U S Department
of Transportation
**Pipeline and Hazardous
Materials Safety Administration**

400 Seventh Street, S W
Washington, D C 20590

SEP 20 2006

Ms. Meg Yeage
President
ConocoPhillips
600 North Dairy Ashford
TA 2010
Houston, Texas 77079

Re: **CPF No. 5-2004-5009**

Dear Ms. Yeage:

Enclosed is the Final Order issued by the Acting Associate Administrator for Pipeline Safety in the above-referenced case. It makes findings of violation and specifies actions to be taken to comply with the pipeline safety regulations. When the terms of the Compliance Order are completed, as determined by the Director, Western Region, this enforcement action will be closed. Your receipt of the Final Order constitutes service under 49 C.F.R. § 190.5.

Sincerely,

James Reynolds
Pipeline Compliance Registry
PHMSA-Office of Pipeline Safety

Enclosure

cc: Mr. Chris Hoidal, P.E., Director, Western Region, PHMSA

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
OFFICE OF PIPELINE SAFETY
WASHINGTON, DC 20590

In the Matter of	)	
ConocoPhillips,	)	**CPF No. 5-2004-5009**
Respondent	)	

FINAL ORDER

On August 11-15 and October 2, 2003, pursuant to 49 U.S.C. § 60117, a representative of the Pipeline and Hazardous Materials Safety Administration's (PHMSA's)[1] Office of Pipeline Safety conducted an on-site pipeline safety inspection of Respondent's Yellowstone Pipeline facilities in Montana and Idaho as well as manuals and records in Billings, Helena, and Missoula, Montana. As a result of the inspection, the Director, Western Region, issued to Respondent, by letter dated March 22, 2004, a Notice of Probable Violation and Proposed Compliance Order (Notice). In accordance with 49 C.F.R. § 190.207, the Notice proposed finding that Respondent had violated 49 C.F.R. Part 195 and proposed ordering Respondent to take certain measures to correct the alleged violations. The Notice also warned Respondent to take appropriate corrective action on other cited items.

Respondent responded to the Notice by letter dated April 28, 2005, later supplemented (Response). Respondent contested the allegations and offered information to explain the allegations. Respondent did not request a hearing, and therefore has waived its right to one.

FINDINGS OF VIOLATION

(Contested)

Item 3 in the Notice alleged Respondent violated 49 C.F.R. § 195.571 by failing to properly consider the voltage drop when measuring cathodic protection levels on its Yellowstone Pipeline. The Notice alleged that Respondent could not provide documentation showing how

[1] Effective February 20, 2005, the Pipeline and Hazardous Materials Safety Administration (PHMSA) succeeded Research and Special Programs Administration as the agency responsible for regulating safety in pipeline transportation and hazardous materials transportation. See, section 108 of the Norman Y. Mineta Research and Special Programs Improvement Act (Public Law 108-426, 118 Stat. 2423-2429 (November 30, 2004)). See also, 70 Fed. Reg. 8299 (February 18, 2005) redelegating the pipeline safety authorities and functions to the PHMSA Administrator.

considerations for voltage drops have been accounted for when Respondent used a cathodic protection adequacy criteria of an "on" potential at least as negative as 850 millivolts (mV) with respect to a saturated copper/copper sulphate reference electrode.

49 C.F.R. § 195.571 requires that cathodic protection monitoring criteria must meet the requirements of NACE Standard RP0169-96, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems," paragraphs 6.2 and 6.3. NACE RP0169 Section 6 allows for an operator to use -850 mV potential with cathodic protection applied and voltage drops considered, typically known as the "on" method. An "on" potential taken with cathodic protection current applied is made up of both the polarized potential of the structure being protected as well as the voltage drop caused by the soils resistance to the protective current being applied. The voltage drop magnitude of an "on" potential can be so high that the polarized potential part of the "on" potential is not adequate to provide corrosion protection to the structure. Therefore, an operator is required to consider those voltage drops to insure that there is still sufficient cathodic protection current reaching the structure to provide protection from corrosion. RP0169 Section 6 allows the operator to account for those voltage drops in several ways including measurement or calculation of voltage drops, evaluation of physical evidence of corrosion and/or evaluation of the cathodic protection system. Prudent industry practice is that when potential measurements are more negative than 850 mV and voltage drops have been accounted for, potentials measured may be used to monitor the cathodic protection system for a period of time or until there is a significant change in the environment, structural, coating, or cathodic protection system parameters.[2]

In its April 28, 2004 Response, Respondent argues that sustaining "on" readings of at least as negative as 850 mV is taking voltage drops into consideration. Respondent contends that this information was made available to PHMSA during the 2003 inspection in support of this argument.

In Respondent's case, it appears unclear as to how voltage drops are considered and how "on" potentials were used for monitoring. During the 2003 inspection, cathodic protection records consisted of "on" pipe to soil measurements taken along the pipeline during the 2002 and 2003 years. Though other information may have been available for review, PHMSA would still have had to integrate the pig logs, the rectifier readings, the exposed pipe reports, the historic cathodic protection levels, and other data at each test station to determine if "on" levels taken in 2002 and 2003 did demonstrate the adequacy of corrosion control measures. However, that is Respondent's responsibility under 49 C.F.R. § 195.589 and not the PHMSA inspector.

Respondent's records do not clearly indicate how voltage drops are considered nor do they indicate "on" potentials being used to monitor each test station. Accordingly, I find that Respondent violated 49 C.F.R. § 195.571 as alleged in the Notice.

Item 5 in the Notice alleged Respondent violated 49 C.F.R. § 195.575(e) by failing to install any fault current or lightning protection on its pipeline where it is in close proximity to electrical transmission tower footings. The Notice alleged that Respondent provided no evidence that

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[2] See NACE Standard TM0497-97, "Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Piping Systems."

Yellowstone Pipeline is protected from fault currents or lightning from several adjacent electrical tower footings in the Heights area of Billings, Montana.

49 C.F.R. § 195.575(e) requires that an operator must protect their pipeline against damage from fault currents or lightning imposed from electrical transmission tower footings.

In its April 28, 2004 Response, Respondent states that it considered the existing rectifiers and associated groundbeds to be a form of protection from fault currents and lightning. Respondent's supplement provided its procedures for "Ground Fault & Lightning Protection" to PHMSA. Those procedures stated that "Any existing ground mats or ground rods as well as/or any existing rectifier and its associated groundbed (within one mile of the influenced section), which are electrically tied to a section of pipeline seeing AC influences or a section of pipeline in close proximity to a high voltage power line tower footing or ground, are considered to provide protection against ground faults and lightning strikes."

During the 2003 inspection, data obtained indicates that the nearest rectifier is approximately three miles from the beginning of this line segment that is in close proximity to tower footings. In this case, the distance to the nearest rectifier is further than one mile, exceeding the criteria in Respondent's procedures; furthermore, this segment of pipeline crosses through several residences in a populated area of Billings, Montana.

Respondent additionally provided the "AC Electrical Interference Analysis Billings/Yellowstone 10" Pipeline" report prepared by ARK Engineering and Technical Services, Inc, dated December 13, 2004. In that report ARK Engineering did an alternating current (AC) interference study of the area of concern. This study and subsequent analysis found that the worst case fault currents from the adjacent electrical transmission lines in the Heights area of Billings, Montana would induce a coating stress voltage of 1260 V. That report also states that coating damage can occur when coating stress voltages are greater than 5000 V on pipelines coated with fusion bonded epoxy and when these voltages are between 1000 V and 2000 V for bitumen coated pipelines.

Although the report concludes that no additional mitigation methods are required at this time on this section of pipeline, that conclusion is based on the assumption that the pipeline is coated with fusion bonded epoxy. Respondent's personnel informed the PHMSA inspector that this pipeline segment is coated with coal tar enamel, a bitumen based coating. Therefore, it appears that this report calls for some type of mitigating action to minimize coating stress voltages that could be induced from fault currents.

Accordingly, I find that Respondent violated 49 C.F.R. § 195.575(e) as alleged in Item 5 of the Notice.

Item 6 in the Notice alleged Respondent violated 49 C.F.R. § 195.577(a) by failing to provide protection from current induced upon the Yellowstone Pipeline from adjacent electrical transmission power lines in the Heights area of Billings, Montana. The Notice alleged that the AC pipe to soil readings at the time of this inspection showed an induced AC voltage on the pipeline of 5V.

It its April 28, 2004 Response, Respondent stated that no AC potential readings taken on the Yellowstone Pipeline at the time of the 2003 inspection were above 5V AC, which is less than the 15V AC action level defined in their procedures. Therefore, Respondent contends that provisions at this location are adequate. In its procedure MPR-4006, "High Voltage AC Power Lines – Influence on Pipelines – Safety Precautions and Corrosion Mitigation Considerations" (Effective Date 2004-05-26" submitted to PHMSA on May 26, 2004, Respondent considers readings above 15 V AC to be detrimental both because of worker safety and pipeline corrosion.

Although Respondent submitted "AC Electrical Interference Analysis Billings/Yellowstone 10" Pipeline" report to also address Notice Item 6, that study only investigated the induced AC voltages on the Yellowstone Pipeline and not the AC current density. In addition, this report concluded that touch voltages present no apparent personal safety concerns.

According to NACE Corrosion 2004 Paper 04206, "AC Corrosion: Corrosion Rate and Mitigation Requirements" by Mark Yunovick and Neil G. Thompson of CC Technologies Laboratories, Inc., "The mitigation threshold of 15 V recommended in NACE RP0177 for safety concerns is not necessarily sufficient to mitigate AC corrosion." That is, although maintaining induced current potentials below 15 V AC is primarily a safety level to provide shock protection to individuals working on the pipeline per NACE Standard RP0177-2000, "Mitigation of Alternating Current and Lightning Effects on Metallic Structures and Corrosion Control Systems," it is questionable as to whether this is an acceptable level to prevent corrosion. Furthermore, the NACE AC Corrosion 2004 Paper 04206 gives guidance that mitigation criteria should put the emphasis on mitigating the AC current density, rather than the AC voltage. Here, an AC current density study was not done on this segment of pipeline and, thus, it cannot be determined if induced AC voltages/currents present a corrosion hazard.

Accordingly, I find that Respondent violated 49 C.F.R. § 195.577 as alleged in Item 6 of the Notice.

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

COMPLIANCE ORDER

The Notice proposed a Compliance Order with respect to Items 3, 5, and 6 in the Notice. 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. Pursuant to the authority of 49 U.S.C. § 60118(b) and 49 C.F.R. § 190.217, Respondent is ordered to take the following actions to ensure compliance with the pipeline safety regulations applicable to its operations. Respondent must—

1. With respect to Item 3, pertaining to voltage drop consideration on the Yellowstone Pipeline, develop a procedure for monitoring cathodic protection that incorporates methods to be used to determine if one of the criteria listed in paragraph 6.2 of NACE Standard RP0169-96 has been met.

2. With respect to Item 5, pertaining to fault currents or lightning from adjacent electrical transmission lines in the Heights area of Billings, Montana, protect the pipeline against damage from fault currents or lightning along this segment as well as any other segments that are close to electrical transmission tower footings;

3. With respect to Item 6, pertaining to the area of AC influence in the Heights area of Billings, Montana, develop a program to identify, test for, and minimize detrimental effects of currents induced upon the pipeline from adjacent electrical transmission power lines;

4. Within 30 days of receipt of this Final Order, complete the above items;

5. Respondent shall maintain documentation of the safety improvement costs associated with fulfilling this Compliance Order and submit the total to Director, Western Region, PHMSA. Costs shall be reported in two categories: 1) total cost associated with preparation/revision of plans, procedures, studies and analyses, and 2) total cost associated with replacements, additions and other changes to pipeline infrastructure; and

6. Submit documentation of procedures, costs and evidence of actions taken to the Director, Western Region, Pipeline and Hazardous Materials Safety Administration, 12300 West Dakota Avenue, Suite 110, Lakewood, Colorado 80228. Please refer to CPF No. 5-2004-5009 on any correspondence or communication in these matters.

The Director, Western Region, may grant an extension of time to comply with any of the required items upon a written request timely submitted by the Respondent demonstrating good cause for an extension.

Failure to comply with this Final Order may result in the assessment of civil penalties of not more than $100,000 per day, or in the referral of the case for judicial enforcement.

WARNING ITEMS

The Notice did not propose a civil penalty or corrective action for Items 1 and 2 in the Notice but warned Respondent that it should take appropriate corrective action to correct the items.

Item 1, as more fully described in the Notice, was for failing to test tie-ins in accordance with 49 C.F.R. §§ 195.308. Respondent stated in its response that the six-foot segment of pipe in question was installed before the pipeline was hydrostatically tested on April 10, 2003. However, information from the 2003 inspection of the Yellowstone Pipeline showed that the six-foot pipe segment in question was installed on April 11, 2003, one day after the hydrostatic test was completed for the pipeline. This six-foot pipe segment replaced piping that included a fitting used for the April 10, 2003 hydrostatic test. There is no definitive evidence that this piece of pipe was pressure tested prior to being installed on April 11, 2003.

Item 2, as more fully described in the Notice, was for failing to take corrective action to mitigate corrosive activity in accordance with 49 C.F.R. §§ 195.402 and 195.579. This item was uncontested and Respondent provided documentation indicating it was addressing this internal corrosion issue.

Items 1 and 2 in the Notice are considered to be warning items. Respondent is warned that if it does not take appropriate action to correct these items, enforcement action will be taken if a subsequent inspection reveals a violation.

WITHDRAWAL OF WARNING ITEM

Item 4 in the Notice cited that Respondent's records showed that there were low cathodic protection readings at MP 3.7 on the Alkali Creek to Laurel segment in both 2002 and 2003 years. Respondent presented data, indicating that it was following up on the low cathodic protection potentials at MP 3.7 on the Alkali Creek to Laurel segment after the first low reading was taken in 2002, which was prior to the 2003 PHMSA inspection. Based on this information, I am withdrawing this warning item.

Under 49 C.F.R. § 190.215, Respondent has a right to submit a 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 terms of the order, including any required corrective action, remain in full effect unless the Associate Administrator, upon request, grants a stay. The terms and conditions of this Final Order are effective on receipt.

Theodore L. Willke
Acting Associate Administrator
for Pipeline Safety

Date Issued