U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

12300 W. Dakota Ave., Suite 110
Lakewood, CO 80228

NOTICE OF PROBABLE VIOLATION
PROPOSED CIVIL PENALTY
and
PROPOSED COMPLIANCE ORDER

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
FAX TO: 713-656-8232

March 25, 2013

Mr. Gary Pruessing
President
ExxonMobil Pipeline Company
800 Bell Street
Room 741-D
Houston, Texas 77002

CPF 5-2013-5007

Dear Mr. Pruessing:

On July 2, 2011, a representative of the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), pursuant to Chapter 601 of 49 United States Code, responded to a failure on ExxonMobil Pipeline Company's (EMPCO) Silvertip Pipeline System at Laurel, Montana. The 69.6-mile Silvertip Pipeline System (Silvertip Pipeline) is a 12" diameter transmission pipeline that transports crude oil from the company's Silvertip Pump Station near Belfry, Montana, northwards to the Billings Refinery via Laurel. The Silvertip Pipeline crosses the Yellowstone River approximately 800 feet east of the Highway 212 (Failure Site). The pipeline segment at the Failure Site potentially "could affect" a High Consequence Area (HCA) under PHMSA's integrity management regulations due to the impacts that a pipeline failure could have on the Yellowstone River and other environmentally sensitive areas.

At approximately 10:40 p.m. mountain daylight time (MDT) on July 1, 2011, the Silvertip Pipeline failed at this Yellowstone River crossing, releasing approximately 1500 barrels of crude oil over the next hour (Failure). The Failure was reported to the National Response Center on July

2, 2011, at approximately 12:19 a.m. MDT. The oil discharged directly into the Yellowstone River at flood stage and fouled nearby agricultural fields, pastures and lawns along the banks downstream of Laurel.

The Failure was first detected by EMPCO's Operations Control Center (OCC) in Houston, Texas. The OCC houses the company's Supervisory Control and Data Acquisition (SCADA) system for all EMPCO pipelines, including the Silvertip Pipeline. The company's various pipelines are segregated so that similar types of pipelines are operated from a single console at the OCC. The console that monitored and controlled the Silvertip Pipeline at the time of the Failure was known as Console #2, from which 12 different pipeline systems were operated.

On the evening of July 1, 2011, Console #2 was being controlled by Controller "A." At 10:40:43 p.m., an alarm went off on Console #2, indicating a drop in line pressure at Remote Control Valve (RCV) 4462, located immediately upstream and south of the Yellowstone River crossing. Controller A apparently did not see or recognize this alarm. However, at 10:41:14 p.m. MDT, he did notice a second alarm indicating that the booster pump at the Edgar Pump Station, located approximately 14 miles upstream from Laurel, had automatically shut down because of a "low suction pressure" alarm. Based on this information, Controller A believed that he might have a leak and shut down the pumps at the head of the Silvertip Pipeline and closed the originating valve (RCV 1066) at 10:50:39 p.m. MDT to stop the flow of crude oil into the pipeline. He then closed RCV 1067, located approximately one-half mile downstream and north of the Yellowstone River crossing, at 10:57:15 p.m. MDT.

Three minutes later, Controller A notified his supervisor, who reviewed the trends and alarm logs and at 11:07:32 p.m. MDT directed Controller A to re-open RCV 1067 to allow oil to drain into the Billings refinery. The supervisor initiated a telephone call to the First Line Supervisor in the field, who asked for a senior technician to be added to the call. These three individuals discussed what might have caused the Edgar pumps to go down on low suction. After further discussion and review of the SCADA data, the OCC Supervisor noticed for the first time that the initial alarm had actually been precipitated by a pressure drop at RCV 4462. The supervisor finally ordered RCV 4462 to be closed at 11:36:51 p.m. MDT, which stopped the gravity flow of crude oil into the Yellowstone River. This occurred approximately 56 minutes after the first alarm, a delay that allowed approximately 1063 additional barrels of crude oil to contaminate the river.

According to EMPCO's own internal investigation and PHMSA's failure investigation report, the cause of the Failure was a submerged "guillotine" break in the pipeline near the south shore of the river. Debris caught on the exposed pipe during the flooding gradually increased external stress on the pipe until it ultimately failed.

Following the release, PHMSA issued a Corrective Action Order [CPF No. 5-2011-5017H] dated July 5, 2011, that required EMPCO to take certain actions before restarting the Silvertip Pipeline, and complete additional safety measures before the 2012 flood season. These actions included the replacement of the Yellowstone River crossing with a horizontally directionally drilled line.

The Failure was presaged by numerous indications over the past 20 years that the Yellowstone River was prone to seasonal flooding, including that the river had experienced increased erosion

and scouring from recent floods, that another pipeline in the vicinity had failed in 2009 due to flooding, and a series of warnings from City of Laurel officials who expressed concerns to EMPCO about the safety of the Silvertip Pipeline for at least a year prior to the Failure.

Recurring problems with flooding and scouring of the Yellowstone River near Laurel had been common knowledge in Laurel for years. These problems had apparently worsened since 1991, when the Highway 212 Bridge was constructed in a manner that constricted water flow in the river and increased the velocity and scouring of floodwaters.

Within approximately 500 feet and "upriver" of the Failure Site, there were three other transmission pipelines, one of which had experienced a recent failure due to flooding and river scouring. Specifically, on June 7, 2009, an 8" natural gas pipeline operated by Williston Basin Interstate Pipeline (WBI) had failed under the Yellowstone River as a result of erosion and flooding. In response to that failure, WBI replaced it with a 16-inch line horizontally directionally drilled (HDD) at a depth of 40-50 feet below the river. In the aftermath of the WBI failure, ConocoPhillips abandoned its 8-inch crude oil pipeline and filled it with nitrogen. It was later determined after the Failure that the ConocoPhillips line also ruptured sometime between 2009-2011.

On August 6, 2010, City officials held a meeting, of various government officials, EMPCO, and representatives of two other pipeline operators (WBI and ConocoPhillips) to view the south bank of the river and to express the City's concerns about the continuing erosion downstream of the Highway 212 Bridge. Several months later, City officials contacted PHMSA again with the same concerns. The agency again communicated this information to EMPCO, whose response was to conduct a depth of cover survey in December 2010. Upon receipt of that study, EMPCO concluded that the existing depth of cover was a minimum of five feet in the river.

The following spring brought new flooding. In May 2011, both PHMSA and Laurel officials expressed to EMPCO their continuing concerns about flood conditions on the Yellowstone River, including the area downstream of the Highway 212 Bridge at the future Failure Site, where it was evident that the erosion on the south bank was extensive and continuing. In June, it became apparent that the river, which normally receded after a few weeks, was still at flood stage, thus increasing the risk of scouring, erosion, and the accumulation of debris that could potentially damage the Silvertip Pipeline.

City of Laurel officials contacted EMPCO on multiple occasions between May 25 and June 24, 2011, to express concerns about the safety of the Silvertip Pipeline. On these two dates, EMPCO shut down the line for several hours to assess the situation but decided each time to resume operations. However, on May 25, WBI decided to shut down its "trenched" 16-inch natural gas pipeline located under the Yellowstone River, within a few hundred feet of the Silvertip Pipeline crossing, because of the high floodwaters.[1]

[1] This line was later replaced with a HDD crossing in 2012.

As a result of PHMSA's post-failure investigation, it appears that EMPCO has committed probable violations of the Pipeline Safety Regulations, Title 49, Code of Federal Regulations. The probable violations are:

1. **§195.452 Pipeline integrity management in high consequence areas.**

(i) What preventive and mitigative measures must an operator take to protect the high consequence area?
(2) Risk analysis criteria. In identifying the need for additional preventive and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to:
(i) Terrain surrounding the pipeline segment, including drainage systems such as small streams and other smaller waterways that could act as a conduit to the high consequence area;
(ii) Elevation profile;
(iii) Characteristics of the product transported;
(iv) Amount of product that could be released;
(v) Possibility of a spillage in a farm field following the drain tile into a waterway;
(vi) Ditches alongside a roadway the pipeline crosses;
(vii) Physical support of the pipeline segment such as by a cable suspension bridge;
(viii) Exposure of the pipeline to operating pressure exceeding established maximum operating pressure.

Under PHMSA's integrity management regulations, EMPCO was required to conduct a risk analysis of each pipeline segment that could adversely affect an HCA in the event of a hazardous liquid spill. For at least two years prior to the Failure, EMPCO failed to consider all relevant risk factors in identifying the need for additional preventive and mitigative (P&M) measures in its integrity management program (IMP) for the Silvertip Pipeline. In the risk analysis used as the conceptual basis to develop appropriate P&M measures, entitled *Silvertip to Billings 12" Crude Preventive and Mitigative Measures Analysis Summary,* dated July 7, 2010 (2010 P&M Plan), EMPCO failed to consider all relevant risk factors, as required under 49 C.F.R. § 195.452(i)(2), in evaluating the likelihood of a pipeline release that could affect the Yellowstone River.

In its 2010 P&M Plan, EMPCO failed to consider a number of factors that could have significantly affected the potential impact of a failure on this particular pipeline segment, particularly at the Yellowstone River crossing near Laurel. These factors included: the terrain surrounding the pipeline segment, including drainage systems; the elevation profile of the pipeline; the amount of product that could be released in a spill; and the physical support of the pipeline segment in the river. Other factors that EMPCO should have considered for this segment are listed in Appendix C to 49 C.F.R. Part 195, Guidance for Implementation of Integrity Management Program. The guidance lists additional factors that operators should potentially consider in its IMP, including "potential natural forces inherent in the area (flood zones, earthquakes, subsidence areas, etc.)."

The risk of flooding on the Yellowstone River was a known threat that could cause the pipe in the river to lose physical support and potentially rupture. The Yellowstone River had a history of extensive seasonal flooding, channel migration, and river bottom scour that should have been considered in the risk analysis. As noted above, this history of flooding had seriously impacted other pipeline operators in the vicinity of the Failure Site.

EMPCO's failure to recognize the risk of flooding and river bottom scour as part of its 2010 P&M Plan, particularly after the 2009 and 2010 flood seasons, resulted in an integrity management plan that failed to properly address known risks to the integrity of the Silvertip Pipeline at the Failure Site. EMPCO should have made changes after the WBI failure in June 2009 and yet did not make changes after the August 6, 2010 meeting with the City of Laurel. The prolonged flooding of the Yellowstone River in the weeks prior to the Failure did, in fact, lead to excessive erosion and river scouring, a loss of pipeline support caused by high water volume and detritus, and the ultimate guillotine failure of the pipeline. Respondent's failure, over an extended period of time, to recognize these threats as part of its risk analysis was a major cause of the Failure.

2. §195.452 Pipeline integrity management in high consequence areas.

(i) What preventive and mitigative measures must an operator take to protect the high consequence area?
(1) General requirements. An operator must take measures to prevent and mitigate the consequences of a pipeline failure that could affect a high consequence area. These measures include conducting a risk analysis of the pipeline segment to identify additional actions to enhance public safety or environmental protection. Such actions may include, but are not limited to, implementing damage prevention best practices, better monitoring of cathodic protection where corrosion is a concern, establishing shorter inspection intervals, installing EFRDs on the pipeline segment, modifying the systems that monitor pressure and detect leaks, providing additional training to personnel on response procedures, conducting drills with local emergency responders and adopting other management controls.

Consistent with its failure to conduct a risk analysis that recognized the potential for flooding of the Yellowstone River, EMPCO failed to take P&M Measures required by § 195.452 (i) (1) that could have mitigated the consequences of a pipeline failure due to flooding. The Silvertip Pipeline was originally designed and constructed in the 1950's, more than 20 years prior to the adoption of PHMSA's regulatory program. At some time after the line had been in operation, the valves upstream of river crossings as well as other strategic valves were modified to allow remote operation. The current configuration of the pipeline includes four remote control valves (RCVs) - a type of Emergency Flow Restricting Device – installed immediately upstream of four river crossings (Clark Fork, Rock Creek, Yellowstone River-Laurel, and Yellowstone River-Billings) along the Silvertip Pipeline. These RCVs were designed to allow controllers to remotely isolate the pipeline in the event of a failure that could spill crude oil into waterways or other environmentally sensitive areas. The RCVs on the Silvertip Pipeline were also equipped with surge-relief bypasses, which protected the pipeline from pressures that could potentially damage the pipe upon rapid closure.

While the RCVs were installed for the purpose of mitigating the consequences of a failure, EMPCO failed to take any action to operate the RCVs in a manner that would actually prevent or mitigate the consequences of a failure potentially affecting the Yellowstone River. In addition, it failed to take any other P&M Measures that could have potentially addressed such a threat, including the possible implementation of other damage prevention best practices, strengthening leak detection systems, undertaking additional training for its personnel to respond effectively in the event of a spill, or addressing the risk of a guillotine failure due to flooding.

3. §195.403 Emergency Response Training.

(a) Each operator shall establish and conduct a continuing training program to instruct emergency response personnel to:
(3) Recognize conditions that are likely to cause emergencies, predict the consequences of facility malfunctions or failures and hazardous liquids or carbon dioxide spills, and take appropriate corrective action;

EMPCO failed to establish and conduct a continuing training program to instruct emergency response personnel to recognize conditions likely to cause emergencies, to predict the consequences of crude oil spills, or to take appropriate corrective actions. Specifically, the company did not effectively train the controllers and supervisors at the OCC to recognize conditions likely to cause emergencies during flooding, to predict the consequences of facility malfunctions, failures, or hazardous liquid spills, or to take appropriate corrective actions. EMPCO staff stated in post-failure interviews that it was their practice to drain crude away from a release and that because the Silvertip Pipeline gravity-flowed into the Laurel refinery, anything but a guillotine failure would allow crude oil to drain away from the release.

Following "low pressure" alarms at 10:40 p.m. MDT and shutdown of pumps at 10:47 p.m. MDT, Controller A requested assistance from his OCC Supervisor, who assumed control of Silvertip Pipeline operations at approximately 11:00 p.m. MDT. He called the First Line Supervisor in Billings, Montana, who then conferenced in a Senior Field Technician. Each of these individuals was aware of the high levels of flooding that had been occurring since mid-May on the Yellowstone River. Nevertheless, it took until 11:36 p.m. for these three EMPCO individuals to determine that a release had occurred near the Yellowstone River and oil could be flowing into the river.

From their actions following the first alarm on the date of the Failure, it is apparent that neither the OCC Supervisor nor the First Line Supervisor had been adequately trained to recognize and properly respond to the: 1) local environmental conditions that were likely to cause emergencies, e.g., localized historic flooding; 2) the consequences of a guillotine failure in the river; or 3) the unique system configurations, e.g., surge-protected RCVs that could have mitigated the consequences of the Failure. Had the controllers and supervisors been trained to know the elevation profile of the pipeline adjacent to the river and the design of the RCVs, they would have been able to make the decision to close the RCVs upstream of the Yellowstone River crossing more quickly.

4. **§195.402 Procedural manual for operations, maintenance, and emergencies.**

(a) *General.* Each operator shall prepare and follow for each pipeline system a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies....
(e) Emergencies. The manual required by paragraph (a) of this section must include procedures for the following to provide safety when an emergency condition occurs;
(2) Prompt and effective response to a notice of each type emergency, including fire or explosion occurring near or directly involving a pipeline facility, accidental release of hazardous liquid or carbon dioxide from a pipeline facility, operational failure causing a hazardous condition, and natural disaster affecting pipeline facilities.

EMPCO violated § 195.402(e)(2) by failing to have written procedures for taking prompt and effective action to protect the Silvertip Pipeline after receiving notice of a natural disaster affecting the company's pipeline facilities. Specifically, EMPCO's manual failed to include procedures to respond to seasonal flooding of the Yellowstone River.

Beginning on or before May 25, 2011 and continuing through the date of the Failure, EMPCO had notice that the Yellowstone River was experiencing flooding at Laurel that adversely affected the safety of the Silvertip Pipeline, yet the company had no written procedures in place to address a natural disaster of this type. The company's response during the month prior to the Failure was to visit Laurel, meet with City and other government officials, shut down the line for several hours on two separate occasions while evaluating data, monitor the water levels daily, and to place sandbags around RCV 4462 in Laurel's Riverside Park to protect the valve in case it was flooded.

The company, however, had no written procedures on how its emergency response personnel should address flooding. Since the portion of the line that was buried in the Yellowstone River was neither visible nor easily accessible, such procedures needed to address potential actions such as emergency shutdown of pumps and closure of isolating valves or even precautionary purging of the pipeline in areas susceptible to a release. For example, on May 25, 2011, WBI shut down its open-cut 16-inch gas pipeline within a few hundred feet of the Failure Site due to concerns about flooding. Although EMPCO also shut down its line on May 25th and June 24th, both shutdowns were only for a few hours. There is no indication that EMPCO initiated or implemented any new procedures to respond to the 2011 flooding of the Yellowstone River.

5. **§195.402 Procedural manual for operations, maintenance, and emergencies.**

(a) *General.* Each operator shall prepare and follow for each pipeline system a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies....
(e) Emergencies. The manual required by paragraph (a) of this section must include procedures for the following to provide safety when an emergency condition occurs;
(4) Taking necessary action, such as emergency shutdown or pressure reduction, to minimize the volume of hazardous liquid or carbon dioxide that is released from any section of a pipeline in the event of a failure.

EMPCO violated § 195.402(e)(4) by failing to have written procedures for taking necessary action to minimize the volume of oil potentially released from any section of the Silvertip Pipeline in the event of a failure. The Silvertip Pipeline was physically equipped with RCVs upstream of each major water crossing that could be remotely actuated by pipeline controllers in Houston. However, the EMPCO procedures in place at the time of the Failure did not include instructions to close the RCVs upstream of waterways in a manner designed to minimize the flow of product into the water in the event of a suspected release.

EMPCO's OCC operating instructions (OI) at the time of the Failure instructed EMPCO controllers to shut down the originating pumps and close the valves at the beginning of the Silvertip Pipeline. However, the OIs did not include procedures for the rapid closure of all appropriate valves if the controller suspected a leak. In particular, EMPCO lacked written procedures for shutting down RCV 4462 in the event of a suspected leak that could affect the Yellowstone River. The first indication of a possible release on the date of the Failure, given the history of flooding and the City's concerns about this pipeline should have prompted an immediate emergency shutdown of the system, including pumps and all isolating valves.

During PHMSA's failure investigation, EMPCO provided a timeline of OCC controller actions, supervisor actions and SCADA recorded events. This timeline shows the pumps at the originating station were shut down within seven minutes of the first SCADA alarm. These actions were done in accordance with the EMPCO emergency procedures in place at the time of the spill. It took 56 minutes, however, for the supervisors to correctly assess the situation and close RCV 4662 immediately upstream of the Yellowstone River to stop the flow of oil into the river. Failure to close this valve resulted in considerably more crude oil being spilled into the Yellowstone River.

As part of this investigation, EMPCO personnel were asked why the OIs did not include a requirement to immediately close all RCVs after a possible leak, especially if each RCV could be quickly closed without concerns of overpressurization. EMPCO staff said it was their practice to drain crude away from a release and that because the Silvertip Pipeline gravity flowed into the Laurel refinery, anything but a guillotine failure would allow crude oil to drain away from the release. However, the Failure was a guillotine failure and EMPCO's procedures did not address the proper response to a guillotine failure. By failing to have a procedure in place to address such a failure, the pipeline continued to drain into the Yellowstone River for approximately 56 minutes after the initial alarm and allowed an additional 1,063 barrels of oil to pollute the river.

Proposed Civil Penalty

Under 49 United States Code, § 60122, you are subject to a civil penalty not to exceed $200,000 per violation per day the violation persists up to a maximum of $2,000,000 for a related series of violations. For violations occurring prior to January 3, 2012, the maximum penalty may not exceed $100,000 per violation per day, with a maximum penalty not to exceed $1,000,000 for a related series of violations. The Compliance Officer has reviewed the circumstances and supporting documentation involved in the above probable violations and has recommended that you be preliminarily assessed a civil penalty of $1.7 million as follows:

Item number	PENALTY
1	$495,500
2	$504,500
4	$600,000
5	$100,000

Proposed Compliance Order

With respect to item 3, pursuant to 49 United States Code § 60118, the Pipeline and Hazardous Materials Safety Administration proposes to issue a Compliance Order to ExxonMobil. Please refer to the *Proposed Compliance Order*, which is enclosed and made a part of this Notice.

Response to this Notice

Enclosed as part of this Notice is a document entitled *Response Options for Pipeline Operators in Compliance Proceedings*. Please refer to this document and note the response options. All material submit in response to this enforcement action may be 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). If you do not respond within 30 days of receipt of this Notice, this constitutes a waiver of your right to contest the allegations in this Notice and authorizes the Associate Administrator for Pipeline Safety to find facts as alleged in this Notice without further notice to you and to issue a Final Order.

In your correspondence on this matter, please refer to **CPF 5-2013-5007** and for each document you submit, please provide a copy in electronic format whenever possible.

This Notice does not address any potential civil or criminal liability that EMPCO may have for violations of any other federal laws arising from or otherwise related to the events or conduct giving rise to this Notice or to the consequences or damages resulting from the July 1, 2011 failure.

Sincerely,

Terrence A. Larson for Chris Hoidal

Chris Hoidal
Director, Western Region
Pipeline and Hazardous Materials Safety Administration

Enclosure: *Response Options for Pipeline Operators in Compliance Proceedings*

PROPOSED COMPLIANCE ORDER

Pursuant to 49 United States Code§ 60118, the Pipeline and Hazardous Materials Safety Administration (PHMSA) proposes to issue to Exxon Mobil Pipeline Company a Compliance Order incorporating the following remedial requirement to ensure compliance with the pipeline safety regulations:

1. In regard to Item Number 3 of the Notice pertaining to emergency response training, ExxonMobil must train all controllers, future and existing, on all ExxonMobil hazardous liquid pipelines to recognize conditions that are likely to cause emergencies, predict the consequences of facility malfunctions, failures, or hazardous liquids spills, and take appropriate corrective action.

2. ExxonMobil must provide documentation of the completed training to the Director, Western Region, within 30 days.

3. It is requested (not mandated) that ExxonMobil maintain documentation of the safety improvement costs associated with fulfilling this Compliance Order and submit the total to Chris Hoidal, Director, Western Region, Pipeline and Hazardous Materials Safety Administration. It is requested that these costs 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.