

March 24, 2017

**VIA CERTIFIED MAIL AND FAX TO: 307-237-3164**

Mr. H.A. True, III  
President  
Belle Fourche Pipeline Company  
455 N. Poplar Street  
P.O. Drawer 2360  
Casper, WY 82602

**Re: CPF No. 5-2016-5013H**

Dear Mr. True:

Please find enclosed the Post-Hearing Decision regarding the Corrective Action Order issued to Belle Fourche Pipeline Company on December 20, 2016. The Decision confirms the Corrective Action Order with respect to the Bicentennial Pipeline system, with certain modifications. This Decision is being served by facsimile and certified mail in accordance with 49 C.F.R. § 190.5. The terms of the decision are effective upon receipt.

Thank you for your cooperation in this matter.

Sincerely,

Alan K. Mayberry  
Associate Administrator  
for Pipeline Safety

Enclosure

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, OPS  
Mr. Chris Hoidal, Director, Western Region, OPS  
Mr. Colin G. Harris, Faegre Baker Daniels LLP (*via email to  
colin.harris@Faegrebd.com*)  
Ms. Ann Prouty, Faegre Baker Daniels LLP (*via email to ann.prouty@Faegrebd.com*)

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

**U.S. DEPARTMENT OF TRANSPORTATION  
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION  
OFFICE OF PIPELINE SAFETY  
WASHINGTON, D.C. 20590**

In the Matter of	)	
Belle Fourche Pipeline Company,	)	
Respondent.	)	
	)	CPF No. 5-2016-5013H

**POST-HEARING DECISION CONFIRMING  
CORRECTIVE ACTION ORDER**

On December 20, 2016, the Associate Administrator for Pipeline Safety, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), issued a Corrective Action Order (CAO) under authority of 49 U.S.C. § 60112 and 49 C.F.R. § 190.233, finding that continued operation by Belle Fourche Pipeline Company (Belle Fourche or Respondent) of its Bicentennial Pipeline would be hazardous to life, property, or the environment. The CAO made preliminary findings that the hazards were associated with a failure of the pipeline discovered on December 5, 2016, and the hazards would continue unless certain corrective measures were taken. The CAO also found that failure to issue the order expeditiously without prior notice would result in a likelihood of serious harm to life, property, or the environment.

The Respondent requested review of the CAO to determine whether the order should remain in effect. In accordance with 49 C.F.R. §§ 190.211 and 190.233(c), a hearing was held on February 21, 2017, in Denver, Colorado, before a Presiding Official from the Office of Chief Counsel, PHMSA.

At the hearing, the Respondent provided an overview of its pipeline system, discussed the factual circumstances of the failure, and argued that the CAO should be terminated because OPS exceeded its statutory authority and relied on erroneous facts in issuing the CAO. In the alternative, Respondent requested that the terms of the corrective action be amended.

**I. Background**

On December 5, 2016 (estimated time 10:30 a.m.), a landowner reported a spill to Belle Fourche’s DOT Compliance Coordinator, who later confirmed the discharge from the Skunk Hill to Bicentennial pipeline system. It remains unknown exactly when the release started. Respondent initially estimated that 1200 barrels of crude oil were released, but later increased

that estimate to 12,615<sup>1</sup> barrels on March 22, 2017. The crude oil was released into the Ash Coulee Creek due to a girth weld failure.<sup>2</sup>

Belle Fourche Pipeline Company is a liquids pipeline operator that gathers and transports crude oil. The company was founded in 1957 and is based in Casper, Wyoming. Belle Fourche Pipeline Company operates as a subsidiary of True Companies, Inc.<sup>3</sup> The Skunk Hill to Bicentennial pipeline system is approximately 58 miles long and transports Bakken crude oil westwards from the Skunk Hill Pump Station in Billings County, North Dakota to the Bicentennial Station in McKenzie County, North Dakota. The failure occurred in Billings County, North Dakota, approximately 16 miles south of Belfield. The maximum operating pressure (MOP) of the pipeline is 1100 psig, established by hydrostatic test in 2013. The pressure at the point of the failure was approximately 621 psig when the failure occurred.

## **II. Standard for Reviewing Issuance of a Corrective Action Order**

The authority for issuing a CAO is specified in 49 U.S.C. § 60112 and 49 C.F.R. § 190.233. Under those provisions, the Associate Administrator may issue a CAO if a pipeline facility is or would be hazardous to life, property, or the environment. Prior notice to the operator of the facility must be given before issuance of a CAO, but prior notice may be waived if the Associate Administrator finds that failure to do so would result in the likelihood of serious harm to life, property, or the environment. The CAO may include corrective measures including suspended or restricted use of the facility, physical inspection, testing, repair, replacement, or other appropriate action.

The primary purpose of a hearing following issuance of a CAO without prior notice is to determine whether the CAO should remain in effect or be terminated or amended.<sup>4</sup> If the Associate Administrator finds that the facility is or would be hazardous to life, property, or the environment, the Associate administrator confirms the CAO. If the Associate Administrator does not find the facility is or would be hazardous, the Associate Administrator terminates the order.

In making such a determination, the Associate Administrator must consider, if relevant: (1) the characteristics of the pipe and other equipment used in the pipeline facility, including its age, manufacturer, physical properties (including its resistance to corrosion and deterioration), and the method of its manufacture, construction or assembly; (2) the nature of the materials transported (including their corrosive and deteriorative qualities), the sequence in which the materials are transported, and the pressure required for such transportation; (3) the characteristics of the geographical areas in which the pipeline facility is located, in particular the climatic and

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<sup>1</sup> Respondent provided a new (and higher) spill volume estimate in a supplemental accident report dated March 22, 2017.

<sup>2</sup> The Ash Coulee Creek drains into the Little River Missouri River. The oil reached 4.5 miles downstream from the failure site to the eastern edge of a High Consequence Area (HCA).

<sup>3</sup> <http://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=4440556>.

<sup>4</sup> § 190.233(b).

geologic conditions (including soil characteristics) associated with such areas; (4) the proximity of the area in which the hazardous liquid pipeline facility is located to environmentally sensitive areas; (5) the population density and population and growth patterns of such areas; (6) any recommendation of the National Transportation Safety Board made under another law; and (7) any other factors the Associate Administrator consider appropriate. The relevant factors are considered below.

### *1. Characteristics of the Pipe*

The Bicentennial Pipeline system was constructed between 1979 and 1990. The failure occurred in a 19-mile segment of the 58-mile Skunk Hill to Bicentennial Pipeline system, and is located between the Skunk Hill Pump Station and the Treetop Station. This particular segment was built in 1985 using 6-inch nominal diameter, API 5LX-42, 0.1880-inch wall thickness Electric Resistance Welded (“ERW”) pipe.

In some respects, this system has classic components of a gathering system.<sup>5</sup> However, in March 2015, the system began to receive crude from an upstream liquid line, and became a regulated line. Yet, the system has “hydraulic characteristics of a gathering line” that constrain the Respondent’s ability to interpret the data that it receives from its leak detection system (or “LDS”). In other words, if the Bicentennial system were a classic regulated liquid line, (1) the system would operate at a steady pressure, and every barrel injected into its system could be accounted for; and (2) there would be no injection or withdrawal points along the length of the pipeline. However, the Bicentennial system routinely operates in a low-pressure environment due to shutdowns and input variations. Belle Fourche does not pump out of the Skunk Hill Station every day, and on average, the pipeline is shut down 3-6 times a month. In addition, the system has eleven lease automated custody transfer units (“LACTs”) that inject oil along the pipeline.<sup>6</sup> Imbalances in the line are not uncommon, and do not necessarily portend a leak or failure.<sup>7</sup>

The Respondent’s LDS<sup>8</sup> relies on volume balancing, or line balance. Skunk Hill is a metered station at which discharge pressure and other data is collected, and then transmitted via satellite to the Casper control center. As mentioned above, there are 11 LACTs, along with other manual injection points, that run the length of the system. The end of the system is also metered. Belle Fourche monitors pressure flow trend displays and pressure flow alarm thresholds at Skunk Hill, and if pressure variations exceed thresholds, there are hi-lo alarms. Each pump along the pipeline also has hi-lo alarms.

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<sup>5</sup> “It has a history as a gathering system for most of the years. Since the older segments go back to 1979, it’s most simply operated as a gathering system to Bicentennial.” Mr. Stamp, Belle Fourche Engineer, Transcript, Page 90: 14-17.

<sup>6</sup> “The LACTs account for approximately 200 barrels per day of input, or less than 1% of the approximately 24,000 barrel daily flow of the Pipeline.”

<sup>7</sup> 115:3-9.

<sup>8</sup> Exhibit 4, 13.

Nevertheless, PHMSA correctly notes that the system is correctly classified as a regulated liquid line, and that the Respondent could eliminate its slack line conditions via backpressure controls.<sup>9</sup>

## ***2. Nature of the materials transported***

The Bicentennial Pipeline system transports Bakken crude oil. In the CAO, OPS pointed to the hazardous nature of the product being transported as one basis for its finding that continued operation of the Bicentennial pipeline would pose a hazard.<sup>10</sup> There is no contrary evidence in the record. When released into the environment, crude oil poses a serious risk of harm to persons, property, and the environment. This fact, coupled with the system's proximity to high consequence areas and waterways are significant considerations in assessing this pipeline system.

## ***3. Characteristics of the geographical area***

During the hearing, both sides vigorously disputed the extent to which the geography and topography of the area affected the risk of a similar event across the pipeline system. In OPS' view, the majority of the system is in a landslide-prone area, and therefore susceptible to the kinds of land movement that precipitated this Failure.<sup>11</sup> The Director, using his experience as a geotechnical engineer, analyzed the US Geological Survey of the area and the circumstances of this accident. The topography of the area, the soil conditions, and slope stability issues was one reason that the Region found in the CAO, and continues to believe, that the system is vulnerable to similar incidents in the future.

The Respondent disagreed, and pointed to the numerous other pipelines traversing the areas without incident or enforcement action from OPS.

## ***4. Proximity to Environmentally Sensitive Areas***

There is no dispute that this pipeline system is in the vicinity of a High Consequence Area (HCA), and that the release occurred in close proximity to an HCA. The fact that this release endangered an HCA is a significant factor in determining whether the CAO was appropriately issued.

## ***5. Other factors***

In determining whether the CAO should remain in effect, or face termination or modification, I must weigh whether the current factual circumstances give rise to a likelihood of serious harm to life, property, or the environment. There are several unknowns still at play in this Failure. OPS and the Respondent continue to dispute three critical facts: (1) the effect of the topography on the

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<sup>9</sup> OPS Post-Hearing Submission, 9.

<sup>10</sup> CAO, Page 4.

<sup>11</sup> 87: 8-9.

likelihood of a similar failure in the future; (2) the efficacy of Respondent's leak detection system; and (3) whether or not the Respondent has reliably identified the cause of the Failure.

Belle Fourche provided a copious amount of information on the geography of its pipeline system, and argued that OPS could not prove that there was a quantifiable risk of a repeat Failure. In the Respondent's view, this release was an isolated, unpredictable event that is not predictive of land movement on the Bicentennial Pipeline system. OPS fundamentally disagrees, and even argues that Belle Fourche may have experienced other failures that it is not able to detect due to an inadequate leak detection system coupled with an unstable terrain.

In arriving at a decision, I have considered the materials presented by the parties and the testimony in support thereof. The Director, Western Region, offered compelling testimony given his background as a geotechnical engineer who had engaged in "slope stability analysis for ten years."<sup>12</sup> Given his unique qualification in this area, it is difficult to discount his testimony that there is a likelihood of land movement potential on the Bicentennial system that rises to the level required for issuance of a CAO.<sup>13</sup>

Second, the adequacy of Belle Fourche's leak detection system was a highly contentious issue. It is undeniable that Respondent's leak detection system did not detect this failure. Respondent's personnel testified that on December 3, 2016, it registered an imbalance in the system and notified the control room, which misinterpreted its own data, leading to a release that was unabated for at least two days. Even if I accept the Respondent's argument that most Failures are first reported by a third party (and not an operator's leak detection system), it is notable that we still do not know exactly when this leak occurred and Belle Fourche remains uncertain if a date can be pinpointed. In addition, Belle Fourche's own personnel testified that there had been previous incidents where the interpolation of its volume balancing data had led to misinterpretations by its personnel, and perhaps contributed to the dismissal of concerning trends related to this Failure.

On the other hand, OPS appears to have misunderstood some aspects of the Respondent's leak detection system, including the volume injected by the LACTs.<sup>14</sup> While OPS continues to maintain the inadequacy of the current LDS, the evidence in this case is not sufficient to compel the installation of a new LDS at this time. The Respondent correctly notes that OPS has not alleged that it has violated any regulatory code regarding its leak detection system. Furthermore, the Respondent presented persuasive evidence that, even if a more sophisticated leak detection system was installed on the Bicentennial pipeline, it would not necessarily have detected this leak due to the hydraulic characteristics of this system. In order to determine whether there is sufficient evidence to establish the need to install new computational pipeline monitoring (CPM)

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<sup>12</sup> 13: 5-7; 54:11.

<sup>13</sup> While it is true that the Region did not attempt to quantify the landslide risk to the Bicentennial pipeline, I do not believe that the Region must engage in such a detailed analysis.

<sup>14</sup> "We pump out Skunk Hill at a thousand barrels an hour, and the 11 injection points amount to about 200 barrels per day." 92:1-3.

leak detection system<sup>15</sup> on this system, additional investigation into the causes of this accident and the characteristics of this pipeline system is needed. If OPS can establish via a root cause analysis that Belle Fourche's leak detection system is inadequate, the Director may order Belle Fourche to overhaul its LDS through amending the existing CAO.

Lastly, the parties remain divided over the cause of the Failure. While the Respondent is confident that it has isolated the cause of this Failure, and that no further investigation is needed, OPS is equally convinced that further investigation is necessary. On this point, I find that more investigation is needed. The company has presented no independent facts such as a metallurgical evaluation or third-party root cause analysis that offer any degree of certainty as to the cause of failure on this system. While Belle Fourche has speculated that this was a weather related event, I am unconvinced based on the level of investigation undertaken thus far.

### **III. Analysis and Finding of Hazardousness**

In order to confirm the issuance of this CAO, I must find that the facility is or would be hazardous to life, property, or the environment without corrective measures. During the hearing, the Respondent argued that, in order to uphold a CAO issued without notice, OPS must (1) prove that there is a hazard; and (2) that the hazard "rise(s) to the level such that there will be another incident like the incident that caused the hazard in the first place (21: 10-14)." I disagree. The statute requires that, in order for a CAO to be issued without notice, OPS must "decide[s] failure to issue the order expeditiously will result in likely serious harm to life, property, or the environment."<sup>16</sup> In other words, OPS must prove that, but for the expeditious issuance of the order, likely serious harm will result. During the hearing, OPS maintained that a confluence of circumstances established the necessity of issuing a CAO without notice: (1) land movement concerns associated with the topography and weather conditions; (2) an inadequate leak detection system; and (3) an indeterminate cause of failure.

I find that, as of December 20, 2016, OPS met the threshold determination necessary for issuance of a CAO without notice, or that the facility is or would be hazardous to life, property, or the environment; and that likely serious harm to life, property, or the environment would result absent expeditious issuance of the CAO.<sup>17</sup>

### **IV. Other Issues Raised at the Hearing**

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<sup>15</sup> This leak detection method employs numerous monitored variables, and a sophisticated computer model to identify upsets or potential leaks. Monitored inputs include operating parameters for temperature, pressure, flow and density, and include equipment inputs such as pump start/stop and valve open/close signals. The data from all sensors is compared against a baseline model for values that differ from the modeled case indicating a potential leak. <https://primis.phmsa.dot.gov/comm/FactSheets/FSLeakDetectionsystems.htm>

<sup>16</sup> 49 U.S.C. § 60112(e).

<sup>17</sup> During the hearing, OPS acknowledged two factual errors that it relied upon in issuing the CAO: (1) that horizontally directional drills were replicated across the system and (2) that the volume injected by the unmetered LACTs was evidence of a deficient leak detection system. However, these errors are not significant and did not prevent OPS from meeting the evidentiary burden for a CAO. Some of the misunderstanding regarding the LACTs may have been due to information that was not forthcoming from the operator.

Respondent requested a hearing on the threshold issue of whether PHMSA exceeded its statutory authority in issuing a CAO without notice.<sup>18</sup> It argued that PHMSA's CAO authority was its strongest tool, designed only for imminent risks, and that another enforcement tool (e.g. compliance order, notice of proposed safety order, etc.) would have been more appropriate.

In the alternative, Respondent raised several issues regarding the scope of the CAO and the actions that the Respondent must take to restart the pipeline.

I have reviewed the evidence to determine whether the CAO items should remain in effect or be modified. Based on the evidence in the record, I continue to find the Bicentennial pipeline system would be hazardous to life, property, or the environment unless corrective measures are taken. The CAO will remain in effect, as written, subject to the clarifications and modifications set forth below.

### ***1. Shutdown of Isolated Segment.***

The CAO ordered the Respondent not to operate the Isolated Segment until authorized by the Western Director. Belle Fourche argued that the shutdown of this segment amounted to a shutdown of entire pipeline system, and I agree. However, as I will explain below, significant questions remain as to the cause of this Failure, and those must be addressed prior to resuming normal operations. Belle Fourche must not operate the Isolated Segment, until authorized by the Director.

### ***2. Aerial Patrols of Affected Segment.***

This item remains in effect, as written in the CAO.

### ***3. Return to Service.***

Respondent must obtain written approval from the Director prior to resuming operation of the Isolated Segment of the Pipeline.

### ***4. Excavation of Failure.***

I find that it is necessary for Belle Fourche to excavate the failed section of pipe, unless there are documented countervailing safety concerns verified by a geotechnical site investigation report. The Director, Western Region, will evaluate the geotechnical site investigation report and make a determination as to how and when the excavation can safely occur, and set a timeline for this work to commence.

### ***5. Metallurgical Testing.***

Belle Fourche must complete a mechanical and metallurgical testing and failure analysis, in the manner set forward under the CAO.

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<sup>18</sup> 49 U.S.C. § 60112(e).



#### **6. *Root Cause Failure Analysis***

Belle Fourche must complete a root cause failure analysis within 120 days following receipt of this Order that is supplemented and facilitated by an independent third-party vendor acceptable to the Director. It is entirely reasonable for PHMSA to order an independent analysis. I understand that it is Belle Fourche's position that it has pinpointed the cause of the Failure, and no further investigation is necessary. However, an independent root cause analysis is necessary to assure both parties that operations can safely resume.<sup>19</sup>

#### **7. *Emergency Response.***

Belle Fourche must comply with the original terms of the CAO with respect to Item 7. The deadline for this submittal is April 30, 2017.

#### **8. *Geotechnical Evaluation of Existing HDD-installed Pipe Segments.***

This will remain in the CAO, subject to any modifications accepted by the Regional Director.

#### **9. *Future Geotechnical Evaluation and Remediation.***

This provision remains in effect, as written in the CAO.

#### **10. *Records Verification.***

This item has been completed.

#### **11. *In-line Inspection.***

The parties agreed to the withdrawal of this Item. However, I will order that Belle Fourche reevaluate its pigging intervals based on the relative risk of slope movement.

#### **12. *Reporting.***

The parties agreed to the withdrawal of this Item.

#### **13. *Leak Detection.***

For the reasons stated above, I am modifying the CAO to remove Item 13 in its entirety.

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<sup>19</sup> "Mr. Gilliam: I think what PHMSA's saying, in my perspective, is failures don't always have a single mechanism. This could be a multi-mechanism failure, and we just want to assure ourselves that we don't have some other issues going on ..."

**Conclusion**

On March 14, 2017, Belle Fourche submitted an objection and response to OPS' Post-Hearing Brief, specifically its reliance on 2010 Bulletin on leak detection that was not submitted prior to the hearing. OPS responded on March 15, 2017. I will not reach this issue, as I did not rely on or evaluate the 2010 Bulletin in reaching this decision.

The CAO issued to Belle Fourche Pipeline Company on December 20, 2016, is confirmed and will remain in effect, with the changes noted herein to its terms.

March 24, 2017

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Alan K. Mayberry  
Associate Administrator  
for Pipeline Safety

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Date Issued