Pipeline Failure Investigation Report

Pipeline System: **Distribution System** **Operator:** NorthWestern Energy

Location: Bozeman, MT **Date of Occurrence:** 3-5-2009

Medium Released: Natural Gas **Quantity:** Unknown

MTPSC Arrival Time & Date: 11:00 A.M. **Total Damages $** 2,500,000

Investigation Responsibility: ☒ State ☐ PHMSA ☐ NTSB Other

Company Reported Apparent Cause:

☐ Corrosion ☐ Excavation

☒ Natural Forces ☐ Incorrect Operation ☐ Other Outside Force Damage

☒ Material and/or Welds ☐ Equipment and Operations ☐ Other

Rupture	☐ Yes	☒ No		
Leak	☒ Yes	☐ No		
Fire	☒ Yes	☐ No		
Explosion	☒ Yes	☐ No		
Evacuation	☒ Yes	☐ No	Number of Persons 200	Area approx 2 block radius

Narrative Summary

Short summary of the Incident/Accident which will give interested persons sufficient information to make them aware of the basic scenario and facts.

3-5-09

At approximately 8:12 AM an explosion occurred in downtown Bozeman. NorthWestern Energy (NWE) called the Montana Public Service Commission (MTPSC) to report an explosion occurred that may have involved natural gas at approximately 8:40 AM. MTPSC left for Bozeman at approximately 9:30 AM. In Bozeman, MTPSC met with NWE and entered incident scene. MTPSC collected images of the incident scene.

The City of Bozeman had a press conference attended by Governor of Montana, Bozeman City Manager, Bozeman Assistant City Manager, NWE CEO, NWE personnel. It was announced at the press conference that one person was unaccounted for.

NWE in conjunction with incident commander decided to let gas burn and install stopple fittings rather than valve natural gas off at key valves. NWE and incident commander based their decision on the expected cold weather. NWE believed a large number of customers would be affected by shutting off gas with key valve for downtown zone and shutting off downtown zone could result in insufficient gas flow to adjacent zones resulting in loss of heating for a significant number of customers.

NWE controlled natural gas by installing a stopple fitting in the 8" steel main in the alley between Main and Mendenhall east of the incident site. The stopple fitting east of the incident site was a complete installation as a new fitting was welded to the pipe followed by tapping of the pipe and subsequent stopple installed. Initially, NWE removed material (asphalt and soil) over a stopple fitting west of incident site under Black Avenue. NWE subsequently utilized equipment to insert the stopple plug into the pipe (actual fitting was installed previously).

NWE found after utilizing stopple fittings that gas was still flowing to the incident site. Further review of NWE's maps by NWE personnel indicated two sections of main crossed between the incident site and the stopple fitting under Black Avenue. NWE indicated map was read incorrectly. Thus, NWE excavated the 8" main closer to the incident site (west of Black Avenue) and installed (fitting had to be welded to pipe, pipe tapped, stopple inserted into pipe and activated to control flow of gas). The flow of natural gas was originally expected to be controlled by 4:30 pm. However, because an additional stopple fitting was required, the flow of gas was not controlled until 11:45 PM.

While NWE crews were installing the stopple fittings, NWE personnel performed bar hole testing along the main. Approximately 250 ft of pipe was not bar hole tested as it was within incident area.

3-6-09

MTPSC met with NWE personnel to review NWE's proposed procedure for pressure testing distribution system. The Bozeman Fire Department continued to search for unaccounted person. MTPSC also met with ATF and Bozeman City Police. Bozeman Fire Marshall requested assistance from ATF given the magnitude of the incident.

At Bozeman City Hall, prior to MTPSC and NWE meeting with ATF and Bozeman City Police, NWE and MTPSC interviewed a witness. The following is contact information for the witness:

Dan Hunt
Phone: 595-8181
PO Box 549
Bozeman, MT 59701

Dan Hunt performs snow removal. He stated that he smelled gas between 8:00 and 8:07 while standing on Main Street. Additionally, Dan indicated he smelled gas when he was getting snow removal equipment out of the old Bozeman TV and Appliance building.

The Bozeman Fire Marshal was controlling the scene as a criminal investigation. The ATF was assisting by interviewing witnesses.

3-7-09

Bozeman Fire Department continued to search for unaccounted for person. MTPSC was not on scene as Bozeman Fire Department aided by ATF was conducting a search for the unaccounted for person and controlling the scene as a criminal investigation.

3-8-09

Bozeman Fire Department continued to search for unaccounted for person. MTPSC was not present at scene as Bozeman Fire Department aided by ATF was conducting a search for the unaccounted for person and controlling the scene as a criminal investigation.

NWE under the direct supervision of the Bozeman Fire Department/ATF replaced service valves on risers that were involved in the incident. Valves were replaced to ensure leaks did not occur at valve when line was pressure tested as the valves may have been damaged in the explosion.

NWE was originally going to pressure test against stopple fittings. The pressure test was going to be conducted at 33 psi. See the NWE pressure test procedure. During setup for the tests, NWE found the stopple west of the incident scene was allowing gas to leak. Because the stopple was leaking, NWE indicated it was better to cut the 8" main adjacent to both stopple fittings controlling the flow of gas. After main was cut and capped, NWE-M ran temporary services to affected businesses and pressure tested the sectionalized piece of main and associated service lines.

3-9-09

At the Bozeman Fire Department's/ATF's direction, NWE removed the asphalt over the 8" main adjacent to the incident site. NWE also removed some soil and utilized a ground heating device to thaw ground. Ground heater was operated over night.

3-10-09

At the Bozeman Fire Department's/ATF's direction NWE drilled holes and utilized a flame ionization unit to sense for residual gas in ground. The hole locations and gas measurements are included as part of this report. NWE unearthed the Montana Trails Gallery service tap and isolated the service tap from the main. The Montana Trails Gallery service line failed a subsequent pressure test. The 8" main/associated service lines were pressure tested at 33 psi for one hour and passed.

3-11-09

At the Bozeman Fire Department's/ATF's direction NWE , Cleared debris from concrete on top of service line. A-core concrete cutters were hired to cut concrete into sections. Concrete was removed and soil excavated adjacent to service line in the vicinity of the service riser. After soil excavated with back hoe, service line was uncovered via hand digging. Upon uncovering of the service line, it was discovered that one of holes drilled for sensing gas in the ground had been drilled right above the service line and had scuffed the pipe. After the riser end of the service line had been exposed, compressed air was introduced into the service line. It was found the service line was leaking closer to the main in an area of the service line that had not been exposed. Excavation of the service line continued. A 2-inch female threaded coupler connecting two sections of 2-inch threaded male service line was uncovered. Compressed air was introduced into the service line again and it was determined the service line was leaking at the 2-inch female threaded couple. The service line was sectionalized by cutting the service line into three separate portions: 1) main to coupler; 2) section of pipe containing the coupler; and, 3) couple to service valve. The pipe was cut and supported so as not to disturb the coupler (area where leak was identified). Sections 1 and 3 were pressure tested and with compressed air and found not to leak. ATF/Bozeman Fire Department concluded the service line leak at the female coupler was the source of natural gas. The section of pipe containing the coupler was left in the ground for insurance investigators to analyze.

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Pipe section was subsequently removed and NWE took custody of the pipeline section until all affected parties could agree on appropriate testing of coupler and associated pipe.

Injuries/Fatalities
Tara Bowman

Buildings/Structures Most Affected
Rocking R
Boodles
Lilly Lu
Montana Trails Gallery
American Legion
Tolstedt Architects
Several surrounding buildings sustained broken windows/minor damage

Region/State _____ **Reviewed by:** _____

Principal Investigator: _____ **Title:** _____

Date: _____ **Date:** _____

Failure Location & Response		
Location (City, Township, Range, County/Parish): Bozeman, MT		(Acquire Map)
Address or M.P. on Pipeline: (1) 219 E Main Street	Type of Area (Rural, City): (1) Downtown area of City	
Date: 3-5-2009	Time of Failure: Prior to 8:12 A.M.	
Time Detected: 8:12 A.M.	Time Located: 8:12 AM	
How Located: Explosion Site		
NRC Report #: (Attach Report) 899129	Time Reported to NRC: 12:30 PM EST	Reported by: Len LeVeaux

Type of Pipeline:

Gas Distribution	Gas Transmission	Hazardous Liquid	LNG
☐ LP	☐ Interstate Gas	☐ Interstate Liquid	☐ LNG Facility
☐ Municipal	☐ Intrastate Gas	☐ Intrastate Liquid	
☒ Public Utility	☐ Jurisdictional Gas Gathering	☐ Offshore Liquid	

1 Photo documentation

Pipeline Failure Investigation Report

Failure Location & Response

☐ Master Meter ☐ Offshore Gas ☐ Jurisdictional Liquid Gathering
☐ Offshore Gas - High H_2S ☐ CO_2

Pipeline Configuration (Regulator Station, Pump Station, Pipeline, etc.):
8-inch main with 2-inch service lines operated at approximately 33 psi.

Operator/Owner Information

Owner: NorthWestern Energy	Operator: NorthWestern Energy
Address:	Address:
3010 West 69th Street	40 East Broadway
Sioux Falls, SD 57108	Butte, MT 59701
Company Official: Curt Pohl (VP of Retail Operations)	Company Official: Keith Meagor (DOT Coordinator)
Phone No.: Fax No.:	Phone No. (406) 497-2214 Fax No. (406) 497-2048

Drug and Alcohol Testing Program Contacts ☒ N/A

Drug Program Contact & Phone:
Alcohol Program Contact & Phone:

Damages

Product/Gas Loss or Spill(2)	Estimated Property Damage $ 2,499,000
Amount Recovered	Associated Damages(3) $
Estimated Amount $	

Description of Property Damage:
Multiple buildings destroyed/extensively damaged: Boodles, Lilly Lu, Montana Trails Gallery, Rocking R, American Legion, Tolstedt Architects. Several windows in surronding area were also damaged. Several customers connected to the 8" main in the alley were without service following the incident , but were connected to temporary service lines.

Customers out of Service: ☒ Yes ☐ No Number: ____
Suppliers out of Service: ☐ Yes ☒ No Number: ____

Fatalities and Injuries

Fatalities:	☒ Yes	☐ No	Company: 0	Contractor: 0	Public: 1
Injuries - Hospitalization:	☐ Yes	☒ No	Company: ____	Contractor: ____	Public: ____
Injuries - Non-Hospitalization:	☐ Yes	☒ No	Company: ____	Contractor: ____	Public: ____
Total Injuries (including Non-Hospitalization):			Company: ____	Contractor: ____	Public: ____

Name	Job Function	Yrs w/ Comp.	Yrs. Exp.	Type of Injury
Tara Bowman	Montana Trails Gallery Director			Fatality

2 Initial volume lost or spilled
3 Including cleanup cost

Pipeline Failure Investigation Report

Fatalities and Injuries				

Drug/Alcohol Testing ☒ *N/A*					
Were all employees that could have contributed to the incident, post-accident tested within the 2 hour time frame for alcohol or the 32 hour time frame for all other drugs? ☐ Yes ☐ No					
Job Function	Test Date & Time	Location	Results		Type of Drug
			Pos	Neg	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

System Description
Describe the Operator's System: 8-inch main with 2-inch service lines operated at approximately 33 psi.

Pipe Failure Description ☐ *N/A*	
Length of Failure (inches, feet, miles): 5.8 inches (1)	
Position (Top, Bottom, include position on pipe, 6 O'clock): (1) Pipe cracked from approximately 1:30 to 10:30.	Description of Failure (Corrosion Gouge, Seam Split): (1) Circumferential crack approximately 5.8" long that went from 1:30 postion to 10:30.
Laboratory Analysis: ☒ Yes ☐ No Performed by: Stork Twin City Testing Corporation	
Preservation of Failed Section or Component: ☐ Yes ☐ No If Yes - Method:	
In Custody of: NorthWestern Energy Corporation	

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Pipe Failure Description	☐ ***N/A***
Develop a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, etc. Bar Hole Test Survey Plot should be outlined with concentrations at test points. Direction of Flow.	

Component Failure Description		☒ ***N/A***
Component Failed:		(1)
Manufacturer:	Model:	
Pressure Rating:	Size:	
Other (Breakout Tank, Underground Storage):		

Pipe Data	☐ ***N/A***
Material: Steel	Wall Thickness/SDR: 0.154 inches
Diameter (O.D.): 2 3/8 inches	Installation Date: late 1940's (estimated)
SMYS: 42,523 psi	Manufacturer: unknown
Longitudinal Seam: furnace butt welded	Type of Coating: coal tar
Pipe Specifications (API 5L, ASTM A53, etc.): Appears to meet 1945 API 5L specifications	

Joining	☐ ***N/A***
Type: Threaded Coupling	Procedure: N/A
NDT Method: N/A	Inspected: ☐ Yes ☐ No

Pressure @ Time of Failure @ Failure Site			☒ ***N/A***	
Pressure @ Failure Site:		Elevation @ Failure Site:		
Pressure Readings @ Various Locations:			Direction from Failure Site	
Location/M.P./Station #	Pressure (psig)	Elevation (ft msl)	Upstream	Downstream

Upstream Pump Station Data	☒ ***N/A***
Type of Product:	API Gravity:
Specific Gravity:	Flow Rate:

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Upstream Pump Station Data ☒ ***N/A***	
Pressure @ Time of Failure [4]	Distance to Failure Site:
High Pressure Set Point:	Low Pressure Set Point:

Upstream Compressor Station Data ☒ ***N/A***	
Specific Gravity:	Flow Rate:
Pressure @ Time of Failure [4]	Distance to Failure Site:
High Pressure Set Point:	Low Pressure Set Point:

Operating Pressure ☐ ***N/A***	
Max. Allowable Operating Pressure: 35 psi	Determination of MAOP: Determined by 49 CFR 192.619(a)(3)
Actual Operating Pressure: 33 psi	
Method of Over Pressure Protection: N/A to Incident	
Relief Valve Set Point: N/A to Incident	Capacity Adequate? ☐ Yes ☐ No

Integrity Test After Failure ☐ ***N/A***	
Pressure Test Conducted in place? (Conducted on Failed Components or Associated Piping): ☒ Yes ☐ No	
If NO, Tested after removal? ☐ Yes ☐ No	
Method:	
Describe any failures during the test. Service line would not hold pressure. 8" main was pressure tested for 1 hour at 33 psi (operating pressure) and held pressure (See chart from chart recorder)	

Soil/water Conditions @ Failure Site ☐ ***N/A***	
Condition of and Type of Soil around Failure Site (Color, Wet, Dry, Frost Depth): **Black Dirt, Ground was damp, frost depth at failure site could not be determined due to proximity to fire.**	
Type of Backfill (Size and Description): **Black soil with occasional pieces of what appeared to be pieces of clay pipe.**	
Type of Water (Salt, Brackish): **N/A**	Water Analysis [5] ☐ Yes ☒ No

External Pipe or Component Examination ☐ ***N/A***	
External Corrosion? ☐ Yes ☒ No [1] Fracture site appeared to have intergranular cracking\corrosion (pitting or macroscale corrosion was not present. (Refer to EN Engineering Report)	Coating Condition (Disbonded, Non-existent): [1] coating condition ranged from intact to spalled off along length of service line examined. (Refer to EN Engineering Report)
Description of Corrosion: Refer to EN Engineering report and Stork Testing Results.	
Description of Failure Surface (Gouges, Arc Burns, Wrinkle Bends, Cracks, Stress Cracks, Chevrons, Fracture Mode, Point of Origin):	

4 Obtain event logs and pressure recording charts
5 Attach copy of water analysis report

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External Pipe or Component Examination ☐ ***N/A***	
Refer to EN Engineering report	
Above Ground: ☐ Yes ☒ No (1)	Buried: ☒ Yes ☐ No (1)
Stress Inducing Factors: possibly ground movement - (Refer to EN Engineering Report) (1)	Depth of Cover: approximately 42 inches (1)

Cathodic Protection ☐ ***N/A***	
P/S (Surface): <-1.0 V on main in several locations.	P/S (Interface):
Soil Resistivity: Not Checked pH: Not Checked	Date of Installation: partial 1950s, complete in 1970s
Method of Protection: **Rectified CP System**	
Did the Operator have knowledge of Corrosion before the Incident? ☐ Yes ☒ No	
How Discovered? (Close Interval Survey, Instrumented Pig, Annual Survey, Rectifier Readings, ECDA, etc):	

Internal Pipe or Component Examination ☒ ***N/A***	
Internal Corrosion: ☐ Yes ☐ No (1)	Injected Inhibitors: ☐ Yes ☐ No
Type of Inhibitors:	Testing: ☐ Yes ☐ No
Results (Coupon Test, Corrosion Resistance Probe):	
Description of Failure Surface (MIC, Pitting, Wall Thinning, Chevrons, Fracture Mode, Point of Origin):	
Cleaning Pig Program: ☐ Yes ☐ No	Gas and/or Liquid Analysis: ☐ Yes ☐ No
Results of Gas and/or Liquid Analysis (6)	
Internal Inspection Survey: ☐ Yes ☐ No	Results (7)
Did the Operator have knowledge of Corrosion before the Incident? ☐ Yes ☐ No	
How Discovered? (Instrumented Pig, Coupon Testing, ICDA, etc.):	

6 Attach copy of gas and/or liquid analysis report
7 Attach copy of internal inspection survey report

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Outside Force Damage ☒ ***N/A***	
Responsible Party:	Telephone No.:
Address:	
Work Being Performed:	
Equipment Involved: [1]	Called One Call System? ☐ Yes ☐ No
One Call Name:	One Call Report # [8]
Notice Date:	Time:
Response Date:	Time:
Details of Response:	
Was Location Marked According to Procedures? ☐ Yes ☐ No	
Pipeline Marking Type: [1]	Location: [1]
State Law Damage Prevention Program Followed? ☐ Yes ☐ No ☐ No State Law	
Notice Required: ☐ Yes ☐ No	Response Required: ☐ Yes ☐ No
Was Operator Member of State One Call? ☐ Yes ☐ No	Was Operator on Site? ☐ Yes ☐ No
Did a deficiency in the Public Awareness Program contribute to the accident? ☐ Yes ☐ No	
Is OSHA Notification Required? ☐ Yes ☐ No	

Natural Forces ☐ ***N/A***
Description (Earthquake, Tornado, Flooding, Erosion):
Pipe was believed to fail as a result of environmentally assisted cracking - possibly frost heave. (Refer to EN Engineering Report)

8 Attach copy of one-call report

Pipeline Failure Investigation Report

Failure Isolation ☐ ***N/A***	
Squeeze Off/Stopple Location and Method: (1) **Section of 8" main was isolated using stopple fittings and later pipe was cut and sectionalized with welded caps.**	
Valve Closed - Upstream: N/A - installed stopple Time: N/A	I.D.: N/A M.P.: N/A
Valve Closed - Downstream: Time: N/A	I.D.: N/A M.P.: N/A
Pipeline Shutdown Method: ☒ Manual ☐ Automatic ☐ SCADA ☐ Controller ☐ ESD	
Failed Section Bypassed or Isolated: Isolated	
Performed By: Westline Crew and Bozeman Division	Valve Spacing: N/A

Odorization ☐ ***N/A***		
Gas Odorized: ☒ Yes ☐ No	Concentration of Odorant (Post Incident at Failure Site):0.092%	
Method of Determination: ☐ Yes ☐ No Odorameter	% LEL: ☐ Yes ☒ No Time Taken: ☐ Yes ☐ No	% Gas In Air: ☒ Yes ☐ No
Was Odorizer Working Prior to the Incident? ☒ Yes ☐ No	Type of Odorizer (Wick, By-Pass): N/A N/A	
Odorant Manufacturer: N/A Model: N/A	Type of Odorant: N/A N/A	
Amount Injected: N/A	Monitoring Interval (Weekly): Quarterly	
Odorization History (Leaks Complaints, Low Odorant Levels, Monitoring Locations, Distances from Failure Site): Gas is odorized at the the transmission level. NWE checks odorant levels on their distribution system.		

Weather Conditions ☐ ***N/A***	
Temperature: avg 30-35F	Wind (Direction & Speed): Snow
Climate (Snow, Rain): Snow	Humidity:
Was Incident preceded by a rapid weather change? ☐ Yes ☒ No	
Weather Conditions Prior to Incident (Cloud Cover, Ceiling Heights, Snow, Rain, Fog): **Snow**	

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Gas Migration Survey ☐ ***N/A***	
Bar Hole Test of Area: ☒ Yes ☐ No	Equipment Used: Combustiable Gas Indicator and Flame Ionization
Method of Survey (Foundations, Curbs, Manholes, Driveways, Mains, Services) [9] [1] Drilled holes in asphalt along 8" main pathway.	

Environment Sensitivity Impact ☒ ***N/A***	
Location (Nearest Rivers, Body of Water, Marshlands, Wildlife Refuge, City Water Supplies that could be or were affected by the medium loss): [1]	
OPA Contingency Plan Available? ☐ Yes ☐ No	Followed? ☐ Yes ☐ No

Class Location/High Consequence Area ☐ N/A	
Class Location: 1 ☐ 2 ☐ 3 ☒ 4 ☐ Determination: _____	HCA Area? ☐ Yes ☐ No ☒ N/A Determination: _____
Odorization Required? ☒ Yes ☐ No ☐ N/A	

Pressure Test History ☒ **N/A**
(Expand List as Necessary)

	Req'd [10] Assessment Deadline Date	Test Date	Test Medium	Pressure (psig)	Duration (hrs)	% SMYS
Installation	N/A					
Next						
Next						
Most Recent						

Describe any problems experienced during the pressure tests.

Internal Line Inspection/Other Assessment History ☒ **N/A**
(Expand List as Necessary)

	Req'd [10] Assessment Deadline Date	Assessment Date	Type of ILI Tool [11]	Other Assessment Method [12]	Indicated Anomaly If yes, describe below
Initial					☐ Yes ☐ No
Next					☐ Yes ☐ No

9 Plot on site description page
10 As required of Pipeline Integrity Management regulations in 49CFR Parts 192 and 195
11 MFL, geometry, crack, etc.
12 ECDA, ICDA, SCCDA, "other technology," etc.

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Internal Line Inspection/Other Assessment History *(Expand List as Necessary)*					☒ **N/A**
Next					☐ Yes ☐ No
Most Recent					☐ Yes ☐ No
Describe any previously indicated anomalies at the failed pipe, and any subsequent pipe inspections (anomaly digs) and remedial actions.					

Pre-Failure Conditions and Actions ☒ **N/A**
Was there a known pre-failure condition requiring [10] the operator to schedule evaluation and remediation? ☐ Yes (describe below or on attachment) ☐ No
If there was such a known pre-failure condition, had the operator established and adhered to a required [10] evaluation and remediation schedule? Describe below or on attachment. ☐ Yes ☐ No ☐ N/A
Prior to the failure, had the operator performed the required [10] actions to address the threats that are now known to be related to the cause of this failure? ☐ Yes ☐ No ☐ N/A List below or on an attachment such operator-identified threats, and operator actions taken prior to the accident.
Describe any previously indicated anomalies at the failed pipe, and any subsequent pipe inspections (anomaly digs) and remedial actions.

Maps & Records ☐ ***N/A***
Are Maps and Records Current? [13] ☒ Yes ☐ No Comments: See copies of records

Leak Survey History ☐ ***N/A***
Leak Survey History (Trend Analysis, Leak Plots): **See copies of records.**

Pipeline Operation History ☐ ***N/A***
Description (Repair or Leak Reports, Exposed Pipe Reports): **See copies of service orders.**
Did a Safety Related Condition Exist Prior to Failure? ☐ Yes ☒ No Reported? ☐ Yes ☒ No
Unaccounted For Gas: **N/A**

13 Obtain copies of maps and records

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Pipeline Operation History ☐ ***N/A***
Over & Short/Line Balance (24 hr., Weekly, Monthly/Trend): **N/A**

Operator/Contractor Error ☒ ***N/A***	
Name:	Job Function:
Title:	Years of Experience:
Training (Type of Training, Background):	
Was the person "Operator Qualified" as applicable to a precursor abnormal operating condition? ☐ Yes ☐ No ☐ N/A	
Was qualified individual suspended from performing covered task ☐ Yes ☐ No ☐ N/A	
Type of Error (Inadvertent Operation of a Valve):	
Procedures that are required:	
Actions that were taken:	
Pre-Job Meeting (Construction, Maintenance, Blow Down, Purging, Isolation):	
Prevention of Accidental Ignition (Tag & Lock Out, Hot Weld Permit):	
Procedures conducted for Accidental Ignition:	
Was a Company Inspector on the Job? ☐ Yes ☐ No	
Was an Inspection conducted on this portion of the job? ☐ Yes ☐ No	
Additional Actions (Contributing factors may include number of hours at work prior to failure or time of day work being conducted):	
Training Procedures:	
Operation Procedures:	
Controller Activities:	

Name	Title	Years Experience	Hours on Duty Prior to Failure	Shift

Alarm Parameters:
High/Low Pressure Shutdown:
Flow Rate:

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Operator/Contractor Error	☒ ***N/A***
Procedures for Clearing Alarms:	
Type of Alarm:	
Company Response Procedures for Abnormal Operations:	
Over/Short Line Balance Procedures:	
Frequency of Over/Short Line Balance:	
Additional Actions:	

Additional Actions Taken by the Operator	☐ ***N/A***
Make notes regarding the emergency and Failure Investigation Procedures (Pressure reduction, Reinforced Squeeze Off, Clean Up, Use of Evacuators, Line Purging, closing Additional Valves, Double Block and Bleed, Continue Operating downstream Pumps): **See narrative summary.**	

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Photo Documentation [(1)]					
Overall Area from best possible view. Pictures from the four points of the compass. Failed Component, Operator Action, Damages in Area, Address Markings, etc.					
Photo No.	Description	Roll No.	Photo No.	Description	Roll No.
1	See digital image log.		1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
11			11		
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20			20		
21			21		
22			22		
23			23		
24			24		
25			25		
26			26		
27			27		
28			28		
29			29		
30			30		
Type of Camera: Kodak Digital					
Film ASA:Digital Images					
Video Counter Log (Attach Copy): N/A					

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Additional Information Sources			
Agency	Name	Title	Phone Number
Police:	**David McManis**	**Detective Sergeant**	**(406) 582-2000**
Fire Dept.:	**Greg Megaard**	**Deputy Chief/Fire Marshal**	**(406) 582-2350**
State Fire Marshall:			
State Agency:			
NTSB:	**Charles Koval**		**(202) 314-6464**
EPA:			
FBI:			
ATF:	**Kenneth J. Bray**	**Resident Agent in Charge**	**(406) 657-6886**
OSHA:			
Insurance Co.:	**Lonnie Larson**	**Fire Investigator**	**(406) 348-2594**
FRA:			
MMS:			
Television:			
Newspaper:			
Other:	**Pete Katchmar (PHMSA)**	**Senior Accident Investigator**	**(303) 807-8458**

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Persons Interviewed		
Name	Title	Phone Number
Dan Hunt		**(406) 595-8181**

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Event Log	
Sequence of events prior, during, and after the incident by time. (Consider the events of all parties involved in the incident, Fire Department and Police reports, Operator Logs and other government agencies.)	
Time	Event
	See Narrative Summary

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Investigation Contact Log			
Time	Date	Name	Description
		See Business Cards.pdf	

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Failure Investigation Documentation Log				
Operator: NorthWestern Energy	Unit #:	CPF #:	Date:	
Appendix Number	Documentation Description	Date Received	FOIA	
			Yes	No
	See incident records			

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Site Description
Provide a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, etc. Bar Hole Test Survey Plot should be outlined with concentrations at test points. Photos should be taken from all angles with each photo documented. Additional areas may be needed in any area of this guideline.

See maps, pictures and reports.