

Pipeline Failure Investigation Report

Pipeline System: _____ **Operator:** _____
Operator ID: _____ **Unit Number:** _____ **Activity Number:** _____
Location: _____ **Date of Occurrence:** _____
Material Released: _____ **Quantity:** _____
PHMSA Arrival Time & Date: _____ **Total Damages \$:** _____
Investigation Responsibility: __ State __ PHMSA __ NTSB __ Other _____

<i>Company Reported Apparent Cause:</i>	<i>Company Reported Sub-Cause (from PHMSA Form 7000-1/7100.2):</i>
<input type="checkbox"/> Corrosion	
<input type="checkbox"/> Natural Force Damage	
<input type="checkbox"/> Excavation Damage	
<input type="checkbox"/> Other Outside Force Damage	
<input type="checkbox"/> Material Failure (Pipe, Joint, Weld)	
<input type="checkbox"/> Equipment Failure	
<input type="checkbox"/> Incorrect Operation	
<input type="checkbox"/> Other	

<i>Accident/Incident Resulted in (check all that apply):</i>	<i>Comments:</i>
<input type="checkbox"/> Rupture	
<input type="checkbox"/> Leak	
<input type="checkbox"/> Fire	
<input type="checkbox"/> Explosion	
<input type="checkbox"/> Evacuation	Number of Persons: _____ Area: _____

<i>Narrative Summary</i>
Short summary of the Incident/Accident scenario

Region/State: _____ **Reviewed by:** _____
Principal Investigator: _____ **Title:** _____
Date: _____ **Date:** _____

Pipeline Failure Investigation Report

<i>Failure Location & Response</i>			
Location (City, Township, Range, County/Parish):			(Acquire Map)
Address or M.P. on Pipeline: ⁽¹⁾	Type of Area (Rural, City): ⁽¹⁾		
Coordinates of failure location (Latitude):		(Longitude):	
Date:	Time of Failure:		
Time Detected:	Time Located:		
How Located:			
NRC Report #: (Attach Report)	Time Reported to NRC:	Reported by:	
Type of Pipeline:			
Gas Distribution	Gas Transmission	Hazardous Liquid	___ LNG
<input type="checkbox"/> LP	<input type="checkbox"/> Interstate Gas	<input type="checkbox"/> Interstate Liquid	
<input type="checkbox"/> Municipal	<input type="checkbox"/> Intrastate Gas	<input type="checkbox"/> Intrastate Liquid	
<input type="checkbox"/> Public Utility	<input type="checkbox"/> Gas Gathering	<input type="checkbox"/> Offshore Liquid	
<input type="checkbox"/> Master Meter	<input type="checkbox"/> Offshore Gas	<input type="checkbox"/> Liquid Gathering	
	<input type="checkbox"/> Offshore Gas - High H ₂ S	<input type="checkbox"/> CO ₂	
		<input type="checkbox"/> Low Stress Liquid	
		<input type="checkbox"/> HVL	
Pipeline Configuration (Regulator Station, Pump Station, Pipeline, etc.):			

<i>Operator/Owner Information</i>			
Owner:	Operator:		
Address:	Address:		
Company Official:	Company Official:		
Phone No.:	Fax No.:	Phone No.	Fax No.
<u>Drug and Alcohol Testing Program Contacts</u> ___ N/A			
Drug Program Contact & Phone:			
Alcohol Program Contact & Phone:			

¹ Photo documentation

Pipeline Failure Investigation Report

<i>Damages</i>	
Product/Gas Loss or Spill ⁽²⁾ Amount Recovered Estimated Amount \$	Estimated Property Damage \$ Associated Damages ⁽³⁾ \$
Description of Property Damage:	
Customers out of Service: __ Yes __ No Number:	
Suppliers out of Service: __ Yes __ No Number:	

<i>Fatalities and Injuries</i>					___ N/A
Fatalities:	__ Yes	__ No	Company:	Contractor:	Public:
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	

<i>Drug/Alcohol Testing</i>					___ 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	

<i>System Description</i>

2 Initial volume lost or spilled
 3 Including cleanup cost

Pipeline Failure Investigation Report

<i>System Description</i>	
Describe the Operator's System:	

<i>Pipe Failure Description</i>	
___ <i>N/A</i>	
Length of Failure (inches, feet, miles): (1)	
Position (Top, Bottom, include position on pipe, 6 O'clock): ⁽¹⁾	Description of Failure (Corrosion Gouge, Seam Split): ⁽¹⁾
Laboratory Analysis: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Performed by:	
Preservation of Failed Section or Component: <input type="checkbox"/> Yes <input type="checkbox"/> No	
If Yes - Method:	
In Custody of:	
Develop a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, direction of flow, etc. Bar Hole Test Survey Plot, if included, should be outlined with concentrations at test points.	

<i>Component Failure Description</i>	
___ <i>N/A</i>	
Component Failed:	(1)
Manufacturer:	Model:
Pressure Rating:	Size:
Other (Breakout Tank, Underground Storage):	

<i>Pipe Data</i>	
___ <i>N/A</i>	
Material:	Wall Thickness/SDR:
Diameter (O.D.):	Installation Date:
SMYS:	Manufacturer:
Longitudinal Seam:	Type of Coating:
Pipe Specifications (API 5L, ASTM A53, etc.):	

<i>Joining</i>	
___ <i>N/A</i>	
Type:	Procedure:
NDT Method:	Inspected: <input type="checkbox"/> Yes <input type="checkbox"/> No

<i>Pressure @ Time of Failure @ Failure Site</i>	
___ <i>N/A</i>	
Pressure @ Failure Site:	Elevation @ Failure Site:

Pipeline Failure Investigation Report

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

<i>Upstream Pump Station Data</i> ___ N/A	
Type of Product:	API Gravity:
Specific Gravity:	Flow Rate:
Pressure @ Time of Failure ⁽⁴⁾	Distance to Failure Site:
High Pressure Set Point:	Low Pressure Set Point:

<i>Upstream Compressor Station Data</i> ___ N/A	
Specific Gravity:	Flow Rate:
Pressure @ Time of Failure ⁽⁴⁾	Distance to Failure Site:
High Pressure Set Point:	Low Pressure Set Point:

<i>Operating Pressure</i> ___ N/A	
Max. Allowable Operating Pressure:	Determination of MAOP:
Actual Operating Pressure:	
Method of Over Pressure Protection:	
Relief Valve Set Point:	Capacity Adequate? ___ Yes ___ No

<i>Integrity Test After Failure</i> ___ 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.	

<i>Soil/water Conditions @ Failure Site</i> ___ N/A	
Condition of and Type of Soil around Failure Site (Color, Wet, Dry, Frost Depth):	
Type of Backfill (Size and Description):	

4 Obtain event logs and pressure recording charts

Pipeline Failure Investigation Report

<i>Soil/water Conditions @ Failure Site</i> ___ N/A	
Type of Water (Salt, Brackish):	Water Analysis ⁽⁵⁾ ___ Yes ___ No

<i>External Pipe or Component Examination</i> ___ N/A	
External Corrosion? ___ Yes ___ No ⁽¹⁾	Coating Condition (Disbonded, Non-existent): ⁽¹⁾
Description of Corrosion:	
Description of Failure Surface (Gouges, Arc Burns, Wrinkle Bends, Cracks, Stress Cracks, Chevrons, Fracture Mode, Point of Origin):	
Above Ground: ___ Yes ___ No ⁽¹⁾	Buried: ___ Yes ___ No ⁽¹⁾
Stress Inducing Factors: ⁽¹⁾	Depth of Cover: ⁽¹⁾

<i>Cathodic Protection</i> ___ N/A	
P/S (Surface):	P/S (Interface):
Soil Resistivity: pH:	Date of Installation:
Method of Protection:	
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):	

<i>Internal Pipe or Component Examination</i> ___ 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

5 Attach copy of water analysis report

Pipeline Failure Investigation Report

<i>Internal Pipe or Component Examination</i>		___ <i>N/A</i>
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.):		

<i>Outside Force Damage</i>		___ <i>N/A</i>
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		

<i>Natural Forces</i>	___ <i>N/A</i>
Description (Earthquake, Tornado, Flooding, Erosion):	

- 6 Attach copy of gas and/or liquid analysis report
 7 Attach copy of internal inspection survey report
 8 Attach copy of one-call report

Pipeline Failure Investigation Report

Natural Forces	__ <i>N/A</i>

Failure Isolation		__ <i>N/A</i>
Squeeze Off/Stopple Location and Method:		(1)
Valve Closed - Upstream: Time:	I.D.: M.P.:	
Valve Closed - Downstream: Time:	I.D.: M.P.:	
Pipeline Shutdown Method: __ Manual __ Automatic __ SCADA __ Controller __ ESD		
Failed Section Bypassed or Isolated:		
Performed By:	Valve Spacing:	

Odorization		__ <i>N/A</i>
Gas Odorized: __ Yes __ No	Concentration of Odorant (Post Incident at Failure Site):	
Method of Determination: __ Yes __ No	% LEL: __ Yes __ No	% Gas In Air: __ Yes __ No
	Time Taken: __ Yes __ No	
Was Odorizer Working Prior to the Incident? __ Yes __ No	Type of Odorizer (Wick, By-Pass):	
Odorant Manufacturer: Model:	Type of Odorant:	
Amount Injected:	Monitoring Interval (Weekly):	
Odorization History (Leaks Complaints, Low Odorant Levels, Monitoring Locations, Distances from Failure Site):		

Weather Conditions		__ <i>N/A</i>
Temperature:	Wind (Direction & Speed):	
Climate (Snow, Rain):	Humidity:	
Was Incident preceded by a rapid weather change? __ Yes __ No		
Weather Conditions Prior to Incident (Cloud Cover, Ceiling Heights, Snow, Rain, Fog):		

Pipeline Failure Investigation Report

Gas Migration Survey		__ N/A
Bar Hole Test of Area: <input type="checkbox"/> Yes <input type="checkbox"/> No	Equipment Used:	
Method of Survey (Foundations, Curbs, Manholes, Driveways, Mains, Services) ⁽⁹⁾ (1)		

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? <input type="checkbox"/> Yes <input type="checkbox"/> No	Followed? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Class Location/High Consequence Area		__ N/A
Class Location: 1 __ 2 __ 3 __ 4 __ Determination:	HCA Area? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Determination:	
Odorization Required? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		

Pressure Test History							__ N/A
<i>(Expand List as Necessary)</i>							
	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
<i>(Expand List as Necessary)</i>						
	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 <input type="checkbox"/> No <input type="checkbox"/>	
Next					__ Yes <input type="checkbox"/> No <input type="checkbox"/>	
Next					__ Yes <input type="checkbox"/> No <input type="checkbox"/>	
Most Recent					__ Yes <input type="checkbox"/> No <input type="checkbox"/>	

9 Plot on site description page

10 As required of Pipeline Integrity Management regulations in 49CFR Parts 192 and 195

11 MFL, TFI, UT, Combination, Geometry, etc.

12 ECDA, ICDA, SCCDA, "other technology," etc.

Pipeline Failure Investigation Report

Internal Line Inspection/Other Assessment History ___ N/A
<i>(Expand List as Necessary)</i>

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:

Leak Survey History ___ N/A

Leak Survey History (Trend Analysis, Leak Plots):

Pipeline Operation History ___ N/A
--

Description (Repair or Leak Reports, Exposed Pipe Reports):

Did a Safety Related Condition Exist Prior to Failure? ___ Yes ___ No Reported? ___ Yes ___ No

Unaccounted For Gas:

Over & Short/Line Balance (24 hr., Weekly, Monthly/Trend):

13 Obtain copies of maps and records

Pipeline Failure Investigation Report

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:				
Procedures for Clearing Alarms:				
Type of Alarm:				
Company Response Procedures for Abnormal Operations:				

Pipeline Failure Investigation Report

<i>Operator/Contractor Error</i>		<u> </u> <i>N/A</i>
Over/Short Line Balance Procedures:		
Frequency of Over/Short Line Balance:		
Additional Actions:		

Pipeline Failure Investigation Report

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):

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	Photo No.	Description
1		16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

Camera Type:

Pipeline Failure Investigation Report

<i>Additional Information Sources</i>			
Agency	Name	Title	Phone Number
Police:			
Fire Dept.:			
State Fire Marshall:			
State Agency:			
NTSB:			
EPA:			
USCG:			
FBI:			
ATF:			
OSHA:			
Insurance Co.:			
FRA:			
MMS:			
Television:			
Newspaper:			
Other:			
<i>Persons Interviewed</i>			
Name	Title	Phone Number	

Pipeline Failure Investigation Report

Investigation Contact Log			
Time	Date	Name	Description

Failure Investigation Documentation Log					
Operator:		Unit #:	CPF #:	Date:	
Appendix Number	Documentation Description		Date	FOIA	
			Received	Yes	No

Pipeline Failure Investigation Report

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.