

Pipeline Failure Investigation Report

Pipeline System: _____ Operator: _____

Location: _____ Date of Occurrence: _____

Medium Released: _____ Quantity: _____

PHMSA Arrival Time & Date: _____ Total Damages \$ _____

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 _____ Area _____

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.

Region/State _____

Reviewed by: _____

Principal Investigator: _____

Title: _____

Date: _____

Date: _____

Failure Location & Response

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<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⁾		
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"/> LNG Facility
<input type="checkbox"/> Municipal	<input type="checkbox"/> Intrastate Gas	<input type="checkbox"/> Intrastate Liquid	
<input type="checkbox"/> Public Utility	<input type="checkbox"/> Jurisdictional Gas Gathering	<input type="checkbox"/> Offshore Liquid	
<input type="checkbox"/> Master Meter	<input type="checkbox"/> Offshore Gas	<input type="checkbox"/> Jurisdictional Liquid Gathering	
	<input type="checkbox"/> Offshore Gas - High H ₂ S	<input type="checkbox"/> CO ₂	
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>			<input type="checkbox"/> N/A
Drug Program Contact & Phone:			
Alcohol Program Contact & Phone:			

<i>Damages</i>	
Product/Gas Loss or Spill ⁽²⁾	Estimated Property Damage \$
Amount Recovered	Associated Damages ⁽³⁾ \$
Estimated Amount \$	
Description of Property Damage:	

1 Photo documentation
 2 Initial volume lost or spilled
 3 Including cleanup cost

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<i>Damages</i>				
Customers out of Service:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Number: _____	
Suppliers out of Service:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Number: _____	

<i>Fatalities and Injuries</i>					
Fatalities:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Company: _____	Contractor: _____	Public: _____
Injuries - Hospitalization:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Company: _____	Contractor: _____	Public: _____
Injuries - Non-Hospitalization:	<input type="checkbox"/> Yes	<input type="checkbox"/> 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>					
<input type="checkbox"/> <i>N/A</i>					
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?					
<input type="checkbox"/> Yes <input type="checkbox"/> No					
Job Function	Test Date & Time	Location	Results		Type of Drug
			Pos	Neg	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	

<i>System Description</i>

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

<i>Pipe Failure Description</i>		<input type="checkbox"/> N/A
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, etc. Bar Hole Test Survey Plot should be outlined with concentrations at test points. Direction of Flow.		

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

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

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<i>Pressure @ Time of Failure @ Failure Site</i>				
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

<i>Upstream Pump Station Data</i>	
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>	
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>	
Max. Allowable Operating Pressure:	Determination of MAOP:
Actual Operating Pressure:	
Method of Over Pressure Protection:	
Relief Valve Set Point:	Capacity Adequate? <input type="checkbox"/> Yes <input type="checkbox"/> No

<i>Integrity Test After Failure</i>	
Pressure Test Conducted in place? (Conducted on Failed Components or Associated Piping):	<input type="checkbox"/> Yes <input type="checkbox"/> No
If NO, Tested after removal?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Method:	
Describe any failures during the test.	

<i>Soil/water Conditions @ Failure Site</i>	
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

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<i>Internal Pipe or Component Examination</i>		<input type="checkbox"/> N/A
Results of Gas and/or Liquid Analysis ⁽⁶⁾		
Internal Inspection Survey: <input type="checkbox"/> Yes <input type="checkbox"/> No	Results ⁽⁷⁾	
Did the Operator have knowledge of Corrosion before the Incident? <input type="checkbox"/> Yes <input type="checkbox"/> No		
How Discovered? (Instrumented Pig, Coupon Testing, ICDA, etc.):		

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

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

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<i>Natural Forces</i> <input type="checkbox"/> N/A
Description (Earthquake, Tornado, Flooding, Erosion):

<i>Failure Isolation</i> <input type="checkbox"/> N/A	
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: <input type="checkbox"/> Manual <input type="checkbox"/> Automatic <input type="checkbox"/> SCADA <input type="checkbox"/> Controller <input type="checkbox"/> ESD	
Failed Section Bypassed or Isolated:	
Performed By:	Valve Spacing:

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

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<i>Odorization</i>		<input type="checkbox"/> N/A

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

<i>Gas Migration Survey</i>		<input type="checkbox"/> 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)		

<i>Environment Sensitivity Impact</i>		<input type="checkbox"/> 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

<i>Class Location/High Consequence Area</i>		<input type="checkbox"/> N/A
Class Location: 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 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		

<i>Pressure Test History</i> <small>(Expand List as Necessary)</small>	<input type="checkbox"/> N/A
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9 Plot on site description page

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Pressure Test History <input type="checkbox"/> 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 <input type="checkbox"/> 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					<input type="checkbox"/> Yes <input type="checkbox"/> No
Next					<input type="checkbox"/> Yes <input type="checkbox"/> No
Next					<input type="checkbox"/> Yes <input type="checkbox"/> No
Most Recent					<input type="checkbox"/> Yes <input type="checkbox"/> 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 <input type="checkbox"/> N/A
Was there a known pre-failure condition requiring ⁽¹⁰⁾ the operator to schedule evaluation and remediation? <input type="checkbox"/> Yes (describe below or on attachment) <input type="checkbox"/> 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. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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 <input type="checkbox"/> N/A

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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Are Maps and Records Current? ⁽¹³⁾ <input type="checkbox"/> Yes <input type="checkbox"/> No Comments:

Leak Survey History	<input type="checkbox"/> N/A
Leak Survey History (Trend Analysis, Leak Plots):	

Pipeline Operation History	<input type="checkbox"/> N/A
Description (Repair or Leak Reports, Exposed Pipe Reports):	
Did a Safety Related Condition Exist Prior to Failure? <input type="checkbox"/> Yes <input type="checkbox"/> No Reported? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Unaccounted For Gas:	
Over & Short/Line Balance (24 hr., Weekly, Monthly/Trend):	

Operator/Contractor Error		<input type="checkbox"/> 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? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Was qualified individual suspended from performing covered task <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Was an Inspection conducted on this portion of the job? <input type="checkbox"/> Yes <input type="checkbox"/> No		

13 Obtain copies of maps and records

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<i>Operator/Contractor Error</i>					<input type="checkbox"/> <i>N/A</i>
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:					
Over/Short Line Balance Procedures:					
Frequency of Over/Short Line Balance:					
Additional Actions:					

<i>Additional Actions Taken by the Operator</i>	<input type="checkbox"/> <i>N/A</i>
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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):

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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	Photo No.	Description
1		31	
2		32	
3		33	
4		34	
5		35	
6		36	
7		37	
8		38	
9		39	
10		40	
11		41	
12		42	
13		43	
14		44	
15		45	
16		46	
17		47	
18		48	
19		49	
20		50	
21		51	
22		52	
23		53	
24		54	
25		55	
26		56	
27		57	
28		58	
29		59	
30		60	

Camera Type:

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

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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.