DOT US Department of Transportation
PHMSA Pipeline and Hazardous Materials Safety Administration
OPS Office of Pipeline Safety
Central Region

Principal Investigator	Roger Sneegas
Region Director	David Barrett
Date of Report	July 1, 2011
Subject	Failure Investigation Report – Magellan Ammonia Line 501 Buckle

Operator, Location, & Consequences

Date of Failure	July 23, 2010
Commodity Released	Anhydrous Ammonia
City/County & State	Pickrell/Gage, Nebraska
OpID & Operator Name	12105 Magellan Ammonia Pipeline, L.P.
Unit # & Unit Name	32773 (MAPCO) NH3 NEBRASKA
SMART Activity #	130689
Milepost / Location	Milepost 153.4/5 miles east of Pickrell, NE
Type of Failure	Leak, pipe buckle and crack resulting from compressive overload
Fatalities	0
Injuries	0
Description of area impacted	Non HCA, rural cropland
Property Damage	$163,161 including repairs and lost product

Executive Summary

Magellan's 8-inch, Line 501 Beatrice to Greenwood Nebraska, anhydrous ammonia pipeline leaked on July 23, 2010 during maintenance activities to dislodge cleaning pigs. The pigs were being used to remove the commodity (anhydrous ammonia) from the pipeline prior to conducting a planned hydrostatic test. Air had leaked past the pigs, resulting in a vapor lock which caused the pigs to become lodged in the pipeline upstream of Beatrice pump station. The air in the pipeline made it difficult to push the pigs without exceeding the maximum operating pressure (MOP). This occurred in Gage County, Nebraska near the town of Pickrell. At the time and location of the failure, Magellan personnel were working to install a 2 inch Thread-O-Ring (TOR) fitting at milepost 153.4, a high point in the pipeline. The TOR fitting was being installed to bleed air out of the pipeline and remove the vapor lock.

In preparation for attaching the TOR fitting, approximately 10 feet of pipeline was excavated from the top of the pipe only (the pipeline remained partially embedded in the ground). When the contract welder started to weld on the TOR, the pipe began moving upward in the ditch and buckled. When the pipe buckled, a corresponding wrinkle formed (located upstream of the buckle 10.5 ft). The pipe cracked in the buckle area. The pipe moved vertically upward at the failure location for 3.19 feet. The buckle occurred 62 feet from a road crossing. According to the metallurgical analysis, the pipe had physical and chemical properties consistent with the vintage of pipe, had no pre-existing defects, and failed as the result of compressive overload.

The total amount of anhydrous ammonia lost was reported by Magellan to be 0.48 barrels. As the release occurred, the anhydrous ammonia formed a white vapor cloud that damaged about 4 acres of crops before it dispersed in the wind. No unusual weather or geological components were determined to be a factor. The release did not ignite, and no one was killed or injured although 9 were evacuated. Air and water monitoring was performed at the site and no water impact was found. Minor soil contamination was found and remediated.

System Details

Magellan's Line 501, West Leg Ammonia Line is an 8-inch diameter pipeline that moves anhydrous ammonia from Conway, Kansas to Mankato, Minnesota. This portion of the pipeline was referred to as the Beatrice to Greenwood, Nebraska (MP 147 to MP 195) segment.

At the incident location, the pipeline is constructed of carbon steel pipe meeting API 5L characteristics for Grade X46, and was 8- 5/8 inch in diameter with a 0.156 inch wall thickness, a seam type of low frequency ERW, and was manufactured by Lone Star Steel. The pipeline was installed in 1968 and coated with black Polyken tape coating. The MOP of the pipeline was 1,198 psig.

No supply disruptions resulted from the failure as the pipeline was shutdown for planned maintenance.

A review of Magellan (portions previously reported under Enterprise) leak records identified four other leaks on this system in Nebraska. Previous leaks ranged in size from 3 gallons to 43 barrels. Failure cause history does indicate repeated material and weld failures for this pipeline.

Events Leading up to the Failure and the Failure

The pipeline segment had been idle since June 15, 2010 in preparations for hydrostatic testing. On the day of the leak, the pipeline was at a pressure of 633 psig at the failure location. Multiple cleaning pigs, Enduro (neoprene with disks including a wire brush section), had been used to prepare the pipeline for the hydrotest.

Excavation activities started approximately at noon CT on July 23, 2010 (Friday) in order to install the TOR fitting at MP 153.4 to remove the vapor lock and dislodge the cleaning pigs. Magellan's internal accident report indicated that excavation activities included hand digging and exposing the pipeline "halfway". The pipeline depth was approximately 48 inches. Magellan's internal accident investigation indicates that this pipeline area had been uncovered for less than 1.25 hours before welding began. The welder first completed several tack welds to assist with stabilizing the fitting position and then shortly after beginning welding on the TOR, the pipeline began to rise up from the bottom of the ditch. The pipeline started to bow and then buckled, cracked and leaked in the course of approximately a minute. The Magellan contract welder and welder helper were in the excavated area at the time. The welder reported feeling the pipe start to move as he started to weld on the fitting. The TOR fitting was located approximately 1 foot away from the point where the pipe buckled and cracked. Magellan reports the failure to have occurred at 2:05 PM CT.

The pipeline moved up a total of approximately 3.19 feet indicating the existence of very high compressive force. Through interviews and the Magellan internal accident report, PHMSA learned that the pipe movement was gradual enough that the welders and others in the vicinity had time to evacuate upwind without injury. Those present reported that approximately three slugs of liquid ammonia escaped from the pipe, each forming vapor clouds. After the liquid ammonia escaped, air vented from the release location.

The accident occurred in an agricultural area (corn and soy beans) and about 4 acres of crops were damaged by the vapor cloud which identified the wind pattern. The wind was gusting up to 20 mph according to weather data. The mean temperature on this day was 84 degrees F with a high of 92 degrees F.

In subsequent interviews, PHMSA asked about the excavation activities prior to the accident in an effort to determine if the track hoe had damaged the pipe. Multiple witnesses said the hoe had not contacted the pipe and the metallurgical report supported this information.

The pipeline maximum operating pressure (MOP) of 1198 psig was established by a hydrostatic test done in 1968 at original construction to 1,628 psig (97.8 % SMYS). Overpressure protection for the pipeline is controlled by the upstream Beatrice pump station. The high set point is 942 psig with the maximum discharge pressure at the upstream pump station of 941 psig. Based on original hydrotest, the point of failure was calculated to have a maximum MOP of 1546 psig. At the time of the accident, the pipeline pressure at the point of failure was approximately 633 psig.

No external corrosion was visible in the area of the buckle and the pipe-to-soil reading near the leak on the day of the failure was -1.480 V (on). The pipeline has an impressed current cathodic protection system.

A review of the control center information and the SCADA controller response was not conducted. This was not performed for this accident because the pipeline was not in operation at the time. The contract welder was tested for drug and alcohol and tests proved that this was not a contributory factor to the failure.

Emergency Response

Magellan personnel were already on site at the time of the accident due to the planned maintenance activity. Magellan personnel isolated the failure using upstream and downstream manual valves (milepost 150.2 and 158.7) within a half hour of the accident (2:30 PM CT). Contact with the Magellan control room by field personnel was ongoing. While isolation activities were underway, initial calls to local emergency response were made. NRC contact was performed thereafter.

The Gage County Sheriff and Pickerell Fire department both responded to the accident and assisted with temporary evacuations and road closures (East Dogwood Road was located within 62 feet of the buckle failure location). Six adjacent farm houses were temporarily evacuated for a total of 9 people.

A creek was located within 0.5 miles (north) of the failure. Creeks and ponds in the area were sampled by Apex, an environmental contractor, and no contamination was found. Some soil was impacted and remediated.

Summary of Return-to-Service

On July 24th, Magellan started installing stopple fittings upstream and downstream of the failure location but within the isolated segment (between manual closed valve locations) in an effort to further secure isolation of the pipeline. According to the Magellan internal accident report when the north end of the pipeline (farthest point from East Dogwood road crossing) was being cut for stopple installation, movement was also observed and the pipe actually peeled off and broke loose. At the failure location, the buckle was located 17.85 feet from the upstream girth weld and centered at 6:00 orientation while the wrinkle was located 7.42 feet from the upstream girth weld and centered at the 12:00 orientation. The buckle had a circumference ratio (buckle versus adjacent pipe) of 1.14 while that of the wrinkle was 1.09 (wrinkle versus adjacent pipe). Magellan had removed and replaced the damaged section of pipe a week after the failure. Approximately 300 feet of new pipe was required to replace the area between the stopple fittings. The failure pipe and adjacent pipe (46 feet) were sent to Det Norske Veritas Columbus (DNV) for analysis. DNV concluded that there were no pre-existing pipe defects at the failure location and that the pipe failed due to buckling and resulting cracking caused by compressive overload. DNV also noted that the physical and chemical properties of the pipe were consistent with the specifications of this vintage pipe.

Metallurgical analysis of the buckle and wrinkle revealed several cracks in the buckle area: a through wall axial crack; a through wall circumferential crack; and several other circumferential cracks. All were indicative of overload conditions. The cracks did not cross a long seam or a girth weld.

A review of field measurements and the observed pipeline movement indicated that this portion of the pipeline was laid with an approximate 6 degree bend. Available data did not indicate the presence of a field bend. Review of evidence indicates that this 6 degree bend was accomplished as the pipe was installed to fit the ditch.

The United States Geological Service (USGS) was contacted and assisted PHMSA with a review of historical data regarding geological activity for the area of the failure. On Dec. 17, 2009, a geological event was recorded by the USGS and listed as minor. The event was so low in magnitude (3.6 Lg's at 79 km/49 miles) that information parameters local to the failure area (such as felt where elements) were not available in the USGS database. Geological activity did not cause the failure.

A review of the high-resolution MFL and deformation (Magpie) tool run data from 8/4/2006 was conducted. The data provided as a result of the tool run did not contain any anomaly indications that met Magellan's repair criteria in the area of the failure. A unique pipe element associated with joint length was discovered during the review of the in-line inspection (ILI) data. A joint of pipe located closer to the road crossing and just upstream of the failed pipe was significantly shorter in length than all of the other joints (8.75 feet versus 30-59 ft in length). Repairs were not noted by the operator for this segment. It is possible that this shorter joint of pipe was installed to line up with the road crossing. This may serve as additional evidence regarding increased compression stress at original construction.

Magellan submitted a return-to-service plan to PHMSA for approval on August 13, 2010. On October 1, 2010 the Central Region Director approved the pipeline to resume service, with the condition of successful completion of hydrostatic testing that was planned as a part of the Magellan ongoing integrity verification program.

Investigation Findings & Contributing Factors

The release of anhydrous ammonia was caused by through wall axial cracks in the pipe (centered at the 6:00 orientation) resulting from a pipe buckle at a high point that had recently been excavated. The pipe moved and buckled due to unstable compressive overload. The tensile properties of samples removed from the pipe met the specifications of carbon steel, API 5L, Grade X46 line pipe at the time of manufacture. The failure was not due to a pre-existing pipe defect.

The pipe was installed in an area where a six degree bend was present. This required the pipe to flex to meet the ditch since a field bend or fitting was not utilized at the time of construction.

The amount of total force required to produce this buckling action was not determined during the Magellan internal accident investigation process nor included in the DNV metallurgical analysis report.

Magellan did review elevations in the valve section used to isolate the pipeline and the minimum elevation is 1287 feet and the maximum elevation is 1425 feet. In the area of the buckle, an elevation change of 61 feet was present (1363 feet and 1424 feet).

The pipeline exhibited additional stress when the north end of the segment was cut as the pipe peeled off and broke (approximately 205 feet from the failure location with a slight downward slope).

Magellan performed an internal accident investigation regarding the failure and determined that revisions were needed in a pressure testing procedure. Magellan changed System Integrity Plan (SIP) document 7.03-ADM-001 in two areas. This procedure now requires the Project Manager to evaluate and rule out any alternative methods to installing a tap for venting. Magellan also requires that land topography be reviewed and an evaluation prior to excavating activities associated with a tap installation in order to determine potential for existing mechanical stress in the pipeline. If the potential for existing mechanical stress is determined based on the review, then the area excavated will be increased in length and width. This extra area of excavation will be performed to allow the pipe opportunity to flex and relieve existing stresses prior to additional work being performed. PHMSA reviewed this procedure and addressed additional guidance requirements.

PHMSA contacted DNV and Magellan as a final metallurgical analysis report from DNV was not provided at the time of this report. Magellan indicated that a final report had never been prepared. No significant changes were communicated by Magellan to the draft DNV report.

Appendices

Appendix A NRC Report No. 948671
Appendix B Accident Report Submitted to PHMSA No. 20100179-15904
Appendix C Pipeline System Map
Appendix D Photographs
Appendix E Metallurgical Report

NATIONAL RESPONSE CENTER 1-800-424-8802
***** For Public Use *****
Information released to a third party shall comply with any applicable federal and/or state Freedom of Information and Privacy Laws

Incident Report # 948671

INCIDENT DESCRIPTION

***Report taken at 15:42 on 23-JUL-10**
Incident Type: PIPELINE
Incident Cause: OPERATOR ERROR
Affected Area:
The incident occurred on 23-JUL-10 at 14:30 local time.
Affected Medium: AIR ATMOSPHERE

SUSPECTED RESPONSIBLE PARTY

Organization: MAGELLAN PIPELINE
TULSA, OK 74172

Type of Organization: PRIVATE ENTERPRISE

INCIDENT LOCATION

MP: 153 County: GAGE
City: PICKERALL State: NE

3/10 OF A MILES WEST OF S-54 AND EAST DOGWOOD

RELEASED MATERIAL(S)

CHRIS Code: AMA Official Material Name: AMMONIA, ANHYDROUS
Also Known As:
Qty Released: 250 BARREL(S)

DESCRIPTION OF INCIDENT

A WELDER WAS WORKING ON A FITTING AND BURNED A HOLE THROUGH THE PIPE WHICH RESULTED IN A RELEASE OF AMMONIA.

INCIDENT DETAILS

Pipeline Type: DISTRIBUTION
DOT Regulated: YES
Pipeline Above/Below Ground: BELOW
Exposed or Under Water: NO
Pipeline Covered: UNKNOWN

DAMAGES

Fire Involved:	**NO**	**Fire Extinguished: UNKNOWN**		
INJURIES:	**NO**	**Hospitalized:**	**Empl/Crew:**	**Passenger:**
FATALITIES:	**NO**	**Empl/Crew:**	**Passenger:**	**Occupant:**
EVACUATIONS:	**NO**	**Who Evacuated:**	**Radius/Area:**	
Damages:	**NO**			

Closure Type		Description of Closure	Length of Closure	Direction of Closure
Air:	**N**			
Road:	**N**			
Waterway:	**N**			
Track:	**N**			

Major Artery: N

Passengers Transferred: NO

Environmental Impact: UNKNOWN
Media Interest: NONE Community Impact due to Material:

REMEDIAL ACTIONS

ONE VALVE CLOSED ON THE NORTH SIDE, WAITING TO CLOSE VALVE ON THE SOUTH SIDE OF THE PIPELINE
Release Secured: UNKNOWN
Release Rate:
Estimated Release Duration:

WEATHER

Weather: PARTLY CLOUDY, 93ºF Wind speed: 13 MPH Wind direct

ADDITIONAL AGENCIES NOTIFIED

Federal: NONE
State/Local: SHERIFF
State/Local On Scene: NONE
State Agency Number: NONE

NOTIFICATIONS BY NRC

ATLANTIC STRIKE TEAM (MAIN OFFICE)
23-JUL-10 15:48

USCG ICC (ICC ONI)
23-JUL-10 15:48

COLORADO INFO ANALYSIS CENTER (FUSION CENTER)
23-JUL-10 15:48

DHS PROTECTIVE SECURITY ADVISOR (PSA DESK)
23-JUL-10 15:48

DOT CRISIS MANAGEMENT CENTER (MAIN OFFICE)
23-JUL-10 15:48

U.S. EPA VII (MAIN OFFICE)
23-JUL-10 15:50

NEBRASKA DEPT OF ENV QUALITY (MAIN OFFICE)
23-JUL-10 15:48

NE INFORMATION ANALYSIS CENTER (MAIN OFFICE)
23-JUL-10 15:48

NATIONAL INFRASTRUCTURE COORD CTR (MAIN OFFICE)
23-JUL-10 15:48

NOAA RPTS FOR NE (MAIN OFFICE)
23-JUL-10 15:48

PIPELINE & HAZMAT SAFETY ADMIN (OFFICE OF PIPELINE SAFETY (AUTO))
23-JUL-10 15:48

DEPT HEALTH AND ENV (MAIN OFFICE)
23-JUL-10 15:48

DOI/OEPC DENVER (MAIN OFFICE)
23-JUL-10 15:48

ADDITIONAL INFORMATION

NO ADDITIONAL INFORMATION.

***** END INCIDENT REPORT # 948671 *****

NOTICE: This report is required by 49 CFR Part 195. Failure to report can result in a civil penalty not to exceed $100,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed $1,000,000 as provided in 49 USC 60122.	OMB NO: 2137-0047 EXPIRATION DATE: 01/31/2013

U.S Department of Transportation Pipeline and Hazardous Materials Safety Administration	**Report Date:**	08/19/2010
	No.	20100179 - 15904 ---------- (DOT Use Only)

ACCIDENT REPORT - HAZARDOUS LIQUID PIPELINE SYSTEMS

INSTRUCTIONS

Important: *Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the PHMSA Pipeline Safety Community Web Page at http://www.phmsa.dot.gov/pipeline.*

PART A - KEY REPORT INFORMATION

Report Type: *(select all that apply)*	**Original:**	**Supplemental:**	**Final:**
		Yes	**Yes**
Last Revision Date:	06/30/2011		
1. Operator's OPS-issued Operator Identification Number (OPID):	12105		
2. Name of Operator	MAGELLAN AMMONIA PIPELINE, L.P.		
3. Address of Operator:			
3a. Street Address	P.O. Box 22186, MD 27		
3b. City	TULSA		
3c. State	Oklahoma		
3d. Zip Code	74121		
4. Local time *(24-hr clock)* and date of the Accident:	07/23/2010 14:05		
5. Location of Accident:			
Latitude:	40.36468		
Longitude:	-96.65431		
6. National Response Center Report Number (if applicable):	948671		
7. Local time *(24-hr clock)* and date of initial telephonic report to the National Response Center (if applicable):	07/23/2010 14:39		
8. Commodity released: *(select only one, based on predominant volume released)*	HVL or Other Flammable or Toxic Fluid which is a Gas at Ambient Conditions		
- Specify Commodity Subtype:	Anhydrous Ammonia		
- If "Other" Subtype, Describe:			
- If Biofuel/Alternative Fuel and Commodity Subtype is Ethanol Blend, then % Ethanol Blend: %:			
- If Biofuel/Alternative Fuel and Commodity Subtype is Biodiesel, then Biodiesel Blend (e.g. B2, B20, B100): B			
9. Estimated volume of commodity released unintentionally (Barrels):	.36		
10. Estimated volume of intentional and/or controlled release/blowdown (Barrels):	.12		
11. Estimated volume of commodity recovered (Barrels):			
12. Were there fatalities?	No		
- If Yes, specify the number in each category:			
12a. Operator employees			
12b. Contractor employees working for the Operator			
12c. Non-Operator emergency responders			
12d. Workers working on the right-of-way, but NOT associated with this Operator			
12e. General public			
12f. Total fatalities (sum of above)			
13. Were there injuries requiring inpatient hospitalization?	No		
- If Yes, specify the number in each category:			
13a. Operator employees			
13b. Contractor employees working for the Operator			
13c. Non-Operator emergency responders			
13d. Workers working on the right-of-way, but NOT			

associated with this Operator	
13e. General public	
13f. Total injuries (sum of above)	
14. Was the pipeline/facility shut down due to the Accident?	No
- If No, Explain:	Line had been down since June 15 for Hydrostatic Testing
- If Yes, complete Questions 14a and 14b: *(use local time, 24-hr clock)*	
14a. Local time and date of shutdown:	
14b. Local time pipeline/facility restarted:	
- Still shut down? (* Supplemental Report Required)	
15. Did the commodity ignite?	No
16. Did the commodity explode?	No
17. Number of general public evacuated:	9
18. Time sequence *(use local time, 24-hour clock)*:	
18a. Local time Operator identified Accident:	
18b. Local time Operator resources arrived on site:	

PART B - ADDITIONAL LOCATION INFORMATION

1. Was the origin of Accident onshore?	Yes
If Yes, Complete Questions (2-12)	
If No, Complete Questions (13-15)	
- If Onshore:	
2. State:	Nebraska
3. Zip Code:	68422-8125
4. City	Pickrell
5. County or Parish	Gage
6. Operator-designated location:	Milepost/Valve Station
Specify:	153.4
7. Pipeline/Facility name:	Anhydrous Ammonia Pipeline
8. Segment name/ID:	Line Segment 501
9. Was Accident on Federal land, other than the Outer Continental Shelf (OCS)?	No
10. Location of Accident:	Pipeline Right-of-way
11. Area of Accident (as found):	Underground
Specify:	Under soil
- If Other, Describe:	
Depth-of-Cover (in):	48
12. Did Accident occur in a crossing?	No
- If Yes, specify below:	
- If Bridge crossing –	
Cased/ Uncased:	
- If Railroad crossing –	
Cased/ Uncased/ Bored/drilled	
- If Road crossing –	
Cased/ Uncased/ Bored/drilled	
- If Water crossing –	
Cased/ Uncased	
- Name of body of water, if commonly known:	
- Approx. water depth (ft) at the point of the Accident:	
- Select:	
- If Offshore:	
13. Approximate water depth (ft) at the point of the Accident:	
14. Origin of Accident:	
- In State waters - Specify:	
- State:	
- Area:	
- Block/Tract #:	
- Nearest County/Parish:	
- On the Outer Continental Shelf (OCS) - Specify:	
- Area:	
- Block #:	
15. Area of Accident:	

PART C - ADDITIONAL FACILITY INFORMATION

1. Is the pipeline or facility:	Interstate
2. Part of system involved in Accident:	Onshore Pipeline, Including Valve Sites
- If Onshore Breakout Tank or Storage Vessel, Including Attached Appurtenances, specify:	
3. Item involved in Accident:	Pipe
- If Pipe, specify:	Pipe Body

3a. Nominal diameter of pipe (in):	8.625
3b. Wall thickness (in):	.156
3c. SMYS (Specified Minimum Yield Strength) of pipe (psi):	46,000
3d. Pipe specification:	API 5LX-46
3e. Pipe Seam , specify:	Longitudinal ERW - Low Frequency
- If Other, Describe:	
3f. Pipe manufacturer:	Lone Star Steel
3g. Year of manufacture:	1968
3h. Pipeline coating type at point of Accident, specify:	Cold Applied Tape
- If Other, Describe:	
- If Weld, including heat-affected zone, specify:	
- If Other, Describe:	
- If Valve, specify:	
- If Mainline, specify:	
- If Other, Describe:	
3i. Manufactured by:	
3j. Year of manufacture:	
- If Tank/Vessel, specify:	
- If Other - Describe:	
- If Other, describe:	
4. Year item involved in Accident was installed:	1968
5. Material involved in Accident:	Carbon Steel
- If Material other than Carbon Steel, specify:	
6. Type of Accident Involved:	Other
- If Mechanical Puncture – Specify Approx. size:	
in. (axial) by	
in. (circumferential)	
- If Leak - Select Type:	
- If Other, Describe:	
- If Rupture - Select Orientation:	
- If Other, Describe:	
Approx. size: in. (widest opening) by	
in. (length circumferentially or axially)	
- If Other – Describe:	Buckle that resulted in a release

PART D - ADDITIONAL CONSEQUENCE INFORMATION

1. Wildlife impact:	No
1a. If Yes, specify all that apply:	
- Fish/aquatic	
- Birds	
- Terrestrial	
2. Soil contamination:	Yes
3. Long term impact assessment performed or planned:	No
4. Anticipated remediation:	No
4a. If Yes, specify all that apply:	
- Surface water	
- Groundwater	
- Soil	
- Vegetation	
- Wildlife	
5. Water contamination:	No
5a. If Yes, specify all that apply:	
- Ocean/Seawater	
- Surface	
- Groundwater	
- Drinking water: *(Select one or both)*	
- Private Well	
- Public Water Intake	
5b. Estimated amount released in or reaching water (Barrels):	
5c. Name of body of water, if commonly known:	
6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA) as determined in the Operator's Integrity Management Program?	No
7. Did the released commodity reach or occur in one or more High Consequence Area (HCA)?	No
7a. If Yes, specify HCA type(s): *(Select all that apply)*	
- Commercially Navigable Waterway:	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's	

Integrity Management Program?	
- High Population Area:	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- Other Populated Area	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- Unusually Sensitive Area (USA) - Drinking Water	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- Unusually Sensitive Area (USA) - Ecological	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
8. Estimated cost to Operator :	
8a. Estimated cost of public and non-Operator private property damage paid/reimbursed by the Operator	$ 2,500
8b. Estimated cost of commodity lost	$ 50
8c. Estimated cost of Operator's property damage & repairs	$ 113,311
8d. Estimated cost of Operator's emergency response	$ 41,800
8e. Estimated cost of Operator's environmental remediation	$ 5,000
8f. Estimated other costs	$ 500
Describe:	Lodging and Food for Evacuees while away from their homes
8g. Estimated total costs (sum of above)	$ 163,161

PART E - ADDITIONAL OPERATING INFORMATION

1. Estimated pressure at the point and time of the Accident (psig):	633.00
2. Maximum Operating Pressure (MOP) at the point and time of the Accident (psig):	1,198.00
3. Describe the pressure on the system or facility relating to the Accident (psig):	Pressure did not exceed MOP
4. Not including pressure reductions required by PHMSA regulations (such as for repairs and pipe movement), was the system or facility relating to the Accident operating under an established pressure restriction with pressure limits below those normally allowed by the MOP?	Yes
- If Yes, Complete 4.a and 4.b below:	
4a. Did the pressure exceed this established pressure restriction?	No
4b. Was this pressure restriction mandated by PHMSA or the State?	PHMSA
5. Was "Onshore Pipeline, Including Valve Sites" OR "Offshore Pipeline, Including Riser and Riser Bend" selected in PART C, Question 2?	Yes
- If Yes - (*Complete 5a. – 5f. below)*	
5a. Type of upstream valve used to initially isolate release source:	Manual
5b. Type of downstream valve used to initially isolate release source:	Manual
5c. Length of segment isolated between valves (ft):	44,526
5d. Is the pipeline configured to accommodate internal inspection tools?	Yes
- If No, Which physical features limit tool accommodation? (*select all that apply)*	
- Changes in line pipe diameter	
- Presence of unsuitable mainline valves	
- Tight or mitered pipe bends	
- Other passage restrictions (i.e. unbarred tee's, projecting instrumentation, etc.)	
- Extra thick pipe wall (applicable only for magnetic flux leakage internal inspection tools)	
- Other -	
- If Other, Describe:	
5e. For this pipeline, are there operational factors which significantly complicate the execution of an internal inspection tool run?	No
- If Yes, Which operational factors complicate execution? (*select all that apply*)	
- Excessive debris or scale, wax, or other wall buildup	

- Low operating pressure(s)	
- Low flow or absence of flow	
- Incompatible commodity	
- Other -	
- If Other, Describe:	
5f. Function of pipeline system:	> 20% SMYS Regulated Trunkline/Transmission
6. Was a Supervisory Control and Data Acquisition (SCADA)-based system in place on the pipeline or facility involved in the Accident?	Yes
If Yes -	
6a. Was it operating at the time of the Accident?	Yes
6b. Was it fully functional at the time of the Accident?	Yes
6c. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the detection of the Accident?	No
6d. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the confirmation of the Accident?	No
7. Was a CPM leak detection system in place on the pipeline or facility involved in the Accident?	Yes
- If Yes:	
7a. Was it operating at the time of the Accident?	Yes
7b. Was it fully functional at the time of the Accident?	Yes
7c. Did CPM leak detection system information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the detection of the Accident?	No
7d. Did CPM leak detection system information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the confirmation of the Accident?	No
8. How was the Accident initially identified for the Operator?	Local Operating Personnel, including contractors
- If Other, Specify:	
8a. If "Controller", "Local Operating Personnel", including contractors", "Air Patrol", or "Guard Patrol by Operator or its contractor" is selected in Question 8, specify the following:	Contractor working for the Operator
9. Was an investigation initiated into whether or not the controller(s) or control room issues were the cause of or a contributing factor to the Accident?	No, the Operator did not find that an investigation of the controller(s) actions or control room issues was necessary due to: (provide an explanation for why the Operator did not investigate)
- If No, the Operator did not find that an investigation of the controller(s) actions or control room issues was necessary due to: *(provide an explanation for why the operator did not investigate)*	This section of the liine was out of service due to Hydrostatic Testing at the time the release occurred. The Controller was not involved in monitoring or operating the line during the Hydrostatic Test.
- If Yes, specify investigation result(s): *(select all that apply)*	
- Investigation reviewed work schedule rotations, continuous hours of service (while working for the Operator), and other factors associated with fatigue	
- Investigation did NOT review work schedule rotations, continuous hours of service (while working for the Operator), and other factors associated with fatigue	
Provide an explanation for why not:	
- Investigation identified no control room issues	
- Investigation identified no controller issues	
- Investigation identified incorrect controller action or controller error	
- Investigation identified that fatigue may have affected the controller(s) involved or impacted the involved controller(s) response	
- Investigation identified incorrect procedures	
- Investigation identified incorrect control room equipment operation	
- Investigation identified maintenance activities that affected control room operations, procedures, and/or controller response	
- Investigation identified areas other than those above:	
Describe:	

PART F - DRUG & ALCOHOL TESTING INFORMATION

1. As a result of this Accident, were any Operator employees tested under the post-accident drug and alcohol testing requirements of DOT's Drug & Alcohol Testing regulations?	No
- If Yes:	
1a. Specify how many were tested:	

1b. Specify how many failed:	
2. As a result of this Accident, were any Operator contractor employees tested under the post-accident drug and alcohol testing requirements of DOT's Drug & Alcohol Testing regulations?	Yes
- If Yes:	
2a. Specify how many were tested:	1
2b. Specify how many failed:	0

PART G – APPARENT CAUSE

Select only one box from PART G in shaded column on left representing the APPARENT Cause of the Accident, and answer the questions on the right. Describe secondary, contributing or root causes of the Accident in the narrative (PART H).

Apparent Cause:	G5 - Material Failure of Pipe or Weld

G1 - Corrosion Failure - only one **sub-cause** can be picked from shaded left-hand column

Corrosion Failure – Sub Cause:	
- If External Corrosion:	
1. Results of visual examination:	
- If Other, Describe:	
2. Type of corrosion: *(select all that apply)*	
- Galvanic	
- Atmospheric	
- Stray Current	
- Microbiological	
- Selective Seam	
- Other:	
- If Other, Describe:	
3. The type(s) of corrosion selected in Question 2 is based on the following: *(select all that apply)*	
- Field examination	
- Determined by metallurgical analysis	
- Other:	
- If Other, Describe:	
4. Was the failed item buried under the ground?	
- If Yes :	
4a. Was failed item considered to be under cathodic protection at the time of the Accident?	
If Yes - Year protection started:	
4b. Was shielding, tenting, or disbonding of coating evident at the point of the Accident?	
4c. Has one or more Cathodic Protection Survey been conducted at the point of the Accident?	
If "Yes, CP Annual Survey" – Most recent year conducted:	
If "Yes, Close Interval Survey" – Most recent year conducted:	
If "Yes, Other CP Survey" – Most recent year conducted:	
- If No:	
4d. Was the failed item externally coated or painted?	
5. Was there observable damage to the coating or paint in the vicinity of the corrosion?	
- If Internal Corrosion:	
6. Results of visual examination:	
- Other:	
7. Type of corrosion *(select all that apply)*: -	
- Corrosive Commodity	
- Water drop-out/Acid	
- Microbiological	
- Erosion	
- Other:	
- If Other, Describe:	
8. The cause(s) of corrosion selected in Question 7 is based on the following *(select all that apply)*: -	
- Field examination	
- Determined by metallurgical analysis	
- Other:	
- If Other, Describe:	
9. Location of corrosion *(select all that apply)*: -	
- Low point in pipe	
- Elbow	
- Other:	

- If Other, Describe:	
10. Was the commodity treated with corrosion inhibitors or biocides?	
11. Was the interior coated or lined with protective coating?	
12. Were cleaning/dewatering pigs (or other operations) routinely utilized?	
13. Were corrosion coupons routinely utilized?	
Complete the following if any Corrosion Failure sub-cause is selected AND the "Item Involved in Accident" (from PART C, Question 3) is Tank/Vessel.	
14. List the year of the most recent inspections:	
14a. API Std 653 Out-of-Service Inspection	
- No Out-of-Service Inspection completed	
14b. API Std 653 In-Service Inspection	
- No In-Service Inspection completed	
Complete the following if any Corrosion Failure sub-cause is selected AND the "Item Involved in Accident" (from PART C, Question 3) is Pipe or Weld.	
15. Has one or more internal inspection tool collected data at the point of the Accident?	
15a. If Yes, for each tool used, select type of internal inspection tool and indicate most recent year run: -	
- Magnetic Flux Leakage Tool	
Most recent year:	
- Ultrasonic	
Most recent year:	
- Geometry	
Most recent year:	
- Caliper	
Most recent year:	
- Crack	
Most recent year:	
- Hard Spot	
Most recent year:	
- Combination Tool	
Most recent year:	
- Transverse Field/Triaxial	
Most recent year:	
- Other	
Most recent year:	
Describe:	
16. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	
If Yes -	
Most recent year tested:	
Test pressure:	
17. Has one or more Direct Assessment been conducted on this segment?	
- If Yes, and an investigative dig was conducted at the point of the Accident::	
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted:	
18. Has one or more non-destructive examination been conducted at the point of the Accident since January 1, 2002?	
18a. If Yes, for each examination conducted since January 1, 2002, select type of non-destructive examination and indicate most recent year the examination was conducted:	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	

G2 - Natural Force Damage - only one **sub-cause** can be picked from shaded left-handed column

Natural Force Damage – Sub-Cause:	
- If Earth Movement, NOT due to Heavy Rains/Floods:	
1. Specify:	

- If Other, Describe:	
- If Heavy Rains/Floods:	
2. Specify:	
- If Other, Describe:	
- If Lightning:	
3. Specify:	
- If Temperature:	
4. Specify:	
- If Other, Describe:	
- If High Winds:	
- If Other Natural Force Damage:	
5. Describe:	
Complete the following if any Natural Force Damage sub-cause is selected.	
6. Were the natural forces causing the Accident generated in conjunction with an extreme weather event?	
6a. If Yes, specify: *(select all that apply)*	
- Hurricane	
- Tropical Storm	
- Tornado	
- Other	
- If Other, Describe:	
G3 - Excavation Damage - only one **sub-cause** can be picked from shaded left-hand column	
Excavation Damage – Sub-Cause:	
- If Excavation Damage by Operator (First Party):	
- If Excavation Damage by Operator's Contractor (Second Party):	
- If Excavation Damage by Third Party:	
- If Previous Damage due to Excavation Activity:	
Complete Questions 1-5 ONLY IF the "Item Involved in Accident" (from PART C, Question 3) is Pipe or Weld.	
1. Has one or more internal inspection tool collected data at the point of the Accident?	
1a. If Yes, for each tool used, select type of internal inspection tool and indicate most recent year run: -	
- Magnetic Flux Leakage	
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted:	
- Geometry	
Most recent year conducted:	
- Caliper	
Most recent year conducted:	
- Crack	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted:	
- Combination Tool	
Most recent year conducted:	
- Transverse Field/Triaxial	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
2. Do you have reason to believe that the internal inspection was completed BEFORE the damage was sustained?	
3. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
4. Has one or more Direct Assessment been conducted on the pipeline segment?	
- If Yes, and an investigative dig was conducted at the point of the Accident:	
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted:	

5. Has one or more non-destructive examination been conducted at the point of the Accident since January 1, 2002?	
5a. If Yes, for each examination, conducted since January 1, 2002, select type of non-destructive examination and indicate most recent year the examination was conducted:	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
Complete the following if Excavation Damage by Third Party is selected as the sub-cause.	
6. Did the operator get prior notification of the excavation activity?	
6a. If Yes, Notification received from: *(select all that apply)* -	
- One-Call System	
- Excavator	
- Contractor	
- Landowner	
Complete the following mandatory CGA-DIRT Program questions if any Excavation Damage sub-cause is selected.	
7. Do you want PHMSA to upload the following information to CGA-DIRT (www.cga-dirt.com)?	
8. Right-of-Way where event occurred: *(select all that apply)* -	
- Public	
- If "Public", Specify:	
- Private	
- If "Private", Specify:	
- Pipeline Property/Easement	
- Power/Transmission Line	
- Railroad	
- Dedicated Public Utility Easement	
- Federal Land	
- Data not collected	
- Unknown/Other	
9. Type of excavator:	
10. Type of excavation equipment:	
11. Type of work performed:	
12. Was the One-Call Center notified?	
12a. If Yes, specify ticket number:	
12b. If this is a State where more than a single One-Call Center exists, list the name of the One-Call Center notified:	
13. Type of Locator:	
14. Were facility locate marks visible in the area of excavation?	
15. Were facilities marked correctly?	
16. Did the damage cause an interruption in service?	
16a. If Yes, specify duration of the interruption (hours)	
17. Description of the CGA-DIRT Root Cause *(select only the one predominant first level CGA-DIRT Root Cause and then, where available as a choice, the one predominant second level CGA-DIRT Root Cause as well):*	
Root Cause:	
- If One-Call Notification Practices Not Sufficient, specify:	
- If Locating Practices Not Sufficient, specify:	
- If Excavation Practices Not Sufficient, specify:	
- If Other/None of the Above, explain:	
G4 - Other Outside Force Damage - *only one **sub-cause** can be selected from the shaded left-hand column*	
Other Outside Force Damage – Sub-Cause:	
- If Nearby Industrial, Man-made, or Other Fire/Explosion as Primary Cause of Incident:	
- If Damage by Car, Truck, or Other Motorized Vehicle/Equipment NOT Engaged in Excavation:	
1. Vehicle/Equipment operated by:	
- If Damage by Boats, Barges, Drilling Rigs, or Other Maritime Equipment or Vessels Set Adrift or Which Have Otherwise Lost Their Mooring:	

2. Select one or more of the following IF an extreme weather event was a factor:	
- Hurricane	
- Tropical Storm	
- Tornado	
- Heavy Rains/Flood	
- Other	
- If Other, Describe:	
- If Routine or Normal Fishing or Other Maritime Activity NOT Engaged in Excavation:	
- If Electrical Arcing from Other Equipment or Facility:	
- If Previous Mechanical Damage NOT Related to Excavation:	
Complete Questions 3-7 ONLY IF the "Item Involved in Accident" (from PART C, Question 3) is Pipe or Weld.	
3. Has one or more internal inspection tool collected data at the point of the Accident?	
3a. If Yes, for each tool used, select type of internal inspection tool and indicate most recent year run:	
- Magnetic Flux Leakage	
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted:	
- Geometry	
Most recent year conducted:	
- Caliper	
Most recent year conducted:	
- Crack	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted:	
- Combination Tool	
Most recent year conducted:	
- Transverse Field/Triaxial	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
4. Do you have reason to believe that the internal inspection was completed BEFORE the damage was sustained?	
5. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
6. Has one or more Direct Assessment been conducted on the pipeline segment?	
- If Yes, and an investigative dig was conducted at the point of the Accident:	
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted:	
7. Has one or more non-destructive examination been conducted at the point of the Accident since January 1, 2002?	
7a. If Yes, for each examination conducted since January 1, 2002, select type of non-destructive examination and indicate most recent year the examination was conducted:	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
- If Intentional Damage:	
8. Specify:	
- If Other, Describe:	
- If Other Outside Force Damage:	
9. Describe:	

G5 - Material Failure of Pipe or Weld - only one **sub-cause** can be selected from the shaded left-hand column	
Use this section to report material failures ONLY IF the "Item Involved in Accident" (from PART C, Question 3) is "Pipe" or "Weld."	
Material Failure of Pipe or Weld – Sub-Cause:	Construction-, Installation-, or Fabrication-related
1. The sub-cause selected below is based on the following: *(select all that apply)*	
- Field Examination	
- Determined by Metallurgical Analysis	Yes
- Other Analysis	
- If "Other Analysis", Describe:	
- Sub-cause is Tentative or Suspected; Still Under Investigation (Supplemental Report required)	
- If Construction, Installation, or Fabrication-related:	
2. List contributing factors: *(select all that apply)*	
- Fatigue or Vibration-related	
Specify:	
- If Other, Describe:	
- Mechanical Stress:	
- Other	Yes
- If Other, Describe:	DUCTILE FAILURE DUE TO INHERENT STRESS IN THE LINE CAUSED DURING CONSTRUCTION
- If Original Manufacturing-related (NOT girth weld or other welds formed in the field):	
2. List contributing factors: *(select all that apply)*	
- Fatigue or Vibration-related:	
Specify:	
- If Other, Describe:	
- Mechanical Stress:	
- Other	
- If Other, Describe:	
- If Environmental Cracking-related:	
3. Specify:	
- Other - Describe:	
Complete the following if any Material Failure of Pipe or Weld sub-cause is selected.	
4. Additional factors: (*select all that apply*):	
- Dent	
- Gouge	
- Pipe Bend	
- Arc Burn	
- Crack	
- Lack of Fusion	
- Lamination	
- Buckle	Yes
- Wrinkle	
- Misalignment	
- Burnt Steel	
- Other:	
- If Other, Describe:	
5. Has one or more internal inspection tool collected data at the point of the Accident?	Yes
5a. If Yes, for each tool used, select type of internal inspection tool and indicate most recent year run:	
- Magnetic Flux Leakage	Yes
Most recent year run:	2006
- Ultrasonic	
Most recent year run:	
- Geometry	Yes
Most recent year run:	2006
- Caliper	
Most recent year run:	
- Crack	
Most recent year run:	
- Hard Spot	
Most recent year run:	
- Combination Tool	
Most recent year run:	
- Transverse Field/Triaxial	
Most recent year run:	
- Other	

Most recent year run:	
Describe:	
6. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	No
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
7. Has one or more Direct Assessment been conducted on the pipeline segment?	No
- If Yes, and an investigative dig was conducted at the point of the Accident -	
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site -	
Most recent year conducted:	
8. Has one or more non-destructive examination(s) been conducted at the point of the Accident since January 1, 2002?	No
8a. If Yes, for each examination conducted since January 1, 2002, select type of non-destructive examination and indicate most recent year the examination was conducted: -	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
G6 – Equipment Failure - only one **sub-cause** can be selected from the shaded left-hand column	
Equipment Failure – Sub-Cause:	
- If Malfunction of Control/Relief Equipment:	
1. Specify: *(select all that apply)* -	
- Control Valve	
- Instrumentation	
- SCADA	
- Communications	
- Block Valve	
- Check Valve	
- Relief Valve	
- Power Failure	
- Stopple/Control Fitting	
- ESD System Failure	
- Other	
- If Other – Describe:	
- If Pump or Pump-related Equipment:	
2. Specify:	
- If Other – Describe:	
- If Threaded Connection/Coupling Failure:	
3. Specify:	
- If Other – Describe:	
- If Non-threaded Connection Failure:	
4. Specify:	
- If Other – Describe:	
- If Defective or Loose Tubing or Fitting:	
- If Failure of Equipment Body (except Pump), Tank Plate, or other Material:	
- If Other Equipment Failure:	
5. Describe:	
Complete the following if any Equipment Failure sub-cause is selected.	
6. Additional factors that contributed to the equipment failure: *(select all that apply)*	
- Excessive vibration	
- Overpressurization	
- No support or loss of support	

- Manufacturing defect	
- Loss of electricity	
- Improper installation	
- Mismatched items (different manufacturer for tubing and tubing fittings)	
- Dissimilar metals	
- Breakdown of soft goods due to compatibility issues with transported commodity	
- Valve vault or valve can contributed to the release	
- Alarm/status failure	
- Misalignment	
- Thermal stress	
- Other	
- If Other, Describe:	

G7 - Incorrect Operation - only one **sub-cause** can be selected from the shaded left-hand column

Incorrect Operation – Sub-Cause:	
- If Damage by Operator or Operator's Contractor NOT Related to Excavation and NOT due to Motorized Vehicle/Equipment Damage:	
- If Tank, Vessel, or Sump/Separator Allowed or Caused to Overfill or Overflow:	
1. Specify:	
- If Other, Describe:	
- If Valve Left or Placed in Wrong Position, but NOT Resulting in a Tank, Vessel, or Sump/Separator Overflow or Facility Overpressure:	
- If Pipeline or Equipment Overpressured:	
- If Equipment Not Installed Properly:	
- If Wrong Equipment Specified or Installed:	
- If Other Incorrect Operation:	
2. Describe:	
Complete the following if any Incorrect Operation sub-cause is selected.	
3. Was this Accident related to *(select all that apply)*: -	
- Inadequate procedure	
- No procedure established	
- Failure to follow procedure	
- Other:	
- If Other, Describe:	
4. What category type was the activity that caused the Accident?	
5. Was the task(s) that led to the Accident identified as a covered task in your Operator Qualification Program?	
5a. If Yes, were the individuals performing the task(s) qualified for the task(s)?	

G8 - Other Accident Cause - only one **sub-cause** can be selected from the shaded left-hand column

Other Accident Cause – Sub-Cause:	
- If Miscellaneous:	
1. Describe:	
- If Unknown:	
2. Specify:	

PART H - NARRATIVE DESCRIPTION OF THE ACCIDENT

Welder was tacking a TOR fitting onto the line to assist in relieving vapors in the pipe as part of the process of emptying contents of pipe in preparation for conducting a Hydrostatic Test of the pipeline segment when the pipe began moving and making a noise. The pipe subsequently emerged from the excavated trench and bowed, creaking a crack on the bottom of the pipe. The pipe segment was removed from the line and sent for metallurgical analysis. Repair was made by installing a new piece of pipe and the Hydrostatic Test continued.

File Full Name

PART I - PREPARER AND AUTHORIZED SIGNATURE	
Preparer's Name	Deaundra Chancellor
Preparer's Title	
Preparer's Telephone Number	
Preparer's E-mail Address	
Preparer's Facsimile Number	
Authorized Signature's Name	Deaundra Chancellor
Authorized Signature Title	Sr. Compliance Coordinator
Authorized Signature Telephone Number	918-574-7386
Authorized Signature Email	
Date	06/30/2011

Appendix C Pipeline System Map

This document is on file at PHMSA

Photo No. 1
Failure Location Looking North
July 24, 2010

Photo No. 2
Crop Damage From Failure Site Looking East
July 27, 2010

Photo No. 3
Buckle and crack
July 24, 2010

Photo No. 4
TOR Fitting 1’ Upstream From Failure
July 27, 2010

Appendix E Metallurgical Report

This document is on file at PHMSA