

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

Principal Investigator Joe Elmer
Senior Accident Investigator Karen Butler
Region Director David Barrett / Allan Beshore
Date of Report 8/10/2015
Subject Failure Investigation Report – Magellan Pipeline Company, LP – Other Accident Cause

Operator, Location, & Consequences

Date of Failure 11/22/2012
Commodity Released Gasoline
City/County & State Coralville / Johnson, Iowa
OpID & Operator Name 22610 Magellan Pipeline Company, LP
Unit # & Unit Name 3953 (WPL) CHICAGO UNIT
SMART Activity # 144161
Milepost / Location 0+00, Iowa City Station & Terminal
Type of Failure Leak
Fatalities 0
Injuries 0
Description of area impacted Terminal Facility (HCA)
Total Costs \$158,100

Failure Investigation Report – Magellan Pipeline Company L.P. Breakout Tank Leak

Failure Date 11/22/2012

Executive Summary

On November 22, 2012 at approximately 9:25 am CST,¹ Magellan Pipeline Company, L.P. local operating personnel discovered Tank 1390 leaking during the filling of the tank after an API 653 inspection was completed. 10.52 barrels of gasoline were released. Metallurgical analysis determined the cause to be either internal corrosion or damage caused by grit blasting of the floor. No fatalities or injuries resulted from the failure. There were no service interruption or supply impacts as a result of the failure. The release did occur in an HCA. The total cost of the failure, emergency response, tank repair and environmental cleanup is estimated at \$158,100.

System Details

The Magellan hazardous liquid pipeline system includes approximately 9,400 miles of pipeline and 600 storage tanks in 13 different states. Magellan operates the Iowa City Station and Terminal in Coralville, Iowa for the storage and transportation of refined products. The facility is served by three pipelines and provides refined products to the eastern Iowa and Chicago markets. The facility contains 23 break out tanks. Among these is Tank 1390, which developed the leak. Tank #1390 is an 85-foot diameter by 40-foot tall cone roof tank with an aluminum internal floating roof. The tank was constructed by Graver Tank in 1955. The tank capacity is 36,868 barrels.

Events Leading up to the Failure

Prior to the leak, an API 653 inspection was completed on October 11, 2012 by Tank Consultants, Inc. The following repairs were completed after the inspection: Two pinholes located in the internal corner weld were repaired, a pad plate was installed on the tank bottom for the level gauge guide wire bracket, a seal welded pad plate had been installed under the ant-rotation cable bracket, a 12-inch by 12-inch pad plate was installed over a hole on plate 37 and all top side pits .125 inches deep. The tank was then re-inspected on November 5, 2012.

On November 21, 2012 tank was filled starting at approximately 12:00 pm and was stopped at 8 feet at around 4:00 pm. Tank 1390 was filled via a mainline-split process where the incoming product stream is split between multiple tanks to ensure a slower fill rate into those tanks. At approximately 4:21 pm the local operators walked around the tank to check for leaks and to hand line gauge the tank to ensure the accuracy of the side liquid level gauge.

The leak was discovered by local operators at approximately 9:25 am on November 22, 2012 during routine tank farm inspections. A product level of 8 feet in Tank 1390 is equivalent to 8000 barrels of product in the tank. It is unlikely that the small leakage volume would have been identified using electronic gauging.

¹ All times are Central Standard Time (CST) unless otherwise noted.

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Failure Date 11/22/2012

Emergency Response

Magellan had local personnel on site during the filling of the tank. On November 22, 2012 at approximately 11:47 am Magellan Pipeline Company notified the National Response Center of the release (NRC # 1031325). Excavation activities were immediately initiated to remove the soil and gravel adjacent to the tank that was impacted by the release.

On November 22, 2012 Apex Companies, LLC (APEX) was retained for cleanup of the spill. On November 23, 2012, Apex mobilized to the site to assess the impacted soil and conduct additional excavation activities. A photoionization detector (PID) was utilized to field screen the soil and gravel during excavation activities to determine the amount of material to be removed. The excavation surrounding the south perimeter of the tank had an approximate 12 – 18 inches below grade surface. The excavation depth was based on visual observations and PID readings. All excavated soil and gravel was placed on plastic and covered with plastic awaiting analytical analysis for proper disposal. On November 23, 2012 at approximately 5:00 am the product was completely transferred out of the tank. Approximately 7.9 barrels of product was recovered during excavation. Approximately 20 cubic yards of impacted soil were excavated and were transported to Johnson County Landfill in Iowa City, Iowa for proper disposal.

On November 24, 2014 the tank floor was cleaned and a through wall hole was discovered in the bottom of the tank. The hole was located near the south entrance .

Summary of Return-to-Service

On November 28, 2012, Tank Consultants, Inc. performed a magnetic flux exclusion (MFE) scan on the entire floor. No additional through bottom holes were identified.

On November 29, 2012, HMT Inc. performed a vacuum test on all bottom and corner welds. No additional through bottom holes were identified. A 20-inch by 20-inch section was cutout that contained the hole in the floor and the section was sent to Kiefner and Associates for analysis. The damaged section of floor was repaired in accordance with API 653 and inspected by an API 653 inspector.

On December 7, 2012 the tank was filled to approximately 4-feet and inspected for leaks. The tank was then filled to a level of 8-feet and allowed to sit idle overnight.

After the tank was inspected for leaks it was returned to service on December 8, 2012 at approximately 8:14 am

Investigation Details

On November 23, 2012, PHMSA Central Region began following up on NRC Report #1031325. An inspector did not respond to the accident site.

On January 4, 2013, PHMSA Central Region conducted a teleconference with Magellan concerning the leak.

PHMSA Central Region requested and reviewed the following documents:

- Monthly External Tank Inspection Forms (Form 07-Form-0077) (July – December 2012)
- Monthly Overfill Protection System and Water Draw Inspection (July – December 2012)

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- API 653 Out of Service Inspection Procedure
- Apex Companies, LLC – Rapid Response Activity Report
- Fiberglass lining inspection report
- Kiefner & Associates Failure Analysis
- Epoxy Internal Coating Specification
- TCI Tank Consultants, Inc. API 653 Internal Inspection Report dated 10-11-2012
- Tank Inspection and Maintenance Order dated 7-11-1995
- Tank 1390 Recommended Repair Checklist dated 12-10-2012

Findings and Contributing Factors

The failure analysis performed by Kiefner and Associates did not identify a specific cause of the hole in the bottom of the tank. While conclusive evidence does not exist to determine the exact cause of the hole, it is strongly suspected that a leak at the coupling joint in the abrasive blasting equipment hose caused grooving in the floor in three areas and created the hole that caused the leak.

Corrective action taken: The internal epoxy lining specification has been updated to include wording that requires a protective sleeve be installed over all blast hose connections that come in contact with the blast surface. The specification requires that the fittings and protective sleeve be inspected before and after blasting activities to ensure the connection(s) are intact. If damage is found to the protective sleeve or hose connections that would be indicative of an abrasive leak, the blast surface will be visually inspected for damage.

Appendices

Appendix A - Map and Photographs

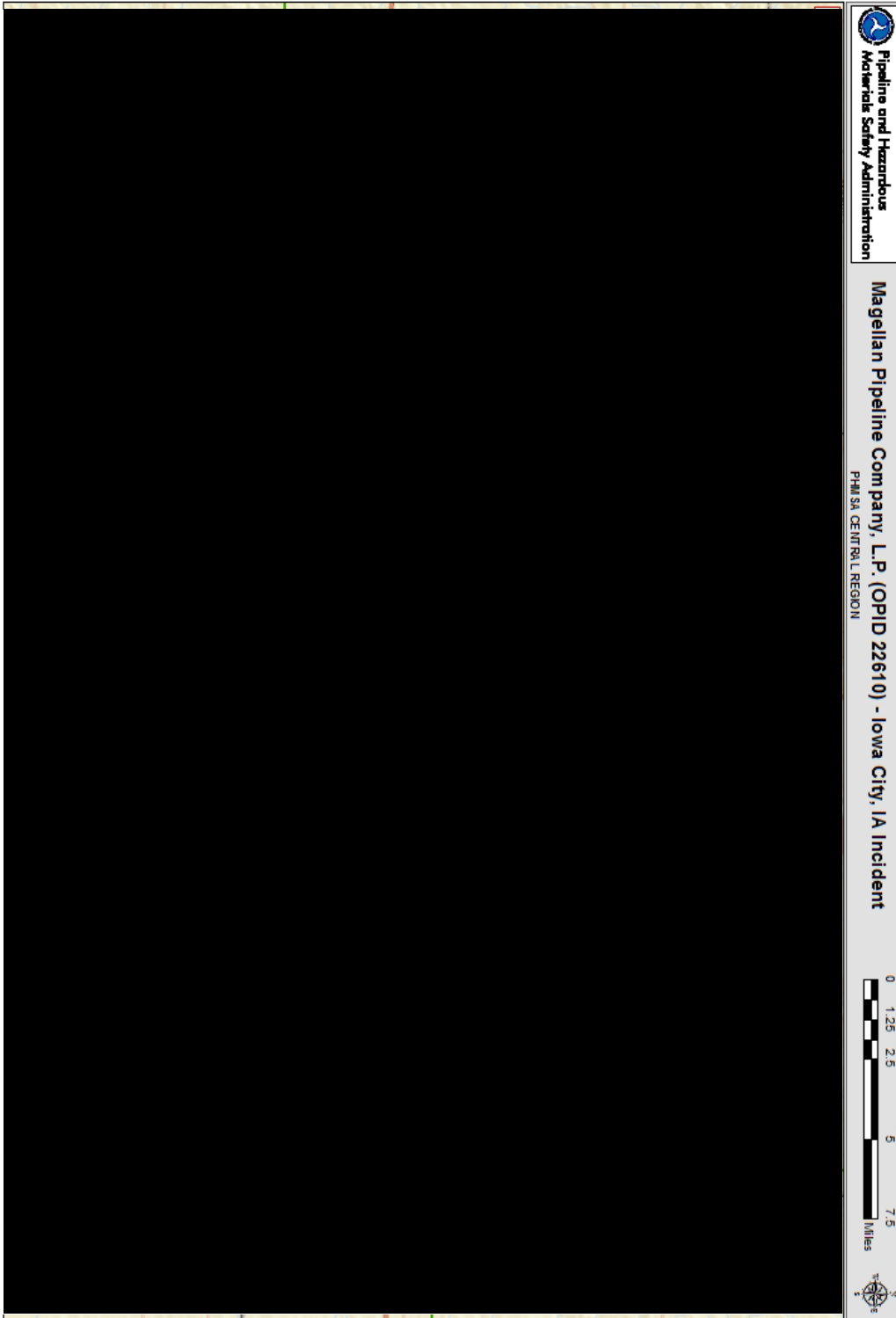
Appendix B - NRC Report

Appendix C - Operator's Report

Appendix D - Metallurgical Report

Appendix A - Map and Photographs

Map of accident location



Appendix A - Map and Photographs

Visual indication of the through-bottom hole, 11/26/2012
(Magellan provided the photograph)



Visual indication of defect in close proximity to the hole, 11/26/2012
(Magellan provided the photograph)



Appendix A - Map and Photographs

Visual indication of hole and the defect in close proximity to the hole, 11/29/2012. The patch was installed as part of an OOS inspection in 1997.

(Magellan provided the photograph)



Example of vacuum box testing of the bottom welds conducted on 11/28/2012.

(Magellan provided the photograph)



Appendix A - Map and Photographs

Example of MFE scanning on 11/28/2012.
(Magellan provided the photograph)



Appendix B - NRC 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 # 1031325

INCIDENT DESCRIPTION

*Report taken at 11:47 on 22-NOV-12
Incident Type: STORAGE TANK
Incident Cause: UNKNOWN
Affected Area:
The incident was discovered on 22-NOV-12 at 09:40 local time.
Affected Medium: LAND EARTHEN CONTAINMENT

SUSPECTED RESPONSIBLE PARTY

Organization: MAGELLAN PIPELINE CO
URBANDALE, IA 50322

Type of Organization: PRIVATE ENTERPRISE

INCIDENT LOCATION

912 FIRST AVE County: JOHNSON
City: CORALVILLE State: IA Zip: 52241

RELEASED MATERIAL(S)

CHRIS Code: GAS Official Material Name: GASOLINE: AUTOMOTIVE (UNLEADED)
Also Known As:
Qty Released: 800 GALLON(S)

DESCRIPTION OF INCIDENT

CALLER IS REPORTING A SPILL OF ABOUT 800 GALLONS OF GASOLINE POOLED ON THE GROUND DURING ROUNDS. THE TANK WAS JUST PUT BACK INTO SERVICE YESTERDAY.

INCIDENT DETAILS

Description of Tank: FLOATING TOP TANK
Tank Above/Below Ground: ABOVE
Transportable Container: NO
Tank Regulated: UNKNOWN
Tank Regulated By:
Tank ID: 1390
Capacity of Tank:
Actual Amount: 8000 BARREL(S)

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

<u>Closure Type</u>	<u>Description of Closure</u>	<u>Length of Closure</u>	<u>Direction of Closure</u>
Air:	N		
Road:	N		Major Artery: N
Waterway:	N		
Track:	N		

Appendix B - NRC Report

Passengers Transferred: NO
Environmental Impact: UNKNOWN
Media Interest: NONE Community Impact due to Material:

REMEDIAL ACTIONS

TRANSFERRING PRODUCT TO ANOTHER TANK. LOOKING FOR THE LEAK LOCATION. CLEAN UP IS UNDERWAY. RESPONSE CONTRACTORS ARE EN ROUTE.

Release Secured: NO
Release Rate:
Estimated Release Duration:

WEATHER

ADDITIONAL AGENCIES NOTIFIED

Federal:

State/Local: IDNR, FIRE CHIEF, LOCAL EMA
State/Local On Scene:
State Agency Number:


NOTIFICATIONS BY NRC

ATLANTIC STRIKE TEAM (MAIN OFFICE)
22-NOV-12 11:53
CGIS RAO ST. LOUIS (COMMAND CENTER)
22-NOV-12 11:53
DOT CRISIS MANAGEMENT CENTER (MAIN OFFICE)
22-NOV-12 11:53
U.S. EPA VII (MAIN OFFICE)
22-NOV-12 12:04
U.S. EPA VII (CRIMINAL INVESTIGATION DIVISION)
22-NOV-12 11:53
FEMA REGION 7 (COORDINATION CENTER)
22-NOV-12 11:53
IOWA DEPT OF PUBLIC HEALTH (COMMAND CENTER)
22-NOV-12 11:53
IA U.S. ATTORNEY'S OFFICE (INTELLIGENCE OFFICER)
22-NOV-12 11:53
NATIONAL INFRASTRUCTURE COORD CTR (MAIN OFFICE)
22-NOV-12 11:53
NOAA RPTS FOR IA (MAIN OFFICE)
22-NOV-12 11:53
NATIONAL RESPONSE CENTER HQ (AUTOMATIC REPORTS)
22-NOV-12 11:53
NTSB PIPELINE (MAIN OFFICE)
22-NOV-12 11:53
IA DEPT NAT RES ATTN: DUTY OFFICER (MAIN OFFICE)
22-NOV-12 11:53
DOI/OEPC DENVER (MAIN OFFICE)
22-NOV-12 11:53
USCG DISTRICT 8 (MAIN OFFICE)
22-NOV-12 11:53

ADDITIONAL INFORMATION

*** END INCIDENT REPORT # 1031325 ***

Appendix C - Operator's Accident Report

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: 01/31/2014	
 U.S Department of Transportation Pipeline and Hazardous Materials Safety Administration	Original Report Date:	12/19/2012	
	No.	20120364 - 17277 ----- (DOT Use Only)	
ACCIDENT REPORT - HAZARDOUS LIQUID PIPELINE SYSTEMS			
A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB Control Number. The OMB Control Number for this information collection is 2137-0047. Public reporting for this collection of information is estimated to be approximately 10 hours per response (5 hours for a small release), including the time for reviewing instructions, gathering the data needed, and completing and reviewing the collection of information. All responses to this collection of information are mandatory. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Information Collection Clearance Officer, PHMSA, Office of Pipeline Safety (PHP-30) 1200 New Jersey Avenue, SE, Washington, D.C. 20590.			
INSTRUCTIONS			
<i>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.</i>			
PART A - KEY REPORT INFORMATION			
Report Type: <i>(select all that apply)</i>	Original:	Supplemental:	Final:
		Yes	Yes
Last Revision Date:	02/28/2013		
1. Operator's OPS-issued Operator Identification Number (OPID):	22610		
2. Name of Operator	MAGELLAN PIPELINE COMPANY, LP		
3. Address of Operator:			
3a. Street Address	ONE WILLIAMS CENTER, MD 27 P.O. BOX 22186		
3b. City	TULSA		
3c. State	Oklahoma		
3d. Zip Code	74172		
4. Local time (24-hr clock) and date of the Accident:	11/22/2012 09:25		
5. Location of Accident:			
Latitude:	41.68411		
Longitude:	-91.5701		
6. National Response Center Report Number (if applicable):	1031325		
7. Local time (24-hr clock) and date of initial telephonic report to the National Response Center (if applicable):	11/22/2012 10:44		
8. Commodity released: <i>(select only one, based on predominant volume released)</i>	Refined and/or Petroleum Product (non-HVL) which is a Liquid at Ambient Conditions		
- Specify Commodity Subtype:	Gasoline (non-Ethanol)		
- 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):	10.52		
10. Estimated volume of intentional and/or controlled release/blowdown (Barrels):			
11. Estimated volume of commodity recovered (Barrels):	7.90		
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			

Appendix C - Operator's Accident Report

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?	Yes
- If No, Explain:	
- If Yes, complete Questions 14a and 14b: <i>(use local time, 24-hr clock)</i>	
14a. Local time and date of shutdown:	11/22/2012 10:00
14b. Local time pipeline/facility restarted:	12/08/2012 08:14
- Still shut down? (* Supplemental Report Required)	
15. Did the commodity ignite?	No
16. Did the commodity explode?	No
17. Number of general public evacuated:	
18. Time sequence <i>(use local time, 24-hour clock)</i> :	
18a. Local time Operator identified Accident:	11/22/2012 09:25
18b. Local time Operator resources arrived on site:	11/22/2012 09:50
PART B - ADDITIONAL LOCATION INFORMATION	
1. Was the origin of Accident onshore?	Yes
<i>If Yes, Complete Questions (2-12)</i>	
<i>If No, Complete Questions (13-15)</i>	
- If Onshore:	
2. State:	Iowa
3. Zip Code:	52241
4. City:	Coralville
5. County or Parish:	Johnson
6. Operator-designated location:	Milepost/Valve Station
Specify:	0+00
7. Pipeline/Facility name:	Iowa City Station & Terminal
8. Segment name/ID:	Station #610
9. Was Accident on Federal land, other than the Outer Continental Shelf (OCS)?	No
10. Location of Accident:	Totally contained on Operator-controlled property
11. Area of Accident (as found):	Tank, including attached appurtenances
Specify:	
- If Other, Describe:	
Depth-of-Cover (in):	
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 Breakout Tank or Storage Vessel, including Attached Appurtenances
- If Onshore Breakout Tank or Storage Vessel, Including Attached Appurtenances, specify:	Atmospheric or Low Pressure

Appendix C - Operator's Accident Report

3. Item involved in Accident:	Tank/Vessel
- If Pipe, specify:	
3a. Nominal diameter of pipe (in):	
3b. Wall thickness (in):	
3c. SMYS (Specified Minimum Yield Strength) of pipe (psi):	
3d. Pipe specification:	
3e. Pipe Seam , specify:	
- If Other, Describe:	
3f. Pipe manufacturer:	
3g. Year of manufacture:	
3h. Pipeline coating type at point of Accident, specify:	
- 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:	Single Bottom System
- If Other - Describe:	
- If Other, describe:	
4. Year item involved in Accident was installed:	1955
5. Material involved in Accident:	Carbon Steel
- If Material other than Carbon Steel, specify:	
6. Type of Accident Involved:	Leak
- If Mechanical Puncture – Specify Approx. size:	
in. (axial) by	
in. (circumferential)	
- If Leak - Select Type:	Pinhole
- If Other, Describe:	
- If Rupture - Select Orientation:	
- If Other, Describe:	
Approx. size: in. (widest opening) by	
in. (length circumferentially or axially)	
- If Other – Describe:	
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:	Yes
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?	Yes
7. Did the released commodity reach or occur in one or more High Consequence Area (HCA)?	Yes
7a. If Yes, specify HCA type(s): (Select all that apply)	
- Commercially Navigable Waterway:	

Appendix C - Operator's Accident Report

Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- High Population Area:	Yes
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	Yes
- 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 Property Damage:	
8a. Estimated cost of public and non-Operator private property damage	\$ 0
8b. Estimated cost of commodity lost	\$ 1,100
8c. Estimated cost of Operator's property damage & repairs	\$ 80,000
8d. Estimated cost of Operator's emergency response	\$ 12,000
8e. Estimated cost of Operator's environmental remediation	\$ 60,000
8f. Estimated other costs	\$ 5,000
	Describe: Metallurgical Analysis
8g. Total estimated property damage (sum of above)	\$ 158,100
PART E - ADDITIONAL OPERATING INFORMATION	
1. Estimated pressure at the point and time of the Accident (psig):	.00
2. Maximum Operating Pressure (MOP) at the point and time of the Accident (psig):	.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?	No
- If Yes, Complete 4.a and 4.b below:	
4a. Did the pressure exceed this established pressure restriction?	
4b. Was this pressure restriction mandated by PHMSA or the State?	
5. Was "Onshore Pipeline, Including Valve Sites" OR "Offshore Pipeline, Including Riser and Riser Bend" selected in PART C, Question 2?	No
- If Yes - (Complete 5a. – 5e. below)	
5a. Type of upstream valve used to initially isolate release source:	
5b. Type of downstream valve used to initially isolate release source:	
5c. Length of segment isolated between valves (ft):	
5d. Is the pipeline configured to accommodate internal inspection tools?	
- 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?	
- If Yes, Which operational factors complicate execution? (select all that apply)	

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- 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 Gathering
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?	No
- If Yes:	
7a. Was it operating at the time of the Accident?	
7b. Was it fully functional at the time of the Accident?	
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?	
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?	
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:	Operator employee
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)	While Operations Control can detect tank levels via SCADA, there is NO CPM monitoring of the tank. The release was not detected by the SCADA system. Pressure, temps and flow rate were within normal ranges at the time the release was discovered. Under the circumstances, it was concluded that neither Operations Control nor the Controller on duty caused or contributed to the release.
- 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	

Appendix C - Operator's Accident Report

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?	No
- If Yes:	
2a. Specify how many were tested:	
2b. Specify how many failed:	
PART G – APPARENT CAUSE	
<i>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).</i>	
Apparent Cause:	G8 - Other Incident Cause
G1 - Corrosion Failure - only one sub-cause can be picked from shaded left-hand column	
External Corrosion:	
Internal Corrosion:	
- If External Corrosion:	
1. Results of visual examination:	
- If Other, Describe:	
2. Type of corrosion: <i>(select all that apply)</i>	
- 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: <i>(select all that apply)</i>	
- Field examination	
- Determined by metallurgical analysis	
- Other:	
- If Other, Describe:	
4. Was the failed item buried under the ground?	
- If Yes :	
<input type="checkbox"/> 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 <i>(select all that apply):</i> -	
- 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 <i>(select all that apply):</i> -	
- Field examination	
- Determined by metallurgical analysis	

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- Other:	
- If Other, Describe:	
9. Location of corrosion <i>(select all that apply)</i> : -	
- 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:

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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: <i>(select all that apply)</i>	
- 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):	

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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: <i>(select all that apply)</i> -	
- 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: <i>(select all that apply)</i> -	
- 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 <i>(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):</i>	
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 <i>sub-cause</i> can be selected from the shaded left-hand column	
Other Outside Force Damage – Sub-Cause:	

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- 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:

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	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:	
1. The sub-cause selected below is based on the following: <i>(select all that apply)</i>	
- Field Examination	
- Determined by Metallurgical Analysis	
- 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: <i>(select all that apply)</i>	
- Fatigue or Vibration-related	
	Specify:
	- If Other, Describe:
- Mechanical Stress:	
- Other	
	- If Other, Describe:
- If Original Manufacturing-related (NOT girth weld or other welds formed in the field):	
2. List contributing factors: <i>(select all that apply)</i>	
- 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: <i>(select all that apply)</i> :	
- Dent	
- Gouge	
- Pipe Bend	
- Arc Burn	
- Crack	
- Lack of Fusion	
- Lamination	
- Buckle	
- Wrinkle	
- Misalignment	
- Burnt Steel	
- Other:	
	- If Other, Describe:
5. Has one or more internal inspection tool collected data at the point of the Accident?	
5a. If Yes, for each tool used, select type of internal inspection tool and indicate most recent year run:	
- Magnetic Flux Leakage	Most recent year run:
- Ultrasonic	Most recent year run:
- Geometry	Most recent year run:
- Caliper	Most recent year run:
- Crack	Most recent year run:
- Hard Spot	Most recent year run:

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- 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?	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
7. 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:	
8. Has one or more non-destructive examination(s) been conducted at the point of the Accident since January 1, 2002?	
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: <i>(select all that apply)</i> -	
- 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:	

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Complete the following if any Equipment Failure sub-cause is selected.	
6. Additional factors that contributed to the equipment failure: <i>(select all that apply)</i>	
- 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:	
Damage by Operator or Operator's Contractor NOT Related to Excavation and NOT due to Motorized Vehicle/Equipment Damage	No
Tank, Vessel, or Sump/Separator Allowed or Caused to Overflow or Overflow	No
1. Specify:	
- If Other, Describe:	
Valve Left or Placed in Wrong Position, but NOT Resulting in a Tank, Vessel, or Sump/Separator Overflow or Facility Overpressure	No
Pipeline or Equipment Overpressured	No
Equipment Not Installed Properly	No
Wrong Equipment Specified or Installed	No
Other Incorrect Operation	No
2. Describe:	
Complete the following if any Incorrect Operation sub-cause is selected.	
3. Was this Accident related to <i>(select all that apply)</i> : -	
- 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:	Unknown
- If Miscellaneous:	
1. Describe:	
- If Unknown:	

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2. Specify:	Investigation complete, cause of Accident unknown				
PART H - NARRATIVE DESCRIPTION OF THE ACCIDENT					
<p>Following the completion of an API 653 Out of Service Tank Inspection and Repairs, product was found on the ground next to the tank chime during the re-filling of the tank. Subsequent inspection indicated the presence of a pinhole in the floor of the tank, resulting in the release. The tank was repaired by Qualified personnel following API 653 and returned to service. The section of the floor containing the pinhole was removed and sent to a metallurgical lab for analysis, which indicated the cause may have been due to corrosion, but it may also have been caused by a damaged blasting hose. The report concluded that the debris adjacent to the leak site between the epoxy coating and the floor had the appearance of blasting grit, and the metal loss may have been due to corrosion, but it may have also been caused by a damaged blasting hose used to clean the floor in preparation for applying an epoxy floor coating.</p>					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; padding: 2px;">File Full Name</td> <td style="width: 20%;"></td> </tr> <tr> <td style="height: 20px;"></td> <td></td> </tr> </table>		File Full Name			
File Full Name					
PART I - PREPARER AND AUTHORIZED SIGNATURE					
Preparer's Name	Kenneth L. Lybarger				
Preparer's Title	Sr. Compliance Coordinator				
Preparer's Telephone Number	918-574-7315				
Preparer's E-mail Address	ken.lybarger@magellanlp.com				
Preparer's Facsimile Number	918-574-7246				
Authorized Signature's Name	Kenneth L. Lybarger				
Authorized Signature Title	Sr. Compliance Coordinator				
Authorized Signature Telephone Number	918-574-7315				
Authorized Signature Email	ken.lybarger@magellanlp.com				
Date	02/28/2013				

Appendix D
Metallurgical Report

This document is on file at PHMSA