

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

Senior Accident Investigator Richard J. Lopez
Region Director R. M. Seeley
Date of Report 05/30/2012
Subject Chevron Pipe Line Company, Grand Bay 10-inch Pipeline, Plaquemines Parish, Louisiana

Operator, Location, & Consequences

Date of Failure 01/26/2011
Commodity Released Crude Oil
City/County & State Plaquemines Parish, Louisiana
OPID & Operator Name 2731 Chevron Pipe Line Company
Unit # & Unit Name 18124 Offshore Venice/Buras Team
SMART Activity # 133527
Milepost / Location Main Pass Block 12, Plaquemines Parish, Louisiana
Type of Failure Brittle, tensile fracture at pre-existing mechanical damage

Fatalities None
Injuries None
Description of area impacted Gulf of Mexico (non HCA)
Property Damage \$906,900

Failure Investigation Report – Chevron Grand Bay 10-inch January 26, 2011

Executive Summary

On January 26, 2011, Chevron Pipe Line Company (CPL) experienced a failure on its Grand Bay 10-inch pipeline in Plaquemines Parish, Louisiana. There was no fire, explosion or injuries. Approximately 80 barrels of crude oil were released. The accident was reported to the National Response Center (NRC) by CPL (NRC report #965775).

At the time of the failure, the pipeline was being lowered while in service. The cause of failure is attributed to a brittle, tensile fracture at an area of pre-existing mechanical damage. The failure propagation was due to the combination of stress concentration at the mechanical damaged areas, the lack of fracture toughness of the pipe at the point of failure and the applied tensile stresses.

After the release the line was shut down, booms deployed and the Oil Spill Response Organization (OSRO) was contacted. The line remains out of service.

System Details

The Grand Bay 10-inch pipeline is part of the Cypress pipeline system that originates at Chevron's offshore Louisiana facilities and ends at Empire/Ostrica Terminal. The Cypress system is comprised of 373 miles of pipeline of various diameters.

The Empire/Ostrica Terminal is located near the east bank of the Mississippi River about three miles south of Empire, Plaquemines Parish, Louisiana. The Empire terminal is a hub that receives crude oil via pipelines from production facilities in the Gulf of Mexico. The terminal, in turn, sends oil via pipelines and barges to various locations along the Gulf Coast. (Appendices A and B)

The Grand Bay 10-inch pipeline was installed in 1953 of 10.75-inch nominal outside diameter pipe, wall thickness of 0.365 inches, grade X-35, lap welded, carbon steel. The maximum operating pressure (MOP) of the system is 366 psig, and the line was operating at 87 psig at the time of the failure.

A corrosion mitigation system was designed and installed on the pipeline. It is comprised of a coating and a cathodic protection system. The coating system consists of coal tar glass and 2.79-inch concrete weight coating. Cathodic protection is provided by galvanic anodes that were installed at the time of original construction.

Events leading up to the Failure

In July 2009, several segments of the existing pipeline "LAL 0247 10 inches," in the Main Pass area of the Gulf of Mexico were discovered by survey to have inadequate depth of soil coverage. As a result of the survey, those segments were required to be reburied in accordance with 49 CFR Part §195.413(c)(3).

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Chevron was in the process of lowering the pipeline at the time the accident occurred. The procedures for lowering the pipeline required the performance of a “hydro jetting process”. The process uses high pressure water jets that cut the sea bed surface underneath and on the sides of the pipeline creating a trench. The pipeline is then allowed to lower into the trench by its own weight.

On January 26, 2011, Chevron Pipe Line (CPL) was hydro jetting to lower the line when the lowering crew smelled and saw the crude oil.

Emergency Response

The jetting was stopped when crude odor was detected and then spotted on the water, at approximately 1603 on Jan 26, 2011. The Chevron Control Center (CSC) was then contacted by Chevron’s Person in Charge (PIC) at the leakage site.

The crew on the jetting barge immediately deployed the containment and absorption boom to contain the spill. The CSC, which had independently detected the loss of pressure and was investigating if shutdown was needed, shut down the main pumps remotely to stop the flow of crude oil.

Empire Terminal employees were dispatched to manually shut down valves (at Romere Pass and Grand Bay Receiving Station), and the ORA pump to stop any remaining flow at the release site. By 1830 hours, these valves and the ORA pump were closed and isolated.

Chevron reported the accident to the NRC on January 26, 2011 at 1722. They also submitted a written report to PHMSA on 02/15/2011. (Appendix C)

Summary of Return-to-Service

Chevron has not taken any action to return the line to service. At the time of this report, the line has not been placed back into service. The line was purged of product, filled with water taken from the Mississippi River and inhibited with corrosion mitigation material after it was repaired.

To determine the exact cause of the accident segments of pipe from the failed area were cut and sent to Chevron’s Energy Technology Company for metallurgical evaluation.

Investigation Details

A metallurgical analysis was performed by Energy Technology Company to determine the cause of the accident. (Appendix D) The analysis indicated that the cause of the release was attributable to:

Failure Investigation Report – Chevron Grand Bay 10-inch January 26, 2011

- Dents on the 10 inch pipeline. The pipeline had dents at five locations, apparently caused by boat and barge traffic in the area, and the failure occurred at one of these dents. The dents were not visible and UT was not capable of detecting them. CPL was not aware of the prior dents or when they occurred.
- Metallurgical analysis of the pipeline material indicated brittle and inflexible steel with nil fracture toughness. The steel with these characteristics was common for pipelines installed in 1953.
- The failure occurred during lowering operations by Chevron’s contractor, Sunland Construction. The lowering was to be made by cutting the new trench at two feet passes until the prescribed depth was reached. The weight of the pipeline would lower in line into the newly cut trench. Based on witness interviews, it appears that the contractor cut trenches of two to four feet on the day of the failure. It is not known whether the failure related to or resulted from the trench depth.

Findings and Contributing Factors

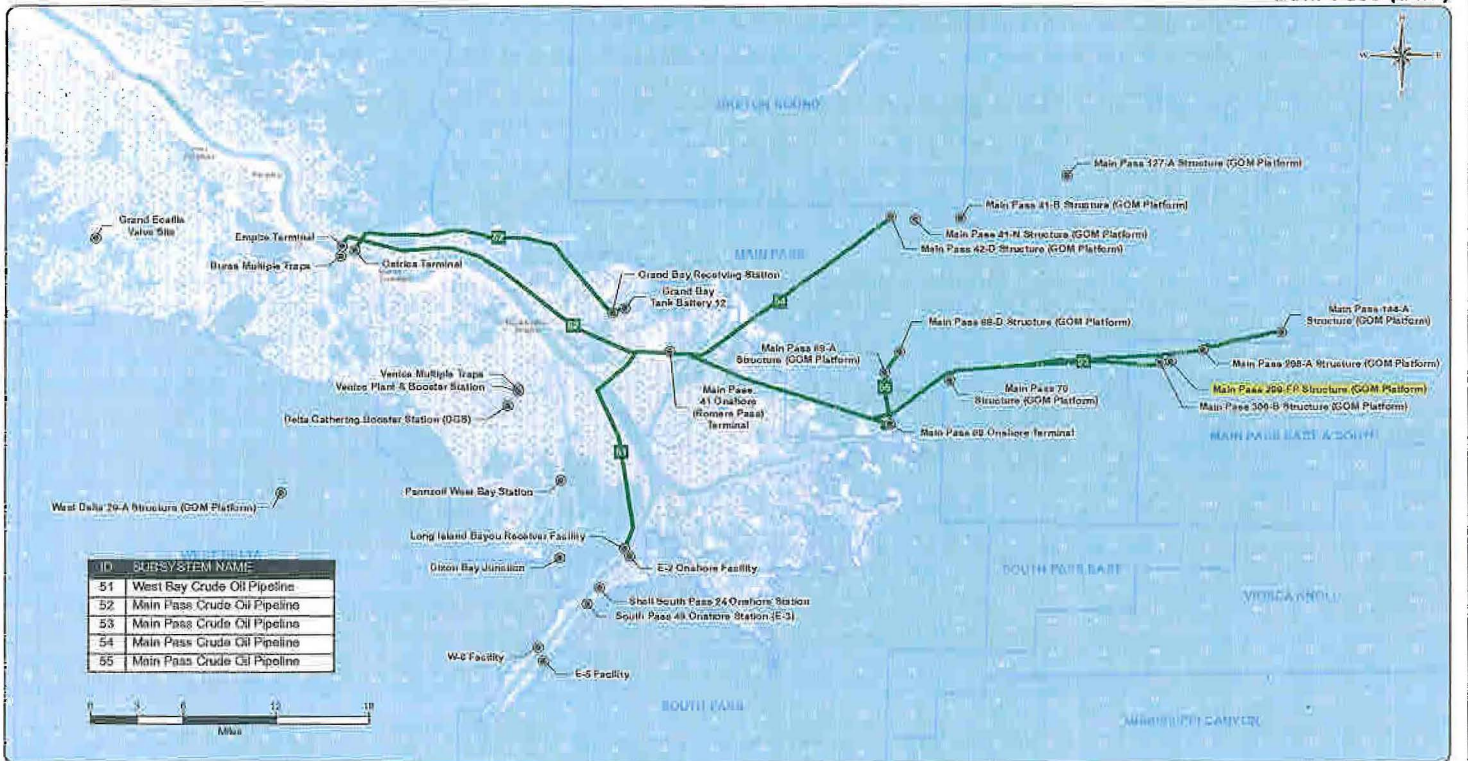
1. The pipeline had prior physical damaged at the failure point. These dents appeared to have been caused by boat propeller impact in the past. Failure of the pipeline occurred at the location of one of the dents.
2. The metallurgical analysis of the pipeline material of construction (1953) indicated brittle and inflexible steel with little fracture toughness. As a result the pipeline did not have the ability to withstand plastic deformation at areas of stress concentration (dents/deformed pipe segments).
3. It is believed that the stresses induced by the lowering project contributed to the accident. The lowering was to be made by cutting the new trench at two feet passes but witness interviews indicate that the contractor cut trenches of two to four feet on the day of the failure. Chevron filed the PHMSA Form 7000-1 Accident report on February 15, 2011 and a final report on August 11, 2011, indicating the cause of the incident as excavation damage.

Appendices

- Appendix A - Operator System Map
- Appendix B - Operator Pipeline Map
- Appendix C - Accident Reports
- Appendix D - Metallurgical Evaluation Report

Appendix A - Operator System Map

Main Pass (MNP)



ID	SUBSYSTEM NAME
51	West Bay Crude Oil Pipeline
52	Main Pass Crude Oil Pipeline
53	Main Pass Crude Oil Pipeline
54	Main Pass Crude Oil Pipeline
55	Main Pass Crude Oil Pipeline



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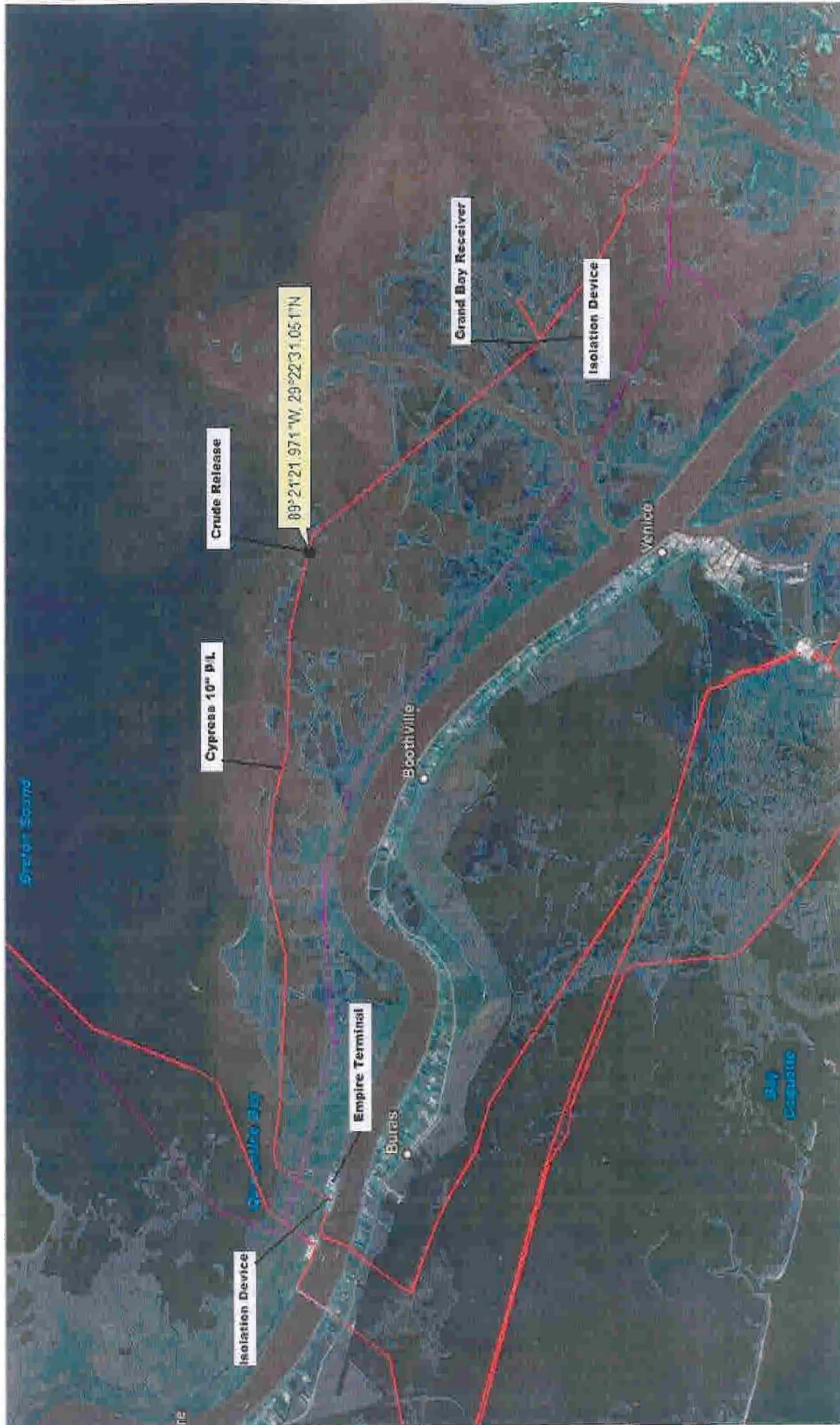
Created: July 2011
 Author: [redacted]
 Date: [redacted]
 Review: [redacted]
 Revision: [redacted]

LEGEND		FACILITY	
	CO2		INERT
	CRUDE		NATURAL GAS
	HVL		PRODUCTS
			FACILITY
			Number = Sub System ID Color = Commodity
NOTE: All lines shown unless otherwise noted.			

GULF COAST CRUDE & CRUDE PRODUCTS

MAP 1 of 1

Appendix B - Operator Pipeline Map



Appendix C- Accident Reports

NATIONAL RESPONSE CENTER 1-800-424-8802

GOVERNMENT USE ONLYGOVERNMENT USE ONLY***

Information released to a third party shall comply with any applicable federal and/or state Freedom of Information and Privacy Laws

Incident Report # 965775

INCIDENT DESCRIPTION

*Report taken by: CIV DAVID DEDEAUX at 17:22 on 26-JAN-11

Incident Type: PIPELINE

Incident Cause: UNKNOWN

Affected Area: GULF OF MEXICO

Incident occurred on 26-JAN-11 at 16:03 local incident time.

Affected Medium: WATER

REPORTING PARTY

Name: JOSEPH WHITE

Organization: CHEVRON PIPELINE CO.

Address: 4800 FOURNACE PL

BELLAIRE, TX 77401

CHEVRON PIPELINE CO. reported for the responsible party.

PRIMARY Phone: (281)6301927 ALTERNATE Phone: (713)4326167

Type of Organization: PRIVATE ENTERPRISE

SUSPECTED RESPONSIBLE PARTY

Name: JOSEPH WHITE

Organization: CHEVRON PIPELINE CO.

Address: 4800 FOURNACE PL

BELLAIRE, TX 77401

PRIMARY Phone: (281)6301927 ALTERNATE Phone: (713)4326167

INCIDENT LOCATION

SEE LAT AND LONG County: PLAQUEMINES

State: LA

Latitude: 29° 37' 05" N

Longitude: 089° 35' 06" W

NONE

RELEASED MATERIAL(S)

CHRIS Code: OIL Official Material Name: OIL: CRUDE

Also Known As:

Qty Released: 0 UNKNOWN AMOUNT

Qty in Water: 0 UNKNOWN AMOUNT

DESCRIPTION OF INCIDENT

CALLER STATED THAT THERE WAS A RELEASE OF AN UNKNOWN AMOUNT OF CRUDE OIL FROM A PIPELINE THE CAUSE IS UNKNOWN THERE WAS A WATERWAY IMPACTED.

SENSITIVE INFORMATION

INCIDENT DETAILS

Pipeline Type: TRANSMISSION

DOT Regulated: YES

Pipeline Above/Below Ground: ABOVE

Exposed or Under Water: YES

Pipeline Covered: YES

---SHEEN INFORMATION---

Sheen Color: DARK BLACK

Sheen Odor Description:

Sheen Travel Direction:

Sheen Size Length:

Sheen Size Width:

---WATER INFORMATION---

Body of Water: GULF OF MEXICO

Tributary of:

Nearest River Mile Marker:

Water Supply Contaminated: UNKNOWN

IMPACT

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

Hours Direction of
Closure Type Description of Closure Closed Closure

N

Air:

N

Road:

Major

Artery:N

N
Waterway:

N
Track:

Environmental Impact: UNKNOWN

Media Interest: NONE Community Impact due to Material:

REMEDIAL ACTIONS

LINE HAS BEEN SHUT DOWN CONTRACTOR HAS BEEN CONTACTED BOOMS ARE IN PLACE.

Release Secured: NO

Release Rate:

Estimated Release Duration:

WEATHER

Weather: CLEAR, 53°F Wind speed: 12 MPH Wind direction: NW

ADDITIONAL AGENCIES NOTIFIED

Federal: NONE

State/Local: NONE

State/Local On Scene: NONE

State Agency Number: NONE

NOTIFICATIONS BY NRC

CALCASIEU PARISH SHERIFF'S DEPT (CRIMINAL INTELLIGENCE UNIT)

26-JAN-11 17:28 (337)4913778

DHS NOC (NOC)

26-JAN-11 17:28 (202)2828114

USCG ICC (ICC ONI)

26-JAN-11 17:28 (301)6693363

USCG-GC IMT (PRIMARY)

26-JAN-11 17:28 (609)3518503

DOT CRISIS MANAGEMENT CENTER (MAIN OFFICE)

26-JAN-11 17:28 (202)3661863

FLD INTEL SUPPORT TEAM NEW ORLEANS (SUPERVISOR, FIST NEW ORLEANS)

26-JAN-11 17:28 (504)5894224

JFO-LA (COMMAND CENTER)

26-JAN-11 17:28 (225)3366513

JFO-LA (FEMA JFO LA)

26-JAN-11 17:28 (225)3366513

LA DEPT OF ENV QUAL (MAIN OFFICE)

26-JAN-11 17:28 (225)2193640
LA DEPT OF WILDLIFE AND FISHERIES (ATTN: LAURA CARVER)
26-JAN-11 17:28 (337)
LA GOV OFFICE HS AND EMERGENCY PREP (MAIN OFFICE)
26-JAN-11 17:28 (225)9257500
LA OFFICE OF GOV (MAIN OFFICE)
26-JAN-11 17:28 (225)2195800
LA OFFICE OF PUBLIC HEALTH (MAIN OFFICE)
26-JAN-11 17:28 (888)2937020
NATIONAL INFRASTRUCTURE COORD CTR (MAIN OFFICE)
26-JAN-11 17:28 (202)2829201
NOAA RPTS FOR LA (MAIN OFFICE)
26-JAN-11 17:28 (206)5264911
PIPELINE & HAZMAT SAFETY ADMIN (OFFICE OF PIPELINE SAFETY (AUTO))
26-JAN-11 17:28 (202)3660568
SECTOR NEW ORLEANS (COMMAND CENTER)
(504)3652209
LA STATE POLICE (MAIN OFFICE)
26-JAN-11 17:28 (225)9256595

ADDITIONAL INFORMATION

NO ADDITIONAL INFORMATION.

*** END INCIDENT REPORT #965775 ***

Report any problems by calling 1-800-424-8802
PLEASE VISIT OUR WEB SITE AT <http://www.nrc.uscg.mil>

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:

02/15/2011

No.

20110050 - 15984

(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

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:	08/11/2011		
1. Operator's OPS-issued Operator Identification Number (OPID):	2731		
2. Name of Operator	CHEVRON PIPE LINE CO		
3. Address of Operator:			
3a. Street Address	4800 FOURNACE PLACE, Rm C382A		
3b. City	BELLAIRE		
3c. State	Texas		
3d. Zip Code	774012324		
4. Local time (24-hr clock) and date of the Accident:	01/26/2011 16:03		
5. Location of Accident:			
Latitude:	29.3753		
Longitude:	-89.3561		
6. National Response Center Report Number (if applicable):	965775		
7. Local time (24-hr clock) and date of initial telephonic report to the National Response Center (if applicable):	01/26/2011 17:22		
8. Commodity released: (select only one, based on predominant volume released)	Crude Oil		
- Specify Commodity Subtype:			
- 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):	79.00		
10. Estimated volume of intentional and/or controlled release/blowdown (Barrels):			
11. Estimated volume of commodity recovered (Barrels):	79.00		
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?	Yes
- If No, Explain:	
- If Yes, complete Questions 14a and 14b: (use local time, 24-hr clock)	
14a. Local time and date of shutdown:	01/26/2011 16:05
14b. Local time pipeline/facility restarted:	
- Still shut down? (* Supplemental Report Required)	Yes
15. Did the commodity ignite?	No
16. Did the commodity explode?	No
17. Number of general public evacuated:	0
18. Time sequence (use local time, 24-hour clock):	
18a. Local time Operator identified Accident:	01/26/2011 16:03
18b. Local time Operator resources arrived on site:	01/26/2011 16:03
PART B - ADDITIONAL LOCATION INFORMATION	
1. Was the origin of Accident onshore?	No
<i>If Yes, Complete Questions (2-12)</i>	
<i>If No, Complete Questions (13-15)</i>	
- If Onshore:	
2. State:	
3. Zip Code:	
4. City	
5. County or Parish	
6. Operator-designated location:	
Specify:	
7. Pipeline/Facility name:	
8. Segment name/ID:	
9. Was Accident on Federal land, other than the Outer Continental Shelf (OCS)?	
10. Location of Accident:	
11. Area of Accident (as found):	
Specify:	
- If Other, Describe:	
Depth-of-Cover (in):	
12. Did Accident occur in a crossing?	
- 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:	7
14. Origin of Accident:	In State waters
- In State waters - Specify:	
- State:	Louisiana
- Area:	
- Block/Tract #:	MP 12
- Nearest County/Parish:	Plaquemine
- On the Outer Continental Shelf (OCS) - Specify:	
- Area:	
- Block #:	
15. Area of Accident:	Below water, pipe buried or jetted below seabed
PART C - ADDITIONAL FACILITY INFORMATION	
1. Is the pipeline or facility:	Interstate
2. Part of system involved in Accident:	Offshore Pipeline, Including Riser and Riser Bend
- 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):	10.75
3b. Wall thickness (in):	.365
3c. SMYS (Specified Minimum Yield Strength) of pipe (psi):	35,000
3d. Pipe specification:	Unknown
3e. Pipe Seam, specify:	Lap Welded
- If Other, Describe:	
3f. Pipe manufacturer:	Unknown
3g. Year of manufacture:	1953
3h. Pipeline coating type at point of Accident, specify:	Other
- If Other, Describe:	Somastic
- 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:	1953
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:	Crack
- 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:	No
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:	Yes
5a. If Yes, specify all that apply:	
- Ocean/Seawater	Yes
- Surface	
- Groundwater	
- Drinking water: (Select one or both)	
- Private Well	
- Public Water Intake	
5b. Estimated amount released in or reaching water (Barrels):	79.00
5c. Name of body of water, if commonly known:	Grand Bay
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 Property Damage :	
8a. Estimated cost of public and non-Operator private property damage	\$ 0
8b. Estimated cost of commodity lost	\$ 6,900
8c. Estimated cost of Operator's property damage & repairs	\$ 800,000
8d. Estimated cost of Operator's emergency response	\$ 100,000
8e. Estimated cost of Operator's environmental remediation	\$ 0
8f. Estimated other costs	\$ 0
Describe:	
8g. Total estimated property damage (sum of above)	\$ 906,900
PART E - ADDITIONAL OPERATING INFORMATION	
1. Estimated pressure at the point and time of the Accident (psig):	87.00
2. Maximum Operating Pressure (MOP) at the point and time of the Accident (psig):	366.00
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?	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):	93,184
5d. Is the pipeline configured to accommodate internal inspection tools?	No
- 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 -	Yes
- If Other, Describe:	Modification will have to be made to launcher and receiver for internal tool passage.
5e. For this pipeline, are there operational factors which significantly complicate the execution of an internal inspection tool run?	Yes
- If Yes, Which operational factors complicate execution? (select all that apply)	
- Excessive debris or scale, wax, or other wall buildup	

- Low operating pressure(s)	Yes
- 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?	Yes
6d. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the confirmation of the Accident?	Yes
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?	Yes
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?	Yes
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)	The release was caused by a CPL jetting operation to lower the 10 1/2 Grand Bay Pipeline near the Empire Terminal. Personnel indicated a crude oil-like odor, then had a visual confirmation of crude oil in the surrounding waters. CPL Control Center was contacted and the Grand Bay and Main Pass pipelines were shut down @ 1605 CST.
- 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?	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:	G3 - Excavation Damage
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	
- 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:	Excavation Damage by Operator's Contractor (Second Party)
- 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)?	Yes
8. Right-of-Way where event occurred: (select all that apply) -	
- Public	
- If "Public", Specify:	
- Private	
- If "Private", Specify:	
- Pipeline Property/Easement	Yes
- Power/Transmission Line	
- Railroad	
- Dedicated Public Utility Easement	
- Federal Land	
- Data not collected	
- Unknown/Other	
9. Type of excavator:	Contractor
10. Type of excavation equipment:	Trencher
11. Type of work performed:	Liquid Pipeline
12. Was the One-Call Center notified?	Yes
12a. If Yes, specify ticket number:	110022217
12b. If this is a State where more than a single One-Call Center exists, list the name of the One-Call Center notified:	LA One Call Center
13. Type of Locator:	Utility Owner
14. Were facility locate marks visible in the area of excavation?	Yes
15. Were facilities marked correctly?	Yes
16. Did the damage cause an interruption in service?	Yes
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:	Data Not Collected
- 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:	
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:	
- Combination Tool	
Most recent year run:	
- Transverse Field/Triaxial	
Most recent year run:	
- Other	
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: (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:	
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 Overfill 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 (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

At 1603 CST on 26 JAN 11 Field Personnel were conducting jetting operations from a barge to lower the 10" Grand Bay Pipeline near the Empire Terminal. Personnel indicated a crude oil-like odor, then had a visual confirmation of crude oil in the surrounding waters. CPL Control Center was contacted and the Grand Bay and Main Pass pipelines were shut down @ 1605 CST. Field personnel deployed protective boom in the area and requested assistance from a 3rd Party OSRO clean-up company. The volume released is 79 bbls; the cause of the release is under investigation. OSRO personnel and equipment were scheduled to arrive @ first availability on 27 JAN 11.

As of 2/14/11 the pipeline has been raised from the sea bed and repaired. All product was evacuated from the pipeline by pushing a poly pig with sea water and inhibitor. After the evacuation was complete, a successful two hour standup test was performed using the sea water and inhibitor. The pipeline has been reburied to the required depth and is presently filled with sea water and inhibitor and will remain de-pressured until CPL and its business joint partners can decide on future usage.

Grand Bay Release RCA Summary:

Grand Bay Release Accident Investigation Preliminary Results Summary

On January 26, 2011, approximately 4 p.m. Central, a 10 inch pipeline that runs from Main Pass Platform 41 to Empire (approximately 12 miles southeast of Empire, LA.) failed during line lowering operations, resulting in a release of approximately [79] barrels of crude oil. Boom was deployed by the barge crew and Chevron Control Center initiated remote shut down of the pumps. CPL operators at the Empire terminal were dispatched to manually block-in the valves closest to the leak site at Empire Terminal and Grand Bay Receiving station.

Subject to additional fact gathering and analysis as may be required, the preliminary investigation results are summarized below:

- ¿ The 10 inch pipeline was installed in 1953 to transport crude from Main Pass Platform 41 to Empire Terminal.
- ¿ In July 2009, several segments of the 10 inch pipeline were evaluated per 49CFR 195.413 and determined to have insufficient depth of cover. CPL applied for permits to lower those segments and the failure occurred during jetting operations to lower the line.
- ¿ The 10 inch pipeline had dents at five locations, apparently caused by boat and barge traffic in the area, and the failure occurred at one of these dents. The dents were not visible and UT was not capable of detecting them. CPL was not aware of the prior dents or when they occurred.
- ¿ Metallurgical analysis of the pipeline material indicated brittle and inflexible steel with nil fracture toughness. The steel was common for pipelines installed in 1953.
- ¿ The failure occurred during lowering operations by Chevron's contractor, Sunland Construction. Based on witness interviews, it appears that the contractor cut trenches of two to four feet on the day of the failure. It is not known whether the failure related to or resulted from the trench depth.

This is the Final report for the Accident. Section E 8 and 9 has been revised to indicate the release was recognized by local CPL employee onsite and the pipeline was shutdown immediately.

File Full Name:

20110207170546_Grand Bay MP12 Release.png

PART I - PREPARER AND AUTHORIZED SIGNATURE

Preparer's Name	Paul Falgout
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Authorized Signature Email	paul.falgout@chevron.com
Date	08/11/2011

Appendix D Metallurgical Evaluation Report

This document is on file at PHMSA