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	06/16/2011
Subject	Failure Investigation Report – Whitecap (Chevron), 18" Offshore Failure

Operator, Location, & Consequences

Date of Failure	3/25/2010
Commodity Released	Crude Oil
City/County & State	Gulf of Mexico
OPID & Operator Name	31563, Whitecap Pipe Line Company
Unit # & Unit Name	73780, Whitecap - Offshore
SMART Activity #	130425
Milepost / Location	Outer Continental Shelf, Ship Shoal Area, Block 157
Type of Failure	Leak/Outside force damage from contact with other pipeline
Fatalities	None
Injuries	None
Description of area impacted	Gulf of Mexico (not HCA)
Property Damage	$2,201,260

Executive Summary

On March 25, 2010, Chevron Pipe Line (CPL) was notified of a sheen on water in the vicinity of the 18-inch Whitecap Pipe Line in Ship Shoals (SS) Block 182 area. CPL contacted Apache Corporation, who had recently completed work in this area, and requested their assistance in investigating the reported leak. CPL took operational control of the Mr. Fred (a diver support vessel (DSV)) and began investigating the reported leak. No leaks were found in this area but the search for the leak source continued. After additional over flights it was learned that the origination point could be in the SS 157 area. CPL moved the DSV and initiated a new investigation. The pipeline was shut-in on March 26, 2010, in an attempt to curtail sheen on the water and to help in the identification of the leak. On Saturday, March 27, 2010, the source of discharge was identified as the 18-inch Whitecap pipeline at a crossing with the 36-inch Tennessee Gas Pipeline (TGP) pipeline. The point of failure is not classified as a High Consequence Area (HCA).

There was no fire, explosion or injuries. Approximately two hundred and fifty gallons of crude was released. The accident was not reported to the National Response Center (NRC) by CPL. A written report was submitted to PHMSA on April 18, 2010.

Diver investigation results indicated that the 18-inch Whitecap crude pipeline and TGP's 36-inch natural gas pipeline made contact. TGP's pipeline was resting on top of the Whitecap pipeline. The contact damaged the protective concrete coating on both lines. It also caused a dent on the 18-inch Whitecap pipeline.

To determine the exact cause of the failure, segments of pipe from the failed area were cut and sent to Stress Engineering for metallurgical evaluation. The metallurgical evaluation determined that the stresses attributed to the dent in conjunction with cyclic operational pressure conditions generated cracks on the pipeline that resulted in the thru-wall leak.

Pressure at the point of failure was reported by Chevron to be 400 psig. The maximum operating pressure (MOP) of the line is 1407 psig.

System Details

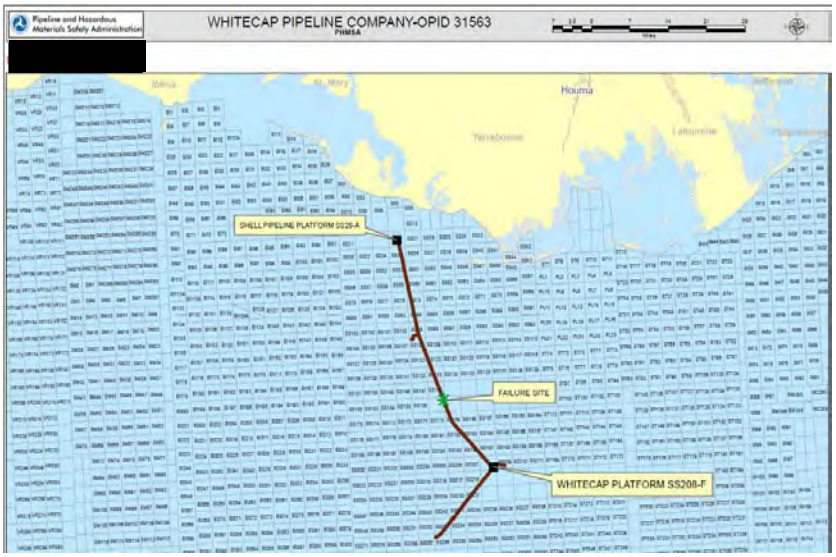

Figure 1: Whitecap Pipeline Showing accident location.

Operator's System Description: The Whitecap Crude Oil Pipe Line System is a 44-mile crude gathering system that originates at Chevron's Ship Shoal 208 "F" Platform and ends at Shell Pipe Line Company's Ship Shoal 28 "A" Platform. Chevron purchased the pipeline from Unocal. They chose to incorporate it as the Whitecap Crude Oil Pipe Line and use Chevron personnel to operate it. Crude is gathered from fields located in the Ship Shoal, South Marsh Island, and Eugene Island areas and is ultimately delivered to the Shell's St. James Terminal located in St. James Parish, Louisiana via the Whitecap and other pipelines. Additional detail schematics are in Appendix A.

Pipe Specifications: The Whitecap pipeline was constructed of 18-inch nominal outside diameter pipe with a wall thickness of 0.406 inches, grade X-52, seamless, carbon steel pipe. It was installed in 1968. 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. The maximum operating pressure of the pipeline system is 1407 psig. It was established in 1968 by hydrostatic tests.

Events leading up to the Failure

On March 25, 2010, Chevron Pipe Line (CPL) was notified of a sheen on water in the vicinity of the 18-inch Whitecap pipeline in Ship Shoals (SS) Block 182 area. CPL contacted Apache Corporation who had recently completed work in the SS 182 and requested their assistance investigating the reported leak. CPL took operational control of the Mr. Fred (a diver support vessel (DSV)) and began investigating the reported leak. No leaks were found in this area but the search for the leak source continued.

After additional over flights it was learned that the origination point could be in the SS 157 area. CPL moved the DSV to SS Block 157 and initiated a new investigation. The pipeline was shut-in on March 26, 2010 to curtail sheen on the water and to help in the identification of the leak. On Saturday, March 27, 2010, divers working for CPL identified the source of discharge as the 18-inch Whitecap pipeline at a crossing with the 36-inch Tennessee Gas Pipeline (TGP) pipeline.

Diver investigation results indicated that the 18-inch Whitecap crude pipeline and TGP's 36-inch natural gas pipeline made contact. TGP's pipeline was resting on top of the Whitecap pipeline.

Operating conditions were normal prior to the accident. Chevron reported that the pressure at the point of failure never exceeded 400 psig. The MOP of the pipeline is 1407 psig.

Emergency Response

At 0745 CDT on March 29, 2010, the CalDive vessel, CalDive 1, arrived on scene and relieved the Mr. Fred. CPL secured 18-inch clamps for repair operations. Additionally, a pollution dome was installed to capture crude that could be released while repairs were being made. Previously released crude dissipated naturally.

For safety purposes during repairs TGP began reducing the pressure on the gas line from 600 psig to approximately 50-35 psig on March 29th. This was accomplished by flaring several days at the SS 198 Platform. The CalDive 1 remained on scene and continued damage assessment when weather conditions permitted. Over-flights were also continued to monitor the sheen.

Summary of return to service

CPL prepared an "Incident Repair and Start-Up Plan" to repair the damages and return the line back to service. The key steps are listed below:

- Lowered pressure on pipeline to static head.
- Complete the Lock out/Tag out process and begin the repair process.
- Install the pollution dome over the cutout site.
- Proceed with damaged pipe segment cutout.
- Install replacement pipe.
- Install sandbags, matting, etc. at crossing.
- Return the line to service.

Investigation Details

Integrity Testing (Prior to the Accident): In line inspections had been performed on the segment where the pipeline leaked. A magnetic flux leakage (MFL) inspection was performed in 2002. In addition to the MFL inspection, a geometry inspection was performed in 2004. The test results did not reveal metal loss or damages to the pipeline where the failure occurred. Chevron also reported that there had not been any leaks on this system since it was constructed in 1968.

In 2006, Chevron also performed tests and inspections that were required by MMS' Notice to Lessees and Operators (NTL) issued in 2005 after Hurricanes Katrina and Rita. To comply with the NTL, Chevron arranged for a geophysical survey to be performed. The geophysical systems included an echo sounder to collect water depths, the magnetometer for detection of ferrous objects, such as, pipelines. The geophysical system also included side scan sonar to provide lateral seafloor coverage. The geophysical survey performed after Hurricanes Katrina and Rita indicated that the TGP pipeline at the crossing was exposed and it was noted that there were sandbags at the crossing. However, none of these inspections indicated pipe contact, damage or movement at the failure site. As a result it is difficult to determine exactly when contact between the pipelines was initiated.

The accident occurred at a pipeline crossing at a water depth of 50-feet. The distance to an upstream launcher is 15.15 miles and 29.32 miles to a downstream receiver. The crossing of the TGP and the Whitecap line was installed per drawings and specifications prepared at the time of construction in 1968. The point of failure was at the 1:00 o'clock position. A 7-inch crack in a flattened area 1-inch deep, 16-inch wide and 6-ft 11-inch long on the 18-inch CPL pipeline was found by the divers.

Metallurgical Analysis: To determine the exact cause of the accident segments of pipe were cut and sent to Stress Engineering for metallurgical evaluation. A metallurgical analysis was performed by Stress Engineering Services, Inc. to determine the cause of the accident. The analysis indicated that the cause of the release was attributable to external impact loading from a 36-inch pipeline that crossed over the 18-inch Whitecap pipeline and to cyclic operational pressure conditions. The full report is included in Appendix C.

As part of the investigation, PHMSA reviewed pipeline control and operational data. A review of the data (Event logs) indicated that the system was not over pressured at the time of failure (see Appendix D).

Findings and Contributing Factors

It was hypothesized in the Metallurgical Analysis that during a hurricane the 36-inch pipeline was lifted vertically and then gravity caused the larger pipeline to fall and impact the 18-inch pipeline. The impact caused a large dent. The stresses attributed to the dent in conjunction with cyclic operational pressure conditions generated cracks on the pipeline that resulted in the thru-wall leak.

Integrity tests had been performed on the segment where the pipeline leaked. A magnetic flux leakage (MFL) inspection was performed in 2002 and a geometry inspection was performed in 2004. There were no indications from the ILI inspections.

In 2006, Chevron performed tests and inspections required by MMS's NTL. The NTL tests were not effective in detecting the contact between the TGP pipeline and the Whitecap which eventually led to failure.

The crossing of the TGP and the Chevron line was installed per drawings and specifications prepared at the time of construction in 1968. A review of this information found that the original design was inadequate. The crossing was redesigned and in compliance with MMS requirements when the repairs were made.

Appendices

Appendix A - System Map
Appendix B - Operator's Accident Report to PHMSA
Appendix C - Metallurgical Evaluation Report
Appendix D - Support Documents

Appendix A – System Maps

This document is on file at PHMSA

Appendix B – Operator's Accident Report to PHMSA

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:**	04/18/2010
	No.	20100045 - 15592 --- (DOT Use Only)

ACCIDENT REPORT - HAZARDOUS LIQUID PIPELINE SYSTEMS

INSTRUCTIONS

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

PART A - KEY REPORT INFORMATION

Report Type: *(select all that apply)*	**Original:**	**Supplemental:**	**Final:**
		Yes	**Yes**
Report Status:	Submitted		
Create Date:	02/15/2011		
1. Operator's OPS-issued Operator Identification Number (OPID):	31563		
2. Name of Operator	WHITECAP PIPE LINE COMPANY, L.L.C.		
3. Address of Operator:			
3a. Street Address	14141 SOUTHWEST FREEWAY		
3b. City	SUGAR LAND		
3c. State	Texas		
3d. Zip Code	77478		
4. Local time *(24-hr clock)* and date of the Accident:	03/25/2010 17:36		
5. Location of Accident:			
Latitude:	28.68555		
Longitude:	-91.04555		
6. National Response Center Report Number (if applicable):	935149		
7. Local time *(24-hr clock)* and date of initial telephonic report to the National Response Center (if applicable):	03/25/2010 17:36		
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):	5.70		
10. Estimated volume of intentional and/or controlled release/blowdown (Barrels):			
11. Estimated volume of commodity recovered (Barrels):			
12. Were there fatalities?	No		
- If Yes, specify the number in each category:			
12a. Operator employees			
12b. Contractor employees working for the Operator			
12c. Non-Operator emergency responders			
12d. Workers working on the right-of-way, but NOT associated with this Operator			
12e. General public			
12f. Total fatalities (sum of above)			
13. Were there injuries requiring inpatient hospitalization?	No		
- If Yes, specify the number in each category:			
13a. Operator employees			
13b. Contractor employees working for the Operator			
13c. Non-Operator emergency responders			

13d. Workers working on the right-of-way, but NOT associated with this Operator	
13e. General public	
13f. Total injuries (sum of above)	
14. Was the pipeline/facility shut down due to the Accident?	Yes
- If No, Explain:	
- If Yes, complete Questions 14a and 14b: *(use local time, 24-hr clock)*	
14a. Local time and date of shutdown:	03/26/2010 13:20
14b. Local time pipeline/facility restarted:	05/01/2010 14:30
- Still shut down? (* Supplemental Report Required)	
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:	03/25/2010 17:36
18b. Local time Operator resources arrived on site:	03/25/2010 17:36
PART B - ADDITIONAL LOCATION INFORMATION	
1. Was the origin of Accident onshore?	No
If Yes, Complete Questions (2-12)	
If No, Complete Questions (13-15)	
- 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:	50
14. Origin of Accident:	On the Outer Continental Shelf (OCS)
- In State waters - Specify:	
- State:	
- Area:	
- Block/Tract #:	
- Nearest County/Parish:	
- On the Outer Continental Shelf (OCS) - Specify:	
- Area:	Ship Shoal
- Block #:	157
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):	18
3b. Wall thickness (in):	.406
3c. SMYS (Specified Minimum Yield Strength) of pipe (psi):	52,000
3d. Pipe specification:	API 5L X52
3e. Pipe Seam , specify:	Longitudinal ERW - Unknown Frequency
- If Other, Describe:	
3f. Pipe manufacturer:	Not available at this time
3g. Year of manufacture:	1968
3h. Pipeline coating type at point of Accident, specify:	Coal Tar
- If Other, Describe:	
- If Weld, including heat-affected zone, specify:	
- If Other, Describe:	
- If Valve, specify:	
- If Mainline, specify:	
- If Other, Describe:	
3i. Manufactured by:	
3j. Year of manufacture:	
- If Tank/Vessel, specify:	
- If Other - Describe:	
- If Other, describe:	
4. Year item involved in Accident was installed:	1968
5. Material involved in Accident:	Carbon Steel
- If Material other than Carbon Steel, specify:	
6. Type of Accident Involved:	Leak
- If Mechanical Puncture – Specify Approx. size:	
in. (axial) by	
in. (circumferential)	
- If Leak - Select Type:	Crack
- If Other, Describe:	Unknown at this time
- 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):	5.70
5c. Name of body of water, if commonly known:	Gulf of Mexico
6. At the location of this Accident, had the pipeline segment or facility been identified as one that "could affect" a High Consequence Area (HCA) as determined in the Operator's Integrity Management Program?	No
7. Did the released commodity reach or occur in one or more High Consequence Area (HCA)?	No
7a. If Yes, specify HCA type(s): *(Select all that apply)*	
- Commercially Navigable Waterway:	
Was this HCA identified in the "could affect"	

determination for this Accident site in the Operator's Integrity Management Program?	
- High Population Area:	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- Other Populated Area	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- Unusually Sensitive Area (USA) - Drinking Water	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
- Unusually Sensitive Area (USA) - Ecological	
Was this HCA identified in the "could affect" determination for this Accident site in the Operator's Integrity Management Program?	
8. Estimated cost to Operator :	
8a. Estimated cost of public and non-Operator private property damage paid/reimbursed by the Operator	$ 0
8b. Estimated cost of commodity lost	$ 1,260
8c. Estimated cost of Operator's property damage & repairs	$ 2,200,000
8d. Estimated cost of Operator's emergency response	$ 0
8e. Estimated cost of Operator's environmental remediation	$ 0
8f. Estimated other costs	$ 0
Describe:	
8g. Estimated total costs (sum of above)	$ 2,201,260

PART E - ADDITIONAL OPERATING INFORMATION

1. Estimated pressure at the point and time of the Accident (psig):	400.00
2. Maximum Operating Pressure (MOP) at the point and time of the Accident (psig):	1,407.00
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):	232,320
5d. Is the pipeline configured to accommodate internal inspection tools?	Yes
- If No, Which physical features limit tool accommodation? (*select all that apply)*	
- Changes in line pipe diameter	
- Presence of unsuitable mainline valves	
- Tight or mitered pipe bends	
- Other passage restrictions (i.e. unbarred tee's, projecting instrumentation, etc.)	
- Extra thick pipe wall (applicable only for magnetic flux leakage internal inspection tools)	
- Other -	
- If Other, Describe:	
5e. For this pipeline, are there operational factors which significantly complicate the execution of an internal inspection tool run?	No
- If Yes, Which operational factors complicate execution? (*select all that apply*)	
- Excessive debris or scale, wax, or other wall buildup	

- Low operating pressure(s)	
- Low flow or absence of flow	
- Incompatible commodity	
- Other -	
- If Other, Describe:	
5f. Function of pipeline system:	> 20% SMYS Regulated Trunkline/Transmission
6. Was a Supervisory Control and Data Acquisition (SCADA)-based system in place on the pipeline or facility involved in the Accident?	Yes
If Yes -	
6a. Was it operating at the time of the Accident?	Yes
6b. Was it fully functional at the time of the Accident?	Yes
6c. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the detection of the Accident?	No
6d. Did SCADA-based information (such as alarm(s), alert(s), event(s), and/or volume calculations) assist with the confirmation of the Accident?	No
7. Was a CPM leak detection system in place on the pipeline or facility involved in the Accident?	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?	Notification From Public
- 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:	
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 leak was too small to detect by SCADA.
- 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

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

Apparent Cause:	G4 - Other Outside Force Damage

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

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

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

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

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

2. Specify:	
- If Other, Describe:	
- If Lightning:	
3. Specify:	
- If Temperature:	
4. Specify:	
- If Other, Describe:	
- If High Winds:	
- If Other Natural Force Damage:	
5. Describe:	
Complete the following if any Natural Force Damage sub-cause is selected.	
6. Were the natural forces causing the Accident generated in conjunction with an extreme weather event?	
6a. If Yes, specify: *(select all that apply)*	
- Hurricane	
- Tropical Storm	
- Tornado	
- Other	
- If Other, Describe:	
G3 - Excavation Damage - only one **sub-cause** can be picked from shaded left-hand column	
Excavation Damage – Sub-Cause:	
- If Excavation Damage by Operator (First Party):	
- If Excavation Damage by Operator's Contractor (Second Party):	
- If Excavation Damage by Third Party:	
- If Previous Damage due to Excavation Activity:	
Complete Questions 1-5 ONLY IF the "Item Involved in Accident" (from PART C, Question 3) is Pipe or Weld.	
1. Has one or more internal inspection tool collected data at the point of the Accident?	
1a. If Yes, for each tool used, select type of internal inspection tool and indicate most recent year run: -	
- Magnetic Flux Leakage	
Most recent year conducted:	
- Ultrasonic	
Most recent year conducted:	
- Geometry	
Most recent year conducted:	
- Caliper	
Most recent year conducted:	
- Crack	
Most recent year conducted:	
- Hard Spot	
Most recent year conducted:	
- Combination Tool	
Most recent year conducted:	
- Transverse Field/Triaxial	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
2. Do you have reason to believe that the internal inspection was completed BEFORE the damage was sustained?	
3. Has one or more hydrotest or other pressure test been conducted since original construction at the point of the Accident?	
- If Yes:	
Most recent year tested:	
Test pressure (psig):	
4. Has one or more Direct Assessment been conducted on the pipeline segment?	
- If Yes, and an investigative dig was conducted at the point of the Accident:	
Most recent year conducted:	
- If Yes, but the point of the Accident was not identified as a dig site:	
Most recent year conducted:	
5. Has one or more non-destructive examination been conducted at the point of the Accident since January 1, 2002?	

5a. If Yes, for each examination, conducted since January 1, 2002, select type of non-destructive examination and indicate most recent year the examination was conducted:	
- Radiography	
Most recent year conducted:	
- Guided Wave Ultrasonic	
Most recent year conducted:	
- Handheld Ultrasonic Tool	
Most recent year conducted:	
- Wet Magnetic Particle Test	
Most recent year conducted:	
- Dry Magnetic Particle Test	
Most recent year conducted:	
- Other	
Most recent year conducted:	
Describe:	
Complete the following if Excavation Damage by Third Party is selected as the sub-cause.	
6. Did the operator get prior notification of the excavation activity?	
6a. If Yes, Notification received from: *(select all that apply)* -	
- One-Call System	
- Excavator	
- Contractor	
- Landowner	
Complete the following mandatory CGA-DIRT Program questions if any Excavation Damage sub-cause is selected.	
7. Do you want PHMSA to upload the following information to CGA-DIRT (www.cga-dirt.com)?	
8. Right-of-Way where event occurred: *(select all that apply)* -	
- Public	
- If "Public", Specify:	
- Private	
- If "Private", Specify:	
- Pipeline Property/Easement	
- Power/Transmission Line	
- Railroad	
- Dedicated Public Utility Easement	
- Federal Land	
- Data not collected	
- Unknown/Other	
9. Type of excavator:	
10. Type of excavation equipment:	
11. Type of work performed:	
12. Was the One-Call Center notified?	
12a. If Yes, specify ticket number:	
12b. If this is a State where more than a single One-Call Center exists, list the name of the One-Call Center notified:	
13. Type of Locator:	
14. Were facility locate marks visible in the area of excavation?	
15. Were facilities marked correctly?	
16. Did the damage cause an interruption in service?	
16a. If Yes, specify duration of the interruption (hours)	
17. Description of the CGA-DIRT Root Cause *(select only the one predominant first level CGA-DIRT Root Cause and then, where available as a choice, the one predominant second level CGA-DIRT Root Cause as well):*	
Root Cause:	
- If One-Call Notification Practices Not Sufficient, specify:	
- If Locating Practices Not Sufficient, specify:	
- If Excavation Practices Not Sufficient, specify:	
- If Other/None of the Above, explain:	
G4 - Other Outside Force Damage - *only one **sub-cause** can be selected from the shaded left-hand column*	
Other Outside Force Damage – Sub-Cause:	Other Outside Force Damage
- 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:	The pipeline failure occurred at the point where a 36-inch diameter foreign pipeline crosses over the subject failed WPL 18-inch pipeline. It is speculated that during a

	preceeding hurricane, the 36-inch foreign pipeline was lifted vertically due to the on-botton currents; once lifted, gravity caused the 36-inch foreign pipeline to fall on the 18-inch WPL pipeline with enough force to cause the specific damage observed that resulted in the leak.

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: *(select all that apply)*	
- 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: *(select all that apply)*	
- 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: *(select all that apply)*	
- Fatigue or Vibration-related:	
Specify:	
- If Other, Describe:	
- Mechanical Stress:	
- Other	
- If Other, Describe:	
- If Environmental Cracking-related:	
3. Specify:	
- Other - Describe:	
Complete the following if any Material Failure of Pipe or Weld sub-cause is selected.	
4. Additional factors: (*select all that apply*):	
- Dent	
- Gouge	
- Pipe Bend	
- Arc Burn	
- Crack	
- Lack of Fusion	
- Lamination	
- Buckle	
- 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	
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: *(select all that apply)* -	
- Control Valve	
- Instrumentation	
- SCADA	
- Communications	
- Block Valve	
- Check Valve	
- Relief Valve	
- Power Failure	
- Stopple/Control Fitting	
- ESD System Failure	
- Other	
- If Other – Describe:	
- If Pump or Pump-related Equipment:	
2. Specify:	
- If Other – Describe:	
- If Threaded Connection/Coupling Failure:	
3. Specify:	
- If Other – Describe:	
- If Non-threaded Connection Failure:	
4. Specify:	
- If Other – Describe:	
- If Defective or Loose Tubing or Fitting:	
- If Failure of Equipment Body (except Pump), Tank Plate, or other Material:	
- If Other Equipment Failure:	
5. Describe:	
Complete the following if any Equipment Failure sub-cause is selected.	

6. Additional factors that contributed to the equipment failure: *(select all that apply)*	
- Excessive vibration	
- Overpressurization	
- No support or loss of support	
- Manufacturing defect	
- Loss of electricity	
- Improper installation	
- Mismatched items (different manufacturer for tubing and tubing fittings)	
- Dissimilar metals	
- Breakdown of soft goods due to compatibility issues with transported commodity	
- Valve vault or valve can contributed to the release	
- Alarm/status failure	
- Misalignment	
- Thermal stress	
- Other	
- If Other, Describe:	
G7 - Incorrect Operation - only one **sub-cause** can be selected from the shaded left-hand column	
Incorrect Operation – Sub-Cause:	
- If Damage by Operator or Operator's Contractor NOT Related to Excavation and NOT due to Motorized Vehicle/Equipment Damage:	
- If Tank, Vessel, or Sump/Separator Allowed or Caused to Overfill or Overflow:	
1. Specify:	
- If Other, Describe:	
- If Valve Left or Placed in Wrong Position, but NOT Resulting in a Tank, Vessel, or Sump/Separator Overflow or Facility Overpressure:	
- If Pipeline or Equipment Overpressured:	
- If Equipment Not Installed Properly:	
- If Wrong Equipment Specified or Installed:	
- If Other Incorrect Operation:	
2. Describe:	
Complete the following if any Incorrect Operation sub-cause is selected.	
3. Was this Accident related to *(select all that apply)*: -	
- Inadequate procedure	
- No procedure established	
- Failure to follow procedure	
- Other:	
- If Other, Describe:	
4. What category type was the activity that caused the Accident?	
5. Was the task(s) that led to the Accident identified as a covered task in your Operator Qualification Program?	
5a. If Yes, were the individuals performing the task(s) qualified for the task(s)?	
G8 - Other Accident Cause - only one **sub-cause** can be selected from the shaded left-hand column	
Other Accident Cause – Sub-Cause:	
- If Miscellaneous:	
1. Describe:	
- If Unknown:	
2. Specify:	

PART H - NARRATIVE DESCRIPTION OF THE ACCIDENT

The pipeline failure occurred at the point where a 36-inch diameter foreign pipeline crosses over the subject failed WPL 18-inch pipeline. It is speculated that during a preceding hurricane, the 36-inch pipeline was lifted vertically due to on-bottom currents; once lifted, gravity caused the 36-inch pipeline to fall on the 18-inch pipeline with enough force to cause the specific damage observed. The external impact loading from the 36-inch pipeline was the primary cause of the failure as it generated a severe dent, causing elevated stresses.
These stresses, in conjunction with the cyclic internal operating pressure conditions of the 18-inch pipeline, generated cracks that resulted in the thru-wall

leak.

File Full Name

PART I - PREPARER AND AUTHORIZED SIGNATURE

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Date	02/15/2011

Appendix C – Metallurgical Evaluation Report

This document is on file at PHMSA

Appendix D – Support Documents

SCADA

Please provide the following information.

- Timeline of events.

  At 1736 CDT on 25 MAR 10 an unknown party reported a mystery sheen to NRC, #935149, in the Gulf of Mexico near OCS block SS 154. At 1913 CDT CNAEP Emergency Management Advisor contacted the CPL Hotline to inquire of any recent incidents reported. At that time, CPL began investigating any CPL operated pipelines in the area. Sometime on 25 MAR MMS contacted CPL Sr. Land Representative regarding the NRC report.

  At 0730 CDT on 26 MAR 10 CPL Control Center was contacted and initiated an investigation with a review of the scada data with no obvious indication of a release. An overflight of the 18" Whitecap Crude Line was immediately dispatched and discovered a sheen in the vicinity of SS 157. At 1100 CDT another overflight was conducted and found the sheen remaining in the area. At 1200 CDT CPL initiated shutdown procedures for the Whitecap pipeline, completed @ 1320 CDT.

  On 26 MAR 10 the CalDive vessel Mr. Fred was contracted by CPL and arrived on scene of a Sub Sea Tie In for the Whitecap line and a 3rd Party Producer. This section had recently undergone repairs by the 3rd Party. Divers inspected the area and reported no indications of a release. The dive vessel proceeded to inspect other portions of the line throughout 27 and 28 MAR. Surface dives continued through 27 and 28 MAR 10 with shortened dives due to weather related issues.

  Several overflights were conducted by CPL and USCG to monitor the sheen. The Whitecap line was brought to minimum pressure on 27 MAR 10 and has remained shut in.

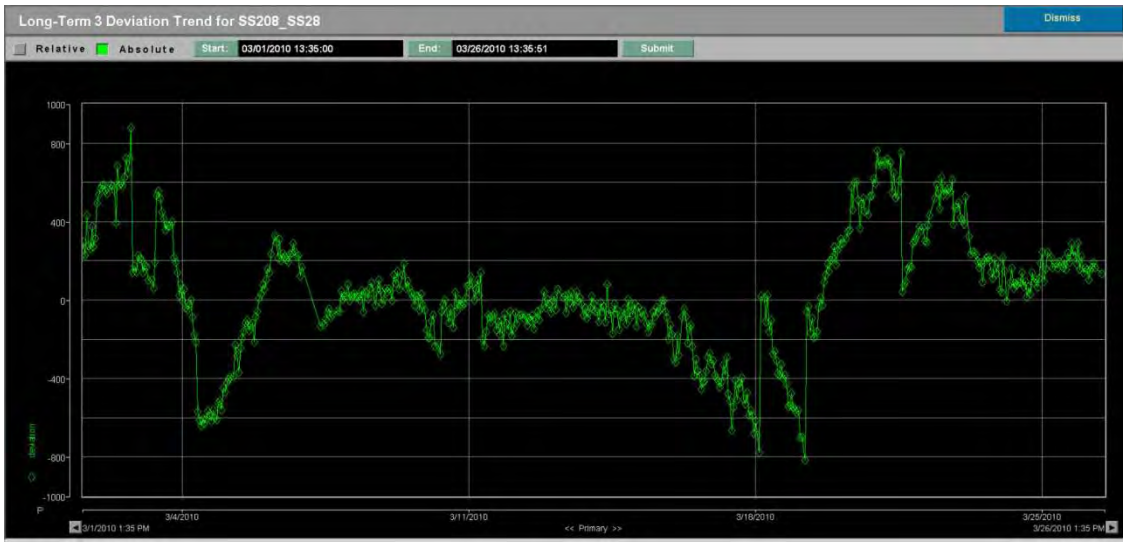
  At 1800 CDT on 28 MAR 10 divers indentified oil droplets in the area of the Whitecap pipeline and a foreign line crossing, however a hole was not visible in the Whitecap pipeline. It was determined that the foreign line was owned by Tennessee Gas (TGP) and was a 36" Natural Gas pipeline. Divers reported that all external coatings on the 18" White Cap and 36" TGP were non-existent, allowing the 2 lines to touch. The TGP line was lying perpendicular to the Whitecap line, on top and in direct contact. CPL began working with TGP to reduce the pressure on the gas line to create a safe working environment.

  At 0745 CDT on 29 MAR 10 the CalDive vessel CalDive 1 arrived on scene and relieved the Mr. Fred. CPL secured (2) 18" clamps for repair operations and sourced another from a 3rd Party.

  TGP began reducing the pressure on the gas line from 600 to 50-35 psi on 29 MAR 10 via flaring at SS 198 Platform and is expected to take several days. The CalDive 1 will remain on scene and continue damage assessment when weather conditions improve. Overflights will continue to monitor the sheen. The total volume released has been

estimated @ 250 gallons using reverse dispersion analysis based on overflight data from first light on 27 MAR 10.

- Historical Trend Screen.



- Alarm Screen.