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

Principal Investigator	Judy Johnson
Senior Accident Investigator	Bryan Louque
Region Director	David Barrett
Date of Report	09/01/2011
Subject	Failure Investigation Report – Jayhawk Taloga to Liberal Internal Corrosion

Operator, Location, & Consequences

Date of Failure	04/12/2005
Commodity Released	Crude Oil
City/County & State	Hugoton/Stevens, Kansas
OpID & Operator Name	9175 - Jayhawk Pipeline, LLC
Unit # & Unit Name	3613 – Liberal
SMART Activity #	115713
Milepost / Location	36.7
Type of Failure	Leak From Internal Corrosion
Fatalities	0
Injuries	0
Description of area impacted	Non HCA Rural Area, Farm Field
Property Damage	$16,500

Executive Summary

On April 12, 2005 a farmer was preparing for planting activities and discovered that crude oil had leaked from the Jayhawk Pipeline. The release was located in southwestern Kansas (Stevens County), approximately 6 miles south of Hugoton. The leak was confirmed to be on the Taloga to Liberal interstate pipeline system (Mile post 36.7). No fatalities or injuries occurred as a result of the release and it did not occur in a High Consequence Area (HCA). Evacuations and road closures were not required. The product did not ignite or explode. An estimated 70 barrels of crude oil was released from the underground pipeline on the right of way. Approximately 10 cubic yards of soil were contaminated and remediated but no surface water was affected. The total cost of the accident was estimated as $16,500 including the product lost and repair costs.

After the pipeline was shutdown and the upstream mainline valve closed, Jayhawk personnel excavated the pipeline (72 inches deep) and determined by visual inspection that a small hole was located on the bottom of the pipe (6 o'clock position). The external coating on the pipeline was intact. Another pipeline (4 inch in diameter and part of the Anadarko gas pipeline system) was located approximately 21 inches above the Jayhawk line near the area of the leak. At the time of the release, a PHMSA Central Region inspector was performing inspection activities on other Jayhawk Pipeline facilities. This PHMSA inspector was made aware of the release during the inspection and responded to the accident location.

Upon cutout of the damaged pipe section, deposits and pitting were observed on the internal pipe surface. Metallurgical analysis of the damaged pipe indicated that "the pipe leaked due to internal corrosion". The deposits found internal to the pipeline segment were analyzed. Sand and saltwater had collected in a low point in the pipeline resulting in corrosive conditions on the internal pipe surface that led to the development of a pin hole allowing crude oil to be released.

System Details

The Jayhawk Pipeline system in 2005 contained approximately 700 miles of crude oil pipeline. The system transported crude across Kansas and parts of Nebraska, Oklahoma, and Texas. Jayhawk's Taloga to Liberal pipeline system runs approximately 80 miles, originating in Morton County, KS and terminating in Meade County, KS. In 2005, Jayhawk moved crude oil from wellhead gathering systems to refineries or tankage.

At the accident location, the pipeline was constructed of API 5L Grade B line pipe manufactured in 1958 by Acme Newport. The pipeline was 6.625 inch in diameter with a 0.188 inch wall thickness. The pipe has a seam type of ERW LF (electric resistance welded low frequency) and was coated with AGF-7 (Asphalt-Glass-Felt). The pipeline system was cathodically protected by an impressed current system.

There were no service interruptions or supply impacts as a result of the accident.

A review of Jayhawk's leak history records for the 2000-2005 time periods indicated several failures due to internal corrosion. These failures were not limited to line pipe. Several of the identified internal corrosion failures involved station piping.

Events Leading up to the Failure

The Taloga to Liberal maximum operating pressure (MOP) was 1160 psig as established by hydrostatic test in 2001. The operator initially reported that the operating pressure at the location and time of the failure was 572 psig. The pressure at the time of the failure was later updated and reported to have been approximately 508 psig.

Previous maintenance projects relevant to the failure involved ineffective maintenance activities associated with pipeline cleaning. In 1996 a Hazardous Facility Order (CPF No. 36505H) was issued regarding the Jayhawk Pipeline system in response to two failures resulting from internal corrosion occurring between Meade and Chase stations.

Jayhawk Pipeline did inject corrosion inhibitor (JaCam 1902C) in this affected pipeline segment prior to this 2005 failure and it was understood that internal corrosion coupons were also in place.

Emergency Response

The Jayhawk Pipeline control center was notified by the farmer who obtained the phone number from a pipeline marker located in the vicinity of the release. Telephonic notification to the National Response Center was made on April 13, 2005. However, a PHMSA Central Region inspector was already working with the operator at the time of the control center notification. Jayhawk Pipeline personnel were dispatched to the accident site and the pipeline was shut down with manual valve closures. Approximately 10 cubic yards of contaminated soil were remediated. There were no wildlife or water impacts. Long term environmental impact assessment was not required.

Summary of Return-to-Service

After the field investigation was complete, the damaged pipeline segment was cut out and replaced with pre-tested pipe. Jayhawk Pipeline completed the repair and returned the pipeline to service at a reduced operating pressure approximately 2.5 days after the release. A Corrective Action Order (CAO), CPF 3-2005-5020H, was issued by Central Region on April 26, 2005. This CAO required an MOP pressure reduction from Taloga (MP 12.8) to Liberal (MP 58.8) of 470 psig, quarterly reports providing CAO status updates, metallurgical analysis of the failed pipe, and the submission of a written plan including corrective measures that required an integration of data regarding all integrity threat conditions including a review of previous failure and leak history, ILI testing from Interstate to Meade stations, an evaluation for internal corrosion of all pump stations and breakout tanks in the entire Jayhawk Pipeline system (this included the identification of areas of possible internal corrosion such as dead legs, low spots, areas not subjected to cleaning pig intervals within facilities). The CAO required proposed solutions to internal corrosion with completion schedules for the identified solutions as a result of facility evaluations, repairs, and testing.

Since this 2005 failure the frequency of cleaning pigs was increased to weekly runs. Water samples are reported by the operator to be pulled during cleaning pig runs and based on the results, biocide trains are run as necessary. When culture counts increase, the operator reports that trains of biocide and

corrosion inhibitor are run with contact time such that microbiological growth can be more effectively controlled. The style, design, wear and manufacturer of the cleaning pigs used are reviewed by the operator to identify possible improvements. Corrosion coupons continue to be monitored. Internal pipeline coating and breakout tank treatments with biocide balls that dissolve or melt on contact with water are ongoing activities.

Investigation Details

Metallurgical analysis was performed on a 39-inch long segment of the damaged pipe which included the pin hole (approximately 1/8" in diameter) and internal pitted area. Two pits were confirmed through the metallurgical analysis but only one was thru wall. The deposits also found internal to the pipeline segment were sampled and analyzed for composition information. The metallurgical report included information about the deposit samples and stated that "quartz, feldspar, and calcite were from sand that apparently collected in a low spot in the line. A small amount of saltwater also collected at that location and the combination created corrosive conditions that led to the development of the pit responsible for the leak". Further information provided by the metallurgical report revealed that "the composition of the deposit indicated that acid gasses such as carbon dioxide and hydrogen sulfide had not contributed significantly to the corrosion."

On June 2, 2005, Jayhawk Pipeline completed an in-line inspection (ILI) assessment of the pipeline from Interstate Station to Meade Station as required by the CAO. Jayhawk prepared and implemented a plan to repair the pipeline based on the ILI results. Forty-one sections of pipe were replaced and fifty-six repair sleeves were installed. Following completion of repairs, the Taloga to Liberal pipeline segment was hydrostatically tested in December 2005. On December 20, 2005, the Taloga to Liberal pipeline segment was restarted with the Taloga Station maximum discharge pressure limited to 976 psig.

Findings and Contributing Factors

Jayhawk Pipeline had several failures due to internal corrosion prior to the accident of April 12, 2005. Prior knowledge of internal corrosion threats did exist for the operator. The Jayhawk Pipeline Taloga to Liberal accident of April 12, 2005 was caused by internal corrosion. Prior to the accident cleaning pigs were not run on a frequent enough basis to prevent accumulation of sand and saltwater at a low point in the pipeline. Sand and saltwater in the low point created corrosive conditions that facilitated the development of corrosion pits on the internal steel pipe surface. One of two corrosion pits identified in the failed segment sent for metallurgical analysis grew until it reached critical depth in the pipe wall and resulted in a pin hole in the pipe that allowed crude oil to be released.

Appendices

A Map and Photographs

B NRC Report #755621

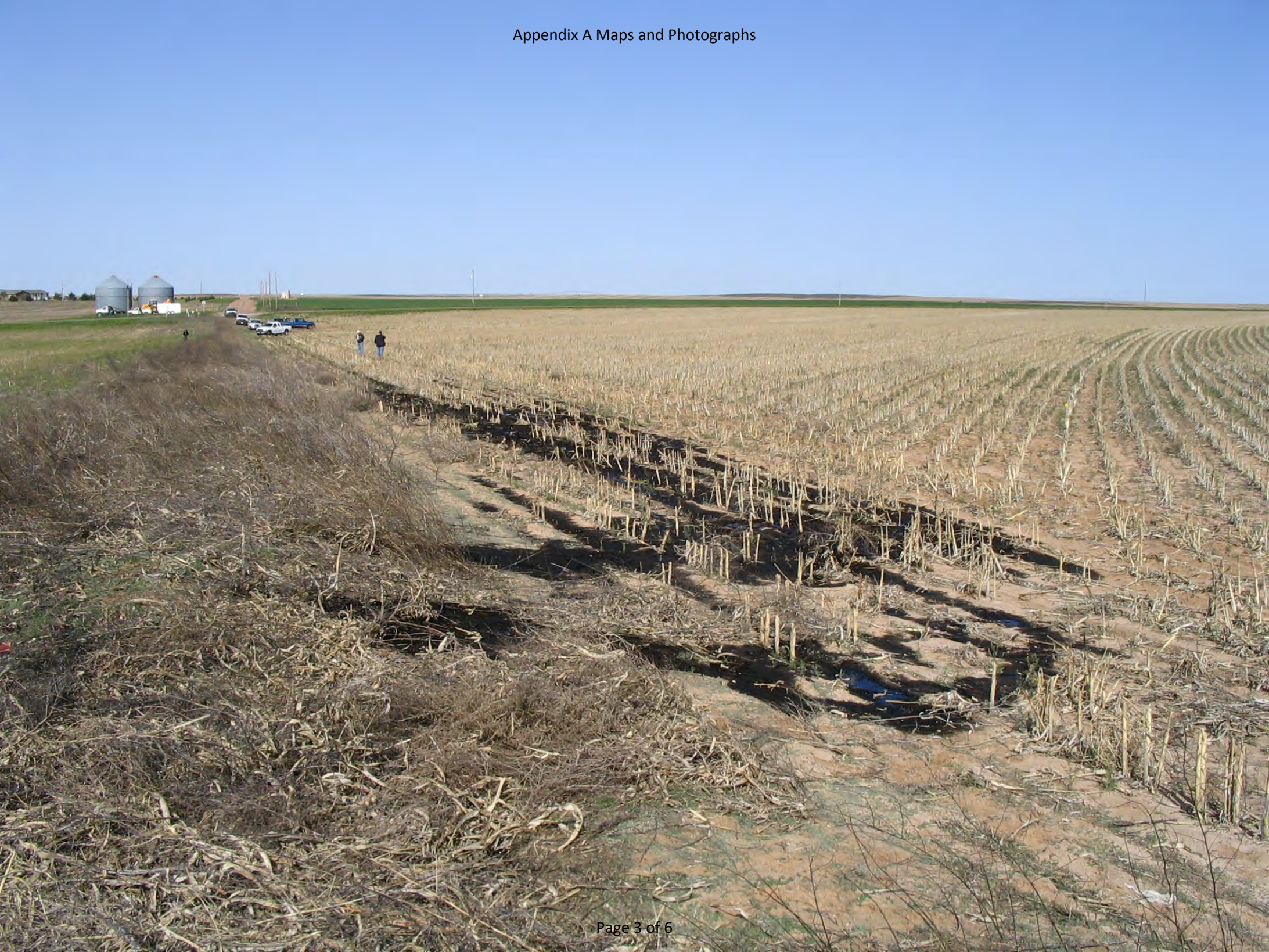
C Operator Accident Report

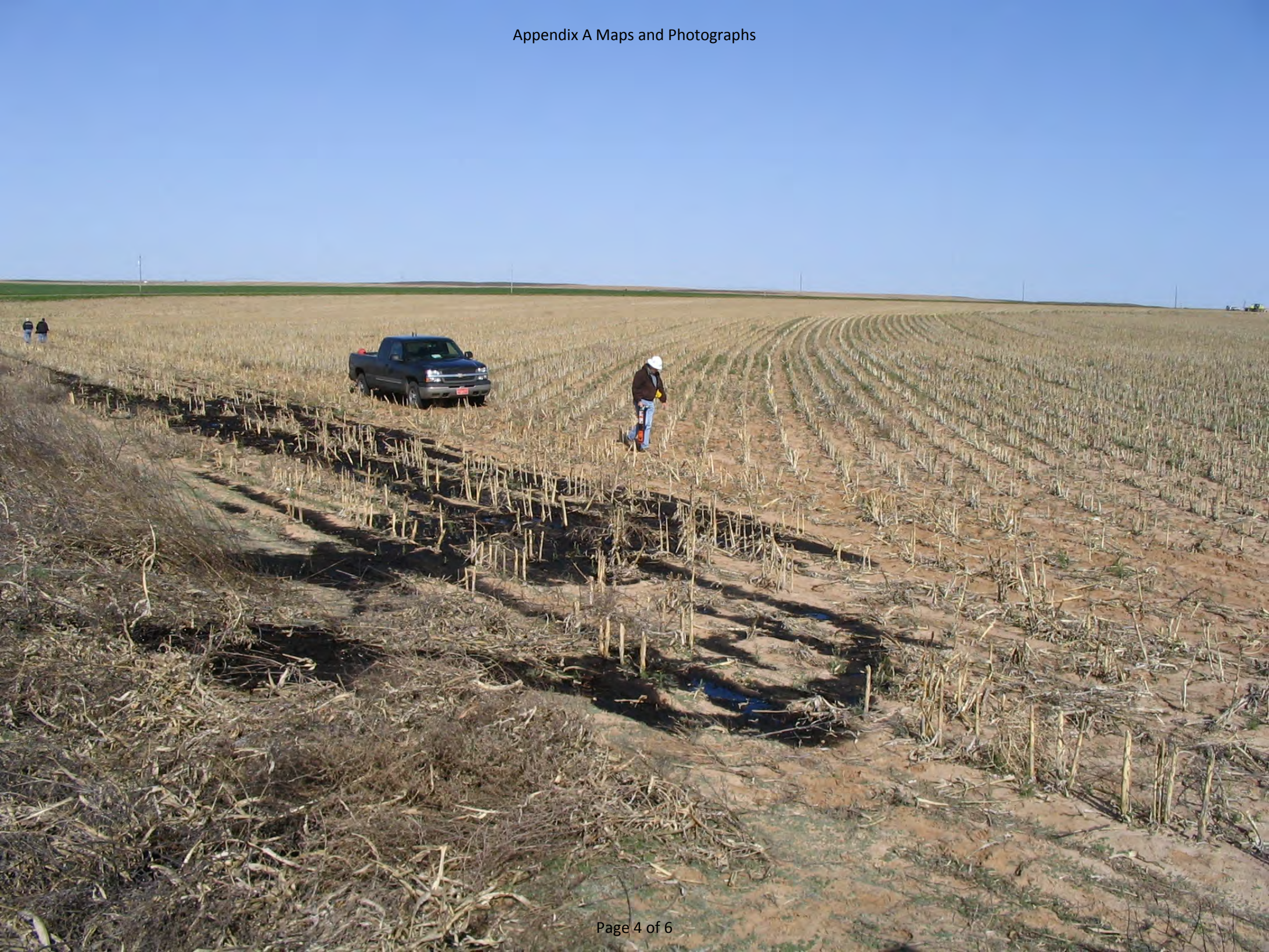
D Metallurgical Report

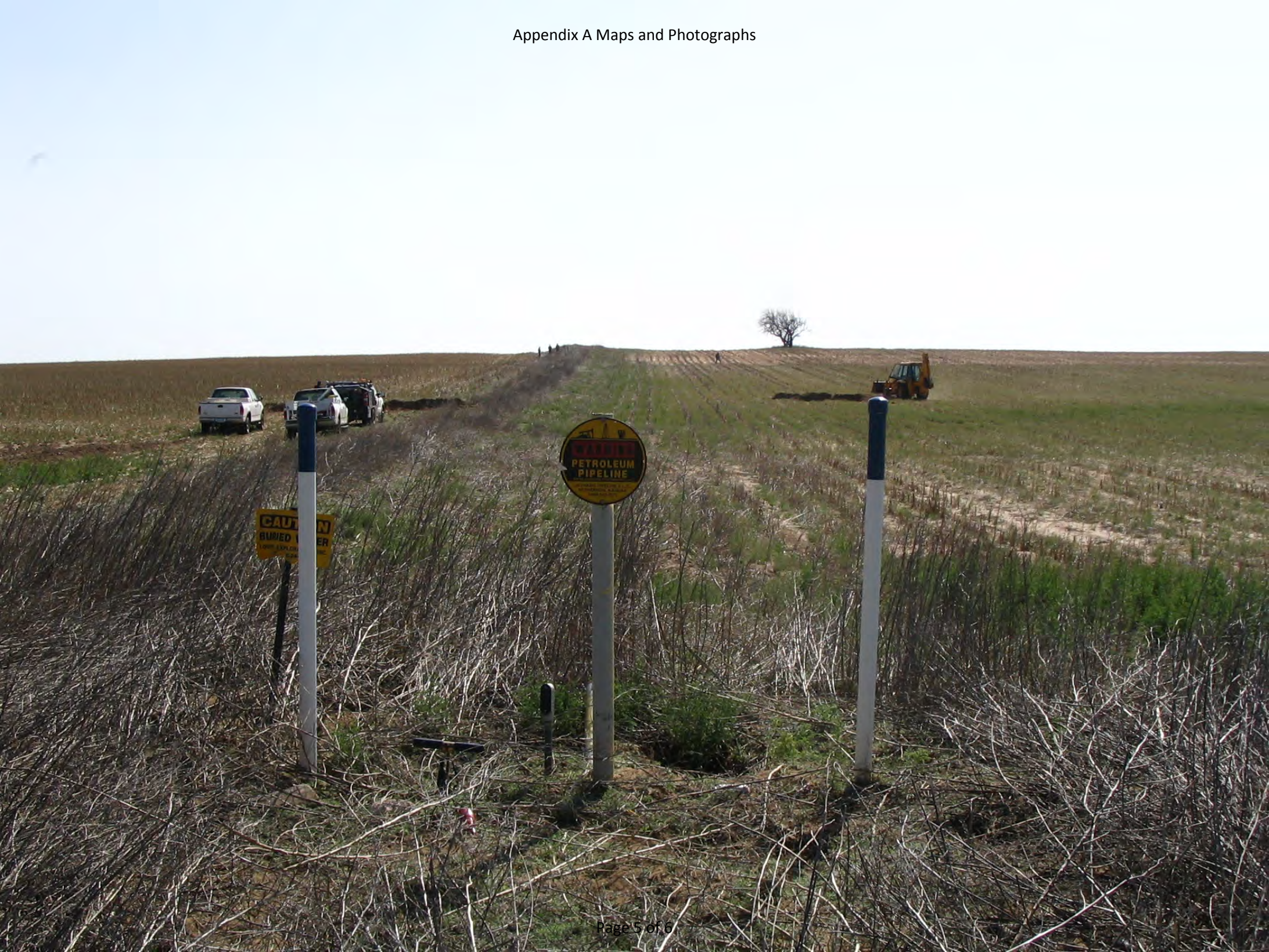
Appendix A Maps and Photographs

Map showing failure location

This document is on file at PHMSA






PETROLEUM
PIPELINE

Appendix B NRC Report #755621

Pipeline & Hazardous Materials Safety Administration

HMIS->INCIDENTS->TELEPHONICS

(Version 3.4.05 PROD) Rules of Behavior Home Logout Menu

[Return to Search]

<< Previous 1..1 of 1 << Save >>

Rescinded **Comments** (max 250 characters)

NRC Number: **755621**
Call Date: **04/13/2005** **Call Time:** **09:54:00**

Caller Information

First Name:	RICHARD	Last Name:	PETERSEN
Company Name:	JAY HAWK PIPELINE		
Address:	2000 SOUTH MAIN		
City:	MCPHERSON	State:	KS
Country:	USA	Zip:	67460
Phone 1:	6202419271	Phone 2:	
Organization Type:	PE	Is caller the spiller?	Yes No No Response
Confidential:	Yes No No Response		

Discharger Information

First Name:	RICHARD	Last Name:	PETERSEN
Company Name:	JAY HAWK PIPELINE		
Address:	2000 SOUTH MAIN		
City:	MCPHERSON	State:	KS
Country:	USA	Zip:	67460
Phone 1:	6202419271	Phone 2:	
Organization Type:	PE		

Spill Information

State:	KS	County:	STEVENS
Nearest City:	HOUGTON	Zip Code:	

Location

Spill Date:	04/13/2005 (mm/dd/yyyy)	Spill Time:	08:00:00 (24hh:mm:ss)
DTG Type:	Occured		
Incident Type	PIPELINE	Reported Incident Type	Pipeline

Description

Appendix B NRC Report #755621

CALLER STATED THAT LAND OWNER REPORTED CRUDE OIL ON THE GROUND THAT MAYBE COMING FROM A PIPELINE DUE TO UNKNOWN CAUSES.

Materials Involved

Material / Chris Name	Chris Code	Total Qty.	Water Qty.
OIL: CRUDE OIL: CRUDE	OIL	70 BBL	

Medium Type: Land

Additional Medium Information:

GROUND

Injuries: 0 Fatalites: 0

Evacuations: Yes No Unknown No. of Evacuations: 0

Damages: Yes No Unknown Damage Amount: 0

Federal Agency Notified: Yes No Unknown State Agency Notified: Yes No Unknown

Other Agency Notified: Yes No Unknown

Remedial Actions

IN THE PROCESS OF MOBILIZING RESPONSE TEAM,INVESTIGATION UNDERWAY

Additional Info

KDHE WILL BE NOTIFIED

Latitude

Degrees: Minutes: Seconds: Quadrant:

Longitude

Degrees: Minutes: Seconds: Quadrant:

Distance from City: Direction:

Section: 1634S37W Township:

Range: Milepost:

Form Approved
OMB No. 2137-0047

Print

U.S. Department of Transportation
Research and Special Programs Administration

ACCIDENT REPORT – HAZARDOUS LIQUID PIPELINE SYSTEMS

Report Date may 17,2005

No. 20050144 -- 13446
(DOT Use Only)

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 Office Of Pipeline Safety Web Page at http://ops.dot.gov.*

PART A – GENERAL REPORT INFORMATION

Check one or more boxes as appropriate:
☐ Original Report ☒ Supplemental Report ☒ Final Report

1. a. Operator's OPS 5-digit Identification Number (if known) / 9175 /
2. b. If Operator does not own the pipeline, enter Owner's OPS 5-digit Identification Number (if known) /_____/
   c. Name of Operator JAYHAWK PIPELINE LLC
   d. Operator street address 2000 SOUTH MAIN
   e. Operator address MCPHERSON MCPHERSON KS 67460
   City, County, State and Zip Code

IMPORTANT: IF THE SPILL IS SMALL, THAT IS, THE AMOUNT IS AT LEAST 5 GALLONS BUT IS LESS THAN 5 BARRELS, COMPLETE THIS PAGE ONLY, UNLESS THE SPILL IS TO WATER AS DESCRIBED IN 49 CFR §195.52(A)(4) OR IS OTHERWISE REPORTABLE UNDER §195.50 AS REVISED IN CY 2001.

2. Time and date of the accident

/ 820 /	/ 04 /	/ 12 /	/ 2005 /
hr.	month	day	year

3. Location of accident
(If offshore, do not complete a through d. See Part C.1)

a. Latitude: 37.0829 Longitude: -101.35139
(if not available, see instructions for how to provide specific location)

b. HUGOTON STEVENS
City, and County or Parish

c. KS 67901
State and Zip Code

d. Mile post/valve station ● or survey station no. ○
(whichever gives more accurate location)

36.7

4. Telephone report

/ 755621 /	/ 04 /	/ 13 /	/ 2005 /
NRC Report Number	month	day	year

5. Losses *(Estimated)*

Public/Community Losses reimbursed by operator:

Public/private property damage	$ 5000
Cost of emergency response phase	$ 0
Cost of environmental remediation	$ 2500
Other Costs	$ 0
(describe)	

Operator Losses:

Value of product lost	$ 3000
Value of operator property damage	$ 0
Other Costs	$ 6000
(describe) REPAIR	
Total Costs	$ 16500

6. Commodity Spilled ● Yes ○ No
(If Yes, complete Parts a through c where applicable)

a. Name of commodity spilled CRUDE OIL

b. Classification of commodity spilled:
○ HVLs /other flammable or toxic fluid which is a gas at ambient conditions
○ CO_2 or other non-flammable, non-toxic fluid which is a gas at ambient conditions
○ Gasoline, diesel, fuel oil or other petroleum product which is a liquid at ambient conditions
● Crude oil

c. Estimated amount of commodity involved :
● **Barrels**
○ **Gallons (check only if spill is less than one barrel)**

Amounts:
Spilled : 70
Recovered: 0

CAUSES FOR SMALL SPILLS ONLY (5 gallons to under 5 barrels) : ***(For large spills [5 barrels or greater] see Part H)***

○ **Corrosion** ○ **Natural Forces** ○ **Excavation Damage** ○ **Other Outside Force Damage**
○ **Material and/or Weld Failures** ○ **Equipment** ○ **Incorrect Operation** ○ **Other**

PART B – PREPARER AND AUTHORIZED SIGNATURE

RICHARD S PETERSEN, MANAGER OF OPERATIONS
(type or print) Preparer's Name and Title

(620) 241-9271
Area Code and Telephone Number

RPETERSON@JAYHAWKPL.COM
Preparer's E-mail Address

(620) 241-9215
Area Code and Facsimile Number

Authorized Signature | (type or print) Name and Title | Date | Area Code and Telephone Number

PART C – ORIGIN OF THE ACCIDENT (Check all that apply)

1. Additional location information
   a. Line segment name or ID TALOGA TO LIBERAL
   b. Accident on Federal land other than Outer Continental Shelf ◡ Yes ● No
   c. Is pipeline interstate? ● Yes ◡ No

Offshore: ◡ Yes ● No *(complete d if offshore)*
d. Area _____ Block # _____
State /_____/ or Outer Continental Shelf ☐

2. Location of system involved (*check all that apply*)
   ☐ Operator's Property
   ☒ Pipeline Right of Way
   ☐ High Consequence Area (HCA)?
   Describe HCA _____

3. Part of system involved in accident
   ◡ Above Ground Storage Tank
   ◡ Cavern or other below ground storage facility
   ◡ Pump/meter station; terminal/tank farm piping and equipment, including sumps
   ◡ Other *Specify:* _____
   ● Onshore **pipeline**, including valve sites
   ◡ Offshore **pipeline**, including platforms

*If failure occurred on **Pipeline**, complete items a - g:*

4. Failure occurred on
   ● Body of Pipe ◡ Pipe Seam ◡ Scraper Trap
   ◡ Pump ◡ Sump ◡ Joint
   ◡ Component ◡ Valve ◡ Metering Facility
   ◡ Repair Sleeve ◡ Welded Fitting ◡ Bolted Fitting
   ◡ Girth Weld
   ◡ Other *(specify)* _____

Year the component that failed was installed: /1958/

5. Maximum operating pressure *(MOP)*
   a. Estimated pressure at point and time of accident: 508 *PSIG*
   b. MOP at time of accident: 1160 *PSIG*
   c. Did an overpressurization occur relating to the accident? ◡ Yes ● No

a. Type of leak or rupture
   ● Leak: ● Pinhole ◡ Connection Failure *(complete sec. H5)*
   ◡ Puncture, diameter *(inches)* _____
   ◡ Rupture: ◡ Circumferential – Separation
   ◡ Longitudinal – Tear/Crack, length *(inches)* _____
   Propagation Length, total, both sides *(feet)* _____
   ◡ N/A
   ◡ Other _____

b. Type of block valve used for isolation of immediate section:
Upstream: ☒ Manual ☐ Automatic ☐ Remote Control ☐ Check Valve
Downstream: ☒ Manual ☐ Automatic ☐ Remote Control ☐ Check Valve

c. Length of segment isolated 101376 ft
d. Distance between valves 101376 ft
e. Is segment configured for internal inspection tools? ● Yes ◡ No
f. Had there been an in-line inspection device run at the point of failure? ◡ Yes ● No ◡ Don't Know
   ◡ Not Possible due to physical constraints in the system
g. If *Yes*, type of device run (*check all that apply*)
   ☐ High Resolution Magnetic Flux tool Year run: _____
   ☐ Low Resolution Magnetic Flux tool Year run: _____
   ☐ UT tool Year run: _____
   ☐ Geometry tool Year run: _____
   ☐ Caliper tool Year run: _____
   ☐ Crack tool Year run: _____
   ☐ Hard Spot tool Year run: _____
   ☐ Other tool Year run: _____

PART D – MATERIAL SPECIFICATION

1. Nominal pipe size *(NPS)* /6.63/ in.
2. Wall thickness /.19/ in.
3. Specification API 5L GR I SMYS /35000/
4. Seam type ERW LF
5. Valve type _____
6. Manufactured by ACME NEWPORT in year /1958/

PART E – ENVIRONMENT

1. Area of accident
   ◡ In open ditch
   ◡ Under pavement
   ◡ Above ground
   ● Underground
   ◡ Under water
   ◡ Inside/under building
   ◡ Other _____

2. Depth of cover: 72 inches

PART F – CONSEQUENCES

1. Consequences *(check and complete all that apply)*

a.	Fatalities	Injuries
Number of operator employees:	0	0
Contractor employees working for operator:	0	0
General public:	0	0
Totals:	0	0

b. Was pipeline/segment shutdown due to leak? ● Yes ◡ No
If Yes, how long? 2 days 12 hours 0 minutes

c. Product ignited ◡ Yes ● No d. Explosion ◡ Yes ● No
e. ☐ Evacuation *(general public only)* /_____/ people
Reason for Evacuation:
◡ Precautionary by company
◡ Evacuation required or initiated by public official

f. Elapsed time until area was made safe:
/_____/ hr. /_____/ min.

2. Environmental Impact

a. Wildlife Impact: Fish/aquatic ◡ Yes ● No; Birds ◡ Yes ● No; Terrestrial ◡ Yes ● No
b. Soil Contamination ● Yes ◡ No
If Yes, estimated number of cubic yards: 10
c. Long term impact assessment performed: ◡ Yes ● No
d. Anticipated remediation ● Yes ◡ No
If Yes, check all that apply: ☐ Surface water ☐ Groundwater ☒ Soil ☐ Vegetation ☐ Wildlife

e. Water Contamination: ◡ Yes ● No (*If Yes, provide the following*)
Amount in water _____ barrels
Ocean/Seawater ◡ No ◡ Yes
Surface ◡ No ◡ Yes
Groundwater ◡ No ◡ Yes
Drinking water ◡ No ◡ Yes (*If Yes, check below.*)
◡ Private well ◡ Public water intake

PART G – LEAK DETECTION INFORMATION

1. Computer based leak detection capability in place? ○Yes ●No
2. Was the release initially detected by? (check one):
   - ○ CPM/SCADA-based system with leak detection
   - ○ Static shut-in test or other pressure or leak test
   - ○ Local operating personnel, procedures or equipment
   - ○ Remote operating personnel, including controllers
   - ○ Air patrol or ground surveillance
   - ● A third party ○Other (specify) _____
3. Estimated leak duration days ____ hours ____

PART H – APPARENT CAUSE

Important: *There are 25 numbered causes in this Part H. Check the box corresponding to the primary cause of the accident. Check one circle in each of the supplemental categories corresponding to the cause you indicate. See the instructions for guidance.*

H1 – CORROSION

1. ○External Corrosion
2. ●Internal Corrosion

(Complete items a – e where applicable.)

a. Pipe Coating: ○Bare ●Coated

b. Visual Examination: ●Localized Pitting ○General Corrosion ○Other _____

c. Cause of Corrosion: ○Galvanic ○Atmospheric ○Stray Current ●Microbiological ○Cathodic Protection Disrupted ○Stress Corrosion Cracking ○Selective Seam Corrosion ○Other _____

d. Was corroded part of pipeline considered to be under cathodic protection prior to discovering accident? ○No ●Yes, Year Protection Started: / 1959 /

e. Was pipe previously damaged in the area of corrosion? ●No ○Yes => Estimated time prior to accident: /_____/ *years* /_____/ *months* *Unknown* ☐

H2 – NATURAL FORCES

3. ○ Earth Movement => ○Earthquake ○ Subsidence ○ Landslide ○Other _____
4. ○ Lightning
5. ○ Heavy Rains/Floods => ○ Washouts ○ Flotation ○ Mudslide ○Scouring ○ Other _____
6. ○ Temperature => ○Thermal stress ○ Frost heave ○ Frozen components ○Other _____
7. ○ High Winds

H3 — EXCAVATION DAMAGE

8. ○ Operator Excavation Damage (including their contractors/Not Third Party)
9. ○ Third Party *(complete a-f)*

a. Excavator group: ○ General Public ○ Government ○Excavator other than Operator/subcontractor

b. Type: ○Road Work ○Pipeline ○Water ○Electric ○Sewer ○Phone/Cable ○Landowner-not farming related ○Farming ○Railroad ○Other liquid or gas transmission pipeline operator or their contractor ○Nautical Operations ○Other _____

c. Excavation was: ○Open Trench ○ Sub-strata (boring, directional drilling, etc…)

d. Excavation was an ongoing activity (Month or longer) ○Yes ○No If Yes, Date of last contact /_____/

e. Did operator get prior notification of excavation activity?

○ Yes; Date received: /_____/ mo. /_____/ day /_____/ yr. ○No

Notification received from: ○One Call System ○ Excavator ○Contractor ○Landowner

f. Was pipeline marked as result of location request for excavation? ○ No ○Yes *(If Yes, check applicable items i - iv)*

i. Temporary markings: ○ Flags ○Stakes ○Paint
ii. Permanent markings: ○
iii. Marks were (check one) : ○ Accurate ○ Not Accurate
iv. Were marks made within required time? ○Yes ○No

H4 – OTHER OUTSIDE FORCE DAMAGE

10. ○ Fire/Explosion as primary cause of failure => Fire/Explosion cause: ○Man made ○Natural
11. ○ Car, truck or other vehicle not relating to excavation activity damaging pipe
12. ○ Rupture of Previously Damaged Pipe
13. ○ Vandalism

H5 – MATERIAL AND/OR WELD FAILURES

Material

14. ○ Body of Pipe => ○ Dent ○ Gouge ○ Bend ○ Arc Burn ○ Other _____

15. ○ Component => ○ Valve ○ Fitting ○ Vessel ○ Extruded Outlet ○ Other _____

16. ○ Joint => ○ Gasket ○ O-Ring ○ Threads ○ Other _____

Weld

17. ○ Butt => ○ Pipe ○ Fabrication ○ Other _____

18. ○ Fillet => ○ Branch ○ Hot Tap ○ Fitting ○ Repair Sleeve ○ Other _____

19. ○ Pipe Seam => ○ LF ERW ○ DSAW ○ Seamless ○ Flash Weld ○ HF ERW ○ SAW ○ Spiral ○ Other _____

*Complete a-g if you indicate **any** cause in part H5.*

a. Type of failure:
○ Construction Defect => ○ Poor Workmanship ○ Procedure not followed ○ Poor Construction Procedures ○ Material Defect

b. Was failure due to pipe damage sustained in transportation to the construction or fabrication site? ○ Yes ○ No

c. Was part which leaked pressure tested before accident occurred? ○ Yes, *complete d-g* ○ No

d. Date of test: /_____/ yr. /_____/ mo. /_____/ day

e. Test medium: ○ Water ○ Inert Gas ○ Other _____

f. Time held at test pressure: /_____/ hr.

g. Estimated test pressure at point of accident: _____ *PSIG*

H6 – EQUIPMENT

20. ○ Malfunction of Control/Relief Equipment => ○ Control valve ○ Instrumentation ○ SCADA ○ Communications ○ Block valve ○ Relief valve ○ Power failure ○ Other _____

21. ○ Threads Stripped, Broken Pipe Coupling => ○ Nipples ○ Valve Threads ○ Dresser Couplings ○ Other _____

22. ○ Seal Failure => ○ Gasket ○ O-Ring ○ Seal/Pump Packing ○ Other _____

H7 – INCORRECT OPERATION

23. ○ Incorrect Operation

a. Type: ○ Inadequate Procedures ○ Inadequate Safety Practices ○ Failure to Follow Procedures ○ Other _____

b. Number of employees involved who failed a post-accident test: drug test: /_____/ alcohol test /_____/

H8 – OTHER

24. ○ Miscellaneous, *describe:* _____

25. ○ Unknown
○ Investigation Complete ○ Still Under Investigation *(submit a supplemental report when investigation is complete)*

PART I – NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE EVENT *(Attach additional sheets as necessary)*

FARMER DISCOVERED CRUDE OIL IN A FIELD HE WAS GETTING READY TO PLANT. HE CALLED THE NUMBER FOUND ON THE PIPELINE MARKER AND REPORTED THE INCIDENT. UPON EXCAVATION, A SMALL PINHOLE WAS DISCOVERED ON THE BOTTOM OF THE PIPE. THE COATING WAS INTACT AND THE PIPE SHOWED NO VISIBLE SIGN OF EXTERNAL CORROSION. AFTER REMOVAL OF THE FAILED PIPE, SOME LOCALIZED INTERNAL PITTING IN THE REMOVED PIPE WAS OBSERVED.FILED 3 SUPPLEMENTS TO THIS REPORT PER PHMSA REQUESTS. THIS TIME I HAVE CHANGED THE DATE OF THE INCIDENT TO THE DATE REQUESTED AND CHANGED THE AMOUNT OF DOWN TIME TO REFLECT THE ADJUSTED DATE OF INCIDENT.

Appendix D Metallurgical Report

This document is on file at PHMSA