Chevron Pipeline Releases
Salt Lake City, Utah
June 11, 2010 & December 1, 2011

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Chevron Pipeline
Rangely Crude System

Pipeline Route
Crude Oil Release #1
Salt Lake City, June 11, 2010

• Release detected on June 12, 2010 after odor call from local fire department (≈ 10 hours after initial release).
• Location of leak was ≈ 50 yards upstream from Red Butte Creek
• Approx 750 BBL of crude oil spilled into Red Butte Creek and downstream lake on June 11/12.
PHMSA Actions after June 11th Release

- Confirmed cause from electric arc from nearby power substation
- Reviewed 2008 in-line inspection results to identify potential past damages
- Looked for other power sources that could damage pipe
- Identification of other damaged pipe
- Observed repair of leak site and damaged pipe in Red Butte Creek valve vault
- Observed pressure test with water and tracer dye @ 300 psig for 4 hours
- PHMSA witnessed all repairs, pressure test set up, review of pressure test data, and restart of pipeline
Update on Compliance Order Release #1

• Compliance Order CPF# 5-2010-5028, dated 2/17/2010
  – Closed on February 23, 2012
  – $423,600.00 Civil Penalty paid on December 1st, 2010.
  – Chevron completed the following items:
    • Clear the ROW for utilizing aerial patrols and utilize other patrolling methods where ROW cannot be cleared from vegetation
    • Inspect pipeline for areas where damage could occur from electrical sources and take protective measures at these areas
    • Reevaluate and modify leak detection system to improve swiftness and sensitivity of leak detection to minimize impact to High Consequence Areas.
Proximity of Electric Facility to Pipeline
Damaged Chevron Pipe
Damaged Chevron Pipe
Crude Oil Release #2
Salt Lake City, December 1, 2010

- On December 1 at 11:54 pm, Chevron notified National Response Center of a spill discovered at 11 pm (all times are local MST)
- Original Spill Estimate was 100 BBLs of Crude Oil
- PHMSA initial contact with Chevron at 4:30 am revealed:
  - Chevron controller noticed “short” on the 10" crude line
  - Local Chevron personnel had been dispatched and **found release 100 yards from the June 11th release**
  - No impact to Red Butte Creek
Timeline:
- Controllers detected leak approx 8:30 pm (shut down)
- Mobilized patrol crew about 9:00 pm
- Leak found approx 11:15 pm

Leak source confirmed at former crossover valve between active No 2 line and No 1 line (out of service)

Leaking valve assembly removed 12/4/2010

Spill Estimate increased from 100 to 500 BBL
PHMSA Actions
Release #2

- Reviewed metallurgical test results of failed valve
- Reviewed Operation and Maintenance records with focus on valves and cold weather maintenance
- Examined valves on system, particularly those involved in water pressure test in June 2010
- Reviewed recent response to our June spill enforcement action for enhanced leak detection
- Determined what safety actions needed to be mandated to address most recent spill prior to return to service
- Identified non compliances and mandated corrections per Corrective Action Order (CAO) CPF# 5-2010-5032H dated December 8, 2010.
Update on Corrective Action Order Release #2

- Compliance Order CPF# 5-2010-5032H, dated 12/08/2010
  - Item 1: Submit a written restart plan. (Completed)
  - Item 2: PHMSA approved restart plan. Pipeline back in service on June 21, 2011 (Completed)
  - Item 3: Continuously monitor ROW for 48 hours after startup and perform daily patrols (Completed)
  - Item 4: Complete a full metallurgical examination and failure analysis of the affected valve within 30 days (Completed)
  - Item 5: Provide appropriate leak detection systems for all above-ground pipeline facilities (Completed)
Update on Corrective Action Order (Cont.)

- Compliance Order CPF# 5-2010-5032H, dated 12/08/2010
  - Item 6: Submit an integrity verification and remedial work plan (Ongoing)
  - Item 7: Integrity verification and remedial work plans become incorporated into this order and implement work plans (Ongoing)
  - Item 8: Implement the integrity verification and remedial work plan (Ongoing)
  - Item 9: Submit valve study with additional valves recommended (Completed)
  - Item 10: Install the additional valves on the system (ongoing)
Red Butte Valve Vault (After 2\textsuperscript{nd} Release)
Red Butte Valve Vault (After 2nd Release)

Tap where June pressure test water injected

Oil seen coming out of bonnet seal at 12 to 4 o’clock position

ANSI 600 Valve Design for 1440 PSI
Remainino Work

- Provo River Crossing near Diamond Bar X Ranch – Summer 2012
- Mountain Dell & Little Dell reservoirs – Bowen Collins and Associates to perform study for options – fall 2012 completion
- Relocate Red Butte/Fort Douglas block valve upstream of creek – Q2 2012
- 1 Motor Operated Valve at MP 138.4- 2012
- 2 Check Valves at MP 138.4 & MP 147- 2012
- Pre-installed tap for draindown near Weber Diversion Canal
Additional Valves

- **Completed** - New check valve installed at MP 112 (between Hannah and Stockmore)
- **Completed** - New check valve installed at MP 114 (between Hannah and Stockmore)
- **Completed** - New check valve installed at MP 121 (between West Fork check valve and top of Wolf Creek Pass)
- New valve with motor operator installed at MP 138.4 with vacuum truck tap and video/leak detection
- New check valve at new valve site at MP 138.4
- **Completed** - Add motor operator to Woodland (MP 136) valve for remote operation
- New check valve installed at MP 147 (between Francis and top spot above Jordenelle reservoir)
- Pre-installed tap for draindown near Weber Diversion Canal
Leak Detection Improvements

- Hourly Log Sheets (volumetric balance)
- Telvent’s (SCADA software provider) Pipeline Monitoring System provides volume balance leak detection
- External leak detection to above ground valve sites
- SCADA software is tuned annually and more frequently for system modifications
- SLC batch operations optimized to support earlier leak indications
- Leak indication response protocols have been implemented
Questions?
Backup Slides
Leak Detection

- Video/Leak detection systems installed at the following locations:
  - 1. Beck Street Gravitometer
  - 2. Kimball's Junction block valve
  - 3. Francis block valve
  - 4. Little Mountain block valve
  - 5. Woodland block valve
  - 6. Silver Creek Junction block valve
  - 7. I-15 block valve
  - 8. Hewletts Ranch block valve
  - 9. Stockmore block valve
  - 10. Red Butte (Fort Douglas)
A reminder concerning AC induced current and fault current protection
PHMSA Actions
Release #2

• Initiated Investigation:
  – First Inspector at site at 8:30 am, Dec 2
  – Lead Investigator at site at 1:00 pm, Dec 2

• Ensured pipeline shut down and remaining contents safely drained to Refinery.

• Verified spill containment and recovery initiated
AC induced current and fault current protection

- **§195.575 Which facilities must I electrically isolate and what inspections, tests, and safeguards are required?**
- (a) You must electrically isolate each buried or submerged pipeline from other metallic structures, unless you electrically interconnect and cathodically protect the pipeline and the other structures as a single unit.
- (b) You must install one or more insulating devices where electrical isolation of a portion of a pipeline is necessary to facilitate the application of corrosion control.
- (c) You must inspect and electrically test each electrical isolation to assure the isolation is adequate.
  
  (d) If you install an insulating device in an area where a combustible atmosphere is reasonable to foresee, you must take precautions to prevent arcing.
- (e) *If a pipeline is in close proximity to electrical transmission tower footings, ground cables, or counterpoise, or in other areas where it is reasonable to foresee fault currents or an unusual risk of lightning, you must protect the pipeline against damage from fault currents or lightning and take protective measures at insulating devices.*
- (f) *Any unusual risk of lightning, you must protect the pipeline against damage from fault currents or lightning and take protective measures at insulating devices.*
AC induced current and fault current protection

• §195.577 What must I do to alleviate interference currents?

• (a) For pipelines exposed to stray currents, you must have a program to identify, test for, and minimize the detrimental effects of such currents.

• (b) You must design and install each impressed current or galvanic anode system to minimize any adverse effects on existing adjacent metallic structures.
AC induced current and fault current protection

- **§192.467 External corrosion control: Electrical isolation.**
  - (a) Each buried or submerged pipeline must be electrically isolated from other underground metallic structures, unless the pipeline and the other structures are electrically interconnected and cathodically protected as a single unit.
  - (b) One or more insulating devices must be installed where electrical isolation of a portion of a pipeline is necessary to facilitate the application of corrosion control.
  - (c) Except for unprotected copper inserted in a ferrous pipe, each pipeline must be electrically isolated from metallic casings that are a part of the underground system. However, if isolation is not achieved because it is impractical, other measures must be taken to minimize corrosion of the pipeline inside the casing.
  - (d) Inspection and electrical tests must be made to assure that electrical isolation is adequate.
  - (e) An insulating device may not be installed in an area where a combustible atmosphere is anticipated unless precautions are taken to prevent arcing.
  - (f) Where a pipeline is located in close proximity to electrical transmission tower footings, ground cables or counterpoise, or in other areas where fault currents or unusual risk of lightning may be anticipated, it must be provided with protection against damage due to fault currents or lightning, and protective measures must also be taken at insulating devices.
AC induced current and fault current protection


- (a) Each operator whose pipeline system is subjected to stray currents shall have in effect a continuing program to minimize the detrimental effects of such currents.

- (b) Each impressed current type cathodic protection system or galvanic anode system must be designed and installed so as to minimize any adverse effects on existing adjacent underground metallic structures.