

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
PDC Energy Oil Spill - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

Subject: **POLREP #4**
Progress
PDC Energy Oil Spill
Z5NH
Beverly, OH
Latitude: 39.6159881 Longitude: -81.6669809

To: Andrew Maguire, EPA
Mark Johnson, ATSDR
Valencia Darby, Department of Interior
Todd Goeks, NOAA
Laurie Lee, NOAA
Craig Butler, Ohio EPA
Kevin Clouse, Ohio EPA
Scott Shane, Ohio EPA
Wayne Babcock, U.S. Department of Interior
Robert Burr, U.S. Department of Interior
Lindy Nelson, U.S. DOI
Carolyn Bohlen, U.S. EPA
Sam Borries, U.S. EPA
Yolanda Bouchee-Cureton, U.S. EPA
Mindy Clements, U.S. EPA
Isalee Coleman, U.S. EPA
Mark Durno, U.S. EPA
Jason El-Zein, U.S. EPA
HQ EOC, U.S. EPA
Sherry Fielding, U.S. EPA
Charlie Gebien, U.S. EPA
John Glover, U.S. EPA
Mick Hans, U.S. EPA
Sharon Jaffess, U.S. EPA
Luke Jones, U.S. EPA
Matt Mankowski, U.S. EPA
Thomas Marks, U.S. EPA
Mike Ribordy, U.S. EPA
Ellen Riley, U.S. EPA
Annette Trowbridge, U.S. Fish & Wildlife
Jake Glascock, Ohio DNR
Freddie Thompson, USCG
Shelly Lam, U.S. EPA

From: Betsy Nightingale, On-Scene Coordinator
Date: 5/10/2014
Reporting Period: 5/9/14 PM - 5/11/14

1. Introduction

1.1 Background

| | | | |
|----------------------------|----------|--------------------------------|----------------|
| Site Number: | Z5NH | Contract Number: | |
| D.O. Number: | | Action Memo Date: | |
| Response Authority: | OPA | Response Type: | Emergency |
| Response Lead: | PRP | Incident Category: | Removal Action |
| NPL Status: | Non NPL | Operable Unit: | |
| Mobilization Date: | 5/4/2014 | Start Date: | 5/4/2014 |
| Demob Date: | | Completion Date: | |
| CERCLIS ID: | | RCRIS ID: | |
| ERNS No.: | | State Notification: | |
| FPN#: | E14519 | Reimbursable Account #: | |

1.1.1 Incident Category

Emergency Response - OPA

1.1.2 Site Description

The site is a wet gas/natural gas oil production well (Well Site Palmer 44-20) north of Beverly, Ohio. Wet gas is a mix of crude oil and condensate.

On Sunday May 4, 2014, PDC Energy reported a 100 barrel spill of drilling mud (75% synthetic oil blend) into an unnamed creek near Beverly, OH. On May 9, PDC provided a revised figure of 366 barrels (15372 gallons) of hydrocarbons are estimated to have been released. In addition to the drilling mud, an unknown amount of wet gas was also released. The spill is believed to have been a result of a mechanical failure of a well head during a horizontal drilling operation intended for hydraulic fracturing in the Utica Shale formation to extract wet gas and natural gas. Upon discovery of the discharge, drilling operations were stopped and PDC Energy implemented their emergency response plan. The incident management specialist contractor, Wild Well Control (WWC), was notified of the situation and mobilized to the discharge site. WWC arrived on site within six hours of mobilization.

The oil production well pad is situated on a man-made earthen platform, with steep embankments to the north, east, and south. (Photos of well pad engineering design plans are available in the website documents section.) As a result of the well head failure, drilling fluid discharged out of the well boring and onto the surface of the drilling pad and down gradient into storm-water control and naturally occurring drainage features adjacent to the north, east, & south perimeters of the well pad and to an unnamed creek downstream of the ditches. The unnamed creek flows for ¼ mile before leading to Cow Run Creek, and Cow Run Creek flows for a mile before leading to Olive Creek. Olive Creek then flows for a mile before meeting with the Muskingum River a tributary of the Ohio River.

Ohio Department of Natural Resources and PDC are investigating the cause of the failure of the well head and release. In addition to the drilling mud and wet gas, natural gas was released causing an explosive atmosphere leading to dangerous working conditions and the evacuation of 7 residents from 3 homes adjacent to the site. The release was stopped and the evacuation was subsequently lifted. PDC does not anticipate any further releases.

1.1.2.1 Location

1010 Center Bend Rd
Beverly, Morgan County, Ohio

1.1.2.2 Description of Threat

Oil has been released into an unnamed creek that is a tributary to the Muskingum River, a navigable waterway.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Please see earlier POLREPs for information prior to this reporting period.

This reporting period, the response planning and reporting process was formalized. Incident Command Structure (ICS) Forms 202, 207 and 214 are now being utilized each operational period (currently 24 hour operational period).

1. Report by Geographic Division. For organizational purposes, the site has been divided geographically as detailed below, and shown in the well pad and waterway maps located in the documents section of the website. These maps are being revised to add updated nomenclature.

During May 9-11, further work was done to develop and implement strategies to address these areas:

Well- No further releases occurred. The well was successfully plugged with a bridge plug/ retrievable well packer at 1750 on May 8. The former well head was removed successfully on May 9. Overnight on May 10, the new well head and blow out preventer were installed, and successfully tested under the oversight of Ohio DNR Oil and Gas Division. Further work on the well was on a standdown starting May 11, for drilling pad cleaning. PDC Energy is still considering what to do with the well, either prepare it for reuse or plug and abandon.

Drilling Pad- Free product remains present on pad and in the pad's stormwater drainage system. 3 catch basins are located on the pad. Catch basin pumpout is ongoing, and catch basins are being kept pumped down to prevent discharges from the pad to the sedimentation basins. The pad is also drained by a subsurface french drain system that drains to the catch basins. The catch basins drain to 2 sediment traps (described below). After the well was plugged, work began to clean up oil from portions of the pad. Steam cleaning is ongoing. Due to the extensive nature of contamination in the pad, the challenges associated with cleaning it while the rig is in place, and the therefore high potential for additional release from the pad, plans are being developed to hydrologically isolate the pad and product on the pad from the surrounding environment, and hopefully permanently prevent discharges, until the pad is fully remediated.

On May 11, it was discovered that the catch basins were improperly installed, resulting in a discharge bypass route around one of the catch basins and into the upstream end of West Lateral. Plans are under development to correct installation flaw and stop the discharge bypass. Absorbents were installed at the seep to collect discharging product until corrections can be made.

East swale (stormwater drainage feature of pad)- Free product remains present. Area drains to ST#1. Area was impacted by spray and overland flow of oil. Because this swale drains to a sediment trap that has been plugged and should not readily discharge, flushing of this swale was designated as a secondary priority.

East Sediment Trap (ST2) - Pond/trap receives storm water from pad. Pond had retained substantial product and was found to discharge with rain/ fluid input. Pump out of pond was initially conducted with smaller pumps, and was switched to pumping by vacuum truck on May 11 to better collect product and contaminated water and sediment. Vacuuming of sediment was completed on May 11, and bentonite pads were installed and hydrated to plug the outfall. Water/product that accumulates in the basin will be pumped out. Some free product remains present.

Sediment Trap #2 Outfall channel (tributary to east lateral) - Free product remains present. Area was impacted by spray and overland flow of oil. Flow from this drainage feature eventually drains to Containment Dam 1. Vegetation clearing is complete. On May 12, final preparations will be made to commence flushing.

East lateral channel (tributary to unnamed creek) - Free product remains present. Area was impacted by spray and overland flow of oil. This tributary drains to Containment Dam 1. Vegetation clearing was completed by May 10. Flushing is planned for May 12 to direct product down to Containment Dam #1.

West Sediment Trap (ST1) - Pond/trap receives storm water from pad. Pond had retained substantial product and was found to discharge with rain/fluid input. Pump out of pond was initially conducted with smaller pumps, and was switched to pumping by vacuum truck on May 10 to better collect product and contaminated water and sediment. Vacuuming of sediment was completed on May 10, and bentonite pads were installed and hydrated to plug the outfall. Water/product that accumulates in the basin will be pumped out. Some free product remains present.

West swale (stormwater drainage feature of pad)- Free product remains present. Area drains to ST#2. Area was impacted by spray and overland flow of oil. A test flush was conducted on May 9 and determined to have been successful. Because this swale drains to a sediment trap that has been plugged and should not readily discharge, flushing of this swale was designated as a secondary priority.

Sediment Trap #1 Outfall channel (tributary to unnamed creek) - Free product remains present. Area was impacted by spray and overland flow of oil. Flow from this drainage feature drains to Containment Dam 1. Vegetation clearing is complete. Flushing was conducted on May 11. Further assessment of next steps is needed.

West lateral (tributary to unnamed creek) - Free product remains present. Area was impacted by spray and overland flow of oil. Vegetation clearing was completed by May 10. Flushing and washing were conducted on May 11 to direct product down to Containment Dam #1. Additional flushing is planned for May 12.

Unnamed tributary (Area between confluence with west lateral and dam 1)- Segment remains heavily oiled. Crews continue work to remove debris. Flushing of the creek was attempted at 1515 to direct product down to Containment Dam #1 on May 8 and proved to be promising. All agree that this approach seems to be reasonable to direct the material to the containment dam. Further flushing will be commenced in an upstream to downstream fashion.

Containment Dam 1- Significant free product remains present upstream of dam. The containment dam was re-enforced on the downstream side on May 9. It was redesigned to withstand a 2 year flood, and a siphon pipe was installed, on an angle, as a contingency overflow for a large rainfall event. The responsible party currently plans to pump and haul out all water and product that accumulates behind the dam, and after limited treatment, reuse some of this water for flushing/ high volume low pressure washing. On May 10, a rope skimmer was installed, and appears to be effectively removing some oil from the water surface although some difficulties with pumps occurred. On May 11, the a new pump was installed, and effectively pumped oil from the skimmer up to a frac tank for storage. On May 11, containment booms (hard) were installed along the banks upstream of the dam to help direct oil and protect banks.

On May 10, a seep was discovered on the downstream side of the dam that is carrying product into the sump. The source of this product is currently be investigated. It may be product that was trapped under the dam during construction, it may be migrating through subsurface gravel or bedrock fractures. the seep is not contributing a huge amount of oil to the sump at this time. The sump is being pumped continuously and monitored 24 hours a day. State geologists will be on site on May 12 to assess this.

Downstream of Dam 1 to Dam 2 on Cow Run - Some absorbents remain in place in this section. Over this reporting period more very clear clean oil appeared in this section, possibly due to oil mobilization during channel opening, or possibly due to fractured bedrock as detailed above. 7 containment points were established with absorbent boom and pads. These are being monitored closely.

Containment Dam 2- During this reporting period, a crew continued to maintain this dam. Absorbent and containment boom are in place upstream of the dam, but do not appear to be accumulating product.

General Notes

Accessibility and topography have impeded response operations.

Flushing and targeted high volume low pressure washing techniques will likely be applied throughout the impacted riverine waterbodies, to direct product down to Containment Dam #1.

2. EPA Air Monitoring

Benzene concentrations remained low on the pad and in the work areas during this reporting period. Offsite

perimeter monitoring for benzene is also conducted daily. There were no off site detections during this reporting period. A summary of current benzene monitoring results and a map of monitoring locations are available in the documents section of the website.

Elevated VOCs were detected frequently at various locations around the site, but levels are quite variable, and also very low frequently. VOCs ranged up to 100 ppm near Containment Dam 1.

Gamma radiation has remained at background levels during this reporting period.

3. EPA Water Sampling Water

Sampling results that have been received back to date do not show detections above levels of concern downstream of Containment Dam 2 for any parameters.

4. PDC Shoreline Cleanup Assessment Technique (SCAT)

PDC is completing SCAT surveys of riverine waterbodies before and after flushing/ high pressure low volume rinsing when possible.

5. PDC Air Monitoring

PDC is conducting roving air monitoring throughout the site making one rotation every 30 minutes, and working with an industrial hygienist, has established the following action levels:

VOCs- at 70 ppm upgrade to Level C PPE; at 700 ppm upgrade to Level B PPE

Benzene - at 2.5 ppm upgrade to Level C PPE

LEL - at 10% evacuate area

H2S - evacuate area if detected

6. Weather

During this reporting period, according to weather.com data for Beverly Ohio, 0.17 inches of rainfall was received on May 9, and 0.20 on May 10.

There is a chance of additional rain predicted for the next 5 days.

2.1.2 Response Actions to Date

EPA is on site overseeing the response by the responsible party. Two containment dams and one pumping basin have been constructed to keep oil contained. Numerous other activities are ongoing and are detailed above.

5325 barrels of oil/fluid/water mixture was estimated to have been recovered as of 1600 on May 5. This number was revised by PDC on May 9 to 3125 barrels (131250 gallons), as they stated that the 5325 reported originally inadvertently included the 1800 bbls of mud that had been made up and remained in storage.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

A Notice of Federal Interest was issued to PDC Energy on 5/5/2014.

2.1.4 Progress Metrics

| <i>Waste Stream</i> | <i>Medium</i> | <i>Quantity</i> | <i>Manifest #</i> | <i>Treatment</i> | <i>Disposal</i> |
|-----------------------------|---------------|-------------------------------|-------------------|------------------|-----------------|
| Oil / Fluid / Water Mixture | Liquid | 3125 barrels (131250 gallons) | | | |
| | | | | | |
| | | | | | |

2.2 Planning Section

This reporting period, the response planning process was formalized. Incident Command Structure (ICS) Forms 202, 207 and 214 are now being utilized each operational period.

2.2.1 Anticipated Activities

Continue to plan and implement high pressure low volume washing and flushing activities.

Continue to pump out sedimentation basins, catch basins and accumulations of water and collect product behind containment dam 1.

Continue cleanup of pad.

Continue oil recovery in creek, sediment ponds and drainage ditches.

Continue other planned activities as described in the operations section.

2.2.1.1 Planned Response Activities

Air monitoring will be conducted sitewide. Water sampling is planned periodically as operational procedures/ situation changes.

Two Us Coast Guard Atlantic Strike Team personnel are mobilizing to the site on May 12 to provide assistance with oversight and air monitoring.

2.2.1.2 Next Steps

Plan for long term remediation.

2.2.2 Issues

Accessibility to impacted creek and environment.

2.3 Logistics Section

Logistics are being managed by PDC.

2.4 Finance Section

2.4.1 Narrative

START costs are through May 10, 2014.

OSC Maguire was initially issued a Federal Project Number (FPN) with a ceiling of \$50,000. On May 8, 2014, the ceiling was increased to \$75,000. On May 10, 2014, the FPN ceiling was increased to \$100,000.

Estimated Costs *

| | Budgeted | Total To Date | Remaining | % Remaining |
|-------------------------|-------------|---------------|------------|-------------|
| Extramural Costs | | | | |
| TAT/START | \$40,000.00 | \$34,914.00 | \$5,086.00 | 12.72% |
| Intramural Costs | | | | |
| | | | | |
| Total Site Costs | \$40,000.00 | \$34,914.00 | \$5,086.00 | 12.72% |

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

No information available at this time.

3. Participating Entities

3.1 Unified Command

EPA, Ohio EPA, PDC Energy

3.2 Cooperating Agencies

US Fish & Wildlife Service
Ohio Department of Natural Resources

4. Personnel On Site

5/8/14

2 - EPA OSC
3 - Tetra Tech START
2 - Ohio EPA OSC
75-100 - PDC Energy and contractors

5/9/14

1 - EPA OSC

2 - Tetra Tech START
1 - Ohio EPA OSC
75-100 - PDC Energy and contractors

5/10/14

1 - EPA OSC
2 - Tetra Tech START
0 - Ohio EPA OSC
75-100 - PDC Energy and contractors

5/11/14

1 - EPA OSC
3 - Tetra Tech START
1 - Ohio EPA OSC
75-100 - PDC Energy and contractors

5. Definition of Terms

| | |
|-------------------|--|
| ATSDR | Agency for Toxic Substances and Disease Registry |
| BZ | Breathing Zone |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CERCLIS | Comprehensive Environmental Response, Compensation, and Liability Information System |
| DNR | Department of Natural Resources |
| EPA | Environmental Protection Agency |
| ERNS | Emergency Response Notification System |
| ERRS | Emergency and Rapid Response Service |
| NG/M ³ | nanograms per cubic meter |
| NCP | National Oil and Hazardous Substance Pollution Contingency Plan |
| NOAA | National Oceanic and Atmospheric Administration |
| NPL | National Priorities List |
| NRC | National Response Center |
| OEPA | Ohio Environmental Protection Agency |
| ODH | Ohio Department of Health |
| OSC | On Scene Coordinator |
| PPE | Personal Protective Equipment |
| PPM | Parts per million |
| RCRIS | Resource Conservation and Recovery Act Information System |
| RP | Responsible Party |
| RRT | Regional Response Team |
| START | Superfund Technical Assessment and Response Team |
| US FWS | United States Fish and Wildlife Service |
| USCG | United States Coast Guard |

6. Additional sources of information

6.1 Internet location of additional information/report

www.epaosc.org/PDCEnergyBeverly

6.2 Reporting Schedule

Reports will be completed every few days, or as needed to communicate new information.

Please check documents section for updated monitoring data and maps.

7. Situational Reference Materials

No information available at this time.