

**PDC ENERGY, INC.  
DJ BASIN – WATTENBERG FIELD  
LEAK DETECTION PLAN**

The content of this Leak Detection Plan (Plan) addresses PDC Energy, Inc.'s onshore oil and gas production facilities located in northeastern Colorado. This Plan has been prepared in accordance with good engineering practices to prevent and mitigate damage to the environment from a potential spill.

The facilities operate 24 hours per day, 7 days per week, and are attended by an onsite Pumper who regularly inspects the facility and performs routine maintenance. Procedures for reporting discharges are provided in the PDC Emergency Response Plan and include contact numbers and spill reporting guidelines.

PDC Energy, Inc. (PDC) will review and evaluate this Plan at least once every year. As a result of this review, non-technical changes may be made to the Plan to ensure that the document is current and up-to-date. Such non-technical changes may include updating contact names, phone numbers, or addresses. In addition to non-technical changes, this Plan may be amended to include more effective prevention and control technology if the technology has been field-proven at the time of the review and will significantly reduce the likelihood of a discharge.

In January of 1974, the United States Environmental Protection Agency (EPA) adopted 40 CFR Part 112 as the Oil Pollution Prevention Program, which has since been recently amended. These oil pollution prevention regulations require the preparation of a Spill Prevention Control and Countermeasure (SPCC) Plan for facilities engaged in operations including the exploration and production of oil and natural gas, and which due to their location, could reasonably discharge oil in harmful quantities into or upon the waters of the United States or adjoining shorelines. The owner or operator of a SPCC regulated facility is required to prepare a written, site-specific spill prevention plan, which details how a facility's operation comply with the requirements of 40 CFR Part 112. Many of the components of PDC's SPCC Plan are included in this Leak Detection Plan.

The following sections detail the regulatory notification requirements and emergency response contacts for spill/releases of oil, condensate or produced water.

### **Containment**

The primary spill containment methods include earthen berms and steel secondary containment sufficiently impervious to contain oil or other released fluids. Secondary containments are constructed around all tanks sufficient to hold the shell capacity of the largest tank located within the containment plus sufficient freeboard for precipitation (a 25-year, 24-hour storm event).

Oil production facilities must have appropriate containment and/or diversionary structures or equipment to prevent a discharge. The entire containment system, including the walls and floor, must be capable of containing oil, and must be constructed so that any discharge from a primary containment system, such as a tank, will not escape the containment system before cleanup occurs.

All ASTs have adequate capacity to assure that they will not overflow if a Pumper is delayed in making regularly scheduled rounds, and the ASTs have overflow equalizing lines between containers so that a full tank will overflow to an adjacent tank.

Aboveground piping is restricted to areas directly around the wellhead, separator, flare, and ASTs. Aboveground piping associated with production equipment is typically located above and within the "footprint" of the secondary containment.

Secondary containment and other spill prevention and control methods for facility transfer and loading/unloading areas include the following:

- Load-out lines and valves located within the containment. At those facilities where the load out is not completely within the containment, the piping is sloped back towards the tank or vessel as a spill prevention and control method.
- Drip pans and load line buckets must be adequately sized to contain the most likely discharge (drips and leaks) inside the containment berm.
- Drip pans and load line buckets must be inspected by the Pumpers on their routine rounds and emptied as needed.

All oil transfer truck and produced water vacuum truck operators are equipped and trained to contain the majority of small leaks, spills or drips that might occur during unloading of ASTs.

In the event of a discharge, the Pumper will use spill cleanup materials and equipment to contain the discharge.

### **Inspections, Tests, and Records**

PDC Pumpers and roustabouts are responsible for inspecting assigned facilities as part of their regular work routine. All aboveground pipes, valves, and appurtenances are inspected as a part of the routine operations. The inspections include an assessment of the general condition of flange joints, valve glands and bodies, drip pans, load line buckets, pipeline supports, and other such items. Drainage ditches and other watercourses in and around the facilities are inspected for oil accumulation on a regular basis. All malfunctions, improper operation of equipment, evidence of leakage, spills, stained or discolored soil, etc. are logged and communicated in a timely manner to the supervisor for proper response.

All flowlines and intra-facility gathering lines and associated valves and equipment are compatible with the type of production fluids, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment. The aboveground flowlines, intra-facility gathering lines, and associated appurtenances are inspected on a regular schedule for leaks, oil discharges, corrosion, or other conditions that could lead to a discharge. Corrective actions will be taken and needed repairs will be made for conditions identified during the inspection. Any accumulations of oil will be promptly removed or stabilization and remediation actions will be initiated.

Personnel visually inspect the outside of all ASTs routinely for signs of deterioration and maintenance needs. All tanks, flow-through vessels, tank supports, and foundations undergo a visual inspection for integrity (pitting, rusting).

PDC also conducts, at a minimum, an annual pressure testing of flowlines as per COGCC requirements. PDC's standard protocol for pressure testing of flowlines, dumplines and facility equipment involves the following key steps:

- Isolate flowline at header and install appropriate gauge;
- Pressure flowline using well head pressure, preferably maximum casing pressure and isolate well head;
- Allow pressure to stabilize;
- Record beginning pressure/time on the Facility Pressure Test Report (F.P.T.R.);
- Monitor for 30 minutes;
- At the end of 30 minutes record pressure/time at end of test on F.P.T.R.;
- Any loss of pressure needs immediate action taken (e.g. eliminate isolation points as source, hydro test for final confirmation);
- If flowline fails test, isolate well and turn in work order;
- If flowline tests good, return well back to normal production; and,
- Turn in Facility Pressure Test Report to a supervisor.

Inspection reports are maintained at the PDC field office in Evans, Colorado for a period of three years.

Any leak discovered in a flowline or appurtenances is promptly addressed by shutting-in the well and isolating the damaged portion of the line. The faulty piece of equipment is then repaired or replaced.

### **Spill Response**

After discovery of a spill, specific steps are taken, including immediate response, reporting, containment and cleanup Pumpers have emergency contact information with them at all times to ensure immediate, appropriate response. Some of the key steps include:

- Account for onsite personnel, assure their safety, and evacuate if a fire, explosion, or exposure hazard exists. Remove all sources of ignition, position fire

suppression equipment, and alert the local Fire Department if necessary. Shut off pumps and close valves that allow oil or other produced fluids to flow to the segment of the system causing the spill/release.

- Restrict access and alert adjacent property owners/operators as warranted by the incident and make internal notifications. PDC's EHS Professionals will make external notifications to applicable regulatory agencies.
- As safety allows – on scene personnel contain the spill, if appropriate, and prevent or divert spilled oil from approaching structures or draining towards waterways or storm drains.
- Initiate cleanup and waste management activities working with a PDC EHS Professional. PDC EHS Professionals will complete all required written notifications or reports. The EHS Professional will conduct a spill assessment and determine any additional cleanup actions as needed.

### **Personnel, Training, and Discharge Prevention Measures**

PDC's EHS department has been designated as the primary point of contact for oil discharge prevention and response.

At a minimum, PDC field personnel are trained in the following related topics:

- General facility operations;
- Spill control equipment;
- Operation and maintenance of equipment to prevent discharges;
- Containment, vessel, tank and piping inspection and maintenance;
- Spill response, containment and cleanup;
- Company policies on reporting and responding to spills;
- Applicable pollution control laws, rules, and regulations;

Additionally, all PDC contractors must review and acknowledge the PDC Contractors Expectation Manual for Environmental, Health & Safety prior to entering any PDC facility.