

# **Leak Detection and Flowline Management (Best Management Practices)**

**Piceance Basin  
Garfield County, CO  
June 20, 2016  
Rev: 2**

## Introduction and Regulatory Basis

Pursuant to Colorado Oil and Gas Conservation Commission (COGCC) Regulations, 604.c.(4)B.ii and series 1100, Ursa Operating Company (Ursa) has developed the following Fluid Leak Detection and Flowline Management BMP to identify, evaluate, and employ appropriate control technologies, monitoring practices, operational practices, and/or other strategies designed to meet the requirements set forth. This document is structured such that information contained within the body is intended to apply generally to all facilities and is employed at Ursa's sole discretion. Information provided in the appendices to the Plan is intended to supply site-specific information for the facilities covered by the BMP. The full plan is currently being revised to comply with new flowline and LUMA regulations/guidelines effective March 2016.

The BMP and plan are intended to be living documents. As new facilities are brought on line, operational practices change, or deficiencies within the document are discovered, things may change to meet current needs. This document addresses the following operational, procedural, and administrative actions. Ursa retains the right to use or not use any or all information included in this plan in order to accommodate with changes and modifications of operational needs.

**Tank Inspections:** will be formally inspected every 30 days under the Spill Prevention Control and Countermeasures (SPCC) plan unless specific COAs warrant more frequent inspections. Ursa contracts Forward Looking Infrared (FLIR) inspections to HCSI. HCSI performs regulatory required FLIR inspections with frequencies determined by throughput volumes. Tanks are also inspected daily by the lease operator (pumper) and contract water haulers, who have been trained on identifying corrective actions on tanks/flowlines. Reference Ursa's SPCC, Storage Tank Emissions Monitoring (STEM) and Leak Detection and Flowline Management Plans for inspection and location specifics.

**Flowline Testing/Monitoring:** will be tested per COGCC 1100 regulations/1101 and 1102 guidance document Updated February 25, 2016.

- New flowlines will be hydrotested to manufactures recommended levels before put in to use.
- Ursa will use SCADA to continuously monitor line pressures. Any fluctuations or drops in pressures that indicate a drop or rise in pressure will be closely monitored and will trigger immediate action including shutting in and scheduling repairs/replacements as necessary.

**Flowline Inspections:** will be inspected per COGCC 1100 regulations/1101 and 1102 guidance document Updated February 25, 2016.

- Daily site visits are made by lease operators (aka pumpers) to the well pad for maintenance issues including leaks and spill potential
- Monthly site inspections will be conducted by 3<sup>rd</sup> party environmental contractors to look for any signs of leaks and or potential leaks.
- FLIR surveys are used to identify any leaks coming from the flowlines on a regular basis.
- According to Ursa's STEM Management Plan onsite inspections will also be conducted to check for leaks.

**Records:** Records of inspections and corrective actions are maintained in accordance with the requirements of the regulations and Ursa's program plans.

- Records will be maintained on flowline improvements made to the system for the calendar year along with the GIS Esri shape files.
- Any and all spills associated with flowlines and or facilities on the pad will be reported, agencies notified, recorded and a root cause analysis performed to indicate why each spill occurred and what can be changed to reduce reoccurrences in accordance with Ursa's Spill Prevention and Response Plan.

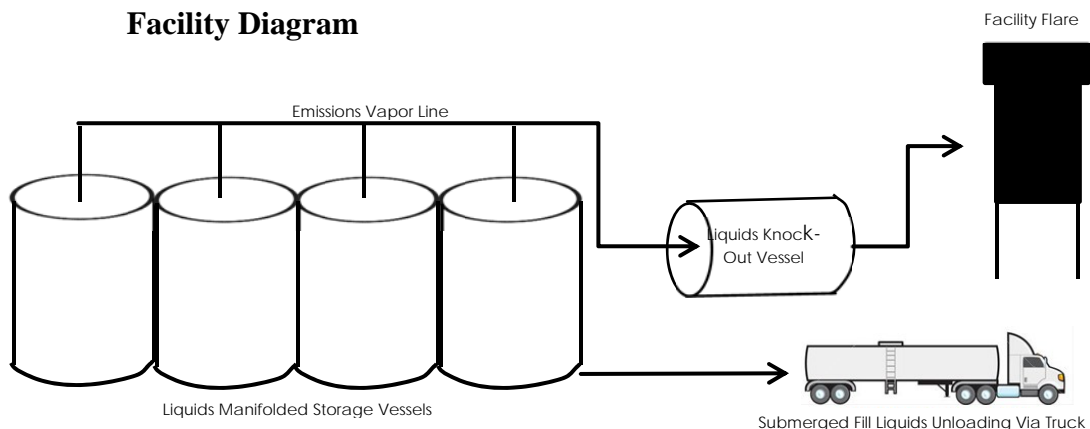
**Monitoring:** Fluid Monitoring in tanks will be achieved through high level alarms installed in each tank with floating tank level gauges. These gauges report remotely tank volumes via telemetry. This telemetry allows pumpers to have real time access to information and review levels on a daily basis. Pumpers also have the ability to program the wells to be shut in automatically in the event of pressure loss. Reference Ursa's Leak Detection and Flowline Management plan for specifics on inspections, testing, documentation, etc.

**Maintenance:** Corrective actions relating to the tanks or flowlines will have effected equipment repaired or replaced as necessary. If larger issues are identified, the repairs may require further attention and/or redesign.

Ursa has adopted the policy that environmental compliance is everyone's responsibility. It is the expectation that all personnel who will be visiting Ursa's sites, including employees and contractors, address observed compliance issues or bring them to a supervisor's attention. In addition to the above pieces, Ursa has daily inspections of tanks by pumper to ensure no leaks are present and equipment is operating appropriately. Ursa has Colorado Department of Public Health and Environment (CDPHE) STEM and Leak Detection and Repair (LDAR) inspections which include Audio Visual and olfactory (AVO) and FLIR inspections. Results of these inspections are tracked under Ursa's inspection and corrective action database. Any discrepancies are documented and repaired. It is also intended to ensure that all subject facilities are designed and operated in a manner consistent with good engineering and air pollution control practices. Ursa has a robust Spill Prevention and Response Plan that details hauling/transportation and field wide spill response.

Below is a typical facility design diagram, and while it may not represent any actual location the equipment and technologies deemed appropriate for each site have been applied to all of Ursa's assets subject to this BMP Plan. The specific control technologies and equipment utilized at each individual facility are documented in Ursa's Leak Detection and Flowline Management and SPCC Plans.

### Facility Diagram



In addition to the general duty to be aware of compliance issues Ursa has implemented a brief facility check and overview process which personnel follow upon arriving at the facility. This brief facility check is similar to a general inspection however in most cases it is not documented. Aspects of this brief facility check may include but are not limited to: ensuring that the thief hatches are closed and sealed, PRVs are not leaking, any combustors are operating and have a visible pilot light, no evidence of liquid pooling or staining in or near tanks/flowline corridor and that the facility is in good repair and not in need of any additional maintenance.