



Flowline Integrity Management Plan McCallum and Wattenberg Fields, Colorado

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Bonanza Creek Energy Operating Company LLC.

1. OVERVIEW

1.1. REGULATORY BACKGROUND

Bonanza Creek Energy Operating Company LLC (BCEOC) conducts routine inspections of all facilities including inspection of flowline integrity as part of multiple regulatory programs. Flowline integrity is regulated by both the Environmental Protection Agency (EPA) Spill Prevention, Control, and Countermeasure regulation (SPCC) and Colorado Oil and Gas Conservation Commission (COGCC) rules. The following is a summary of the regulation verbiage regarding flowline integrity.

EPA – SPCC Onshore Oil Production Regulation (Facility Transfer Operations)

§112.9(d)(3) *For flowlines and intra-facility gathering lines that are not provided with secondary containment in accordance with § 112.7(c), unless you have submitted a response plan under § 112.20, provide in your Plan the following:*

- (i) An oil spill contingency plan following the provisions of part 109 of this chapter.*
- (ii) A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that might be harmful.*

§112.9(d)(4) *Prepare and implement a written program of flowline/intra-facility gathering line maintenance. The maintenance program must address your procedures to:*

- (i) Ensure that 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.*
- (ii) Visually inspect and/or test flowlines and intra-facility gathering lines and associated appurtenances on a periodic and regular schedule for leaks, oil discharges, corrosion, or other conditions that could lead to a discharge as described in § 112.1(b). For flowlines and intra-facility gathering lines that are not provided with secondary containment in accordance with § 112.7(c), the frequency and type of testing must allow for the implementation of a contingency plan as described under part 109 of this chapter.*
- (iii) Take corrective action or make repairs to any flowlines and intra-facility gathering lines and associated appurtenances as indicated by regularly scheduled visual inspections, tests, or evidence of a discharge.*
- (iv) Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with flowlines, intra-facility gathering lines, and associated appurtenances.*

CDPHE Regulation 7

XVII.F.4.a. – *Owners or operators of well production facilities constructed on or after October 15, 2014, must identify leaks from components using an approved instrument monitoring method no sooner than fifteen (15) days and no later than thirty (30) days after the facility commences operation. This initial test constitutes the first, or only for facilities subject to a one time approved instrument monitoring method inspection, of the periodic approved instrument monitoring method inspections. Thereafter, approved instrument monitoring method and AVO inspections must be conducted in accordance with the Inspection Frequencies in Table 4.*

COGCC – Definitions

Rule 100 – *FLOWLINES shall mean those segments of pipe from the wellhead downstream through the production facilities ending at: in the case of gas lines, the gas metering equipment; or in the case of oil lines the oil loading point or LACT unit; or in the case of water lines, the water loading point, the point of discharge to a pit, the injection wellhead, or the permitted surface water discharge point.*

COGCC – Pipeline Regulations (Testing and Maintenance)

Rule 1101.e.(1) – *Before operating a segment of flowline it shall be tested to maximum anticipated operating pressure. In conducting tests, each operator shall ensure that reasonable precautions are taken to protect its employees and the general public. The testing may be conducted using well head pressure sources and well bore fluids, including natural gas. Such pressure tests shall be repeated once each calendar year to maximum anticipated operating pressure, and operators shall maintain records of such testing for Commission inspection for at least three (3) years.*

Rule 1101.e.(2) – *Flowline segments operating at less than fifteen (15) psig are excepted from pressure testing requirements.*

Rule 1102.a.(1) – *Each operator shall take reasonable precautions to prevent failures, leakage and corrosion of pipelines.*

BCEOC has an integrity management program in place and maintains compliance with both the EPA, CDPHE, and COGCC regulations. COGCC Rule 1102 requires that operators take reasonable precautions to prevent failures, leakage, and corrosion of flowlines and to repair those conditions within a reasonable timeframe. The following plan is intended to document compliance with the rule requirements.

1.2. PURPOSE

The purpose of this plan is to document the existing BCEOC flowline integrity management program and to provide clear instruction to maintain compliance with COGCC Rule 1101 and 1102 requirements.

1.3. SCOPE

This plan is applicable to all BCEOC flowlines as defined by the COGCC rules and COGCC Flowline Operator Guidance document. BCEOC maintains an inventory of applicable flowlines. Integrity inspections and best management practices for other operational equipment are not covered under this flowline integrity management plan.

2. APPLICABILITY

Both the COGCC Rule 100 definition of Flowlines as well as the COGCC Operator Flowline Guidance document were used to determine the applicable flowlines for inclusion in the BCEOC flowline maintenance program. The following flowlines are inspected, tested, and maintained under the requirements of this plan.

- Well Site Flowline – the line between the well and separation equipment;
- Sales Line – the gas line from the separator to the gas meter;
- Dump Lines – All subgrade gas dump lines will be included due to elevated pressure;
- Process Piping – in multi-well pad situations, individual dump lines that are commingled prior to going to a set of tanks connected by piping. These only include process piping that has the potential for operating above 15 psig; and
- Non-Well Site Flowline – the line between the Well Site and the point of transfer when the water treatment facility, production facility, or transfer point is not located at the Well Site.

2.1. NON-APPLICABLE FLOWLINES

BCEOC has conducted an applicability determination for all flowlines in our operations areas. The following are flowlines that do not fall into the applicability classifications above or flowlines that have additional inspection requirements that satisfy the intent of integrity management.

Aboveground Flowlines

Aboveground flowlines, predominantly process piping and manifolds, will be not included in the annual pressure testing program due to multiple overlapping compliance programs that track flowline integrity. The following programs include inspection of aboveground flowlines on a routine basis.

- **BCOEC Operational Policy** – All aboveground flowlines are inspected by onsite operations personnel as part of their daily responsibilities at the location.
- **SPCC Compliance** – Aboveground flowlines are inspected within 6 months of first date of production at the location as part of the SPCC requirements. SPCC regulation also requires formal annual inspections of aboveground flowlines, connections, oil containing equipment, and tanks for leaks and corrosion.
- **Air Quality Compliance** – BCEOC has a robust inspection program to maintain compliance with multiple air quality requirements. CDPHE Regulation 7 (XVII. F) requires BCEOC to conduct leak detection and repair (LDAR) and audio/visual/olfactory (AVO) inspections of all aboveground lines, connections, and equipment for leaks and corrosion. BCEOC personnel routinely complete and document all inspections on a set schedule that is determined by the potential VOC emissions at each facility. AVO inspections are conducted on all locations each month. LDAR inspections, performed with

a FLIR camera, can be conducted as often as monthly but will occur a minimum of once per year at all locations.

While maintaining compliance with the three inspection programs above, BCEOC routinely inspects and documents the condition of aboveground flowlines. Due to the level of observation and the reduced timeline for discovery and response to an aboveground flowline release, BCEOC will not conduct annual pressure testing of aboveground flowlines.

3. PRESSURE TESTING OF FLOWLINES

3.1. NEW FLOWLINE INSTALLATIONS

Following the installation of new flowlines and prior to service, BCEOC conducts pressure testing to confirm the flowlines hold pressure and no leaks are present. Flowlines may be hydrotested or pressure tested with wellbore fluids depending on the construction scenario. BCEOC testing duration meets or exceeds the COGCC requirement of four hours as addressed in Rule 1104.h.(1).A. If the flowline pressure loss exceeds 10% and has not stabilized in the last 5 minutes of the test, additional investigation is conducted to determine if potential leaks are present in the system. Pressure deviation during testing will be internally documented and retained with the testing records. Pressure deviations that can't be explained by test fluid, weather, or other common influences will be investigated to determine if potential leaks are present in the system.

3.2. EXISTING FLOWLINE TESTING

As required in COGCC Rule 1101.e, BCEOC conducts annual pressure testing of all buried flowlines anticipated to operate above 15 psig. Flowlines are pressure tested with wellbore fluids depending on where the flowline is located in the production process. BCEOC testing duration meets or exceeds the COGCC required 30 minutes once the fluid pressure has stabilized, as addressed in Rules 1104.f.(2).A., 1104.f.(2).A., and 1104.h.(2).A. If the flowline pressure loss exceeds 10% and has not stabilized in the last 5 minutes of the test, additional investigation is conducted to determine if potential leaks are present in the system. The flowline test is not considered "passed" until these pressure loss parameters are achieved. Pressure deviation during testing will be internally documented and retained with the testing records. Pressure deviations that can't be explained by test fluid, weather, or other common influences will be investigated to determine if potential leaks are present in the system. The flowline will then be repaired, if necessary, to achieve a passing test.

As detailed in Section 2.1 above, BCEOC will not conduct annual pressure testing on flowlines operating below 15 psig or aboveground flowlines.

BCEOC will retain records that the flowlines were blown down. These flowlines will be pressure tested prior to return to production.

4. RECORDKEEPING

Per COGCC Rule 1102.m., BCEOC will keep all records associated with the flowline integrity management program until the abandonment information is reported to the COGCC or it will be transferred with a change of operator.

4.1. INITIAL AND ANNUAL PRESSURE TESTING

During pressure testing events BCEOC will record the following parameters:

- Operator conducting the pressure test;
- Date and time of the pressure test;
- Starting and ending pressure in pounds per square inch;
- Pressure deviation; and
- Results of pressure test (Pass/Fail).

4.2. FLOWLINE FAILURE AND REPAIR

Following a release from a BCEOC flowline, as defined by this plan, BCEOC will conduct immediate investigation and repair of the flowline. The flowline will then be pressure tested before returning to production. During flowline release events BCEOC will record the following parameters:

- Date and time the release was discovered;
- Location of the flowline failure (GPS – latitude/longitude);
- Cause of the flowline failure (if determined);
- Amount of commodity or waste lost; and
- How the flowline was repaired.

Pressure testing of a repaired/replaced flowline will be documented as described in Section 4.1 above. All records from flowline release and repair events will be maintained by BCEOC electronically.

4.3. COGCC AUDITING

BCEOC's Flowline Integrity Management Plan, flowline inventory, annual pressure testing records, and flowline release and repair records will be made available to the COGCC upon request. Depending on the request, the records may take five business days to prepare and submit.