



ECMC FLUID LEAK DETECTION PLAN OPERATOR GUIDANCE

FORM 2A

Rule 304.c.(13). - Fluid Leak Detection Plan

Document Control

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Rule Citation

304.c.(13). Fluid Leak Detection Plan.

A fluid leak detection plan.

Associated Rules (608, 609, 1102) are included in Appendix A.

Purpose of Fluid Leak Detection Plan

The purpose of this plan is to document the location of the drilling, completions, and production equipment; describe engineering and administrative processes to prevent the discharge of fluids (drilling fluids, hydraulic fracturing fluids, flowback fluids, oil, condensate, produced water) to the environment; and document the repair of any fluid leaks or discharges.

Operators are required to document that all above ground and below ground on-site and off-site fluid handling, storage, transmission, and transportation equipment have integrity and are in compliance with the applicable standards cited in the ECMC rules.

Guidance/Requirements

1. Describe the processes and frequency of monitoring, inspections, testing, and maintenance for existing and proposed wellheads; drilling and completion fluid storage tanks; fired vessel, heater treater, and separation equipment; production fluid storage tanks; buried or partially buried tanks, vessels, or structures; on-site flowlines and production piping; temporary off-site frac fluid pipelines; production fluid pits; and fluid handling equipment.
2. Develop a Fluid Leak Detection Plan and an associated set of Best Management Practices (BMPs) to identify, evaluate, and employ appropriate control technologies, monitoring practices, operational practices, and/or other strategies designed to meet the requirements of ECMC's Rule 608 - Oil and Gas Facilities, Rule 609 - Inspections, and Rule 1102 - Flowline and Crude Oil Transfer Line Requirements. (These rules are included in the Appendix of this document.)
3. Develop a program for monitoring and inspecting, testing, and maintaining all structures, equipment, lines, and drainage systems that are used to separate, store, contain, or transfer drilling, completion, and produced fluids developed from oil and gas wells to reduce the potential for discharges. This document should address the following operational, procedural, and administrative actions:

- a. **Introduction and Site Description**

Provide site description for the Oil and Gas Location, including whether on fee or federal surface. Include total acres of disturbance, Working Pad Surface, and post-drilling and completion area (Production Pad); and site elevation.

Include proposed timeframes and duration of all oil and gas operations.

b. Drilling and Completions Operations Leak Detection

Describe the plan to enhance fluid leak detection and minimize spills during drilling and completion activities (through BMPs and strategies).

Include inspection protocol during drilling and completions operations for all fluid containing equipment (tanks, piping, and connections) at Oil and Gas Locations, including but not limited to:

- i. Field-constructed above-ground containers
- ii. All drilling and completion fluid-containing tanks and associated secondary containment structures, including piping/flowlines and layflat for transferring water to and from the location
- iii. Built containers
- iv. Generators/fuel tanks and associated secondary containment
- v. Portable containers and all manifolded piping
- vi. On-site pipelines (fluid transfer, completion lines from pumper trucks to wells, flowback lines)
- vii. Field drainage systems (sumps, skimmers)
- viii. Additional equipment used during storage, containment, or transferring of drilling and completion fluids (drilling mud, cement returns, hydraulic fracturing chemicals and fluids, and flowback fluids)

c. Production Operations Leak Detection

Describe the discharge prevention measures (through BMPs and strategies) that will be established and implemented to aid in preventing fluid releases at produced fluid facilities and equipment during production operations at the Oil and Gas Location.

Include inspection protocol for all fluid-containing equipment (tanks, piping, and connections) at Oil and Gas Locations, including but not limited to:

- i. Wellheads and all associated piping
- ii. All produced fluid-containing tanks and associated secondary containment Structures
- iii. Generators/Fuel Tanks and associated secondary containment
- iv. All manifolded piping
- v. Onsite transfer (flowlines, production piping)
- vi. Field drainage systems (oil traps, sumps, or skimmers)
- vii. Loading and unloading racks
- viii. Well workover operations equipment

d. Monitoring and Inspection Procedures and Schedules

Describe monitoring and inspection procedures and schedules instituted for the following fluid equipment at all Oil and Gas Locations:

- i. Field-constructed above ground containers
- ii. All fluid containing tanks and associated secondary containment structures
- iii. Shop-built containers
- iv. Generators / Fuel Tanks and associated secondary containment
- v. Pressure vessels (separators, heater treaters, pigging stations)
- vi. Produced water pits or ponds

- vii. Portable containers and all manifolded piping
- viii. Onsite pipelines (flowlines, production piping)
- ix. Field drainage systems (oil traps, sumps, or skimmers)
- x. Additional equipment used during separation, storage, containment, or transferring of produced fluids

e. Testing and Maintenance Procedures and Schedules

Describe the testing and maintenance procedures and schedules to be instituted for drilling, completion, and produced fluid facilities and equipment at all Oil and Gas Locations, in particular the following:

- i. Pressure vessels
- ii. Onsite pipeline
- iii. Storage tanks and containers

Maintenance and testing schedules for individual equipment must be described in this plan and the results be provided to ECMC upon request.

f. Record Keeping Requirements

Describe record keeping requirements to be utilized for produced fluid leak detection activities at all Oil and Gas Locations.

Describe how documentation associated with the inspection and testing activities conducted per the requirements of this plan will be maintained.

Describe how records of inspections and tests required by this plan will be signed by the appropriate personnel and retained for a period of three years or as indicated in ECMC's rules.

Inspection records and associated information will be maintained by the Operator with a copy of this plan. Records of inspections, tests, and corrective actions will be provided to ECMC upon request.

g. Site-Specific Fluid Leak Detection BMPs

Provide a detailed list or narrative description of site-specific BMPs for evaluating and determining that all above-ground and below-ground on-site and off-site fluid handling, storage, transmission, and transportation equipment have integrity and are in compliance with the applicable standards cited in the ECMC rules.

BMPs shall include, but are not limited to:

- i. secondary containment;
- ii. daily Audio, Visual and Olfactory (AVO) inspections - sounds, visual observations, and odor detection of hydrocarbon emission(s);
- iii. inspections of all production equipment (tanks, separators, combustors, etc.), wellhead(s), temporary equipment (when required), on-site above ground flowlines;
- iv. use of approved instrument monitoring method (AIMM) Inspections;
- v. spill prevention training to all field employees; and
- vi. flowline integrity testing per 1100 Series Rules; and spill response procedures.

This list is to be provided in a format that allows the BMPs to be copied onto the Form 2A.

h. Leaks and Spills

Provide information and procedures for the repair and cleanup of any leaks or spills. This should include:

- i. Timing of the repair
- ii. Evaluation regarding the extent of any spills
- iii. Handling of contaminated material
- iv. Documentation of the leak or spill including reporting and cleanup requirements per ECMC Rule 912.

Additional Information

Common Errors and Issues Encountered by ECMC Staff

1. N/A

General Notes

1. Maintenance and testing schedules for individual equipment will be described in this plan and the results will be provided to ECMC upon request.
2. Records of inspections, tests, and corrective actions will be provided to ECMC upon request.
3. Releases resulting from the failure of containers, pipelines or other equipment will be documented in accordance with the operator's current incident management procedures and ECMC spill/release reporting requirements.
4. If a Pit is proposed on the location, a Form 15 is required, and Rule 908 and Rule 909 will be followed.
5. Reporting of any spills will require a Form 19 and Form 27 following ECMC Rule 912 and Table 915-1.
6. Information on Instrument Monitoring Methods are available at https://cogcc.state.co.us/library.html#/special_projects/flowline_imm_workgroup
7. Additional Rule References relating to Fluid Leak detection can be found in the following:

- Rule 408: General Drilling Rules;
- Rule 603.f, k, and o: Operational And Safety Requirements
- Rule 608: Oil and Gas Facilities
- Rule 609: Inspections
- Rule 908: Pit Permitting/Reporting Requirements
- Rule 909: Pits - Construction and Operations
- Rule 912: Spills and Releases
- Rule 1102: Flowline and Crude Oil Transfer Line Requirements

Frequently Asked Questions

1. N/A

Document Change Log

Change Date	Description of Changes
December 3, 2020	First Version Created
April 1, 2025	Guidance updated to reflect Dec 2025 Rules
July 10, 2025	Reviewed, ADA accessibility verified, prepared for publication

Appendix - Related Rules

608. OIL AND GAS FACILITIES

a. Production Liquid Storage Tanks.

(1) Atmospheric Tanks used for produced Fluids storage will be built in accordance with the following standards as applicable. Only those editions of standards incorporated by reference in Rules 608.a.(1).A-F apply; later amendments do not apply. All materials incorporated by reference in this Rule 608.a.(1) are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from API, 1220 L Street, NW, Washington, DC 20005-4070, and from Underwriters Laboratories, Inc., 100 Technology Drive, Broomfield, CO 80021.

- A. Underwriters Laboratories, Inc., No. UL-142, Standard for Steel Above Ground Tanks for Flammable and Combustible Liquids, 10th Edition (May 17, 2019);
- B. API Standard No. 650, Welded Steel Tanks for Oil Storage, 13th Edition (March 2020);
- C. API Standard No. 12B, Bolted Tanks for Storage of Production Liquids, 16th Edition (November 2014);
- D. API Standard No. 12D, Field Welded Tanks for Storage of Production Liquids, 12th Edition (June 2017);
- E. API Standard No. 12F, Shop Welded Tanks for Storage of Production Liquids, 13th Edition (January 2019); or
- F. API Standard No. 12P, Specification for Fiberglass Reinforced Plastic Tanks, 4th edition (August 2016), only for produced water.

(2) Tanks used for produced Fluids storage will be located at least 2 diameters from the boundary of the property on which the Tank is built. Where the property line is a public right of way, the Tanks will be 2/3 of

the diameter from the nearest side of the public right of way or easement.

- A. Tanks with less than 3,000 Barrels capacity will be located at least 3 feet apart.
 - B. Tanks with 3,000 or more Barrel capacity will be located at least $\frac{1}{6}$ the sum of the diameters apart. When the diameter of one Tank is less than $\frac{1}{2}$ the diameter of the adjacent Tank, the Tanks will be located at least $\frac{1}{2}$ the diameter of the smaller Tank apart.
- (3) All production Tanks greater than 60 gallons will conform to minimum standards of NFPA Code 30, 2018 Edition unless otherwise specified. Only the 2018 version of NFPA Code 30 applies to this Rule; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from the NFPA, 1 Batterymarch Park, Quincy, MA, 02169-7471.
- (4) At the time of installation, Tanks will be a minimum of 200 feet from any building.
- (5) Unless equipped with a fired heater, Tanks will be a minimum of 75 feet from a FV or heatertreater (“HT”). No ancillary equipment that has potential ignition sources will be installed or used inside the secondary containment area.
- (6) Tanks will be a minimum of 50 feet from a separator, Well test unit, or other non-fired equipment. Non-fired vapor recovery towers, transfer pumps, vapor line knockouts, and LACT units are exempt from this requirement.
- (7) Tanks will be a minimum of 75 feet from a compressor with a rating of greater than or equal to 200 horsepower.
- (8) Tanks will be a minimum of 75 feet from a wellhead.

(9) Gauge hatches on atmospheric Tanks used for crude oil storage will be closed, latched, and sealed at all times when not being actively accessed by trained personnel. Tanks will function as sealed and ventless with gas released only through a vapor control system or properly sized pressure relief valve.

(10) Tank Venting Standards.

A. All Tank Venting systems will be designed, constructed, and operated in accordance with API Standard 2000, Venting Atmospheric and Low Pressure Storage Tanks, 7th edition, March 2014. Only the 7th Edition of the API standard applies to this Rule; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from API at 1220 L Street, NW Washington, DC 20005-4070.

B. Except for individual blowdown lines used to depressurize Tanks prior to opening gauge hatches, vent lines from individual Tanks will be joined and ultimate discharge will be directed away from the loading racks and FV pursuant to API RP 12R-1, Installation, Operation, Maintenance, Inspection, and Repair of Tanks in Production Service, 6th Edition, March 2020. Only the 6th Edition of API RP 12R1 applies to this Rule; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from API, 1220 L Street, NW, Washington, DC 20005-4070.

C. During drilling, completion, production, and storage operations, all sealed Tanks will be designed for a minimum of 4 ounces of

backpressure. Vent/back pressure valves, the combustor, lines to the combustor, and knock-outs will be sized and maintained so as to safely accommodate any surge the system may encounter.

Operators will properly maintain, and periodically test, Tank seals to ensure that they provide the required back pressure and prevent emissions.

(11) During hot oil treatments on Tanks containing 35 degrees or higher API gravity oil, hot oil units will be located a minimum of 100 feet from any Tank being serviced.

(12) Labeling of Tanks. All Tanks and Containers will be labeled pursuant to Rule 605.h.

(13) All open-topped Tanks will be equipped with screens or other appropriate equipment to prevent entry by wildlife, including birds and bats.

(14) Change in Service. Tanks undergoing change in service will be emptied, cleaned, and relabeled for the new use (if any). Operators will manage all waste generated during change in service pursuant to Rule 906.

b. Fired Vessel, Heater-Treater, and Separation Equipment.

(1) Fired vessels ("FV") including heater-treaters ("HT") will be minimum of 50 feet from separators or Well test units.

(2) FV-HT will be a minimum of 50 feet from a lease automatic custody transfer unit ("LACT"). (3) FV-HT will be a minimum of 40 feet from a pump.

(4) FV-HT will be a minimum of 75 feet from a Well.

(5) At the time of installation, FV-HT will be a minimum of 200 feet from a Residential Building Unit.

(6) Vents on pressure safety devices will terminate in a manner so as not to endanger the public or adjoining facilities. They will be designed to be clear and free of debris and water at all times.

- (7) All stacks, vents, or other openings will be equipped with screens or other appropriate equipment to prevent entry by wildlife, including birds and bats.
 - (8) All separation equipment will be designed, constructed and maintained according to API Spec 12J, Specification for Oil and Gas Separators, 8th edition, October 2008. Only the 8th Edition (2008) of API Spec 12J applies to this Rule; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials and are available from API, 1220 L Street, NW, Washington, DC 20005-4070.
- c. Special Equipment. The Director may require an Operator to employ special equipment to protect public safety.
- (1) All Wells located within 500 feet of a Residential Building Unit will be equipped with an automatic isolation valve that will shut the Well in when a sudden change of pressure, either a rise or drop, occurs. Automatic isolation valves will be designed so they are fail safe.
 - (2) Isolation valves required by Rule 608.c.(1) will be electronic or activated by a secondary gas source supply, and will be inspected at least every 3 months to ensure the valves are in good working order and that the secondary gas supply has volume and pressure sufficient to activate the isolation valve.
- d. Static Charge, Lightning, and Stray Current Requirements. All equipment will be designed and operated in a manner to prevent accumulation of static charge pursuant to API RP 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents, 8th Edition, September 2015. Only the 8th Edition (2015) of API RP 2003 applies to this Rule; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801,

Denver, CO 80203. In addition, these materials are available from API, 1220 L Street, NW, Washington, DC 20005-4070.

e. Mechanical Conditions. All Production Facilities, valves, pipes, fittings, and vessels will be securely fastened or sealed, inspected at regular intervals, and maintained in good mechanical condition. All equipment will be engineered, operated, and maintained within the manufacturer's recommended specifications.

f. Buried or Partially Buried Tanks, Vessels, or Structures.

(1) Buried or partially buried Tanks, vessels, or structures used for storage of produced Fluids and E&P Waste will be properly designed, constructed, installed, and operated in a manner to prevent leaks, contain materials safely, and according to manufacturer specifications.

(2) Buried or partially buried Tanks, vessels, or structures will be underlain by an impermeable synthetic or engineered liner that extends to the surface and ties into the secondary containment. In lieu of an impermeable liner, double walled Tanks may be used to meet the requirements of this Rule 608.f.(2).

(3) Operators will inspect or test buried or partially buried Tanks, vessels, or structures for leaks at least annually. Operators will maintain records documenting tests conducted pursuant to this Rule 608.f.(3) for 5 years, and provide the records to the Director upon request.

(4) If any leaks are detected, Operators will repair or replace the Tank, vessel, or structure to prevent future Spills or Releases of E&P Waste. Operators will report, investigate, and remediate any Spill or Release pursuant to Rules 912 & 913.

g. Fluid Handling Equipment. Any piece of Fluid handling equipment that is not a Tank or Flowline, including temporary equipment, and regardless of the volume the equipment is designed to hold, will have either general secondary containment around the equipment, or a written Spill contingency plan. The written Spill contingency plan will include at least the following standards:

- (1) A written commitment of manpower, equipment, and materials required to expeditiously control and contain all discharged Fluids;
- (2) A schedule and protocol for periodic visual inspection or testing flow-through process vessels and associated components (such as dump valves) for leaks, corrosion, or other conditions that could lead to a discharge;
- (3) Procedures for taking corrective action or making repairs to flow-through process vessels and any associated components as indicated by regularly scheduled visual inspections, tests, or evidence of a discharge; and
- (4) Procedures for prompt removal, Remediation, and reporting, if required, for any accumulations of discharges.

609. INSPECTIONS

- a. Unless otherwise specified by the Commission's Rules, Operators will inspect Oil and Gas Locations as set forth below. Operators will promptly investigate, and if appropriate, repair, replace, or remediate any malfunctioning equipment or process. If an Operator takes action to address any malfunctioning equipment or process identified during an inspection, the Operator will maintain documentation of the action taken, and provide it to the Director upon request. The Operator will submit documentation of the results of all Tank system inspections to the Director upon request.
- b. Tank and Process Vessel Inspections. All in-service Tanks and process vessels will be inspected and maintained pursuant to one of the following applicable standards:
 - (1) For Tanks that are built to meet API Standard 650, as incorporated by reference in Rule 608.a.(1).B, or are greater than 30 feet in diameter, API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction, (Fifth Edition, Including Addendum 1 (2018), Addendum 2 (2020), and Errata 1 (2020)). Only the fifth edition (2018, including 2020 Addendum 2 and Errata 1) of API Standard 653 apply; later

amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from API, 1220 L Street, NW, Washington, DC 20005-4070.

- (2) For all other Tanks, either: A. API Standard 12R1, Recommended Practice for Setting, Maintenance, Inspection, Operation, and Repair of Tanks in Production Service (6th edition March 2020). Only the 6th edition (March 2020) of API Standard 12R1 applies; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from API, 1220 L Street, NW, Washington, DC 20005-4070; or B. Steel Tank Institute (“STI”) SP001, Standard for the Inspection of Aboveground Storage Tanks (January 2018). Only the January 2018 version of STI SP001 applies; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials are available from STI, 944 Donata Court, Lake Zurich, IL 60047.
- (3) For process vessels, API Standard 510, Pressure Vessel Inspector (10th edition May 2014). Only the 10th Edition (May 2014) of API Standard 510 applies to this Rule; later amendments do not apply. API Standard 510 is available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, these materials may be examined at any state publications depository library

and is available from API at 1220 L Street, NW Washington, DC 20005-4070.

c. Out of Service Tanks and Process Vessels. Out of service Tanks and process vessels are not subject to the inspection standards in Rule 609.b. Operators will:

- (1) Isolate or disconnect the Tank or process vessel from sources of oil, condensate, produced water, or natural gas;
- (2) Depressurize and evacuate all hydrocarbons and produced water from the Tank or process vessel and test the interior of the Tank or process vessel to show that it is safe for designated entry, cleaning, or repair work.;
- (3) Apply OOSLAT; and
- (4) Equip any openings in the Tank or process vessel with screens or other appropriate equipment to prevent entry by wildlife, including birds and bats.

d. Audio Visual Olfactory Inspections. Operators will conduct Audio, Visual, Olfactory (“AVO”) inspections of all Oil and Gas Facilities, at the same inspection frequency required by the Air Quality Control Commission Regulation 7, 5 C.C.R. §§ 1001-9:D.I.E.2.c.viii-ix & 1001-9:D:II.C.1.d (2021) (“AQCC Regulation 7”). Only the version of the AQCC Regulation 7 in effect as of January 15, 2021 applies to this Rule; later amendments do not apply. All materials incorporated by reference in this Rule are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, CO 80203. In addition, AQCC Regulation 7 is available from the Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246, and is available online at <https://www.colorado.gov/pacific/cdphe/aqcc-regs>. When performing an AVO inspection, an Operator will survey the Oil and Gas Facility using audio, visual, and olfactory techniques to detect failures, leaks, Spills, or Releases, or signs of a leak, Spill, or Release.

1102. FLOWLINE AND CRUDE OIL TRANSFER LINE REQUIREMENTS

- a. Material. Materials for pipe and pipe components must be:
 - (1) Able to maintain the structural integrity of the flowline or crude oil transfer line under anticipated operating temperature, pressure, and other operating conditions; and
 - (2) Compatible with the substances to be transported.
- b. Applicable Technical Standards. Each component of a flowline or crude oil transfer line installed or repaired must meet one of the following standards appropriate for the component:
 - (1) American Society of Mechanical Engineers (ASME), Pipeline Transportation Systems for Liquids and Slurries, 2016 Edition (ASME B31.4-2016), and no later editions of the standard. ASME B31.4-2016 is available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. Additionally, ASME B31.4-2016 may be examined at any state publications depository library and is available to purchase from the ASME. The ASME can be contacted at Two Park Avenue, New York, NY 10016-5990, 1-800-843-2763;
 - (2) ASME Gas Transmission and Distribution Piping Systems, 2016 Edition (ASME B31.8-2016), and no later editions of the standard. ASME B31.8-2016 is available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. Additionally, ASME B31.8-2016 may be examined at any state publications depository library and is available to purchase from the ASME. The ASME can be contacted at Two Park Avenue, New York, NY 10016-5990, 1-800- 843-2763;
 - (3) ASME Process Piping, 2016 Edition (ASME 31.3-2016), and no later editions of the standard. ASME 31.3-2016 is available for public

inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. Additionally, ASME 31.3-2016 may be examined at any state publications depository library and is available to purchase from the ASME. The ASME can be contacted at Two Park Avenue, New York, NY 10016-5990, 1-800-843-2763;

- (4) API Specification 15S, Spoolable Reinforced Plastic Line Pipe, Second Edition, March 2016 (API Specification 15S), and no later editions of the standard. API Specification 15S is available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. In addition, 1100-6 As of January 15, 2021 API Specification 15S may be examined at any state publications depository library and is available from API at 1220 L Street, NW Washington, DC 20005-4070, 1-202-682-8000;
- (5) API RP 15TL4 (R2018) Recommended Practice for Care and Use of Fiberglass Tubulars, Second Edition. March 1999 together with API Specification 15HR, High-pressure Fiberglass Line Pipe, Fourth Edition, February 2016 (API Specification 15HR), and no later editions of the standards. API RP 15TL4 and API Specification 15HR are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. In addition, API RP 15TL4 and API Specification 15HR may be examined at any state publications depository library and are available from API at 1220 L Street, NW Washington, DC 20005-4070, 1-202-682-8000;
- (6) API RP 15TL4 (R2018) Recommended Practice for Care and Use of Fiberglass Tubulars, Second Edition, March 1999, together with API Specification 15LR (R2013), Low Pressure Fiberglass Line Pipe and Fittings, Seventh Edition, August 2001 (API Specification 15LR), and no later editions of the standards. API RP 15TL4 and API Specification 15LR

are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. In addition, API RP 15TL4 and API Specification 15LR may be examined at any state publications depository library and are available from API at 1220 L Street, NW Washington, DC 20005-4070, 1-202- 682-8000; or

- (7) ASME “Repair of Pressure Equipment and Piping” (ASME PCC-2-2018) and no later editions of the standard. The ASME standard is available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. Additionally, the standard may be examined at any state publications depository library. The ASME standard is available to purchase from ASME at Two Park Avenue, New York, NY 10016-5990, 1-800-843-2763.

c. Design. Each component of a flowline or crude oil transfer line must be designed to:

- (1) Prevent failure by minimizing internal or external corrosion and the effects of transported fluids;
- (2) Withstand maximum anticipated operating pressures and other internal loadings without impairment;
- (3) Withstand anticipated external pressures and loads that will be imposed on the pipe after installation;
- (4) Allow for line maintenance, periodic line cleaning, and integrity testing;
- and (5) Have adequate controls and protective equipment to prevent it from operating above the maximum operating pressure.

d. Installation.

- (1) Installation crews must be trained in flowline or crude oil transfer line installation practices for which they are tasked to perform.
- (2) All workers performing welding on steel flowline or steel crude oil transfer lines in pressure service, must be certified in accordance with:
 - A. API Standard 1104, Welding of Pipelines and Related Facilities,

Twenty First Edition, September 2013 and no later editions of the standard. API Standard 1104 is available for public inspection during normal business hours from the Public Room Administrator at the 1100-7 As of January 15, 2021 office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. In addition, API Standard 1104 may be examined at any state publications depository library and is available from API at 1220 L Street, NW Washington, DC 20005-4070, 1-202-682- 8000; or B. ASME BPV Code 2017 Section IX - Welding, Brazing and Fusing Qualification and no later editions of the code. The Section is available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. In addition, the ASME BPV Code may be examined at any state publications depository library The ASME BPV Code is available to purchase from the ASME at Two Park Avenue, New York, NY 10016-5990, 1-800-843- 2763.

- (3) Non-destructive testing of welds for newly constructed steel off-location flowlines or steel crude oil transfer lines must be done in accordance with one of the following: A. Those standards established by the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration pursuant to 49 C.F.R. § 192.243 and 49 C.F.R. § 195.234, in existence as of the date of this regulation, and no later amendments. 49 C.F.R. § 192.243 and 49 C.F.R. § 195.234 are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203. Additionally, 49 C.F.R. § 192.243 and 49 C.F.R. § 195.234 may be found at <https://www.phmsa.dot.gov>; or B. One of the standards set forth in Rule 1102.b. or Rule 1102.d.(2)A. and B., above.
- (4) Non-destructive testing is not required for repairs of existing steel off-location flowlines or steel crude oil transfer lines.

- (5) No pipe or other component may be installed unless it has been visually inspected at the site of installation to ensure that it is not damaged.
- (6) Off-location flowlines and crude oil transfer lines must be locatable by a tracer line or location device placed adjacent to or in the trench of a buried nonmetallic flowline or crude oil transfer line. Any installed tracer wire or metallic device for locating must be resistant to corrosion damage. Caution tape must be placed in the trench above the line and a minimum of one foot below grade. Metallic locatable caution tape may be used to satisfy both the tracer and caution tape requirements, if designed to be a location device.
- (7) Flowlines or crude oil transfer lines must be installed in a manner that minimizes interference with agriculture, land under construction, structures, road and utility construction, wildlife resources, the introduction of secondary stresses, and the possibility of damage to the pipe.
- (8) The pipe must be handled in a manner that minimizes stress and avoids physical damage to the pipe during stringing, joining, or lowering in. During the lowering in process the pipe string must be properly supported so as not to induce excess stresses on the pipe or the pipe joints or cause weakening or damage to the outer surface of the pipe.
- (9) Flowlines or crude oil transfer lines that cross a municipality, county, or state graded road must be bored unless the responsible governing agency specifically permits the operator to open cut the road.
- (10) Flowlines and crude oil transfer lines must be installed pursuant to the manufacturer's specifications. In the absence of applicable manufacturer's specifications, the following requirements apply: 1100-8 As of January 15, 2021 A. Flowline or crude oil transfer line trenches must be constructed to allow the line to rest on undisturbed native soil and provide continuous support along the length of the pipe; B. Trench bottoms must be free of rocks greater than two inches in diameter, debris, trash, and other foreign material not required for flowline or

crude oil transfer line installation; and C. Over excavated trench bottoms must be backfilled with appropriate material and compacted prior to installation of the pipe to provide continuous support along the length of the pipe.

- (11) The width of the trench must provide adequate clearance on each side of the pipe. Trench walls must be excavated to ensure minimal sloughing of sidewall material into the trench. Subsoil from the excavated trench must be stockpiled separately from previously stripped topsoil.
- (12) A flowline or crude oil transfer line trench must be backfilled in a manner that provides firm support under the pipe and prevents damage to the pipe and pipe coating from equipment or from the backfill material. Sufficient backfill material must be placed in the pipe springline to provide long-term support for the pipe. Backfill material that will be within two feet of the pipe must be free of rocks greater than two inches in diameter and foreign debris. Backfilling material must be compacted as appropriate during placement in a manner that provides support for the pipe and reduces the potential for damage to the pipe and pipe joints.
- (13) Flowlines and crude oil transfer lines that traverse sensitive wildlife habitats or sensitive areas, such as wetlands, streams, or other surface waterbodies, must be installed in a manner that minimizes impacts to these areas.