PS Memo 14-04

To: **Stationary Sources Program, Local Agencies and Regulated Community**

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Subject: **Guidance for Oil & Gas Industry Regulation 7, Section XVII.F, Leak Detection and Repair Program for Well Production Facilities and Natural Gas Compressor Stations and Section XVII.B, General Provisions for Open Ended Valves or Lines**

This guidance document is intended to answer frequently asked questions pertaining to the implementation of Regulation 7, Section XVII.B and XVII.F. This guidance is not legally binding interpretation of the actual regulatory provisions, but merely serve as a current guide to assist owners, operators and other interested parties.

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1. DEFINITIONS

This section contains definitions of terms that are contained in Regulation 7, Section XVII.A

1.1. Approved Instrument Monitoring Method (AIMM)

An infra-red camera, EPA Method 21, or other Division approved instrument based monitoring device or method. Any instrument monitoring method approved by the Division must be capable of detecting leaks as defined in Section XVII.F.6. If an owner or operator elects to use Division approved continuous emission monitoring, the Division may approve a streamlined inspection and reporting program for such operations.

1.2. Component

Each pump seal, flange, pressure relief device, connector, and valve that contains or contacts a process stream with hydrocarbons, except for components in process streams consisting of glycol, amine, produced water, or methanol.

1.3. Connector

Flanged, screwed, or other joined fittings used to connect two pipes or a pipe and a piece of process equipment or that close an opening in a pipe that could be connected to another pipe. Joined fittings welded completely around the circumference of the interface are not considered connectors.

1.4. Date of First Production

The date reported to the Colorado Oil and Gas Conservation Commission (COGCC) as the "date of first production.

1.5. Natural Gas Compressor Station

A facility, located downstream of well production facilities, which contains one or more compressors designed to compress natural gas from well pressure to gathering system pressure prior to the inlet of a natural gas processing plant.

1.6. Open-Ended Valve or Line

Any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

1.7. Storage Tank

Any fixed roof storage vessel or series of storage vessels that are manifolded together via liquid line. Storage vessel is as defined in 40 CFR Part 60, Subpart OOOO. Storage tanks may be located at a well production facility or other locations.

1.8. Well Production Facility

All equipment at a single stationary source directly associated with one or more oil wells or gas wells. This equipment includes, but is not limited to, equipment used for storage, separation, treating, dehydration, artificial lift, combustion, compression, pumping, metering, monitoring, and flowline.

2. REGULATION 7, SECTION XVII.F APPLICABILITY

2.1. ***What types of facilities are affected sources under Regulation 7, Section XVII.F?***

As defined in Section XVII.A, well production facilities and natural gas compressor stations are affected sources under Section XVII.F. Well production facilities are further categorized into facilities that contain storage tanks (as defined in Section XVII.A.15) and facilities that do not contain oil or condensate storage tanks (i.e., "tankless"). Both of these well production facility types are affected sources, but each has unique criteria for calculating emissions to determine frequency of monitoring requirements.

2.2. ***If a facility receives hydrocarbon fluids (i.e., gas or liquid) directly from a well bore and has collocated compressors that support on-site operations in addition to well production operations from surrounding well pads, is this considered a well production facility or a natural gas compressor station?***

The Division considers this a well production facility.

2.3. ***In concept, what are considered "new" versus "existing" sources in the categories of natural gas compressor stations and well production facilities?***

2.3.1 For natural gas compressor stations, "existing" sources are those that commenced operation prior to January 1, 2015 and "new" sources are those that commenced operation on or after January 1, 2015.

2.3.2 For well production facilities, "existing" sources are those that were constructed prior to October 15, 2014 and "new" sources are those constructed on or after October 15, 2014.

2.4. ***The statement of basis and purpose indicates the well production facility definition is not meant to include natural gas storage wells. What does that mean practically?***

If a stationary source is specifically operated to support the injection and extraction of natural gas from an underground storage field after the natural gas has been processed in a natural gas processing plant, this type of facility would not be considered a well production facility.

2.5. ***Is a well location without tanks considered a "well production facility"?***

Yes, a well location without storage tanks is considered a well production facility.

2.6. ***Is an injection well for disposal of produced water considered a "well production facility"?***

No. A well production facility is limited to wells with the purpose of production of oil and/or natural gas. A disposal or injection well is not subject to the requirements of Section XVII.F.

3. AIR POLLUTANT EMISSION NOTICE (APEN) AND PERMITTING Q&A

3.1. ***How does Section XVII.F.2. change the way that VOC and hazardous air pollutant emissions (HAP) are calculated for the purpose of assessing Regulation 3, Part A, Section II.B.3 (Emission Reporting) and Part B, Section II.D.2 and II.D.3 (Permitting) requirements?***

As stated in Regulation 7, Section XVII.F.2 owners or operators of well production facilities or natural gas compressor stations that monitor components as required by Section XVII.F may estimate *uncontrolled actual emissions* from components leaks for the purpose of evaluating the applicability of component fugitive emissions to Regulation Number 3 by utilizing the emission factors defined as less than 10,000 ppmv of Table 2-8 of the 1995 EPA Protocol for Equipment Leak Emission Estimates (Document EPA-453/R-95-017).

3.2. ***At what point in time are companies able to follow the emissions calculation approach contained in Regulation 7, Section XVII.F.2 to determine emissions reporting and permitting requirements under Regulation 3?***

3.2.1 Well production facilities

3.2.1.1 "Existing" well production facilities that commence construction prior to October 15, 2014 may assess *uncontrolled actual emissions* according to Regulation 7, Section XVII.F.2 on or after the date established in the phase-in schedule established in Table 4.

3.2.1.2 "New" well production facilities constructed on or after October 15, 2014 may assess *uncontrolled actual emissions* according to Regulation 7, Section XVII.F.2 on or after October 15, 2014.

3.2.2 Natural Gas Compressor Stations

3.2.2.1 "Existing" natural gas compressor stations that commence operation prior to January 1, 2015 may assess *uncontrolled actual emissions* according to Regulation 7, Section XVII.F.2 on or after January 1, 2015.

3.2.2.2 "New" natural gas compressor stations that commence operation on or after January 1, 2015 may assess *uncontrolled actual emissions* according to Regulation 7, Section XVII.F.2 at any point in time after January 1, 2015.

3.3. ***If my existing permit contains a requirement to implement a case-specific Directed Inspection and Maintenance (DI&M) program as part of fulfilling a Regulation 3, Part B, Section III.D.2 Reasonably Available Control Technology (RACT) requirement for fugitive component leaks, when may I transition to complying with Regulation 7, Section XVII.F in lieu of this permit condition (per Regulation 7, Section XVII.F.1)?***

3.3.1 Well production facilities

3.3.1.1 "Existing" well production facilities that commence construction prior to October 15, 2014 will transition from existing permit DI&M requirements to Regulation 7, Section XVII.F.4 LDAR requirements on the specific date established in the phase in schedule established in Table 4.

3.3.1.2 "New" well production facilities constructed on or after October 15, 2014 will not contain Regulation 3, Part B, Section III.D.2 Reasonably Available Control Technology (RACT) requirements that differ from Regulation 7, Section XVII.F.4.

3.3.2 Natural Gas Compressor Stations

3.3.2.1 "Existing" compressor stations that commence operation prior to January 1, 2015 will transition from existing permit DI&M requirements to Regulation 7, Section XVII.F.3 LDAR requirements on January 1, 2015.

3.3.2.2 "New" compressor stations that commence operation after January 1, 2015 will not contain Regulation 3, Part B, Section III.D.2 Reasonably Available Control Technology (RACT) requirements that differ from Regulation 7, Section XVII.F.4.

3.4. ***Are "emissions reduction credits" available for facilities where an existing LDAR monitoring program exists?***

There are no emissions reduction credits currently available for facilities with existing LDAR monitoring programs.

4. FIELD SCENARIO QUESTIONS

<u>Well Production Facilities</u>

4.1. ***What specific activities indicate a well production facility has "commenced operation" in the context of Section XVII.F.4?***

The term "commencement of operation" is defined in Regulation 3, Part A, Section I.B.12 as "a new source commences operation when it first conducts the activity that it was designed and permitted for (i.e., producing cement or generating electricity)".

In the context of Section XVII.F.4 the Division believes a well production facility commences operation upon the date of first production of oil or natural gas. The date the facility commences operation will be maintained by the operator and provided to the Division upon request.

4.2. ***If a well production facility initially subject to a onetime AIMM monitoring requirement per Regulation 7, Section XVII.F.4 is modified to stimulate an existing well or add a new well into production, does this activity trigger the requirement to complete an additional AIMM monitoring event?***

If a well production facility is modified to stimulate an existing well or add a new well, the operator should reevaluate the emissions associated with the well production facility to determine if the monitoring frequency required has changed. If the modification to the well production facility includes an addition of piping or production equipment, but remains in the category that requires a onetime AIMM monitoring event, the operator should recomplete the onetime AIMM monitoring following the modification.

<u>Natural Gas Compressor Stations</u>

4.3. ***Are facilities with compressors that are downstream from well production facilities that compress natural gas back into an oil producing reservoir (i.e., enhanced oil recovery) and not directly into a gathering system prior to the inlet of a natural gas processing plant considered a natural gas compressor station?***

Facilities such as this would not be considered natural gas compressor stations unless the facility also compresses natural gas into a gathering system.

5. MONITORING REQUIREMENTS

5.1. ***How are VOC emissions calculated to determine monitoring frequencies contained in Section XVII.F.4.c, Table 4 for well production facilities?***

5.1.1 For facilities <u>with</u> either condensate or oil storage tanks, estimated *uncontrolled actual VOC emissions* from the highest emitting storage tank (as defined in Section XVII.A.15) at the well production facility determines the frequency at which inspections must be performed under Table 4.

5.1.2 For facilities <u>without</u> condensate or oil storage tanks, owners or operators must rely on the facility emissions (controlled actual VOC emissions from all permanent equipment, including emissions from components determined by utilizing the emission factors defined as less than 10,000 ppmv of Table 2-8 of the 1995 EPA Protocol for Equipment Leak Emission Estimates). The VOC inventory calculated for well production facilities without condensate or oil storage tanks must include VOC emissions from all production equipment on site. These emissions shall be calculated as *controlled actual VOC emissions*.

5.2. ***How are VOC emissions calculated to determine monitoring frequencies contained in Section XVII.F.3.d, Table 3 for natural gas compressor stations?***

Fugitive component leak *uncontrolled actual VOC emissions* must be calculated using the "Average" emission factors of Table 2-4 of the 1995 EPA Protocol for Equipment Leak Emission Estimates (Document EPA-453/R-95-017) to determine the frequency at which inspections must be performed.

5.3. ***Can the frequency of inspections defined in Table 3 for natural gas compressor stations and Table 4 for well production facilities change if the emissions increase or decrease over time?***

Yes, the required monitoring frequency for well production facilities and natural gas compressor stations may change over time due to either increases or decreases in emissions. Since the evaluation of emissions as it relates to determining monitoring frequency is specific to the facility type, operators are responsible for ensuring the established monitoring frequency is appropriate. After the initial frequency assessment, the Division recommends operators evaluate changes in emissions when modifications in the field occur that may significantly impact emissions.

5.4. ***When an operator estimates emissions from a "new" or "modified" well production facility or natural gas compressor station to establish the frequency of monitoring required under Regulation 7, Section XVII.F should the emissions be based on actual emissions or projected actual emissions?***

Since newly constructed and modified well production facilities and natural gas compressor stations need to begin the required monitoring upon commencement of operation the operator should base emissions estimates used to determine frequency of monitoring on projections of actual emissions that will occur during the first year of

operations.

5.5. ***If a source is authorized to use the 1995 EPA Protocol for Equipment Leak Emission Estimates Table 2-8 to estimate uncontrolled actual emissions for permitting purposes, may it also use Table 2-8 to determine inspection frequency?***

For compressor stations, pursuant to Section XVII.F.3.d., fugitive emissions and inspection frequency must be calculated using the emission factors of Table 2-4 of the 1995 EPA Protocol for Equipment Leak Emission Estimates or other Division approved method.

For well production facilities with tanks storing oil or condensate, these sources must look to uncontrolled actual VOC emissions from the highest emitting storage tank to determine inspection frequency. For well production facilities without tanks storing oil or condensate, owners and operators must rely on the facility-wide emissions – which include a calculation of emissions from components using Table 2-8. See Regulation 7, Section XVII.F.4.c.

5.6. ***Are emissions to be tracked on a rolling 12 month total to determine if a monitoring threshold is exceeded in either Table 3 or Table 4 of Regulation 7, Section XVII.F?***

Yes, emissions from well production facilities and natural gas compressor stations should be tracked on a rolling 12 month total to monitor if the inspection frequency changes as a result of an increase or decrease in emissions.

5.7. ***Per Section XVII.F.3.d natural gas compressors stations and Section XVII.F.4.c "tankless" well production facilities operators are required to estimate fugitive VOC emissions from component leaks. When determining the component count to support these calculations are there any exemptions for components based upon size, service type or location?***

To determine the monitoring frequency schedule, fugitive component leak emissions estimates shall be based on average emissions factors in Table 2-4 of the 1995 EPA Protocol for Equipment Leak Emission Estimates (Document EPA-453/R-95-017) for Section XVII.F.3.d (natural gas compressor stations) and the emission factors defined as less than 10,000 ppmv in Table 2-8 for Section XVII.F.4.c ("tankless" well production facilities). Both of these calculation methods require the knowledge of the number of components, type of service and stream composition to estimate emissions. Operators should follow the guidelines contained in the 1995 EPA Protocol for Equipment Leak Emission Estimates to determine which specific components should be accounted for. If a component you identify does not meet one of the identified equipment types or services, it may be excluded from the inventory. There do not appear to be any exceptions based specifically on the size of the component.

5.8. ***Are components which service a stream with minimal hydrocarbon content (i.e. less than a certain weight percentage), but which are not listed in the exemptions of "component" under Section XVII.A.5., required to be monitored for leaks using AIMM under Section XVII.F, or are they exempt?***

There are no exemptions based on weight percentage of the hydrocarbon stream. All equipment defined as "components" located at well production facilities and compressor stations are subject to LDAR requirements.

5.9. ***For Section XVII.F.4.b may an operator conduct the "one time" instrument monitoring prior to the periodic monitoring implementation date for existing well production facilities with emissions greater than zero but less than or equal to 6 tons VOC per year?***

The rule states that operators must complete the onetime AIMM "by January 1, 2016" for well production facilities with emissions greater than zero but less than or equal to 6 tons of VOC per year. For these facilities, operators must complete the onetime AIMM prior to January 1, 2016 and the first periodic monthly AVO monitoring inspection must occur no later than January 31, 2016 (the end of the first monthly monitoring period).

5.10. ***Regulation 7, Section XVII.F.4.a. requires an initial AIMM inspection to be conducted between 15 and 30 days after "new" well production facilities commence operation. Can operators have the option of conducting initial AIMM monitoring between startup and 30 days after the facility commences operation?***

Operators must conduct the required monitoring between 15 and 30 days after the well production facility commences operation as required in the rule. The monitoring may not be completed between 1 and 14 days after commencement of operation if the purpose is to demonstrate compliance with Section XVII.F.4.a.

5.11. ***When an operator completes an AIMM inspection during a given month to meet the AIMM monitoring requirements of Section XVII.F.4, does the monthly AVO monitoring need to occur as well?***

No, during a month where AIMM is completed to meet the requirements of Section XVII.F.4 the operator does not need to complete the AVO inspection required by Table 4. However, the operator must still complete any additional visual inspections required by Section XVII.C.1.d.

6. REPAIR AND REMONITORING REQUIREMENTS

6.1. ***How does the 5 day clock work when a leak is observed using AIMM or AVO and then confirmed with Method 21?***

Pursuant to Section XVII.F.6.e, once a "leak" is discovered using AIMM or AVO, the operator has 5 days either to make a first attempt to repair the leak in accordance with Section XVII.F.7 or to conduct follow up monitoring using EPA Method 21. If the existence of a leak is confirmed by Method 21, operators must make a first attempt to repair the leak within the original five day time period of leak discovery using AIMM or AVO or as required in the schedule set forth in Section XVII.F.7.

6.2. ***For the purpose of Section XVII.F.7.a what does the Division consider to be a "working day"?***

Working days include Monday through Friday, except for Colorado government holidays. Colorado government holidays may be found at the following resource online:

www.sos.state.co.us/pubs/info_center/holidayCalendar.html

6.3. ***How is the Division handling documentation of verifications of repair after an AIMM inspection?***

Records should sufficiently demonstrate that repairs have been conducted and a leak is no longer detected. These records, or a description thereof, should be included in the individual site inspection records.

7. RECORDKEEPING REQUIREMENTS

7.1. ***If a leak is identified outside of an AIMM or AVO monitoring inspection, does it need to be included in the recordkeeping identified in Section XVII.F.8?***

Leaks identified outside of a required AIMM or AVO monitoring event do not need to be included in the records required by Section XVII.F.8.

7.2. ***Does Section XVII.F.8.a require only documenting the method of initial monitoring (e.g., IR Camera) or does it require the full record from that initial monitoring.***

Operators must document the specific method used to conduct the initial AIMM, in addition to all of the other information required by Section XVII.F.8.b-h.

7.3. ***Does the Division have a standard record keeping format available for operators to use in recording data from site inspections for the purpose of Section XVII.F.8?***

Yes, the Division has a standard record keeping form available online for download at:

www.colorado.gov/pacific/cdphe/emissions-requirements-oil-and-gas-industry

7.4. ***Will the video, if using LDAR thermal imaging cameras, need to be kept for 2 years?***

No, the video is not required to be maintained for any length of time. However, in accordance with Section XVII.F.8., the owner/operator should document that an inspection occurred with an IR camera or other equipment, along with any leak findings, and maintain those records for a period of two years.

7.5. ***For well production facilities that require monthly AVO monitoring (per Section XVII.F.4.c), how are the records to be maintained?***

The records identified in Section XVII.F.8. cover AVO inspections, must be maintained for a period of two years, and should be sufficient to enable the source to demonstrate compliance with this rule.

7.6. ***Do sources have to quantify the leak or identify the gas composition?***

No. Sources may elect to quantify the leak concentration in accordance with Section XVII.F.6.e., but this is not required for leak identification.

8. ANNUAL REPORTING REQUIRMENTS

8.1. ***Does the Division have a standard annual reporting format available for operators to use in reporting data from site inspections for the purpose of Section XVII.F.9?***

Yes, the Division has a standard annual reporting form available online for download at:

www.colorado.gov/pacific/cdphe/emissions-requirements-oil-and-gas-industry

8.2. ***What should operators include in the annual report required under Section XVII.F.9. for well production facilities with storage tanks that have emissions below APEN thresholds and do not have an AIRS ID assigned? Do the sites have to be identified?***

No site information or AIRS ID is required as part of the annual report for any facility, regardless of size. For reporting, the owner/operator is required to submit a summary of the number of facilities inspected as well as other values identified Section XVII.F.9. on a company-wide basis. The owner/operator is not expected to report the site information for each inspection identified. However, the Division approved annual reporting form contains a Section 5 which enables the operator to document specific site locations as this information may prove useful for tracking purposes.

However, per Section XVII.F.8., the owner/operator should maintain a record of the site information for each inspection, even at sites with emissions less than reportable thresholds. Such site information may include the well identification number (API number), an AIRS ID where available, the geographic location (latitude, longitude) and/or the site name.

8.3. ***Will there be an annual report due May 31, 2014 since no LDAR requirements are effective?***

No. The first report will be due May 31, 2015 for those facilities constructed on or after October 15, 2014, which have their initial inspection in the 2014 calendar year.

8.4. ***Can the annual reports under the LDAR requirements of Section XVII.F.9. be submitted before May 31st? Can sources set up with the Division a different date of reporting?***

Yes. Section XVII.F.9 requires that operators submit their LDAR annual reports on or before May 31st of each year.

8.5. ***When is a report due if May 31st falls on a weekend or holiday?***

In those situations, the report will be due on the next business day after May 31st.

9. OPEN ENDED VALVE OR LINE REQUIREMENTS

9.1. ***The Definition for "Open-Ended Valve or Line" contained in Section XVII.A.12 "Means any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping." Does the term "process fluid" contained in this definition exclude those process fluids identified in the "component" definition (i.e., glycol, amine, produced water, or methanol) contained in Section XVII.A.5?***

No, the term "process fluid" as used in the definition of "open-ended valve or line" does not exclude glycol, amine, produced water or methanol.

9.2. ***Regulation 7, Section XVII.B.3.a requires that "Beginning January 1, 2015, each open-ended valve or line at well production facilities and natural gas compressor***

stations must be equipped with a cap, blind flange, plug, or a second valve that seals the open end at all times except during operations requiring process fluid flow through the open-ended valve or line."

There is not a clear way to determine applicability of the definition of "open-ended valve or line" to various pieces of equipment and site designs. By way of example, the definition of "open-ended valve or line" could describe vent lines on uncontrolled water tanks or compressor blow down vents. Tanks that are below the 6 ton per year threshold are not controlled and are vented without the employ of a pressure relief valve. Furthermore, because certain open-ended lines or valves that cannot be sealed are intended to emit there would be no benefit to applying the LDAR program to those open-ended valves or lines. Industry proposes that "Open-Ended Valve or Line" exclude equipment designed to emit.

The definition of "Open-Ended Valve or Line" is limited to valves that have one side open to the atmosphere directly or through open piping (i.e., a line). These are the specific sources subject to the requirement of Section XVII.B.3.a. Open ended lines such as those described on storage tanks or compressor blow down vents which are not equipped with a valve are not subject to Section XVII.B.3.a.

9.3. ***Regulation 7, Section XVII.B.3.a provides an exemption for "open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset." Many oil and gas production facilities have devices that release during emergency or safety conditions that would not be considered a shutdown system, by Industry. However, these facilities have equipment that would otherwise be considered emergency or safety devices, such as a pressure relief device on a separator. Does the Division intend to exempt all emergency safety equipment from this Section?***

No, the Division does not intend to exempt all emergency safety equipment from Section XVII.B.3.a, but rather, only open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset related to a shutdown event.

9.4. ***Are vent lines on top of tanks that are used to depressurize the tank before the thief hatch is opened or compressor blow down vents considered to be open-ended lines?***

If the vent line on the top of a tank or used for compressor blow downs is designed with a valve having one side of the valve seat in contact with process fluid and one side open to the atmosphere it should be considered an open-ended valve or line.