



# New Mexico Environment Department Testimony in EIB 21-27 (R)

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Section 20.2.50.116 – Equipment Leaks and  
Fugitive Emissions



# Overview of Fugitive Emissions

- ❑ Large number of valves, pumps, and other equipment associated with natural gas production and processing can be a significant source of VOC emissions
- ❑ Equipment leaks occur from pumps, pressure relief devices, valves, flanges, and connector seals.
- ❑ Source of leaks include open-ended lines and valves as well corrosion of connections, flanges, and valves.



# Overview of Fugitive Emissions

- Leaks are caused by:
  - ▣ poorly fitted connection points or deterioration of seals and gaskets or
  - ▣ changes in pressure, temperature, or mechanical stresses.
- Components emit fugitive emissions from valves; connectors; pressure relief devices; open-ended lines; access doors; flanges; closed vent systems; thief hatches or other openings on storage vessels; agitator seals; distance pieces; crankcase vents; blowdown vents; pump seals or diaphragms; compressors; separators; pressure vessels; dehydrators; heaters; instruments; and meters.



# Overview of Control Options

- Fugitive emission sources can be addressed through implementation of an emission leak detection and repair (“LDAR”) program.
- LDAR programs reduce emissions by requiring owners and operators to inspect their facilities to find and repair leaks. Leak detection methods include:
  - Audio, visual, and olfactory (“AVO”) inspections;
  - Instrument monitoring according to EPA Reference Method 21, 40 CFR Part 60, Appendix A-7 (“EPA Method 21”); and
  - Monitoring using optical gas imaging (“OGI”).



# Overview of Control Options

- ❑ AVO inspections rely sight, sound, and smell to identify leaking components
- ❑ EPA Reference Method 21 identifies leaks using a portable instrument that detects the presence of organic gases and measure their volumetric concentration.
- ❑ OGI is a newer method for leak detection that utilizes forward-looking infrared (“FLIR”) cameras to inspect equipment components to identify leaks.
- ❑ OGI can be used to survey large numbers of components in a short amount of time, whereas EPA Method 21 only allows inspection of one component at a time with an instrument probe.



# Overview of Control Options

- The effectiveness of an LDAR program at controlling emissions is based on the frequency of monitoring and the leak definition.
- More frequent monitoring means more leaks are detected and repaired sooner, resulting in less emissions of harmful air pollutants.



# Summary of Requirements for Fugitive Emissions

- ❑ Default monitoring requirements apply to inspections of equipment and leaking components.
- ❑ Facilities with production greater than 10 barrels of oil (bbls) per day, or production greater than 60,000 standard cubic feet per day of natural gas:
  - Weekly AVO inspections
- ❑ Facilities with production equal to or less than 10 bbls per day, or production equal to or less than 60,000 standard cubic feet per day of natural gas:
  - Monthly AVO inspections



# Summary of Rule Provisions for Fugitive Emissions

- The following facilities must be inspected using EPA Method OGI according to the following schedules:
- **Well sites and tank battery facilities:**
  - annually at facilities with a PTE less than two tpy VOC;
  - semi-annually at facilities with a PTE equal to or greater than two tpy and less than five tpy VOC; and
  - quarterly at facilities with a PTE equal to or greater than five tpy VOC.
- **Gathering and boosting stations, gas processing plants, and natural gas compressor stations:**
  - quarterly at facilities with a PTE less than 25 tpy VOC; and
  - monthly at facilities with a PTE equal to or greater than 25 tpy VOC.



## Other Parties' Testimony on Section 20.2.50.116

- ❑ Industry and the eNGO Parties submitted extensive testimony related to the LDAR inspection frequencies
- ❑ Both groups cited studies related to LDAR with competing datasets on LDAR effectiveness, emission factors, leak rates, component counts, fugitive emissions, costs, representativeness of EPA's data in NM
- ❑ NMED was unable to thoroughly review all this competing technical testimony and associated exhibits provided by the Parties
- ❑ NMED proposed an inspection schedule closely aligned with Colorado's LDAR program in order to provide the EIB with an option between the two Parties competing sets of data
- ❑ NMED was unable to sufficiently demonstrate the basis for the revision and is maintaining the original July 28, 2021 proposal
- ❑ The Parties' subject matter experts should provide testimony regarding the cited peer reviewed studies, cost estimates, leak rates, effectiveness, etc. directly to the EIB for the EIB's consideration



# Revisions to Applicability and Monitoring Provisions

## 20.2.50.116 EQUIPMENT LEAKS AND FUGITIVE EMISSIONS:

**A. Applicability:** Wellhead sites, tank batteries, gathering and boosting sites, stations, natural gas processing plants, transmission compressor stations, and associated piping and components are subject to the requirements of 20.2.50.116 NMAC. Components in water or air service are not subject to the requirements of 20.2.50.116 NMAC. The requirements of this Part may be considered in the facility-wide PTE and in determining the monitoring frequency requirements of this Section.

**B. Emission standards:** The owner or operator of oil and gas production and processing equipment located at wellhead sites, tank batteries, gathering and boosting sites, stations, natural gas processing plants, or transmission compressor stations shall demonstrate compliance with this Part by performing the monitoring, recordkeeping, and reporting requirements specified in 20.2.50.116 NMAC.

**C. Default Monitoring requirements:** Owners and operators shall comply with the following monitoring requirements ~~and the monitoring requirements in 20.2.50.112 NMAC:~~

(1) The owner or operator of a facility with an annual average daily production or average daily throughput of greater than 10 barrels of oil per day or an average daily production of greater than 60,000 standard cubic feet per day of natural gas shall, at least weekly, conduct audio, visual, and olfactory (AVO) inspections of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify defects and leaking components as follows:

(a) conduct an external visual inspection for defects, which may include: cracks, holes, or gaps in piping or covers; loose connections; liquid leaks; broken or missing caps; broken, cracked or otherwise damaged seals or gaskets; broken or missing hatches; or broken or open access covers or other closure or bypass devices;

(b) conduct an audio inspection for pressure leaks and liquid leaks;

(c) conduct an olfactory inspection for unusual or strong odors; and

(d) any positive detection during the AVO inspection shall be ~~be considered a leak;~~

and

~~(e) a leak discovered by an AVO inspection shall be tagged with a visible tag and reported to management or their designee within three calendar days repaired in accordance with Subsection E if not repaired at the time of discovery.~~



# Revisions to Monitoring Provisions

(2) The owner or operator of a facility with an annual average daily production or average daily throughput of equal to or less than 10 barrels of oil per day or an average daily production of equal to or less than 60,000 standard cubic feet per day of natural gas shall, at least monthly, conduct an external audio, visual, and olfactory (AVO) inspection of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify a defect and leaking component as specified in Subparagraphs (a) through ~~(de)~~ of Paragraph (1) of Subsection (C) of 20.2.50.116 NMAC.

(3) The owner or operator of the following facilities shall conduct an inspection using U.S. EPA method 21 or optical gas imaging (OGI) of thief hatches, closed vent systems, pumps, compressors, pressure relief devices, open-ended valves or lines, valves, flanges, connectors, piping, and associated equipment to identify leaking components at a frequency determined according to the following schedules, and upon request by the department for good cause shown:

(a) for existing well sites or tank battery facilities constructed prior to the effective date of this Part, the owner or operator shall comply with these requirements within two years of the effective date of this Part.

(b) for wellhead sites or tank battery facilities:

(i) annually at facilities with a PTE less than two tpy VOC;

(ii) semi-annually at facilities with a PTE equal to or greater than two tpy

and less than five tpy VOC; and

(iii) quarterly at facilities with a PTE equal to or greater than five tpy VOC.

~~(c)~~ for gathering and boosting sites~~stations~~, natural gas processing plants, ~~-~~ and transmission compressor stations:

(i) quarterly at facilities with a PTE less than 25 tpy VOC; and

(ii) monthly at facilities with a PTE equal to or greater than 25 tpy VOC.



# Revisions to Monitoring Provisions

- (4) Inspections using U.S. EPA method 21 shall meet the following requirements:
- (a) the instrument shall be calibrated before each day of ~~its~~ use by the procedures specified in U.S. EPA method 21 and the instrument manufacturer;
  - ~~(b) the instrument shall be calibrated with zero air (less than 10 ppm of hydrocarbon in air), and a mixture of methane or n-hexane and air at a concentration near, but not more than, 10,000 ppm methane or n-hexane; and~~
  - (be) a leak is detected if the instrument records a measurement of 500 ppm or greater of hydrocarbons, and the measurement is not associated with normal equipment operation, such as pneumatic device actuation and crank case ventilation.
- (5) Inspections using OGI shall meet the following requirements:
- (a) the instrument shall comply with the specifications, daily instrument checks, and leak survey requirements set forth in Subparagraphs (1) through (3) of Paragraph (i) of 40 CFR 60.18; and
  - (b) a leak is detected if the emission images recorded by the OGI instrument are not associated with normal equipment operation, such as pneumatic device actuation or crank case ventilation.
- (6) Components that are difficult, unsafe, or inaccessible to monitor, as determined by the following conditions, are not required to be inspected until it becomes feasible to do so:
- (a) difficult to monitor components are those that require elevating the monitoring personnel more than two meters above a supported surface, ~~or that cannot be reached via a wheeled scissor lift or hydraulic type scaffold that allows access to components up to seven and six tenths meters (25 feet) above the ground;~~
  - (b) unsafe to monitor components are those that cannot be monitored without exposing monitoring personnel to an immediate danger as a consequence of completing the monitoring; and



# Revisions to Monitoring Provisions

(c) inaccessible to monitor components are those that are buried, insulated, or obstructed by equipment or piping that prevents access to the components by monitoring personnel.

(7) Prior to any monitoring event, the owner or operator shall date and time stamp the monitoring event.

**D. Alternative equipment leak monitoring plans:** As an equivalent means of compliance with Subsection C of 20.2.50.116 NMAC, an owner or operator may comply with the equipment leak requirements through an alternative monitoring plan as follows:

(1) An owner or operator may comply with an individual alternative monitoring plan, subject to the following requirements:

(a) the proposed alternative monitoring plan shall be submitted to and approved by the department prior to conducting monitoring under that plan.

(b) the department may terminate an approved alternative monitoring plan if the department finds that the owner or operator failed to comply with a provision of the plan and failed to correct and disclose the violation to the department within 15 calendar days of identifying the violation.

(c) upon department denial or termination of an approved alternative monitoring plan, the owner or operator shall comply with the default monitoring requirements ~~under of~~ Subsection C of 20.2.50.116 NMAC within 15 days.

(2) An owner or operator may comply with a pre-approved monitoring plan maintained by the department, subject to the following requirements:

(a) the owner or operator shall notify the department of the intent to conduct monitoring under a pre-approved monitoring plan, and identify which pre-approved plan will be used, at least 15 days prior to conducting the first monitoring under that plan.

(b) the department may terminate the use of a pre-approved monitoring plan by the owner or operator if the department finds that the owner or operator failed to comply with ~~the a~~ provision of the plan and failed to correct and disclose the violation to the department within 15 calendar days of identifying the violation.

(c) upon department denial or termination of an approved alternative monitoring plan, the owner or operator shall comply with the default monitoring requirements ~~under of~~ Subsection C of 20.2.50.116-~~C~~ NMAC within 15 days.



# Revisions to Monitoring Provisions

E. **Repair requirements:** For a leak detected pursuant to monitoring conducted under 20.2.50.116 NMAC:

- (1) the owner or operator shall place a visible tag on the leaking component not otherwise repaired at the time of discovery until the component has been repaired;
- (2) leaks shall be repaired as soon as practicable but no later than within 30-15 days of discovery, ~~except for leaks detected using OGI, which shall be repaired within seven days of discovery;~~
- (3) the equipment must be re-monitored no later than 15 days after the repair of the leak ~~discovery of the leak~~ to demonstrate that it has been repaired; and
- (4) if the leak cannot be repaired within 30-15 days of discovery, ~~or within seven days for a leak detected using OGI,~~ without a process unit shutdown, the leak may be designated "Repair delayed," and must be repaired before the end of the next process unit shutdown.
- (5) if the leak cannot be repaired within 30 days of discovery due to shortage of parts, the leak may be designated "Repair delayed," and must be repaired within 15 days of resolution of such shortage.



# Revisions to Recordkeeping Provisions

## F. Recordkeeping requirements:

(1) The owner or operator shall keep a record of the following for all AVO, RM<sub>21</sub>, OGI, or alternative equipment leak monitoring inspections conducted as required under 20.2.50.116 NMAC, and shall provide the record to the department upon request:

- (a) facility location (latitude and longitude);
- (b) time and date stamp, including GPS of the location, of any monitoring~~date of inspection~~;
- (c) monitoring method (e.g. AVO, RM 21, OGI, approved ~~alternative method approved by the department~~);
- (d) name of the ~~personnel~~ person(s) performing the inspection;
- (e) a description of any leak requiring repair or a note that no leak was found; and
- (f) whether a visible ~~tf~~ flag was placed on the leak or not;

(2) The owner or operator shall keep the following record for any leak that is detected:

- (a) the date the leak is detected;
- (b) the date of attempt to repair;
- (c) for a leak with a designation of “repair delayed” the following shall be recorded:
  - (i) reason for delay if a leak is not repaired within the required number of days after discovery. If a delay is due to a parts shortage, a record documenting the attempt to order the parts and the unavailability due to a shortage is required; and
  - (ii) signature of the ~~authorized representative~~ person(s) who determined that the repair could not be implemented without a process unit shutdown;
- (d) date of successful leak repair;
- (e) date the leak was monitored after repair and the results of the monitoring; and
- (f) a description of the component that is designated as difficult, unsafe, or



# Reporting Requirements

inaccessible to monitor, an explanation stating why the component was so designated, and the schedule for repairing and monitoring the component.

- (3) For a leak detected using OGI, the owner or operator shall keep records of the specifications, the daily instrument check, and the leak survey requirements specified at 40 CFR 60.18(i)(1)-(3).
- (4) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112

NMAC.

**G. Reporting requirements:**

- (1) The owner or operator shall certify the use of an alternative equipment leak monitoring plan under Subsection D of 20.2.50.116 NMAC to the department annually, if used.
- (2) The owner or operator shall comply with the reporting requirements in 20.2.50.112

NMAC.

[20.2.50.116 NMAC - N, XX/XX/2021]