



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

Elizabeth Bisbey-Kuehn
&
Brian Palmer

Section 20.2.50.115 – Control Devices and
Closed Vent Systems



Overview of Control Devices and Closed Vent Systems

- A means to capture, convert, destroy, or recover air contaminants.
- Purpose is to reduce emissions of VOCs and NO_x.
- Controlled Devices include:
 - ▣ open flares,
 - ▣ enclosed combustion devices (“ECDs”),
 - ▣ thermal oxidizers (“TOs”),
 - ▣ vapor recovery units (“VRUs”),
 - ▣ fuel cells,
 - ▣ condensers, and
 - ▣ catalytic converters (oxidative, selective, and non-selective).
- A control device may also include any other air pollution control equipment or emission reduction technologies approved by the Department.
- A closed vent system is a system that is designed to route VOC emissions from a source to a process stream or control device with no loss of VOC emissions to the atmosphere.



Overview of Section 20.2.50.115

- This section establishes operational and performance standards, monitoring and other requirements for control devices and closed vent systems
- Control devices must be installed, operated, and maintained in accordance with manufacturer specifications
- Requires control devices to be sized adequately to handle the expected range of inlet emission stream
- Requires monthly inspections to check for defects, leaks, releases
- Requires assessment to ensure device is properly sized for the inlet emission stream and that emissions are routed to the control device or process
- Requires that the assessment be certified by a qualified professional engineer or inhouse engineer



Overview of Flare Requirements

- ❑ Flares must be properly sized and designed to ensure proper combustion
- ❑ Combustion must be maintained while gas is sent to the flare
- ❑ Gas may not be sent to the flare in excess of the manufacturer maximum rated capacity.
- ❑ All new and existing flares:
 - ❑ shall be equipped with a system to ensure the flare is operated with a flame present at all times when gas is being sent to the flare.
 - ❑ shall inspect and ensure a flame is present upon initiating a flaring event.
 - ❑ shall be equipped with a continuous pilot flame upon startup.
 - ❑ existing flare controlling a continuous gas stream constructed before the effective date shall be equipped with a continuous pilot no later than one year after the effective date of this Part.



Overview of Flare Requirements

- ❑ Existing flares located at a site with low production must:
 - be equipped with an auto-ignitor, continuous pilot, or technology (alarm) that alerts the owner or operator of a flare malfunction, if replaced or reconstructed after the effective date of this Part.
- ❑ flares must operate with no visible emissions
- ❑ flares must be repaired within three business days of any alarm activation.



Enclosed Combustion Devices and Thermal Oxidizers

- ❑ ECD and TO are enclosed ground level combustors
- ❑ Many of the same requirements as flares
- ❑ Similar monitoring, recordkeeping, and reporting requirements
- ❑ NMED made several similar revisions in response to comments



Overview of Vapor Recovery Unit Requirements

- Vapor recovery units (“VRUs”) route vapors from a source back to a separator, a sales gas line, or to a process line for beneficial use, such as use as a fuel.
- A VRU is often referred to as a compressor that is used to boost recovered vapors back into the line.
- In a typical VRU, hydrocarbon vapors are drawn out of the storage vessel under low pressure and are piped to a separator or suction scrubber to collect any condensed liquids, which are recycled back to the storage vessel.



Basis for Requirements in 20.2.50.115

- Pennsylvania GP-5 and GP-5A
- Colorado Reg. 7, Section II.C.5
- NSPS Subpart OOOOa
- NSPS Subpart A – General Provisions



Emission Reductions and Cost Estimates

- There are no costs or emission reductions assigned to the requirements of this section of the rule.
- Costs and reductions for each emission source using those controls are estimated for that section of the rule.



Definitions Associated with 20.2.50.115

F. “Closed vent system” means a system that is designed, operated, and maintained to route the VOC emissions from a source or process to a process stream or control device with no loss of VOC emissions to the atmosphere.

KL. “Control device” means air pollution control equipment or emission reduction technologies that thermally combust, chemically convert, or otherwise destroy or recover air contaminants. Examples of control devices include but are not limited to open flares, enclosed combustion devices (ECDs), thermal oxidizers (TOs), vapor recovery units (VRUs), fuel cells, condensers, ~~air-fuel-ratio-controllers (AFRs)~~, catalytic converters (oxidative, selective, and non-selective), or other emission reduction equipment. A control device may also include any other air pollution control equipment or emission reduction technologies approved by the department to comply with emission standards in this Part.

TT. “Vapor Recovery Control Unit” means a system composed of a scrubber, a compressor and a switch. Its main purpose is to recover vapors. The switch detects pressure variations and turns the compressor on and off. The vapors are drawn through a scrubber, where entrained liquids are captured and returned to the liquid pipeline system or to a storage vessel, and the vapor recovered is compressed into a sales pipeline or other process. To determine if this device is a vapor recovery unit (process) or a vapor recovery control unit (control) the operator must answer the following three questions:

- (1). Is the primary purpose of the equipment to control air pollution?
- (2). Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment?
- (3). Would the equipment be installed if no air quality regulations are in place?

If the primary purpose is to control air pollution then the device is a vapor recovery control unit. Such device’s classification as a control or process unit in a final permit is binding upon both the Department and the operator.



Summary of Applicability and General Requirements

20.2.50.115 CONTROL DEVICES AND CLOSED VENT SYSTEMS:

A. **Applicability:** These requirements apply to control devices and closed vent systems as defined in 20.2.50.7 NMAC and used to comply with the emission standards and emission reduction requirements in this Part.

B. **General requirements:**

(1) Control devices used to demonstrate compliance with this Part shall be installed, operated, and maintained consistent with manufacturer specifications, and good engineering and maintenance practices.

(2) Control devices shall be adequately designed and sized to achieve the control efficiency rates required by this Part and to handle the reasonably expected range of inlet VOC or NO_x concentrations or volumes. ~~fluctuations in emissions of VOC or NO_x.~~

~~_____ (3) The owner or operator of a control device used to comply with the emission standards in this Part shall install an EMT on the control device in accordance with 20.2.50.112 NMAC.~~

~~(34)~~ The owner or operator shall inspect control devices visually or consistent with applicable federally approved inspection methods ~~used to comply with this Part~~ at least monthly to identify defects, leaks, and releases, and to ensure proper maintenance and operation. Prior to an inspection or monitoring event, the owner or operator shall date and time stamp the event, ~~scan the EMT~~ and the required monitoring data entry shall be made electronically captured in accordance with this Part.

~~(45)~~ The owner or operator shall ensure that a control device used to comply with emission standards in this Part operates as a closed vent system that captures and routes VOC emissions to the control device, in order to minimize venting of and that unburnt gas ~~is not directly vented~~ to the atmosphere.

~~(56)~~ The owner or operator of a closed vent system for a centrifugal compressor wet seal fluid degassing system, reciprocating compressor, pneumatic ~~controller or~~ pump, or storage vessel using a control device or routing emissions to a process shall:

(a) ensure the control device or process is of sufficient design and capacity to accommodate the expected range of all emissions from the affected sources;

(b) conduct an assessment to confirm that the closed vent system is of sufficient design and capacity to ensure that ~~all~~ emissions from the affected equipment are routed to the control device or process; and



General Requirements (Subsection B)

(c) have the ~~closed vent system assessment~~ certified by a qualified professional engineer or an in-house engineer with expertise regarding the design and operation of ~~the~~ closed vent system(s) in accordance with Paragraphs (c)(i) and (ii) of this Section.

(i) The assessment of the closed vent system shall be prepared under the direction or supervision of a qualified professional engineer or an in-house engineer who signs the certification in Paragraph (c)(ii) of this Section.

(ii) the owner or operator shall provide the following certification, signed and dated by a qualified professional engineer or an in-house engineer: "I certify that the closed vent system ~~design and capacity~~ assessment was prepared under my direction or supervision. I further certify that the closed vent system ~~design and capacity~~ assessment was conducted, and this report was prepared, pursuant to the requirements of this Part. Based on my professional knowledge and experience, and inquiry of personnel involved in the assessment, the certification submitted herein is true, accurate, and complete."

(~~67~~) The owner or operator shall keep ~~manufacturer specifications~~ ~~manufacturer specifications~~ for all control devices on file. ~~The information shall include the.~~ ~~The information shall include:~~

~~(a) — unique identification number, type of unit, manufacturer name, make, and model, capacity, and destruction or reduction efficiency data. ;~~

~~(b) — maximum heating value for an open flare, ECD, or TO;~~

~~(c) — maximum rated capacity for an open flare, ECD/TO, or VRU;~~

~~(d) — gas flow range for an open flare, ECD, or TO; and~~

~~(e) — designed destruction or vapor recovery efficiency.~~



Flare Emission Standards (Subsection C)

C. Requirements for open flares:

(1) Emission standards:

(a) the flare shall be properly sized and designed to ensure proper combustion efficiency to combust the gas sent to the flare, and combustion shall be maintained for the duration of time that gas is sent to the flare. The owner or operator shall not send gas to the flare in excess of the manufacturer maximum rated capacity.

(b) the owner or operator shall equip each new and existing flare (except those flares required to meet the requirements of Paragraph (c) of this Subsection) with a continuous pilot flame, an operational auto-igniter, or require manual ignition, and shall comply with the following:

(i) a flare with a continuous pilot flame or an auto-igniter shall be equipped with a system to ensure the flare is operated with a flame present at all times when gas is being sent to the flare.

(ii) the owner or operator of a flare with manual ignition shall inspect and ensure a flame is present upon initiating a flaring event.

(iii) a new flare controlling a continuous gas stream shall be equipped with a continuous pilot flame upon startup.

(iv) an existing flare controlling a continuous gas stream constructed before the effective date of this Part shall be equipped with a continuous pilot no later than one year after the effective date of this Part.



Flare Emission Standards and Monitoring Requirements

(c) an existing flare located at a site with an annual average daily production of equal to or less than 10 barrels of oil per day or an average daily production of 60,000 standard cubic feet of natural gas shall be equipped with an auto-ignitor, continuous pilot, or technology (e.g. alarm) that alerts the owner or operator of a flare malfunction, if replaced or reconstructed after the effective date of this Part.

(d) the owner or operator shall operate a flare with no visible emissions, except for periods not to exceed a total of 30 seconds during any 15 consecutive minutes. The flare shall be designed so that an observer can, by means of visual observation from the outside of the flare or by other means such as a continuous monitoring device, determine whether it is operating properly. The observation may be terminated if visible emissions are observed and recorded and action is taken to address the visible emissions.

(e) the owner or operator shall repair the flare within three business days of any thermocouple or other flame detection device alarm activation.

(2) Monitoring requirements:

(a) the owner or operator of a flare with a continuous pilot or auto igniter shall continuously monitor the presence of a pilot flame, or presence of flame during flaring if using an auto igniter, using a thermocouple equipped with a continuous recorder and alarm to detect the presence of a flame. An alternative equivalent technology alerting the owner or operator of failure of ignition of the gas stream may be used in lieu of a continuous recorder and alarm, if approved by the department;

(b) the owner or operator of a manually ignited flare shall monitor the presence of a flame using continuous visual observation during a flaring event;

(c) the owner or operator shall, at least quarterly, and upon observing visible emissions, perform a U.S. EPA method 22 observation while the flare pilot or auto igniter flame is present to certify compliance with visible emission requirements. The observation period shall be a minimum of 15 consecutive minutes. The observation may be terminated if visible emissions are observed and recorded and action is taken to address the visible emissions;



Flare Monitoring and Recordkeeping Requirements

(d) prior to an inspection or monitoring event, the owner or operator shall date and time stamp the event, EMT on the flare shall be scanned, and the required monitoring data entry sshall be made electronically captured during the event in accordance with the monitoring requirements of this Part 20.2.50.112 NMAC; and

~~(e)~~(e) the owner or operator shall monitor the technology that alerts the owner or operator of a flare malfunction and any instances of technology or alarm activation.

(3) Recordkeeping requirements: The owner or operator of an open flare shall keep a record of the following:

(a) any instance of thermocouple or other approved technology or flame detection device alarm activation, including the date and cause of alarm activation, action taken to bring the flare into a normal operating condition, the name of the ~~personnel~~person(s) conducting the inspection, and any maintenance activity performed;

(b) the results of the U.S. EPA method 22 observations;

(c) the monitoring of the presence of a flame on a manual flare during a flaring event as required under Subparagraph (b) of Paragraph (2) of Subsection C of 20.2.50.115 NMAC;

(d) the results of the most recent gas analysis for the gas being flared, including VOC content and heating value; and

(e) the data and time stamp(s), including GPS of the location, of any monitoring event, and

~~_____ (e) any instance of technology or alarm activation of a malfunctioning flare, including the date and cause of the activation, the action taken to bring the flare into normal operating condition, date of repair, name of the personnel conducting the inspection, and any maintenance activities performed.~~



ECD/TO Emission Standards and Monitoring Requirements (Subsection D)

(4) Reporting requirements:- The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

D. Requirements for enclosed combustion devices (ECD) and thermal oxidizers (TO):

(1) Emission standards:

(a) the ECD/TO shall be properly sized and designed to ensure proper combustion efficiency to combust the gas sent to the ECD/TO. The owner or operator shall not send gas to the ECD/TO in excess of the manufacturer maximum rated capacity.

(b) the owner or operator shall equip each new ~~an~~ ECD/TO with a continuous pilot flame or an auto-igniter upon startup. Existing ECD/TO shall be equipped with a continuous pilot flame or an auto-igniter no later than two~~one~~ years after the effective date of this Part. ~~New ECD/TO shall be equipped with a continuous pilot flame or an auto-igniter upon startup.~~

(c) ECD/TO with a continuous pilot flame or an auto-igniter shall be equipped with a system to ensure that the ECD/TO is operated with a flame present at all times when gas is sent to the ECD/TO. Combustion shall be maintained for the duration of time that gas is sent to the ECD/TO.

(d) the owner or operator shall operate an ECD/TO with no visible emissions, except for periods not to exceed a total of 30 seconds during any 15 consecutive minutes. The ECD/TO shall be designed so that an observer can, by means of visual observation from the outside of the ECD/TO or by other means such as a continuous monitoring device, determine whether it is operating properly. The observation may be terminated if visible emissions are observed and recorded and action is taken to address the visible emissions.

(2) Monitoring requirements:

(a) the owner or operator of an ECD/TO with a continuous pilot or an auto igniter shall continuously monitor the presence of a pilot flame, or of a flame during combustion if using an auto-igniter, using a thermocouple equipped with a continuous recorder and alarm to detect the presence of a flame. An alternative equivalent technology alerting the owner or operator of failure of ignition of the gas stream may be used in lieu of a continuous recorder and alarm, if approved by the department.



ECD/TO Monitoring and Recordkeeping Requirements

(b) the owner or operator shall, at least quarterly, and upon observing visible emissions, perform a U.S. EPA method 22 observation while the ECD/TO pilot flame or auto igniter flame is present to certify compliance with the visible emission requirements. The period of observation shall be a minimum of 15 consecutive minutes. The observation may be terminated if visible emissions are observed and recorded and action is taken to address the visible emissions.

(c) prior to an inspection or monitoring event, the owner or operator shall date and time stamp the event. EMT on the unit shall be scanned and the required monitoring data entry shall be made electronically captured during the monitoring event in accordance with the monitoring requirements of 20.2.50.112 NMAC this Part.

(3) Recordkeeping requirements: -The owner or operator of an ECD/TO shall keep records of the following:

(a) any instance of a thermocouple or other approved technology or flame detection device an alarm activation, including the date and cause of the activation, any action taken to bring the ECD/TO into normal operating condition, the name of the personnel-person(s) conducting the inspection, and any maintenance activities performed;

(b) the result of the-any U.S. EPA method 22 observation;

(c) the data and time stamp(s), including GPS of the location, of any monitoring event; and

(d) the results of the most recent gas analysis for the gas being combusted, including VOC content and heating value.

(4) Reporting requirements: -The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.



VRU Emission Standards and Monitoring Requirements (Subsection E)

E. Requirements for vapor recover units (VRU):

(1) Emission standards:

(a) the owner or operator shall operate the VRU as a closed vent system that captures and routes all VOC emissions directly back to the process or to a sales pipeline and does not vent to the atmosphere.

(b) the owner or operator shall control VOC emissions during startup, shutdown, maintenance, or other VRU downtime with a backup control device (e.g. flare, ECD, TO) or redundant VRU during the period of VRU downtime, unless otherwise approved in an air permit issued prior to the effective date of this Part. Alternatively, the owner or operator may shut down and isolate the source being controlled by the VRU. For sites that already have a VRU installed as of the effective date of this Part, the owner or operator shall install backup control devices or redundant VRUs within three years of the effective date of this Part.

(2) Monitoring Requirements:

(a) the owner or operator shall comply with the standards for equipment leaks in



VRU General and Recordkeeping Requirements

20.2.50.116 NMAC, or, alternatively, shall implement a program that meets the requirements of Subpart OOOOa of 40 CFR 60.

(b) prior to a VRU inspection or monitoring event, the owner or operator shall date and time stamp the event, ~~EMT on the unit shall be scanned~~ and the required monitoring data entry shall be ~~electronically captured during the monitoring event made~~ in accordance with the ~~monitoring~~ requirements of this Part ~~20.2.50.112 NMAC~~.

(3) Recordkeeping requirements: -For a VRU inspection or monitoring event, the owner or operator shall record the result of the event ~~in accordance with 20.2.50.112 NMAC~~, including the name of the ~~personnel~~ person(s) conducting the inspection, ~~and any maintenance or repair activities required~~, and the date and time stamp(s), including GPS of the location, of any monitoring event. The owner or operator shall record the type of redundant control device used during VRU downtime, or keep records of the source shut down and isolated and the time period during which it was shut down, or records of compliance with an air permit issued prior to the effective date of this Part.

(4) Reporting requirements: -The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.

F. **Recordkeeping requirements:** -The owner or operator of a control device or closed vent system shall maintain a record of the following:

(1) the certification of the closed vent system assessment, where applicable, and as required by this Part; and

(2) the information required in Paragraph ~~(67)~~ of Subsection B of 20.2.50.115 NMAC.

G. **Reporting requirements:** The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.