



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

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Section 20.2.50.123 – Storage Vessels



Overview of Storage Vessels

- Storage vessels are used throughout the oil and gas sector for storing liquids
- Storage vessels are used in production, gathering, processing, and disposal and are significant sources of VOC emissions.
- May be installed as a single unit or in a grouping of similar or identical vessels, commonly referred to as a “tank battery.”



Overview of Storage Vessels

- Crude oil contains many lighter hydrocarbons in solution in the reservoir.
- When brought to the surface, many of the dissolved lighter hydrocarbons (as well as water) are removed through a series of separators.
- Crude oil is passed through a two-phase separator (where the associated gas is removed, and any oil and water remain together) or a three-phase separator (where the associated gas is removed, and the oil and water are also separated).
- Remaining oil is then directed to a storage vessel where it is stored before being transported off-site. Much of the remaining hydrocarbon gases in the oil are released as vapors in the storage vessels.



Overview of Storage Vessels

- VOC emissions from storage vessels are a function of flash, breathing, and working losses.
 - Flash losses occur when a liquid with entrained gases is transferred from a vessel with higher pressure to a vessel with lower pressure, allowing entrained gases to vaporize or flash.
 - Breathing losses are the release of gas associated with temperature fluctuations and the expansion and contraction of stored fluids resulting from increased or decreased pressures associated with environmental and weather-related fluctuations.
 - Working losses occur when vapors are displaced due to the emptying and filling of a storage vessel.



Control Options for Storage Tanks

- The methods used to reduce VOC emissions from storage tanks are:
 - Route emissions from the storage vessel through an enclosed system to a process where emissions are recycled or recovered (e.g., by installing a vapor recovery unit (VRU) that recovers vapors from the storage vessel) for reuse in the process or for beneficial use of the gas onsite; and/or
 - Route emissions from the storage vessel to a combustion device.



Estimated Emission Reductions and Cost Estimates

- Estimated overall emission reduction of 7,739 tons of allowable VOC emitted from storage vessels as a result of the rule.
- These reductions are achieved at an estimated cost effectiveness of \$2,695/ton VOC using combustors to control emissions.
- This cost effectiveness is based on average annual cost of \$24,710/year for a combustor and for tank retrofits to include a closed vent system.



Revisions to Storage Vessels Requirements

RRRR. “**Storage vessel**” means a single tank or other vessel that is designed to contain an accumulation of hydrocarbon liquid or produced water and is constructed primarily of non-earthen material including wood, concrete, steel, fiberglass, or plastic, which provide structural support, ~~or a process vessel such as a surge control vessel, bottom receiver, or knockout vessel.~~ A well completion vessel that receives recovered liquid from a well after commencement of operation for a period that exceeds 60 days is considered a storage vessel. A storage vessel does not include a vessel that is skid-mounted or permanently attached to a mobile source and located at the site for less than 180 consecutive days, such as a truck or railcar, a or a process vessel such as a surge control vessel, bottom receiver, or knockout vessel, or pressure vessel designed to operate in excess of 204.9 kilopascals (29.72 psi) without emissions to the atmosphere.

G. “**Commencement of operation**” means for an oil and natural gas well ~~sitehead~~, the date any permanent production equipment is in use and product is consistently flowing to a sales lines, gathering line or storage vessel from the first producing well at the stationary source, but no later than the end of well completion operation.



Revisions to Storage Vessels Requirements

20.2.50.123 STORAGE VESSELS

A. **Applicability:** ~~New s~~Storage vessels with a ~~n-uncontrolled~~ PTE equal to or greater than two tpy of VOC and existing storage vessels with a PTE equal to or greater than three tpy of VOC and located at wellhead sites, tank batteries, gathering and boosting ~~sites~~stations, natural gas processing plants, or transmission compressor stations are subject to the requirements of 20.2.50.123 NMAC. Storage vessels manifolded together such that all vapors are shared between the headspace of the storage vessels and are routed to a common outlet or endpoint may determine an individual storage vessel PTE by averaging the emissions across the total number of storage vessels.

B. Emission standards:

(1) An existing storage vessel with a PTE equal to or greater than ~~threetwo~~ tpy of and less than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-five percent according to the following schedule. no later than three years after the effective date of this Part. If a combustion control device is used, the combustion device shall have a minimum design combustion efficiency of ninety-eight percent.

(a) By January 1, 2024, an owner or operator shall ensure at least 35% of the company's existing storage vessels are controlled;

(b) By January 1, 2026, an owner or operator shall ensure at least an additional 35% of the company's existing storage vessels are controlled; and

(c) By January 1, 2028, an owner or operator shall ensure the remaining existing storage vessels are controlled.

~~(2) — An existing storage vessel with a PTE equal to or greater than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-eight percent no later than one year after the effective date of this Part.~~

(23) A new storage vessel with a PTE equal to or greater than two tpy of and less than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-five percent upon startup. If a combustion control device is used, the combustion device shall have a minimum design combustion efficiency of ninety-eight percent.



Revisions to Storage Vessels Requirements

~~(4) A new storage vessel with a PTE equal to or greater than 10 tpy of VOC shall have a combined capture and control of VOC emissions of at least ninety-eight percent upon startup.~~

~~(35)~~ The emission standards in Subsection B of 20.2.50.123 NMAC cease to apply to a storage vessel if the ~~uncontrolled~~ actual annual VOC emissions decrease to less than two tpy.

~~(46)~~ If a control device is not installed by the date specified in Paragraphs (1) ~~through and~~ ~~(24)~~ of Subsection B of 20.2.50.123 NMAC, an owner or operator may comply with Subsection B of 20.2.50.123 NMAC by shutting in the well supplying the storage vessel by the applicable date, and not resuming production from the well until the control device is installed and operational.

~~(57)~~ The owner or operator of a new or existing storage vessel with a thief hatch shall ensure ~~install a control device that allows that~~ the thief hatch is capable of opening sufficiently to relieve overpressure in the vessel and to automatically close once the vessel overpressure is relieved. ~~The thief hatch shall be equipped with a manual lock-open safety device to ensure positive hatch opening during times of human ingress. The lock-open safety device shall only be engaged when an owner or operator are present and during an active ingress activity. Any pressure relief device installed must automatically close once the vessel overpressure is relieved.~~

~~(8)~~ The owner or operator of a new or existing storage vessel shall install an EMT on the storage vessel in accordance with ~~20.2.50.112 NMAC.~~

~~(69)~~ An owner or operator complying with Paragraphs (1) ~~through and~~ ~~(24)~~ of Subsection B of 20.2.50.123 NMAC through use of a control device shall comply with the control device operational requirements in 20.2.50.115 NMAC.



Revisions to Storage Vessels Requirements

C. Monitoring requirements: -The owner or operator of a storage vessel shall:

- (1) monthly, ~~monitor on a monthly basis, or calculate or estimate~~, the total monthly liquid throughput (in barrels) and the upstream separator pressure (in psig) if the storage vessel is directly downstream of a separator. When a storage vessel is unloaded less frequently than monthly, the throughput and separator pressure monitoring shall be conducted before the storage vessel is unloaded;
- (2) conduct an AVO inspection on a weekly basis. If the storage vessel is unloaded less frequently than weekly, the AVO inspection shall be conducted before the storage vessel is unloaded;
- (3) inspect the vessel monthly to ensure compliance with the requirements of 20.2.50.123 NMAC. The inspection shall include a check to ensure the vessel does not have a leak;
- (4) prior to any monitoring event, the owner or operator shall date and time stamp the event, and the monitoring data entry shall be made in accordance with the requirements of this Part, scan the EMT and enter the required monitoring data in accordance with the requirements of 20.2.50.112 NMAC;
- (5) comply with the monitoring requirements in 20.2.50.115 NMAC if using a control device to comply with the requirements in Paragraphs (1) ~~through and~~ (24) of Subsection B of 20.2.50.123 NMAC; and
- (6) comply with the monitoring requirements of 20.2.50.112 NMAC ~~in 20.2.50.112 NMAC~~.

D. Recordkeeping requirements:

- (1) Monthly, ~~The owner or operator shall, on a monthly basis,~~ maintain a record ~~in accordance with 20.2.50.112 NMAC~~ for each storage vessel of the following. ~~The record shall include:~~
 - (a) unique identification number and the vessel location (latitude and longitude) and ~~identification number;~~
 - (b) monitored, calculated, or estimated monthly liquid throughput; ~~and the most recent date of measurement;~~
 - (c) the ~~average monthly~~ upstream separator pressure, if a separator is present;
 - (d) the data and methodology used to calculate the actual emissions of PTE of VOC (tpy); (the calculation methodology shall be department approved);
 - (e) the controlled and uncontrolled VOC emissions (tpy); and
 - (f) the type, make, model, and identification number of any control device.
- (2) A record of liquid throughput ~~in~~ shall be verified by dated liquid level measurements, a dated delivery receipt from the purchaser of the hydrocarbon liquid, the metered volume of hydrocarbon liquid sent downstream, or other proof of transfer.



Revisions to Storage Vessels Requirements

- inspection;
- (3) A record of the inspections required in Subsection C of 20.2.50.123 NMAC shall include:
 - (a) the date and time stamp, including GPS of the location, and date of the
 - (b) the personnel person(s) conducting the inspection;
 - ~~(c) a notation that the required leak check was completed;~~
 - ~~(c)~~ a description of any problem observed during the inspection; and
 - ~~(de)~~ a description and date of any corrective action taken.
 - (4) An owner or operator complying with the requirements in Paragraphs (1) ~~through and~~ (24) of Subsection B of 20.2.50.123 NMAC through use of a control device shall comply with the recordkeeping requirements in 20.2.50.115 NMAC.
 - (5) The owner or operator shall comply with the recordkeeping requirements in 20.2.50.112 NMAC.

E. Reporting requirements:

- (1) An owner or operator complying with the requirements in Paragraphs (1) ~~through and~~ (24) of Subsection B of 20.2.50.123 NMAC through use of a control device shall comply with the reporting requirements in 20.2.50.115 NMAC.
- (2) The owner or operator shall comply with the reporting requirements in 20.2.50.112 NMAC.