VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT

DRAFT STAFF REPORT

June 2023

Proposed Amendments to Rule 71.1 – Crude Oil Production and Separation

Summary of Revisions to Correct EPA and District Identified Rule Deficiencies

EXECUTIVE SUMMARY

The federal Clean Air Act (CAA) requires states to amend EPA identified deficiencies in State Implementation Plan (SIP) rules and regulations ("SIP Calls"). Rule deficiencies, in general, are corrected by enhancing rule stringency (Reasonable Available Control technology, RACT), clarity, and enforceability. "SIP call" corrections are required before deficient rules may be federally promulgated into the State Implementation Plan for Ventura County.

In October 2016, EPA updated the Control Techniques Guidelines (CTG) for the Oil and Natural Gas Industry. As such Staff of EPA Region 9 has identified deficiencies with Ventura County APCD Rule 71.1. EPA staff commented that it was unclear whether Ventura County Rule 71.1 captures all storage vessels that meet or exceed the CTG potential to emit (PTE > 6 tpy of ROCs) threshold due to Rule 71.1 vapor recovery control exemptions, as the applicability of control requirement was based on vapor pressure and tank volumetric capacity rather than PTE.

Additional comments were also made by the EPA staff which are summarized below:

- The control device efficiencies need to be updated to 95% as opposed to 90%, as the control efficiency of these devices are currently at 95% and there will be no emissions reductions from this revision.
- Add additional control and inspection requirements for flares to minimize the flaring emissions.
- Sunset the exemption under section D.4. effective rule adoption.
- Update the length of record keeping requirement from 4 to 5 years.
- Include the full title of test methods referenced in section F of the rule.
- Update the test method identified under section F.3. with the more recent EPA approved version of test methods.
- Add a visual emissions test method for monitoring flare emissions.

Proposed revisions to Rule 71.1 includes corrections to above deficiencies and other minor revisions needed to clarify rule contents and make the rules consistent with other District rules and EPA updated CTG for the Oil and Natural Gas Industry.

Because the proposed amendments are only corrections and there are no new requirements except the visual inspection of flare emissions, no emissions reductions will result from these revisions.

RULE DEFICIENCIES AND PROPOSED REVISIONS

Background:

In April 1992, EPA identified deficiencies in Rule 71.1 which include (1) the unenforceability of Sections B.1. and C.1 which allow Air Pollution Control Officer (APCO) discretion over determination of compliance by alternative control technology for both storage tanks and produced gas, (2) the unenforceability of Subsection D.4. which allowed APCO discretion over exemption determinations by demonstration of the use of best available control technology, (3) lack of acceptable test methods to determine if vapor recovery systems meet 90 percent control efficiencies in Subsections B.1 and C.1, (4) the unenforceability of allowing APCO approval of alternative methods for determination of true vapor pressure, and (5) the use of true vapor pressure in lieu of modified Reid vapor pressure for determination of exemption for tanks installed prior to June 20, 1978.

Based on the above comments, in June 1992 Rule 71.1 was amended to address the deficiencies.

Current Revisions:

In October 2016, EPA updated the Control Techniques Guidelines (CTG) for the Oil and Natural Gas Industry. As such, Staff of EPA Region 9 has identified deficiencies with Ventura County APCD Rule 71.1. EPA staff commented that it was unclear whether Ventura County Rule 71.1 captures all storage vessels that meet or exceed the CTG potential to emit (PTE > 6 tpy of ROCs) threshold due to Rule 71.1 vapor recovery control exemptions, as the applicability of control requirement was based on vapor pressure and tank volumetric capacity rather than PTE.
The District has filtered the VCAPCD permitted device list of fixed roof tanks for those tanks that were exempt from the vapor recovery requirements of Rule 71.1, "Crude Oil Production and Separation." Staff have demonstrated that such tanks utilizing these exemptions from vapor recovery have ROC permitted emissions (potential to emit) that are less than 6 tons per year ROC. Therefore, the emissions from these exemptions from vapor recovery can be deemed insignificant and should not be an issue with the CTG. A detailed analysis is included as an Attachment A to this staff report. Additional comments were also made by the EPA as listed below with APCD responses:

- For control devices other than sending recovered gas to fuel or sales systems or flaring, update the control efficiency from 90% to 95% (B.1.b and 71.1.C.1.c). Sections B.1.b. and C.1.c were revised to 95% control efficiency.
- Add additional requirements for flares such as continuous pilot light, testing the flare's ignition system, and conducting visual inspections to monitor for visible emissions. These additional requirements are NOT in addition to requirements that are already on permits with the exception that there will be a monthly visual inspection requirement per EPA Method 22 to monitor flare's visible emissions. Sections B.1.a. and C.1.b were revised accordingly.

- Sunsetting the exemption under section D.4. effective rule adoption. All tanks currently under this exemption are grandfathered as demonstrated to be below the required PTE as shown in Attachment A. Section D.4. was modified to sunset this exemption effective rule adoption.
- Require 5 years of recordkeeping. Section E.1. was revised to 5 years of recordkeeping.
- Include the full title of test methods in section F.1.a.& F.1.b. of the rule. These sections were modified to include that.
- Update the test method identified under section F.3. with the more recent EPA approved version of this test methods such as Method 8015 to Method 8015D. Sections F.3. were modified to accommodate that.
- Add a visual emissions test method for monitoring flare emissions. Section F.4. was added to include visual inspection method specified under Section 11 of EPA Method 22.
- During the public comment period for the proposed amendments to Rule 71.1, District staff learned of recent interpretations of the Clean Air Act regarding periodic reporting. Therefore, prior to the Advisory Committee meeting on the proposed amendments to Rule 71.1, District staff added subsection E.6 to the rule. Subsection E.6 states: "All records required by this rule shall be submitted to the Air Pollution Control Officer no later than December 31st of the next calendar year." This will allow facilities to continue submitting records during the annual compliance inspection and satisfy periodic reporting requirements.

IMPACTS OF THE PROPOSED RULE

The proposed amendments are only corrections and there are no anticipated ROC emission increases or decreases from the proposed amendments.

COST EFFECTIVENESS

The proposed revisions to Rule 71.1 are not included in the AQMP control measure. Health & Safety Code § 40703 states that the district must consider, and make public, "the cost-effectiveness of a control measure." Therefore, it is not necessary to calculate the cost-effectiveness of the proposed revision to Rule 71.1. Staff expects no increase in direct costs to either the District or any stakeholder.

In addition, because BACT requirements and feasible control measures are not involved, an incremental cost-effectiveness analysis under Health & Safety Code Section 40920.6 is not required.

ENVIRONMENTAL IMPACTS OF METHODS OF COMPLIANCE/ CEQA

Methods of Compliance

California Public Resources Code § 21159 requires the District to perform an environmental analysis of the reasonably foreseeable methods of compliance if the proposed rule requires "the installation of pollution control equipment, or [specifies] a performance standard or treatment requirement..." The proposed revisions to Rule 71.1 are administrative in nature and involve no pollution control equipment Therefore, an analysis is not required.

CEQA Requirement

Staff has determined that adoption of the proposed revisions to Rule71.1 are exempt from the requirements of the CEQA under Section 15061(b)(3) of the CEQA Guidelines because it can be seen with certainty that there is no possibility that these changes may have a significant effect on the environment. The proposed revisions to Rule 71.1 are administrative in nature and no net emission increase will result from any of the proposed changes.

DISCUSSION OF PUBLIC COMMENTS

Public Workshop

A workshop for the proposed rule revisions was held on June 6, 2023. All facilities with permitted sources subject to Rule 71.1 were informed of the workshop. The only comment received was a question about adding the new requirements to Title V permits. Staff responded that the new requirements in Rule 71.1 will be added to Title V permits on renewal, but Title V permit holders are responsible for compliance with all regulations as of the effective date regardless of whether they have been added to the Title V permit.

Advisory Committee

The Advisory Committee met on June 27, 2023 to consider the amendments to Rule 71.1. There were no public comments. The Advisory Committee voted unanimously to recommend adoption of the proposed amendments.

Appendix A

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

TO: Interested Parties

DATE: October 19, 2022
REVISED: March 2, 2023
REVISED: March 28, 2023

FROM: John Harader

SUBJECT: VCAPCD Rule 71.1 Vapor Recovery Exemption Analysis

The District has filtered the VCAPCD permitted device list of fixed roof tanks for those tanks that are exempt from the vapor recovery requirements of Rule 71.1, "Crude Oil Production and Separation." The tables and discussion below demonstrate that such tanks utilizing these exemptions from vapor recovery have ROC permitted emissions (potential to emit) that are less than 6 tons per year (tpy) ROC. Therefore, the emissions from these exemptions from vapor recovery can be deemed insignificant and should not be an issue with the CTG (Control Techniques Guidelines for the Oil and Natural Gas Industry).

The three Rule 71.1 vapor recovery exemptions are:

1. Rule 71.1.D.1.a: Tanks installed prior to June 20, 1978 with a modified Reid vapor pressure (mrvp) at the entry point of the storage tank of less than 0.5 psia. Note that this exemption cannot be used on any new or replacement tanks.
2. Rule 71.1.D.3: Tanks with an ROC content of the liquid entering the tank of less than 5 milligrams per liter.
3. Rule 71.1.D.4: Tanks in which a cost evaluation demonstrated maximum achievable emission reduction has taken place (BACT analysis). Note that this exemption has not been utilized for new installations since the early 1990s. Any new installations after that time and continuing to the present have required vapor recovery pursuant to Rule 26 New Source Review BACT requirements. BACT for tanks subject to Rule 71.1 is vapor recovery; which is achieved in practice and not subject to cost effectiveness.

The District is proposing to revise Section 71.1.D.4 to not allow any BACT analysis exemptions after the revision date of the rule.

Rule 71.1.D.1.a – As shown in Table 1, there are four (4) tanks on permit with this exemption. The permitted emissions for each tank are included in this table. The permitted emissions (or potential to emit) have been calculated for each tank based on tank size, height, and vapor pressure with no vapor recovery. The highest single permitted emissions for any of these four tanks is 0.06 tons per year ROC. The rule already includes a "installed prior to" date of June 20, 1978; therefore, the rule does not allow

for any additional tanks to operate without vapor recovery under this exemption. There is no need for any "worst case" potential to emit evaluations.

Table 1: Permitted Fixed Roof Tanks Exempt from Vapor Recovery Per Rule 71.1.D.1.a (mrvp < 0.5 psia)

Facility No	Device No	Size	Units	Equipment	ROC Emissions (tpy)	ROC Emissions (PPH*)
00053	11021	250	Barrel	Crude Oil Storage Tank	0.06	0.01
01241	14084	250	Barrel	Crude Oil Storage Tank	0.06	0.01
01241	14085	100	Barrel	Wash Tank (OOS†)	0.02	<0.01
01241	14086	116	Barrel	Produced Water Tank (OOS†)	0.02	0.01

*PPH = pounds per hour
†OOS = out of service

The ROC emissions listed above are the VCAPCD permitted emissions for the above tanks and have been calculated using emission factors derived from the EPA Tanks program.

Rule 71.1.D.3 – As shown in Table 2, there are twenty-six (26) tanks on permit with the "ROC content < 5 mg/l" exemption. The District does not calculate permitted emissions for the tanks with this exemption because the very low ROC content yields breathing emissions that are less than 0.01 tpy as discussed below. As demonstrated below, the ROC content of < 5 mg/l is essentially demonstrating that such a tank "meets the definition of a water tank." The District does list these tanks on permit for enforcement of the Rule 71.1.D.3 exemption status. Note that the District has confirmed that the 1000 bbl tank (Device No. 12126) has demonstrated that it meets the ROC content < 5 mg/l requirement even though it is labeled as a "Crude Oil Storage Tank."

Table 2: Permitted Fixed Roof Tanks Exempt From Vapor Recovery Per Rule 71.1.D.3 (ROC content < 5 mg/l)

Facility No	Device No	Quantity	Size	Unit	Equipment
00990	12126	1	1000	Barrel	Crude Oil Storage Tank
00990	20301	1	1000	Barrel	Freshwater Storage Tank
00990	20528	1	1000	Barrel	Freshwater Storage Tank
00990	20533	1	500	Barrel	Freshwater Tank (Facility 4)
00990	20537	3	200	Barrel	Portable Drilling Material Tanks
00813	102811	4	500	Barrel	Produced Water Tanks
00813	102812	15	500	Barrel	Produced Water Tanks
	Total Qty	26			

Potential to emit estimate: Such tanks do not have working losses only breathing losses because the tanks operate with a near constant liquid level. VCAPCD calculates breathing losses using a matrix of emission factors based on vapor pressure and tank height that have been developed from the EPA Tanks program. The largest fixed roof tank in Ventura County is 30,000 barrels and the worst-case would be assuming the tank is 100% oil (or 100% ROC). Based on vapor pressure > 0.5 psia, the emission factor for a tank that size with 100% oil is 2.22 lb ROC per year per tank barrel capacity.

The Rule 71.1.D.3 exemption states that the liquid entering the tank has an ROC content of less than 5 mg/l. An ROC fraction can be calculated by comparing the ROC content of 5 mg/l to the density of a 100% oil tank that is considered to be a 100% ROC liquid. The density of crude oil is 7.1 lb/gal or 850.58 g/l or 850,580 mg/l. Therefore, a ROC fraction for an oil tank with an ROC content of 5 mg/l is: 5mg/l /850,580 mg/l = 0.0000058

Therefore, the worst-case breathing loss emissions (without vapor recovery) for a tank with an ROC content of less than 5 mg/l for the liquid entering the tank are:

(2.22 lb ROC/yr/bbl capacity)(30,000 bbl)(0.0000058)(ton/2000 lb) = 0.00019 tpy ROC

This potential to emit calculation can also be used to calculate the largest tank capacity that would yield a potential to emit of 6 tpy:

(2.22 lb ROC/yr/bbl capacity)(931,960,000 bbl capacity)(0.0000058)(ton/2000 lb) = 6 tpy ROC

A tank capacity of 931,960,000 barrels is unreasonable.

Therefore, using an example of the largest tank, the low ROC content (5 mg/l) exemption will not yield a potential to emit of 6 tpy ROC.

Rule 71.1.D.4 – As shown in Table 3, there are fifteen (15) tanks on permit with the "BACT Analysis" or cost effectiveness exemption. The District is proposing to revise Section 71.1.D.4 to not allow any BACT analysis exemptions after the revision date of the rule. Therefore, only these 15 tanks will be allowed to use this vapor recovery exemption. The discussion below concludes that the existing tanks do not have a potential to emit that exceeds 6 tpy ROC.

The permitted emissions (potential to emit) for each tank are shown in the table.

Table 3: Permitted Fixed Roof Tanks Exempt From Vapor Recovery Per Rule 71.1.D.4 (BACT Analysis)

Facility No	Device No	QTY	Size	Unit	Equipment	ROC Emissions (tpy)	ROC Emissions (PPH)
00990	12000	2	1600	Barrel	Produced Water Tanks	0.54	0.12
00042	10854	2	250	Barrel	Gauge Test Tanks	0.34	0.07
00042	10860	1	250	Barrel	Gauge Test Tank	0.17	0.04
00042	10869	1	250	Barrel	Gauge Test Tank	0.17	0.04
00054	11096	1	1000	Barrel	Reject Tank	0.19	0.04
00054	11097	1	1000	Barrel	Produced Water Tank	0.19	0.04
00053	11000	1	250	Barrel	Crude Oil Storage Tank	0.05	0.01
00053	11001	1	500	Barrel	Crude Oil Storage Tank	0.11	0.03
00053	11006	1	500	Barrel	Crude Oil Storage Tank	0.09	0.02
00053	11014	1	1600	Barrel	LACT Tank	0.68	0.16
00053	11017	1	200	Barrel	LACT Tank	0.09	0.02
00053	17656	2	500	Barrel	Crude Oil Storage Tanks	0.50	0.11
	Total Qty	15					

The permitted emissions have been calculated for each tank using emission factors based on tank size, tank height, and oil vapor pressure that were developed from the EPA Tanks program. No vapor recovery control factors have been applied.

Device No. 11014 shown above is the largest tank at 1600 barrels and has permitted emissions of 0.68 tpy ROC. The District has recalculated the potential to emit for this 1600 bbl tank with the worst case emission factor representing the highest vapor pressure of 2.83 lb ROC/yr/bbl capacity. The potential to emit is:

(2.83 lb ROC/yr/bbl capacity)(1600 bbl)(ton/2000 lb) = 2.26 tpy ROC

Therefore, the 6 tpy ROC threshold is not exceeded.

There are four tanks in the list above that are listed as crude oil storage tanks that include working losses in addition to breathing losses in their potential to emit calculations. The largest of these tanks is 500 bbl capacity. The largest permitted emissions listed above (Device No. 17656) is 0.50 tpy ROC. The District has recalculated the breathing loss and working loss potential to emit based on the worse case vapor pressure and a worst-case unreasonable working loss of unloading the 500 barrel tank 180 times per year (every other day) or (500 bbl)(180) = 90,000 bbl/yr. The worst case emission factor for that size tank is 2.83 lb ROC/yr/bbl capacity. The calculated breathing loss emissions are:

(2.83 lb/yr/bbl capacity)(500 bbl)(ton/2000 lb) = 0.71 tpy ROC

The worst case emission factor for working losses is 73.4 lb ROC/1000 bbl oil throughput. The calculated working loss emissions are:

(73.4 lb ROC/Mbbl)(90 Mbbl/yr)(ton/2000 lb) = 3.30 tpy ROC

The potential to emit for the 500 bbl tank is:

0.71 tpy + 3.30 tpy = 4.01 tpy ROC

<u>Therefore, the 6 tpy ROC threshold is not exceeded using the worst-case potential to emit situation for the 15 tanks that will be allowed to continue using the “cost effectiveness” exemption.</u>