

**MONTEREY BAY UNIFIED AIR POLLUTION CONTROL DISTRICT  
REGULATION IV  
PROHIBITIONS**

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**RULE 427    STEAM DRIVE CRUDE OIL PRODUCTION WELLS**

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*(Adopted 1-16-80; Revised 3-19-86 , 8-25-93, 12-19-01, and 10-17-07.)*

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**PART 1 GENERAL**

**1.1 Purpose**

The purpose of this Rule is to limit emissions of volatile organic compounds (VOC) from the operation of steam drive crude oil production wells.

**1.2 Applicability**

The provisions of this Rule shall apply to any person who owns or operates any steam drive crude oil production wells.

**1.3 Exemptions**

1.3.1 The requirements of Section 3.4 shall not apply to components that are located in areas which cause inspection to be infeasible or unsafe for personnel, provided that such components are identified in the approved Operator Management Plan.

1.3.2 The requirements of Section 3.4 shall not apply to any component leak which the operator demonstrates to the satisfaction of the Air Pollution Control Officer that using an appropriate analyzer is less than 10,000 ppm VOC as methane.

1.3.3 The Air Pollution Control Officer may allow an exemption from the requirements of this Rule on a case-by-case basis for steam drive crude oil production wells that are pilot tests or demonstration projects.

1.3.4 The requirements of Section 3.3 and Subsections 4.3.1.1 and 4.3.1.2 of this Rule shall not apply to the following components that are verified in the Operator Management Plan:

1.3.4.1 components in gaseous stream service with VOC concentrations of 10 percent, by weight or less.

1.3.4.2 components in liquid service with VOC concentrations of 10 percent, by weight or less.

1.3.4.3 underground components.

1.3.4.4 components exclusively handling fluids if the fluid weight evaporated is 10 percent or less at 150 degrees Celsius.

**1.4 Effective Dates**

1.4.1 This Rule is effective October 17, 2007.

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- 1.4.2 The owner or operator of any new steam drive crude oil production well or any existing crude oil production well converted to a steam drive crude oil production well which is completed on or after the date of adoption of the Rule shall install and demonstrate compliance with the provisions of this Rule within four months from the date the well is defined as a steam drive well pursuant to Section 2.9.
- 1.4.3 The owner or operator of any existing steam drive crude oil production well which commenced operation on or after December 19, 2001 and prior to the date of adoption of this Rule shall demonstrate compliance with the provisions of this Rule by October 17, 2008.

1.5 References

The requirements of this Rule arise from the provisions of the California Clean Air Act and amendments (Health and Safety Code Section 40910 *et seq.*) and the federal Clean Air Act and amendments (42 U.S.C. Section 7401 *et seq.*)

PART 2 DEFINITIONS

2.1 Appropriate Analyzer

A hydrocarbon analyzer as approved by the Air Pollution Control Officer, which is calibrated with methane at least at the beginning and end of each day of testing, and operated according to the method specified in Sections 2.6 and 5.2.

2.2 Component

Any valve, connection, diaphragm, seal packing, open ended line, sealing mechanism, hatch, sight glass, or meter.

2.3 Exempt Compounds

As defined in District Rule 101 (Definitions).

2.4 Facility

A stationary source as defined in District Rule 207 (Review of New or Modified Sources).

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2.5 Inspections

- a. "Operator Inspection" shall mean an examination by the operator of components, using an appropriate analyzer, to detect leaks for the purpose of complying with this Rule. An operator inspection shall be performed by any method identified in an approved Operator Management Plan.
- b. "District Inspection" shall mean an examination of components by District personnel for the purpose of determining compliance with this Rule.

2.6 Leak

An emission of VOC which causes an appropriate analyzer sampling one centimeter from a source to register as high or higher than it would register if sampling a gas composed of 15,000 ppm methane in air.

2.7 Notice to Repair

An official written notice from the District to an operator of a facility at which a component is found to be leaking during a District inspection, whether or not the District inspection was scheduled, spontaneous, with or without operator accompaniment.

2.8 Open Ended Line

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

2.9 Steam Drive Well

Any crude oil production well influenced by a steam injection well to the extent that the temperature of any oil produced from such well has been elevated 15° F or more over the temperature of the oil in the originally occurring, uninfluenced reservoir. In the event data is unavailable concerning the temperature of the originally occurring, uninfluenced reservoir, a steam drive well shall mean any well producing oil having a temperature of 125° F or greater.

2.10 Working Day

Any day except weekends and holidays.

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2.11 Violations

The failure or refusal of a person to meet any requirements of this Rule, or of any requirements of an approved Operator Management Plan, shall constitute a violation of the Rule.

2.12 Volatile Organic Compounds (VOC)

As defined in District Rule 101 (Definitions).

**PART 3 REQUIREMENTS AND STANDARDS**

3.1 Hydrocarbon Control Standard

A person shall not operate any steam drive crude oil production well unless VOC emissions from the wellhead annulus valve are reduced by at least 98 percent by weight. Compliance with this requirement shall be determined using the test methods described in Part 5.

3.2 Open Ended Line Standard

No more than 2 percent of the total number of steam drive crude oil production wells may contain an open ended line.

3.3 Operational Requirements

The following provisions shall apply to all steam drive crude oil production wells and associated hydrocarbon control system components affected by this Rule. For purposes of this Rule, the hydrocarbon control system begins at the well head collection point and ends at the point where vapors are incinerated, condensed, or otherwise removed from the atmosphere.

3.3.1 All piping, valves, fittings, and equipment that are a part of the wellhead annulus valve and hydrocarbon control system shall be installed and maintained in a no-leak condition, as further provided and described in this Rule.

3.3.2 An operator, upon detection of a leaking component, shall affix to that component a readily visible red tag bearing the date on which the leak was detected. The tag shall remain in place until the leaking component is repaired and determined to be in compliance with the provisions of this Rule.

3.3.3 An operator shall repair a leaking component to a leak-free condition and verify compliance of the component within the times specified in Sections 3.5 and 3.6.

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3.3.4 Emissions from components which have been tagged by the operator for repair, or which have been repaired and are awaiting compliance verification pursuant to Sections 3.4.1 and 3.4.2, shall not constitute a violation of this Rule.

3.4 Notice to Repair Issued by the District

3.4.1 Any component leak identified by a Notice to Repair issued by the District shall be tagged, repaired, and verified as if the leak had been detected by the operator.

3.4.2 An owner or operator shall be in violation of this Rule for each Notice to Repair issued by the District, which is in excess of the number of notices indicated in the table below and which are issued within the same facility-wide stationary source in any 12-month period.

<u>Total Number of Steam Drive Wells</u>	<u>Number of Notices to Repair</u>
0 - 100	5
101 - 200	10
201 - 300	15
301 - 400	20
401 - 500	25

3.5 Repair of Leaks Exceeding 75,000 ppm

Any component leak which causes a registration on an appropriate analyzer to exceed 75,000 ppm total VOC expressed as methane when the analyzer probe is held at one centimeter from the joining surfaces, shall be repaired to a leak-free condition within 15 working days, with monitoring with an appropriate analyzer to verify the leak-free condition as soon as practicable, but not later than 1 calendar month after the date on which the component is repaired. The Air Pollution Control Officer may grant a 10-day extension if the operator demonstrates an adequate necessity for the delay and that sufficient actions will be taken to correct the leak within this time period.

3.6 Repair of Leaks Exceeding 15,000 ppm

Any component leak which causes a registration on an appropriate analyzer to exceed 15,000 ppm total VOC expressed as methane when the analyzer probe is held at one centimeter from the joining surfaces, shall be repaired to a leak-free condition within 20 working days, with monitoring with an appropriate analyzer to verify the leak-free condition as soon as practicable, but not later than 1 calendar month after the date on which the component is repaired. The Air Pollution Control Officer may grant a 10-day extension if the operator demonstrates an adequate necessity for the delay and that sufficient actions will be taken to correct the leak within this time period. This provision shall not apply to a leaking component which is an essential part of a critical process unit identified in the approved Operator Management Plan, in which case repair shall be accomplished during the next shutdown or

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process turnaround of the critical process unit, but in no case more than three months from the date of detection.

**PART 4 ADMINISTRATIVE REQUIREMENTS**

**4.1 Reporting Requirements**

- 4.1.1 Each operator shall submit a written report to the District by May 1 of each year, which includes a tabulation of inspection dates, components found leaking and emission levels (in ppm), repair and verification dates of leaking components, whether accomplished or scheduled, and which includes a currently updated version of the Operator Management Plan, incorporating any Plan modifications made pursuant to Subsections 4.3.1 or 4.3.2.
- 4.1.2 Each operator shall submit to the District an updated list of all wells connected to a vapor recovery system at the beginning of each quarter of the calendar year.

**4.2 Record Keeping Requirements**

Each operator shall maintain a log covering at least the preceding 12-month period of all inspections performed in compliance with this Rule, components found leaking and emission levels (in ppm of the leaking component) and repair and verification dates.

**4.3 Operator Management Plans**

- 4.3.1 Each operator shall submit an Operator Management Plan to the Air Pollution Control Officer. The Air Pollution Control Officer shall notify the operator within 20 working days of the approval or disapproval with suggested modifications of the Plan. If disapproved, the Plan shall be modified as required by the Air Pollution Control Officer within 20 working days. The Operator Management Plan shall describe the procedures which the operator intends to follow to comply with the provisions of this Rule and must include at least the following:
  - 4.3.1.1 detailed schedule of inspections, which provides for inspection of each affected component at least once per 12 month period, except that components with moving parts, including periodically manipulated valves, shall be inspected at least quarterly. The schedule shall indicate estimated inspection periods and frequency;
  - 4.3.1.2 identification of manipulated valves and components with moving parts, which will be inspected quarterly;
  - 4.3.1.3 repair procedures following leak detection;

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- 4.3.1.4 identification of critical process units which cannot be immediately shut down for repair of leaks;
  - 4.3.1.5 identification of any hazard(s) which might affect the safety of inspectors carrying out the provisions of this Rule; and
  - 4.3.1.6 identification of the resource commitment to the program to implement the Operator Management Plan; and
  - 4.3.1.7 documentation to verify exemption(s) claimed under Subsection 1.3.4.
- 4.3.2 Any modifications to an existing Operator Management Plan relating to changes in inspection or repair procedures must be submitted for, and receive, approval of the Air Pollution Control Officer before they are implemented.

**PART 5 TEST METHODS**

**5.1 Efficiency of Control Devices**

The efficiency of vapor control devices shall be determined using EPA Methods 2, 2A, 2C, or 2D for measuring flow rates and EPA Methods 18, 25, 25A, or 25B for measuring the total gaseous organic concentrations at the inlet and outlet of the control device (40 CFR 60, Appendix A).

**5.2 Leakage**

Vapor leakage shall be determined according to EPA Method 21 for Determination of Volatile Organic Compound Leaks (40 CFR 60, Appendix A).

**5.3 VOC Concentrations**

The VOC content of fluids shall be determined using the latest revision of ASTM Method E168, E169, or E260 as applicable.

**5.4 VOC Evaporation Rates**

The VOC evaporation rate of liquids shall be determined using the latest revision of ASTM Method D86.

**5.5 Source Testing Procedures**

All source testing shall be performed in compliance with the District Source Testing Procedures Manual.

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