

RULE 4407 IN-SITU COMBUSTION WELL VENTS (Adopted May 19, 1994)

1.0 Purpose

The purpose of this rule is to implement federally enforceable emission limitations for in-situ combustion well vents.

2.0 Applicability

This rule is applicable to all crude oil production wells where production has been enhanced by in-situ combustion.

3.0 Definitions

3.1 Air Injection Well: a well into which air is injected, enhancing the production of oil from other wells in the same production zone.

3.2 Components of a collection and control system: all piping, valves, fittings, pumps, compressors, tanks, etc. used to collect, control, store, or dispose of VOC condensate or uncondensed VOCs from in-situ combustion well vents prior to blending of VOC condensate with crude oil or blending of non-condensable VOCs with gases to be used as fuel.

3.3 Fuel Burning Equipment: any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.

3.4 In-Situ Combustion: a thermal crude oil recovery process in which air is injected into an oil reservoir and in-place petroleum oxidizes at an accelerated rate. The heat of combustion and combustion products enhance oil production by decreasing viscosity and pressurizing the reservoir.

3.5 In-Situ Combustion Well: any crude oil production well which produces from the same production zone in which a air injection well is completed and lies within 1000 feet of an air injection well.

3.6 Leak: a reading as methane on a portable hydrocarbon detection instrument (calibrated with methane) in excess of 10,000 ppm, when measured at the surface of the component interface where leakage could occur, with a portable hydrocarbon detection instrument calibrated with methane, or a dripping of liquid organic compounds at a rate of three (3) drops or more per minute.

3.7 Operate: to perform any activity with, or on, any in-situ combustion well, including but not limited to producing, in-situ combustion thermally enhancing, venting, maintaining or repairing.

- 3.8 Portable Hydrocarbon Detection Instrument: a hand held hydrocarbon analyzer using flame ionization or thermal conductivity as the detection method and satisfying Method 21, 40 CFR Part 60. The instrument shall be calibrated on methane and sampling shall occur at one liter per minute.
- 3.9 Production Zone: a subsurface geologic formation or group of formations of oil bearing material beneath the surface of the ground through which air could migrate from an air injection well to an oil production well.
- 3.10 Service or Repair: a well shall be considered under service or repair during rig-up, operation, and rig-down of any rig or pulling unit used to repair or maintain surface or downhole well equipment.
- 3.11 Volatile Organic Compound (VOC): defined in Rule 1020 (Definitions).
- 3.12 VOC Emissions: emissions resulting from the operation of an in-situ combustion well. Such emissions include uncondensed casing vent emissions and any emissions from components of a collection and control system.

4.0 Exemptions

The provisions of this rule shall not apply to any in-situ combustion well that is not producing or is undergoing service or repair.

5.0 Requirements

- 5.1 No person shall operate an in-situ combustion well unless the well vent is connected to:
 - 5.1.1 an emissions control device which abates 85 percent by weight of entering VOC gases and vapors, or
 - 5.1.2 fuel burning equipment or a smokeless flare.
- 5.2 All components of a collection and control system shall be maintained in good repair. The total number of leaks in a collection and control system shall not exceed two (2) percent of the components in the collection and control system.

5.3 Operator Inspection and Maintenance

5.3.1 All components of a collection and control system shall be inspected by the facility operator on a quarterly basis to ensure compliance with the provisions of this rule. If no more than two (2) percent of all components of the collection system are found to be leaking during each of three (3) consecutive quarterly inspections, the inspection frequency may be changed from quarterly to annual.

5.3.2 An operator, upon detection of a leak, shall affix a readily visible tag bearing the date on which the leak is detected. The tag shall remain in place until the leaking component is repaired. An operator shall repair each leak within 15 days of detection. The APCO may grant a ten (10) day extension to repair a leak, provided the operator demonstrates that necessary and sufficient actions have been and are being taken to correct the leak. Failure to repair a leak after a ten (10) day extension constitutes a violation of this rule.

5.4 VOC Control Efficiency Testing

Compliance testing for VOC control efficiency shall be performed annually on all collection and control systems used to comply with this rule. Testing shall be performed during June, July, August, or September of each year if the system's control efficiency is dependent upon ambient air temperature. The APCO may waive the test requirements for VOC control efficiency if all uncondensed VOC emissions collected by a collection and control system are burned in fuel burning equipment or in a smokeless flare.

6.0 Administrative Requirements

6.1 Recordkeeping

6.1.1 The operator of any in-situ combustion well shall maintain records of operations of each well undergoing stimulation including well number and location, well stimulation start-up and shut down dates, and list of equipment operated, on a monthly basis.

6.1.2 The operator of any in-situ combustion well shall maintain an inspection and maintenance log which contains the date of each inspection, the date of discovery of leaking components, and the date of repair.

6.1.3 Records shall be maintained for a period of two years and be submitted to the APCO upon request.

6.2 Test Methods

- 6.2.1 VOC control efficiency shall be determined by EPA Method 25, 25a, or 25b as applicable. Noncompliance as measured by any of these methods shall be considered a violation of this rule.
- 6.2.2 VOC content of organic liquids shall be determined by ASTM Method E168-67, E169-63, or E260-73 as applicable.
- 6.2.3 Leak detection shall be performed with a portable hydrocarbon detection instrument in accordance with EPA Method 21, calibrated with methane.

7.0 Compliance Schedule

The operator of any existing in-situ well shall comply with the following compliance schedule:

- 7.1 By November 19, 1994, submit to the APCO a control plan which includes all steps and construction schedules to be taken to achieve compliance with this rule, and a complete application for Authority to Construct.
- 7.2 By May 19, 1996, demonstrate full compliance with the provisions of this rule.