

RULE 1148.1. OIL AND GAS PRODUCTION WELLS

(a) Purpose

The purpose of this rule is to reduce emissions of volatile organic compounds (VOCs), toxic air contaminants (TAC) emissions and Total Organic Compounds (TOC) from the operation and maintenance of wellheads, well cellars, and the handling of produced gas at oil and gas production facilities to assist in reducing regional ozone levels and to prevent public nuisance and possible detriment to public health caused by exposure to such emissions.

(b) Applicability

This rule applies to onshore oil producing wells, well cellars and produced gas handling operation and maintenance activities at onshore facilities where petroleum and produced gas are produced, gathered, separated, processed and stored. These facilities are also subject to additional rule requirements, including, but not limited to: the storage of organic liquids is subject to Rule 463 – Organic Liquid Storage; wastewater systems, including sumps and wastewater separators are subject to Rule 1176 – VOC Emissions from Wastewater Systems; and leaks from components are subject to Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants. Natural gas distribution, transmission and associated storage operations are not subject to the requirements of this rule.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) ABANDONED WELL is a well that has been certified by the California Geologic Energy Management Division as permanently closed and non-operational.
- (2) CENTRAL PROCESSING AREA is any location within an oil and gas production facility where pressurized phase separation or treatment of produced well fluids, including any produced oil, water or gas, occurs. A location that includes only oil producing wells and associated equipment not involved in pressurized phase separation or treatment, is not considered to be a central processing area.

- (c) (3) COMPONENT is any valve, fitting, pump, compressor, pressure relief device, diaphragm, hatch, sight-glass, wellhead, stuffing box, or meter in VOC service. Components are further classified as:
- (A) MAJOR COMPONENT is any 4-inch or larger valve, any 5-hp or larger pump, any compressor, and any 4-inch or larger pressure relief device.
- (B) MINOR COMPONENT is any component which is not a major component.
- (4) CONFIRMED ODOR EVENT is an occurrence of odor resulting in three or more complaints by different individuals from different addresses, and the source of the odor is verified by South Coast AQMD personnel.
- (5) CONFIRMED OIL DEPOSITION EVENT is an occurrence of property damage due to the airborne release of oil or oil mist from an oil and gas production facility, as verified by South Coast AQMD personnel.
- (6) ENGINE is any spark- or compression-ignited internal combustion engine, including engines used for control of VOC's.
- (7) FACILITY is any equipment or group of equipment or other VOC-, TOC- or TAC-emitting activities, which are located on one or more contiguous properties within the South Coast AQMD, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or by persons under common control). Such above-described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one facility.
- (8) FUEL CELL is a device that generates electricity through an electrochemical reaction, not combustion.
- (9) GAS HANDLING is the control or processing of produced gas for on-site or off-site use.
- (10) HEAVY LIQUID is any liquid with 10 percent or less VOC by volume evaporated at 150°C (302°F), determined according to test methods specified in paragraph (j)(3) or (j)(4).
- (11) LEAK is the dripping of either heavy or light liquid; or the detection of a concentration of TOC above background, determined according to the test method in paragraph (j)(1).
- (12) LIGHT LIQUID is any liquid with more than 10 percent VOC by volume evaporated at 150°C (302°F), determined according to the test method specified in paragraph (j)(3).

- (c) (13) NEUTRALIZING AGENTS are chemical substances applied directly to the surface of the source of the odors in droplet or liquid form and are used to capture, destroy, and remove odorous molecules through a physio-chemical process that does not simply mask the odor.
- (14) ODOR is the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves.
- (15) ODORANT is one or more chemical substances giving off a smell and that is deliberately used to mask another chemical substance's smell.
- (16) OIL PRODUCING WELL is a well which produces crude oil.
- (17) OPTICAL GAS IMAGING (OGI) DEVICE is an infrared camera with a detector capable of visualizing gases in the 3.2-3.4 micrometer waveband.
- (18) ORGANIC LIQUID is any liquid containing VOC.
- (19) PRODUCED GAS is organic compounds that are both gaseous at standard temperature and pressure and are associated with the production, gathering, separation or processing of crude oil.
- (20) RESPONSIBLE PARTY for a corporation is a corporate officer. A responsible party for a partnership or sole proprietorship is the general partner or proprietor, respectively.
- (21) SENSITIVE RECEPTOR is any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; licensed daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.
- (22) SPECIFIC CAUSE ANALYSIS is a process used by an owner or operator of a facility subject to this rule to investigate the cause of a confirmed odor event or confirmed oil deposition event, identify corrective measures and prevent recurrence of a similar event.
- (23) STATIONARY GAS TURBINE is any gas turbine that is gas and/or liquid fueled with or without power augmentation. This gas turbine is either attached to a foundation at a facility or is portable equipment that will reside at the same location for more than 12 consecutive months.
- (24) STUFFING BOX is a packing gland, chamber or "box" used to hold packing material compressed around a moving pump rod to reduce the escape of gas or liquid.

- (c) (25) TIER 4 FINAL ENGINE is an engine subject to the final aftertreatment based Tier 4 emission standards in Title 13, Cal. Code Regs., Section 2423(b)(1)(B) and/or Title 40, CFR, Part 1039.101. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in Title 13, Cal. Code Regs., Section 2423(b)(2)(B) and/or Title 40, CFR, Part 1039.101.
- (26) TOTAL ORGANIC COMPOUNDS (TOC) is the concentration of gaseous organic compounds determined according to the test method in paragraph (i)(1).
- (27) TOXIC AIR CONTAMINANT (TAC) is an air contaminant that has been identified as a hazardous air pollutant pursuant to Section 7412 of Title 42 of the United States Code; or has been identified as a TAC by the California Air Resources Board (CARB) pursuant to Health and Safety Code Section 39655 through 39662; or which may cause or contribute to an increase in mortality or an increase in serious illness, or potential hazard to human health.
- (28) VISIBLE VAPORS are any VOC vapors detected visually by an operator or detected with an OGI device during a well cellar, wellhead, oil producing well, or water injection well inspection.
- (29) VOLATILE ORGANIC COMPOUND is as defined in Rule 102 – Definition of Terms.
- (30) WASTEWATER is a water stream or other liquid waste stream generated in a manner which may contain petroleum liquid, emulsified oil, VOC, or other hydrocarbons.
- (31) WATER INJECTION WELL is a bored, drilled, or driven shaft, or a dug hole that is deeper than it is wide, or an improved sinkhole, or a subsurface fluid distribution system used to inject fluid consisting primarily of water into a reservoir typically to create fluid lift of product or maintain reservoir pressure.
- (32) WELL CELLAR is a lined or unlined containment surrounding one or more oil wells, allowing access to the wellhead components for servicing and/or installation of blowout prevention equipment.
- (33) WELLHEAD is an assembly of valves mounted to the casing head of an oil well through which a well is produced. The wellhead is connected to an oil production line and in some cases to a gas casing line.

- (c) (34) WORKOVER RIG is a mobile piece of equipment used to perform one or more operations on an oil producing well or water injection well.
- (d) Requirements
 - (1) The operator of an oil and gas production facility shall not allow a concentration of a TOC in the well cellar greater than 500 ppmv, according to the test method in paragraph (j)(1).
 - (2) The operator of an oil and gas production facility shall not allow any valve to be opened at the wellhead unless a portable container is used to catch and contain organic liquid that would otherwise drop into the well cellar or onto the ground. Such container shall be kept closed to the atmosphere when it contains organic liquid and is not in use.
 - (3) If a well cellar is verified by South Coast AQMD personnel as the source of odors associated with three or more complaints by different individuals from different addresses in a single day, the operator of an oil and gas production facility shall pump out or remove organic liquid accumulated in the well cellar as soon as possible but no later than by the end of the day.
 - (4) The operator of an oil and gas production facility shall not allow organic liquid to be stored in a well cellar, except as provided by paragraph (d)(5). During any period of equipment maintenance, drilling, well plugging, abandonment operations, or well workover, the operator shall pump out or remove organic liquid that accumulates in the well cellar no later than two (2) days after the maintenance, drilling, well plugging, abandonment or workover activity at the well is completed.
 - (5) The operator may only store organic liquid in a portable enclosed storage vessel if the vessel is equipped with air pollution control equipment to reduce the TOC emissions to less than 250 ppmv outlet concentration according to the test method in paragraph (j)(1), except use of air pollution control equipment is not required during activities determined to meet the exemption criteria of paragraph (k)(2). The operator shall conduct a TOC measurement according to the test method in paragraph (j)(1) at the time of filling, and weekly thereafter to ensure that the air pollution control system achieves the emission standard of 250 ppmv.
 - (6) The operator of an oil and gas production facility shall pump out any organic liquid accumulated in the well cellar immediately before a well is steamed or after a wellhead is steam cleaned.

- (d) (7) The operator of an oil and gas production facility shall pump out or remove organic liquid accumulated in the well cellar when the TOC concentration in the well cellar is greater than 250 ppmv as determined by the test method in paragraph (j)(1) within five (5) calendar days following the determination, or if the well cellar is located within 1,500 feet of a sensitive receptor, by close of the following day. In lieu of the method in paragraph (j)(1), an operator may measure the depth of accumulated organic liquid and pump-out the liquid when the depth exceeds two (2) inches. The organic liquid depth may be measured using a “copper coat” gauge or any other measuring instrument determined to be acceptable by the Executive Officer.
- (8) The operator of an oil and gas production facility shall not allow natural gas or produced gas to be vented into the atmosphere. The emissions of produced gas shall be collected and controlled using one of the following:
- (A) A system handling gas for fuel, sale, or underground injection; or
 - (B) A device, approved by the Executive Officer, with a VOC vapor removal efficiency demonstrated to be at least 95% by weight per test method of paragraph (j)(2) or by demonstrating an outlet VOC concentration of 50 ppmv according to the test method in paragraph (j)(1) or by an equivalent demonstration identified in an approved permit issued on or after March 5, 2004, pursuant to Rule 203 – Permit to Operate. If the control device uses supplemental natural gas to control VOC, it shall be equipped with a device that automatically shuts off the flow of natural gas in the event of a flame-out or pilot failure.
- (9) Except as Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants applies to components of produced gas handling equipment located within 100 meters of a sensitive receptor, the operator shall repair any gaseous leaks of 250 ppmv TOC or greater by the close of the day following the leak discovery or take actions to prevent the release of TOC emissions to the atmosphere until repairs have been completed.
- (10) Unless approved in writing by the Executive Officer, CARB, and United States Environmental Protection Agency (U.S. EPA) as having no significant emissions impacts, no person shall:
- (A) Remove or otherwise render ineffective a well cellar at an oil and gas production well except for purposes of well abandonment to be

- (d) certified by the California Geologic Energy Management Division;
or
- (B) Drill a new oil and gas production well unless a well cellar is installed for secondary containment of fluids.
- (11) The operator of an oil and gas production facility shall utilize a rubber grommet designed for drill piping, production tubing or sucker rods to remove excess or free flowing fluid from piping, tubing or rods that are removed during any maintenance or piping, tubing or rod replacement activity that involves the use of a workover rig.
- (12) The operator of an oil and gas production facility shall, for any central processing area located within 1,500 feet of a sensitive receptor, operate and maintain a monitoring system that alarms or notifies operators of key process conditions, such as operating pressure, liquid level or on/off operating status, or a monitoring system that is required in accordance with applicable local fire regulations, in order to ensure proper facility operation. The monitoring system shall alarm or notify operators at a central location, control center, or other common area. The owner or operator shall identify and document the monitored process parameters or monitoring system required by applicable local fire regulations and shall make such documentation available for inspection upon request.
- (13) Effective February 1, 2025, the operator of an oil and gas production facility shall install and maintain signage. Unless otherwise approved in writing by the Executive Officer, signage shall:
 - (A) Be installed within 50 feet of the main entrance to the facility and in a location that is visible to the public;
 - (B) Measure at least 30 inches wide by 30 inches tall;
 - (C) Display lettering at least 2 inches tall with text color contrasting with the sign background;
 - (D) Located at least 4 feet above grade from the bottom of the sign;
 - (E) Display the following information in English and Spanish:
 - (i) Local or toll-free phone number for the site contact that is accessible 24 hours a day;
 - (ii) Notification statement:
“TO REPORT AIR QUALITY ISSUES SUCH AS ODORS, DUST, OR SMOKE FROM THIS FACILITY, PLEASE CALL [FACILITY CONTACT AND PHONE

- (d) NUMBER] OR THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT AT 1-800-CUT-SMOG[®];
- and
- (iii) Notification statement:
“PARA REPORTAR PROBLEMAS DE CALIDAD DEL AIRE COMO OLORES, POLVO O HUMO DE UNA INSTALACIÓN, LLAME A [CONTACTO DE LA INSTALACIÓN Y NÚMERO DEL TELÉFONO] O AL EL DISTRITO DE ADMINISTRACIÓN DE LA CALIDAD DEL AIRE DE LA COSTA SUR AL 1-800-CUT-SMOG[®];
- and
- (iv) Instructions to access additional information electronically:
<https://www.aqmd.gov/home/rules-compliance/compliance/1148-2>
- (14) The operator of an oil and gas production facility shall maintain well cellar, wellhead, oil producing well, water injection well and associated lines free of visible vapors resulting from a defect in equipment as determined pursuant to the schedule and inspection requirements specified in paragraph (e)(6).
- (15) Effective August 1, 2026, any engine that is powered by produced gas that is used to operate an oil producing or injection well shall comply with a NOx emission limit of 11 ppmv at 15% oxygen on a dry basis.
- (16) Effective August 1, 2026, any stationary gas turbine or fuel cell that is powered by produced gas, at an oil and gas production facility, shall comply with a NOx emission limit of 9 ppmv at 15% oxygen on a dry basis
- (17) Effective August 1, 2027, workover rigs operated at an oil and gas production facility shall be equipped with an engine that meets the minimum emissions standards of a Tier 4 Final engine.
- (18) The operator of an oil and gas production facility shall not use odorants.
- (19) The operator of an oil and gas production facility shall not:
- (A) Use a neutralizing agent that contains more than 0.1 % by weight of toxic air contaminants pursuant to South Coast AQMD Rule 1401 – New Source Review of Toxic Air Contaminants; and
- (B) Atomize or spray any neutralizing agent.
- (20) Effective January 1, 2025, for any leaks that are detected within a well cellar or from a wellhead that are greater than 25,000 ppm VOC with a calibrated

- (d) analyzer per EPA Method 21, the operator shall electronically notify the Executive Officer, using a format approved by the Executive Officer, of the following information within 24 hours of the leak quantification:
 - (A) name and contact information of the owner and operator of the subject wellhead(s) and/or well cellar(s);
 - (B) leak concentration(s) in parts per million (PPM);
 - (C) date of discovery; and
 - (D) status of any repairs.

- (e) **Operator Inspection Requirements**
 - (1) The operator of an oil and gas production facility shall visually inspect:
 - (A) Any stuffing box not located in or above a well cellar daily;
 - (B) Any stuffing box located in or above a well cellar weekly; or(C)
Any stuffing box or produced gas handling and control equipment located 328 feet (100 meters) or less from a sensitive receptor daily. Receptor distance shall be determined as the distance measured from the stuffing box or produced gas handling and control equipment to the property line of the nearest sensitive receptor.
 - (D) Any stuffing box or produced gas handling and control equipment located between 328 feet (100 meters) and 1,500 feet from a sensitive receptor daily for any facility receiving Notice(s) of Violation for Rule 402 and/or H&S Code § 41700 for odor nuisance occurring on two (2) or more days. Receptor distance shall be determined as the distance measured from the stuffing box or produced gas handling and control equipment to the property line of the nearest sensitive receptor.
 - (2) Notwithstanding the requirements of subparagraphs (e)(1)(A) and (e)(1)(B), the operator shall perform monthly visual inspections of any stuffing box fitted with a stuffing box adapter, any closed crude oil collection container, and any well shut off switch that will shut down the well when the container is full.
 - (3) Except for well cellars listed under subdivision (j), the operator shall quarterly, perform an inspection of all well cellars according to the test method in paragraph (j)(1).

- (e) (4) Within two (2) days of discovery of organic liquid leakage observed from the inspections pursuant to subparagraph (e)(1)(A), (e)(1)(B), or paragraph (e)(2), and within eight (8) hours pursuant to subparagraph (e)(1)(C), the operator shall conduct an inspection of the stuffing box and well cellar according to the test method in paragraph (j)(1) or measure the organic liquid depth using a “copper coat” gauge or any other measuring instrument determined to be acceptable by the Executive Officer.
- (5) Notwithstanding the provisions of Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants, the operator of an oil and gas production facility shall conduct a monthly TOC measurement on any component that has been identified as causing or likely to have caused the confirmed odor event through a submitted specific cause analysis report submitted in accordance with the provisions of subdivision (f). The TOC measurement shall be conducted monthly according to the test method in paragraph (j)(1) following submittal of the specific cause analysis report, until the measurement fails to exceed the leak rates identified in subparagraphs (e)(5)(A) and (e)(5)(B) for six consecutive months. The operator shall repair, replace or remove from service the component in accordance with the requirements of subparagraphs (e)(5)(A) and (e)(5)(B).
- (A) Any heavy liquid component leak of more than three drops per minute and greater than 100 ppmv shall be repaired, replaced or removed from service in one (1) calendar day.
- (B) Any light liquid/gas/vapor/component leak greater than 500 ppmv but no more than 10,000 ppmv shall be repaired, replaced or removed from service in one (1) calendar day.
- (6) Optical Gas Imaging Inspections
- Effective February 1, 2025, the operator of an oil and gas production site shall demonstrate compliance with subparagraph (d)(14), by conducting OGI inspections in accordance with the following requirements:
- (A) The person conducting an OGI inspection shall:
- (i) Complete a manufacturer’s certification or training program for the OGI Device used to conduct the inspection, and
- (ii) Operate and maintain the OGI Device in accordance with the manufacturer’s specifications and recommendations.
- (B) Oil and Gas Production Facility Inspections

- (e) A person meeting the requirements of subparagraph (e)(6)(A) shall:
 - (i) Conduct an inspection at an oil and gas production facility at least once per calendar month on all components and well cellars; and
 - (ii) When visible vapors are detected using an OGI Device, and the leak cannot be repaired within 24 hours from time of discovery, the use of an appropriate analyzer in compliance with paragraph (j)(1) shall be used to quantify the visible vapors in ppmv concentration within 48 hours of when the vapors are detected and the leak shall be repaired pursuant to Rule 1173 subdivision (g). Quantification of visible vapors is not required if the leak is repaired within 24 hours from time of discovery.

(f) **Specific Cause Analysis and Report**

Effective September 4, 2015, the owner or operator of any oil and gas production facility with any sensitive receptor within 1,500 feet of any well located on the facility property shall conduct a Specific Cause Analysis for each confirmed odor event and for each confirmed oil deposition event. The Specific Cause Analysis shall describe the steps taken to identify the source and cause of the odor or confirmed oil deposition event, and any mitigation and corrective actions taken or identified. The owner or operator shall, within 30 calendar days following receipt of written notification of a confirmed odor event or confirmed oil deposition event from the Executive Officer, submit the Specific Cause Analysis report to the Executive Officer, certified by the Responsible Party that all information submitted is true and correct.

- (1) The submitted Specific Cause Analysis report shall include the following:
 - (A) Identification of the equipment or activity causing or likely to have caused the confirmed odor event or confirmed oil deposition event, including any equipment or activity identified in the written notification of a confirmed odor event or confirmed oil deposition event by the Executive Officer.
 - (B) Any South Coast AQMD regulatory requirement associated with the equipment or activity causing or likely to have caused the confirmed odor event or confirmed oil deposition event, including but not

- (f) limited to, any permit condition and any other South Coast AQMD rule, including this rule.
 - (C) Identification of any Standard Operating Procedure, emergency or leak prevention plan, including any spill prevention plan, preventative maintenance scheduling or procedure associated with the source of the confirmed odor event or confirmed oil deposition event and any corrective action identified as part of the review and update pursuant to paragraph (f)(2) and schedule for completion of the corrective action.
- (2) The owner or operator shall review and update the following as part of the Specific Cause Analysis:
 - (A) Any Standard Operating Procedures associated with normal production operations and the leak history of inspections associated with the source of the confirmed odor event or confirmed oil deposition event.
 - (B) Any emergency or leak prevention plans, including any spill prevention plans associated with the source of the confirmed odor event or confirmed oil deposition event.
 - (C) Any preventative maintenance scheduling or procedures associated with the source of the confirmed odor event or confirmed oil deposition event.
- (g) **Odor Mitigation Plan**

Effective September 4, 2015, the owner or operator of any oil and gas production facility shall submit for approval an Odor Mitigation Plan, or an update to an existing Odor Mitigation Plan, to the Executive Officer within 90 calendar days following receipt of written notification from the Executive Officer.

 - (1) **Requirement for a Plan Submittal**

The Executive Officer shall notify the owner or operator of any oil and gas production facility with any sensitive receptor within 1,500 feet of any well located on the facility property of the requirement for an Odor Mitigation Plan if any of the following thresholds are met or exceeded:

 - (A) Receipt of Notice(s) of Violation for Rule 402 and/or H&S Code § 41700 for odor nuisance occurring on two (2) or more days; or
 - (B) Three (3) confirmed odor events within the previous six (6) consecutive calendar months.

- (g) (C) Subsequent to approval of an Odor Mitigation Plan:
 - (i) Receipt of a Notice of Violation for Rule 402 – Nuisance, as a result of odors; or
 - (ii) Three (3) confirmed odor events within the most recent six (6) consecutive calendar months following the date of approval of a previous Odor Mitigation Plan.
- (2) Odor Mitigation Plan Elements

An approved Odor Mitigation Plan must include and address the following activities and equipment:

 - (A) Oil and gas production and wastewater generation, including both normal and spill or release management control operations, with corresponding identification of potential or actual sources of emissions, odors, frequency of operator inspection and history of leaks.
 - (B) Activity involving drilling, well completion or rework, repair or maintenance of a well, which notes the sources of emissions, odors, odor mitigation measures for responding to odors and odor complaints, and procedures used for odor monitoring at the site and fence line.
 - (C) Identification of emission points and emission or leak monitoring used for all wastewater tanks, holding, knockout, and oil/water separation vessels, including any pressure relief devices or vacuum devices attached to the vessels, with provisions for recording of releases from such devices.
 - (D) Any equipment or activity identified as part of any previous Specific Cause Analysis.
- (3) Odor Monitoring and Mitigation Requirements

An approved Odor Mitigation Plan must include the following odor monitoring and mitigation provisions:

 - (A) The owner or operator shall conduct continual odor surveillance downwind at the perimeter of the property during drilling, well completion, or rework, repair or maintenance of any well, including water injection wells. Observations shall be recorded hourly. Equivalent odor monitoring equipment may be used in lieu of odor surveillance, subject to approval by the Executive Officer.

- (g)
 - (B) If odors are detected from odor surveillance or odor monitoring at the perimeter of the facility, pursuant to subparagraph (g)(3)(A) and confirmed from drilling, well completion, or rework, repair or maintenance of any well, the associated activity will discontinue until the source or cause of odors is determined and mitigated in accordance with measures previously approved unless the source or cause of the detected odors is determined to not be associated with the activity under surveillance.
 - (C) The oil and gas production facility shall store any removed drill piping, production tubing or sucker rods in a manner that minimizes emissions from crosswinds by storing within an enclosed area or other equivalent method.
 - (D) Notwithstanding the provisions of Rule 1173 - Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants, the operator of any oil and gas production facility shall repair, replace or remove from service any leaking component located within 1,500 feet of a sensitive receptor in accordance with the requirements of clauses (g)(3)(D)(i) and (g)(3)(D)(ii). For each calendar quarter, the operator may extend the repair period, as indicated below, for a total number of leaking components not to exceed 0.05 percent of the number of components inspected during the previous quarter, by type, rounded upward to the nearest integer where required.
 - (i) Any heavy liquid component leak of more than three drops per minute and greater than 100 ppmv shall be repaired, replaced or removed from service in one (1) calendar day with an extended repair period of three (3) calendar days.
 - (ii) Any light liquid/gas/vapor component leak greater than 500 ppmv but no more than 10,000 ppmv shall be repaired, replaced or removed from service in one (1) calendar day with an extended repair period of three (3) calendar days.
 - (E) Any corrective action identified in a Specific Cause Analysis report previously submitted by the facility.
 - (F) The owner or operator shall evaluate the cause or likely cause of any confirmed odor event as identified in any Specific Cause Analysis report previously submitted by the facility and identify either

- (g) improvements to existing monitoring systems required pursuant to paragraph (d)(12) or parameters for a new monitoring system installation. The owner or operator shall establish an installation and implementation schedule for any monitoring system improvements or new installations, subject to Executive Officer approval.

If any provision of paragraph (g)(3) is not included in the Odor Mitigation Plan, an evaluation and documentation must be provided in the Odor Mitigation Plan that states the reason why such provision is not feasible or would not be effective in addressing the specific cause of the confirmed odor events or notice(s) of violation that resulted in the requirement for plan submittal, subject to approval by the Executive Officer.

- (4) The owner and operator of an oil and gas production facility shall comply with all provisions of an approved Odor Mitigation Plan, except as provided by paragraph (k)(2). Violation of any of the terms of the plan is a violation of this rule.

(h) Recordkeeping Requirements

- (1) The operator shall maintain all records that document the purchase and installation of the stuffing box adapter(s) to demonstrate compliance with paragraph (e)(4) at the facility or facility headquarters and such records shall be made available to the Executive Officer upon request.
- (2) The operator shall maintain all records of inspection, measurements, repair, cleaning and pump-outs required by this rule, and of any activities performed under the exemption provided by (k)(2), in a form approved by the Executive Officer at the facility or facility headquarters for a period of three years or a period of five years for a Title V facility and such records shall be made available to the Executive Officer upon request.
- (3) The operator shall maintain production records and other applicable information and documents, including any referenced established written company safety manual or policy, sufficient to demonstrate eligibility for any exemption claimed pursuant to subdivision (j) and make them available to the Executive Officer upon request.
- (4) The operator shall maintain all records and other applicable documents required as part of an Odor Mitigation Plan approved in accordance with subdivision (g) in a form approved by the Executive Officer at the facility

(h) or facility headquarters for a period of three years or a period of five years for a Title V facility and such records and applicable documents shall be made available to the Executive Officer upon request.

(i) **Testing Requirements**

(1) For any engine subject to paragraph (d)(15), the operator shall demonstrate compliance to the emission limit in paragraph (d)(15) by:

(A) Conducting an initial source test within 24 months from August 2, 2024; and

(B) Subsequent source testing within 5 years of the previous source test.

(2) For any stationary turbine subject to paragraph (d)(16), the operator shall demonstrate compliance to the emission limit in paragraph (d)(16) by:

(A) Conducting an initial source test within 24 months from August 2, 2024; and

(B) Subsequent source testing within 5 years of the previous source test.

(j) **Test Methods**

The following test methods and procedures shall be used to determine compliance with this rule. Other test methods determined to be equivalent after review by the staffs of the South Coast AQMD, CARB, and the U.S. EPA, and approved in writing by the Executive Officer may also be used.

(1) Measurement of TOC or VOC concentrations shall be conducted according to the U.S. EPA Reference Method 21 using an appropriate analyzer calibrated with methane. The analyzer shall be calibrated before inspection each day prior to use. For the purpose of demonstrating compliance with the TOC concentration requirements in paragraphs (d)(1) and (d)(7), measurement of the TOC concentrations shall be conducted at a distance of no more than three (3) inches above the organic liquid surface in the well cellar.

(2) **Determination of Efficiency of Emission Control Systems**

The control equipment efficiency of an emission control system, on a mass emissions basis, and the VOC concentrations in the exhaust gases, measured and calculated as carbon, shall be determined by U.S. EPA Test Methods 25, 25A, or South Coast AQMD Method 25.1 - Determination of Total Gaseous Non-Methane Organic Emissions as Carbon or South Coast

- (j) AQMD Method 25.3 Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions from Clean Fueled Combustion Sources, as applicable. U.S. EPA Test Method 18 or CARB Method 422 shall be used to determine emissions of exempt compounds.
 - (3) The VOC content shall be determined according to ASTM Method D 1945 for gases, South Coast AQMD Method 304-91 for liquids. The percent VOC of a liquid evaporated at 150°C (302°F) shall be determined according to ASTM Method D 86.
 - (4) The flash point of heavy liquids shall be determined according to ASTM Method D 93.
 - (5) Laboratory Approval
Sampling, analysis, and reporting shall be conducted by a laboratory that has been approved under the South Coast AQMD Laboratory Approval Program (LAP) for the cited South Coast AQMD reference test methods, where LAP approval is available. For South Coast AQMD reference test methods for which no LAP program is available, the LAP approval requirement shall become effective one year after the date that the LAP program becomes available for that South Coast AQMD reference test method.
 - (6) Source testing for compliance demonstration of NO_x emission limits shall be conducted per South Coast AQMD Method 100.1.
- (k) Exemptions
 - (1) This rule shall not apply to well cellars associated exclusively with:
 - (A) Oil and gas production wells that have been idle and out of operation for more than six months, as indicated by production records, with no liquid leaks or accumulation of crude oil in the well cellar. All provisions of this rule shall apply upon commencement of operation of the idle well.
 - (B) Wells that have been certified as an abandoned well by the California Geologic Energy Management Division.
 - (C) Water, gas or steam injection wells.
 - (2) The provisions of paragraphs (d)(3), (d)(5), (d)(7), (d)(8), (d)(9) and paragraph (g)(3) shall not apply to any well, produced gas handling system, or portable enclosed storage vessel and associated air pollution control equipment undergoing maintenance and repair, well drilling, or well

- (k) abandonment operations, if the owner or operator can demonstrate to the Executive Officer that: performing the maintenance and repair, drilling, or abandonment operation to meet paragraph (d)(3), (d)(5), (d)(7), (d)(8), (d)(9), or paragraph (g)(3), as applicable, would cause the facility to operate in a manner that violates state or federal regulations, applicable industry safety standards, or a written company safety manual or policy that was developed to comply with applicable industry safety standards; and that the maintenance and repair, drilling, or abandonment operation is conducted in a manner that minimizes, as much as possible under the circumstances, emissions to the atmosphere.
- (3) The provisions of paragraph (d)(1), (d)(2) and (d)(7) shall not apply to any well cellar used in emergencies at oil production facilities, if clean-up procedures are implemented within 24 hours after each emergency occurrence and completed within ten (10) calendar days.
- (4) The provisions of paragraph (d)(8) of this rule shall not apply to oil and gas production wells in operation as of March 5, 2004, that produce no more than one (1) barrel per day of oil or 200 standard cubic feet per day of produced gas per facility, provided that such production wells are not located within 100 meters of a sensitive receptor, and provided the production can be demonstrated from annual production records. Demonstration of produced gas production shall be based on metered measurement of the gas.
- (5) The provisions of paragraph (i)(2) shall not apply to a stationary turbine certified by the CARB Distributed Generation Certification Program.