

ARB GHG Oil & Gas Regulation



Santa Barbara County APCD

November 7 – Santa Maria

November 14 – Santa Barbara

(revised on 11/21/17)



Today's Presentation

- Purpose of the ARB Regulation
- Who is Impacted?
- Requirements
- Rule 331 LDAR Exemptions
- Implementation: MOA, Permits, Fees, Enforcement
- Key Deadlines
- Webpage & Resources

Purpose of the ARB Regulation

- AB 32. California Global Warming Solutions Act.
- Purpose is to reduce methane (CH₄) emissions.
- Short-Lived Climate Pollutant (SLCP) Strategy target to reduce methane emissions from the oil & gas sector by 40-45 percent as a whole by 2025.
- SB 887. Natural gas underground gas storage.
- SB 4. Oil & gas well stimulation.
- ARB's regulation covers leaking equipment from compressor seals/rod packing to piping components such as valve and flanges.

Who is impacted?

- Facilities that are impacted:
 - Oil and Gas Production, Processing, and Storage
 - Gas Processing Plants
 - Natural Gas Underground Storage Fields
 - NG Gathering and Boosting Stations
 - NG Transmission Compressor Stations
 - Crude Oil Pipeline Pump Stations
- Facilities that are not impacted:
 - Utility Odorant & Metering Stations
 - Oil & Gas Platforms on the Outer Continental Shelf

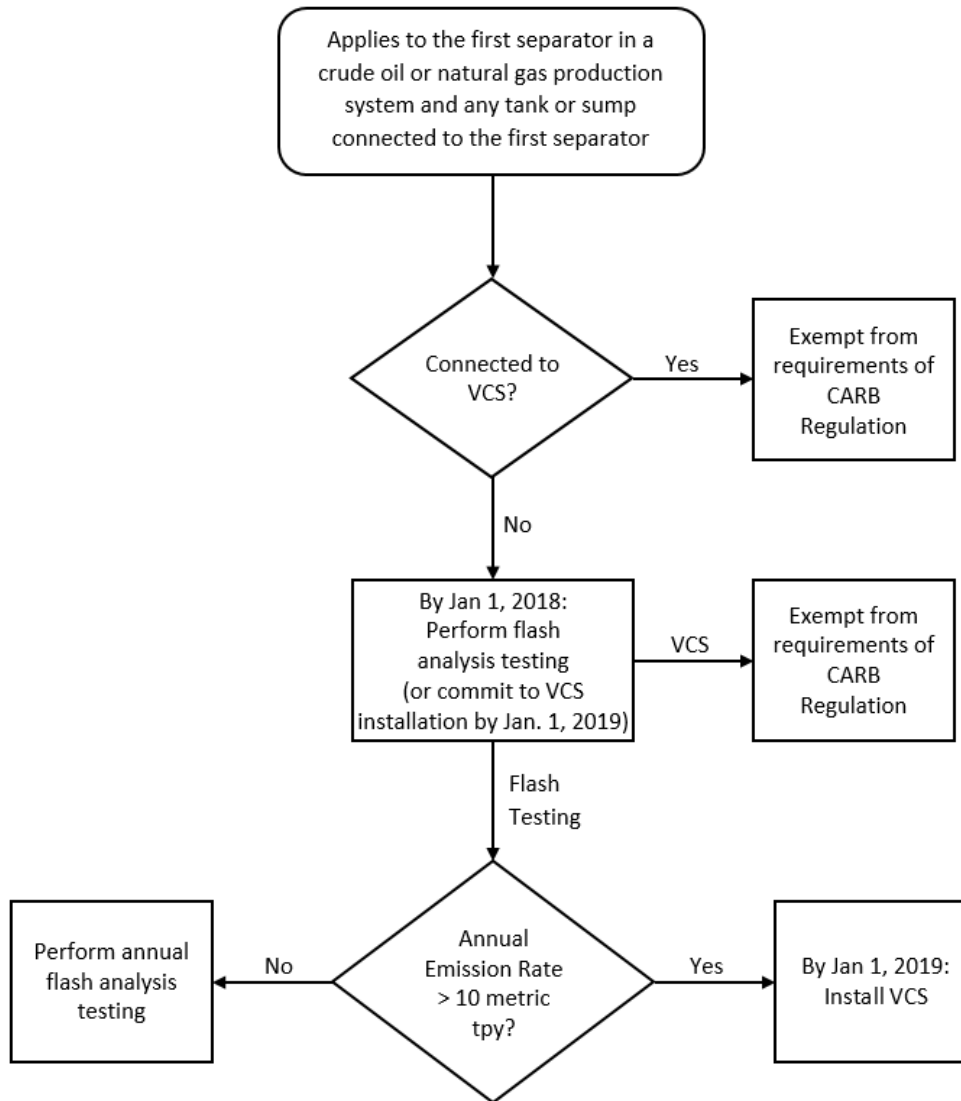
Requirements

- Separator and Tank Systems
- Circulation Tanks for Well Stimulation Treatments
- Natural Gas Compressors
- Natural Gas Powered Pneumatic Devices and Pumps
- Liquids Unloading of Natural Gas Wells
- Well Casing Vents
- Natural Gas Underground Storage Facilities
- Leak Detection and Repair (LDAR), including Critical Components
- Vapor Collection Systems and Vapor Control Devices
- Recordkeeping and Reporting

Separator and Tank Systems

- Definition: *means the first separator in a crude oil or natural gas production system and any tank or sump connected directly to the first separator.*
- Includes upstream gauge tanks.
- Applies to uncontrolled systems.
- Exempted if already connected to a permitted Vapor Collection System (VCS).
- Flash testing required to determine methane emissions.
- VCS required if the annual emissions are above 10 metric tons methane.
- Exemptions for low throughput systems and small gauge tanks.

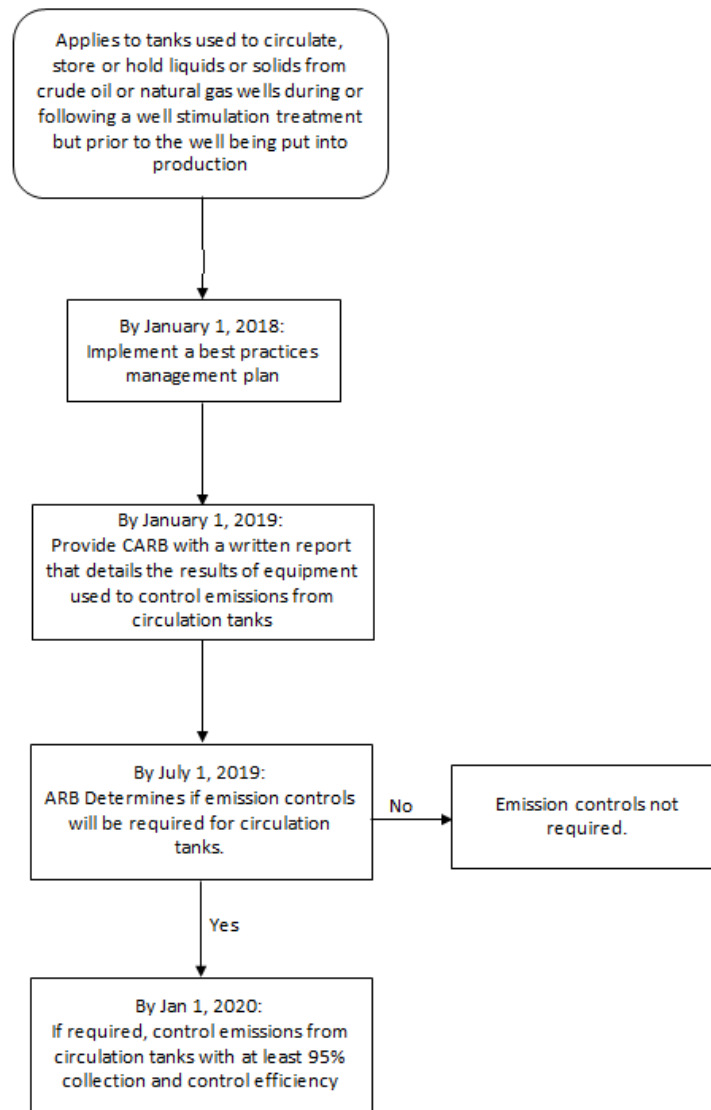
Existing Separator and Tank Systems



Circulation Tanks for Well Stimulation Treatments

- Best Practices Management Plan required
 - Inspection practices to minimize emissions from circulation tanks.
 - Practices to minimize venting of emissions from circulation tanks.
 - Practices to minimize the duration of liquid circulation.
 - Alternative practices to control vented and fugitive emissions.
- Requires a technology assessment by Jan. 1, 2019.
 - Use of a VCS with 95% capture and control.
 - Allows for pooled testing amongst operators.
 - ARB will evaluate results of testing.
- ARB will determine if VCS controls are required for these operations by July 1, 2019.

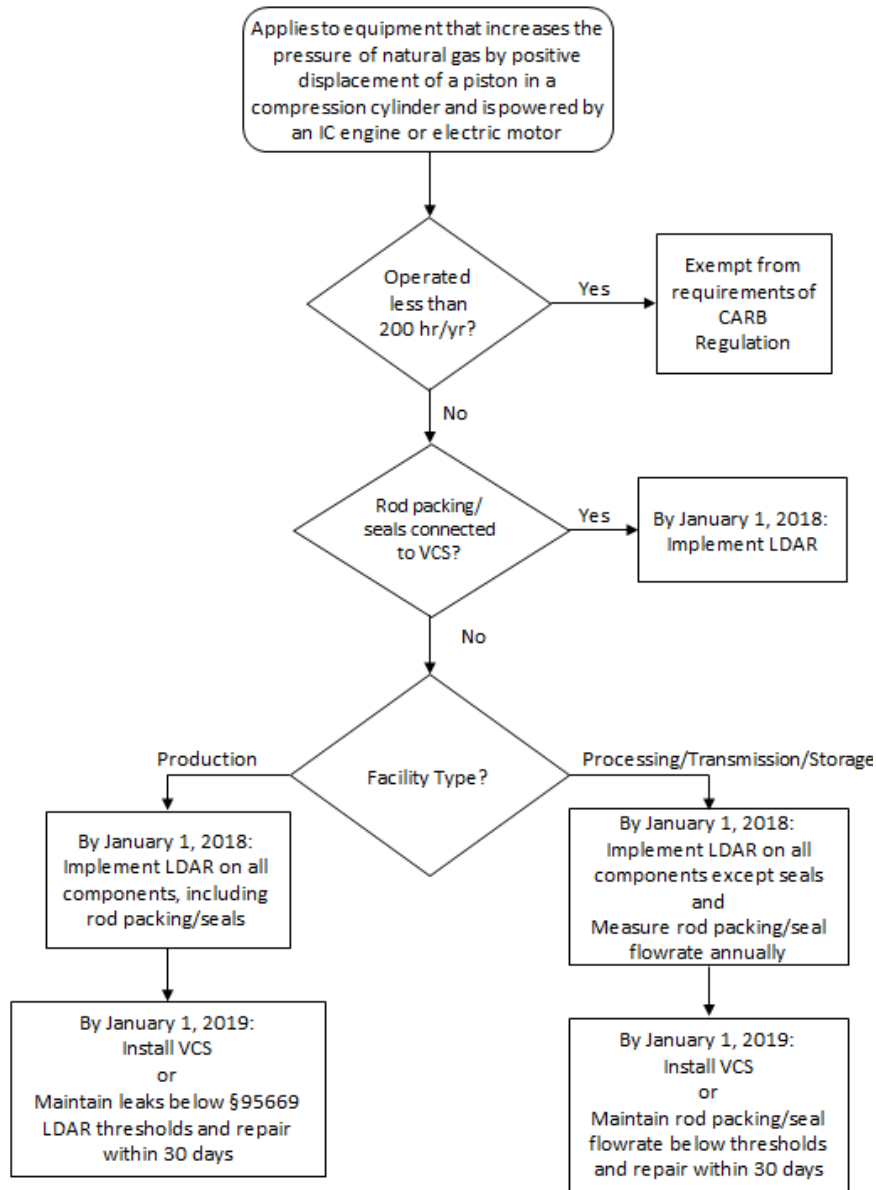
Existing Circulation Tanks for Well Stimulation Treatments



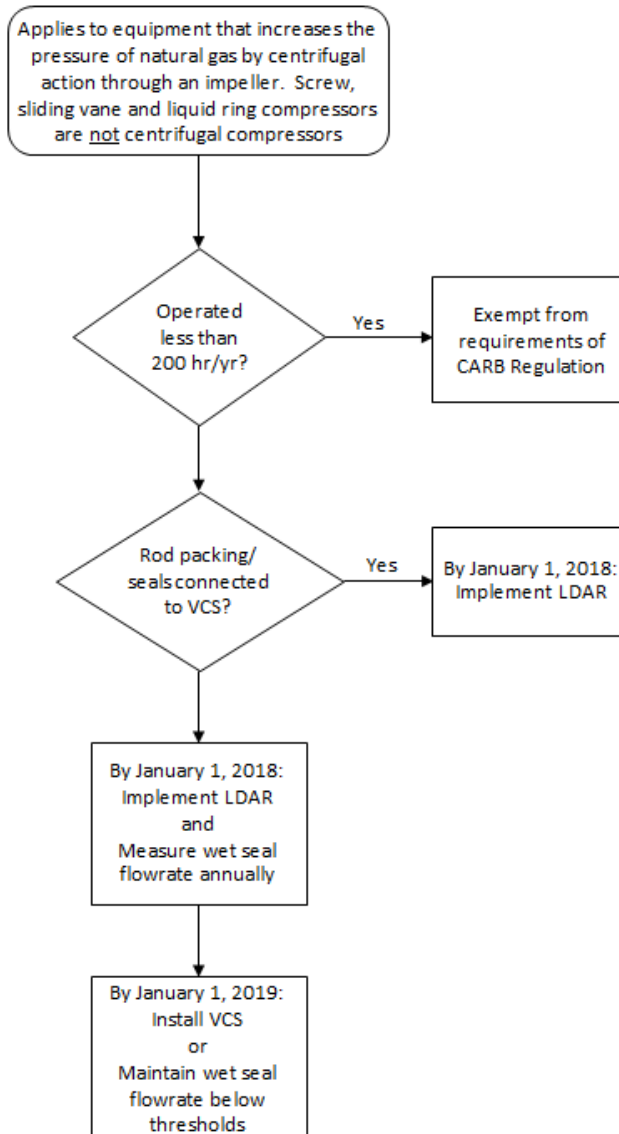
Natural Gas Compressors

- Reciprocating Natural Gas Compressors
 - 200 hour/year exemption
 - LDAR required
 - Seal/Rod Packing Standards
 - Production:
 - Install VCS or meet LDAR limits.
 - Processing/Transmission/Storage:
 - Install VCS or Annually measure leak rates and meet limits
 - In compliance if already connected to permitted VCS
- Centrifugal Natural Gas Compressors
 - 200 hour/year exemption
 - LDAR required
 - Install VCS or Annually measure leak rates and meet limits
 - In compliance if already connected to permitted VCS
- Vapor Recovery Compressors. Typically are sliding vane (exempted) or reciprocating (subject to regulation). Other types...

Existing Reciprocating Natural Gas Compressors



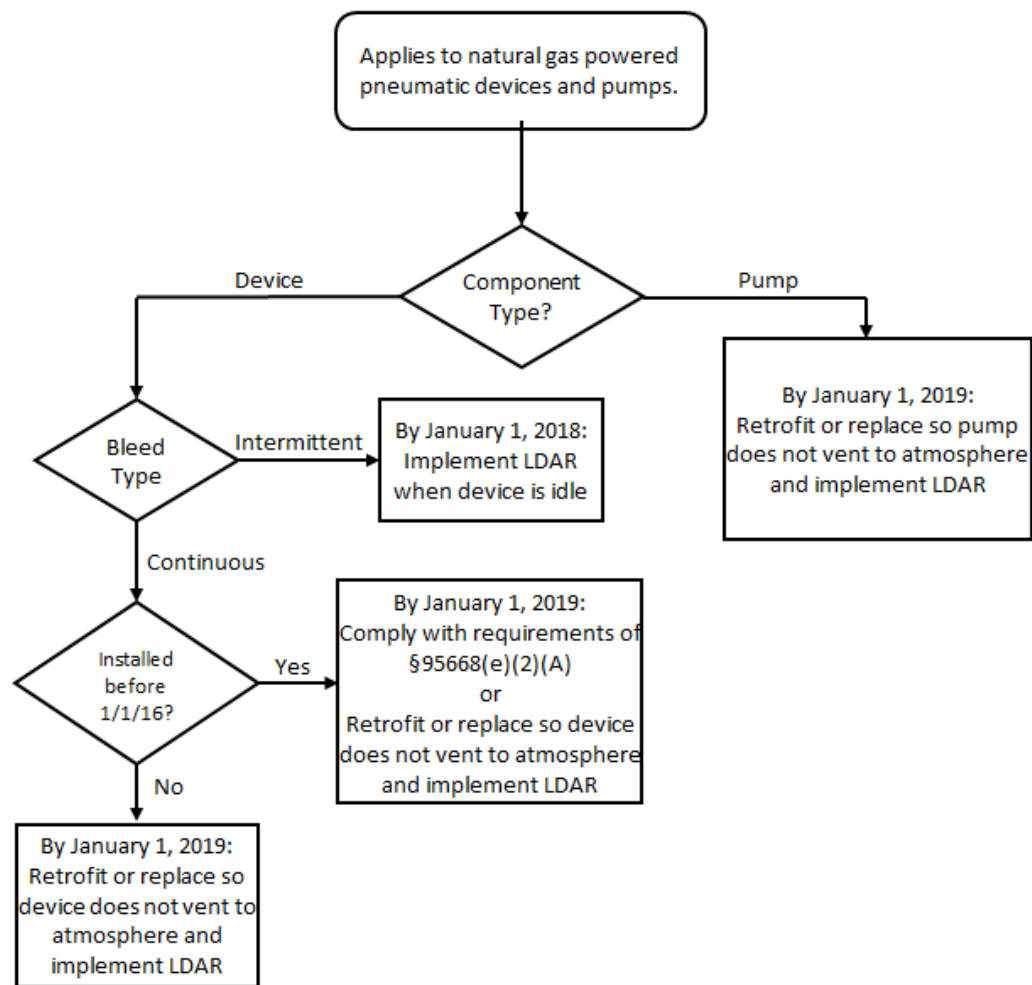
Existing Centrifugal Natural Gas Compressors



Natural Gas Powered Pneumatic Devices and Pumps

- A pneumatic pump is not a pneumatic device.
- Bifurcated b/n continuous bleed and intermittent bleed
- Standards for devices and pumps
- Pneumatic devices installed prior to 2016
 - Cease venting to atmosphere by January 1, 2019, or
 - Annually measure leak rates and meet limits
- LDAR.
 - Intermittent bleed devices: January 1, 2018
 - All others: January 1, 2019
- All NG pneumatic pumps phased out by January 1, 2019

Existing Natural Gas Powered Pneumatic Devices and Pumps



Liquids Unloading of Natural Gas Wells

- Natural gas wells do not include wells that produce crude oil emulsion.
- Three options to comply:
 - Connect to VCS
 - Measure volume of gas vented by direct method
 - Calculate the amount of gas vented

Liquids Unloading of Natural Gas Wells

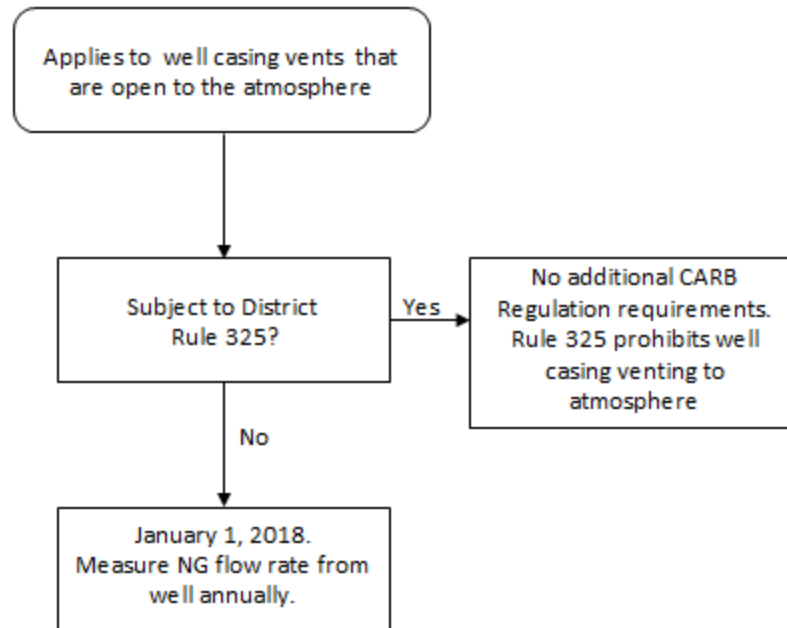
Applies to activities conducted with the use of pressurized natural gas to remove liquids that accumulate at the bottom of natural gas wells and obstruct gas flow

By January 1, 2018:
Collect vented gas with VCS
or
Measure volume of gas vented
or
Calculate volume of gas vented

Well Casing Vents

- Requires annual direct measurement of NG from well casing vents open to the atmosphere.
- District Rule 325 (*Crude Oil Production and Separation*):
 - Prohibits venting of NG from casing vents, whether opened continuously or intermittently.
 - Does not apply to wells that are undergoing routine maintenance.

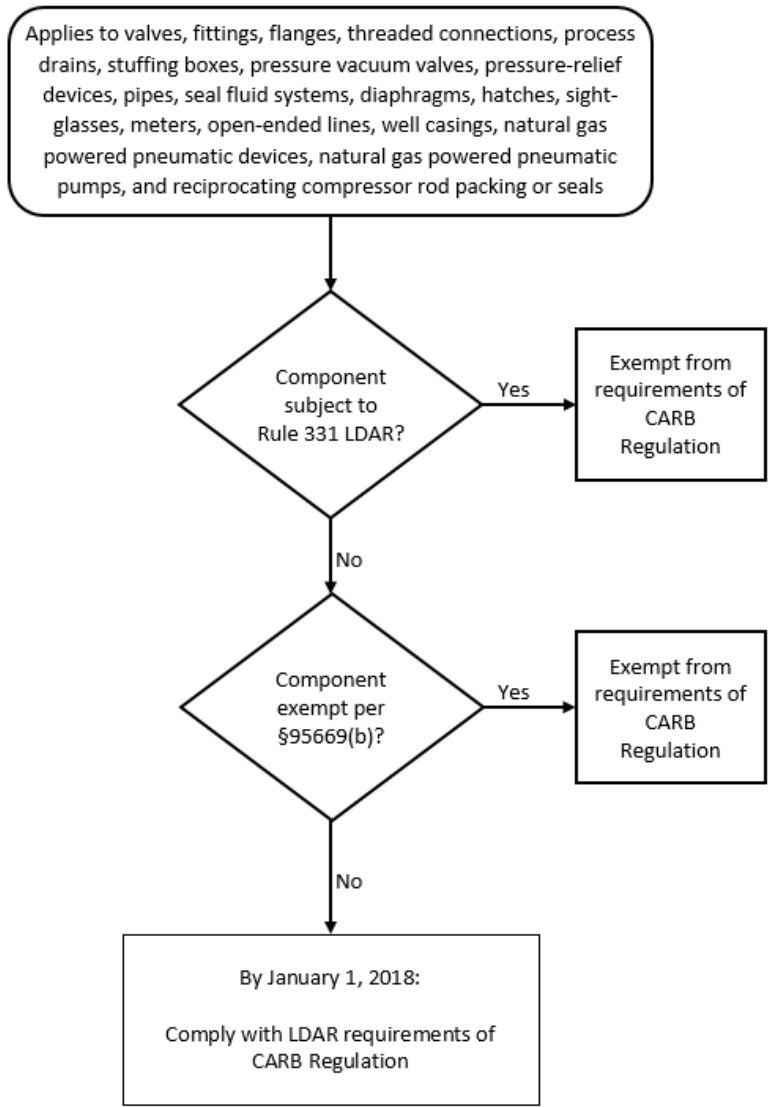
Existing Well Casing Vents



Leak Detection and Repair LDAR

- How are facilities subject to local LDAR rules handled?
- Whose LDAR rule applies when NG Compressor and NG Pneumatics sections cite the ARB LDAR requirements?
- Do facilities that are exempt from Rule 331 have to submit an Inspection & Maintenance Plan?
- What happens to components exempted under Section B of Rule 331? Produced water lines? Utility natural gas lines?
- Can I retract my prior Rule 331 exemptions? How and when?
- Which Rule 331 exemptions should I retract to avoid having to implement two LDAR programs?
 - B.2.a – Natural Gas (partial request)
 - B.3.b – Process fluids < 10 ROC by wt. (partial request)
 - B.3.c – Totally contained or enclosed
 - B.3.e – NG Pneumatic control valves

Existing Component Leak Detection and Repair



Rule 331 LDAR Exemptions



Santa Barbara County Air Pollution Control District
Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities
Rule 331 LDAR Exemptions – Exempt Components that are Subject to the CARB GHG O&G Regulation

SBCAPCD RULE 331 Exemptions	Does CARB GHG O&G Regulation Apply?	COMMENTS
<p><i>Section A – Applicability.</i> Rule applies to components in liquid or gaseous hydrocarbon service at refineries, chemical plants, oil and gas production fields, oil and gas processing plants, and pipeline transfer stations.</p>	<p>No, except for components exempt under Rule 331. Also, the CARB regulation applies to natural gas underground storage facilities; natural gas gathering and boosting stations (that not subject to Rule 331); and, natural gas transmission compressor stations.</p>	<p>For those facilities that are not “subject” to Rule 331 under the Applicability Section, the LDAR requirements of the CARB regulation become effective on January 1, 2018. For those components exempt from Rule 331 due to the provisions of Section B, the CARB regulation will apply. In some cases, the CARB regulation will have a similar exemption to the Rule 331 exemption.</p>
<p><i>Section B.1 – Exemptions.</i> All exemptions requests must be in writing to the Control Officer.</p>	<p>No. The CARB regulation has no similar requirement.</p>	<p>Exemptions from provisions of Rule 331 (in whole or part) are made in writing and are incorporated into the facility’s Inspection & Maintenance Plan. A facility may retract a previously approved exemption request (in whole or in part) if done, prior to January 1, 2018, in writing and with an update to the I&M Plan that incorporates that request. The District recommends this approach as it avoids having to implement two separate LDAR programs at the same facility.</p>
<p><i>Section B.2.a – Exemptions.</i> Components exclusively handling natural gas. This exemption applies to all rule provisions.</p>	<p>Yes. The CARB regulation applies.</p>	<p>The CARB regulations does have a limited exemption under §95669(b)(4) for natural gas distribution pipelines located at a crude oil production facility used for the delivery of commercial quality natural gas and which are <u>not owned or operated</u> by the crude oil production facility. Otherwise, these</p>

SBCAPCD RULE 331 Exemptions	Does CARB GHG O&G Regulation Apply?	COMMENTS
		components must comply with the CARB regulation. ¹
<i>Section B.2.b – Exemptions.</i> Components buried below ground. This exemption applies to all rule provisions.	Yes. However, the CARB regulation contains a similar exemption to Rule 331.	§95669(b)(5) exempts: “Components that are buried below ground. The portion of well casing that is visible above ground is not considered a buried component.” District LDAR already applies to the portion of the well casing visible above ground. No additional action is required to comply with the CARB regulation.
<i>Section B.2.c – Exemptions.</i> One-half inch and smaller stainless steel tube fittings which have been determined to be leak-free by the Control Officer based on an initial inspection in accordance with Section H.1. This exemption applies to all rule provisions.	Yes. However, the CARB regulation contains a similar exemption to Rule 331.	CARB’s §95669(b)(7) also exempts ½ inch stainless steel tube fitting. CARB has confirmed that the District exemption matches the intent of the CARB exemption and no additional action is required to comply with the CARB regulation.
<i>Section B.3.a – Exemptions.</i> Components exclusively in heavy liquid service. This exception applies to the provisions of Sections F.1, F.2, F.3 and F.7.	Yes. However, the CARB regulation contains a similar exemption to Rule 331 for crude oil.	The Rule 331 definition of Heavy Liquid service is not the same as the CARB regulation in §95669(b)(2). If the CARB definition (API gravity being less the 20°) is met, then no additional action is required to comply with the CARB regulation.
<i>Section B.3.b – Exemptions.</i> Components, except components within gas processing plants, exclusively handling liquid and gaseous process fluids with an ROC concentration of 10 percent or	Yes	The CARB regulation does not contain a similar exemption. ¹

¹ A facility may retract (in whole or in part) a previously approved exemption request if done, prior to January 1, 2018, in writing and with an update to the I&M Plan that incorporates that request. The District recommends this approach as it avoids having to implement two separate LDAR programs at the same facility. This would include Sections B.2.a, B.3.b, B.3.c, and B.3.e. The Section B.2.a may still exempt natural gas distribution pipelines located at a crude oil production facility used for the delivery of commercial quality natural gas and that are not owned or operated by the crude oil production facility. The Section B.3.b exemption may still exempt components incorporated into produced water lines located downstream of a separator and tank system that is controlled with the use of a vapor collection system.

SBCAPCD RULE 331 Exemptions	Does CARB GHG O&G Regulation Apply?	COMMENTS
less by weight, as determined according to test methods specified in Section H.2. This exemption applies to the provisions of Sections F.1, F.2, F.3 and F.7.		The Section B.3.b exemption may still exempt components incorporated into produced water lines located downstream of a separator and tank system that is controlled with the use of a vapor collection system.
<i>Section B.3.c – Exemptions.</i> Components totally contained or enclosed such that there are no ROC emissions into the atmosphere. This exemption applies to the provisions of Sections F.1, F.2, F.3 and F.7.	Yes	The CARB regulation does not contain a similar exemption. Under District LDAR program, examples of these components would be compressor seals/rod packings that are enclosed and connected to a VCS. And any system routed to a VCS is in compliance with the CARB regulation. ¹
<i>Section B.3.d – Exemptions.</i> Components incorporated in lines operating exclusively under negative pressures. This exemption applies to the provisions of Sections F.1, F.2, F.3 and F.7.	Yes. However, the CARB regulation contains a similar exemption to Rule 331.	§95669(b)(8) in the CARB regulation matches. No additional action is required to comply with the CARB regulation.
<i>Section B.3.e – Exemptions.</i> Any control valve actuation system, except those used in pressure relief valves and stuffing boxes, which uses gas pressure to open or close the valve and which releases gas to the atmosphere during this process, and for which the Control Officer has <u>determined</u> on a case-by-case basis that no alternate valve design can be feasibly used. This exemption applies to the provisions of Sections F.1, F.2, F.3 and F.7.	Yes	The CARB regulation does not contain a similar exemption. ¹
<i>Section B.4 – Exemptions.</i> The provisions of Sections F.1, F.2, and F.7 of this rule shall not apply to components that are unsafe to monitor, as documented and established in a safety manual or policy, and with the prior written approval of the Control Officer.	No	Section F.3 of Rule 331 has an applicable monitoring requirement for components that are classified as unsafe-to-monitor. No additional action is required to comply with the CARB regulation.

Critical Components

- District retains critical component determinations for components subject to local LDAR rule.
- This applies to prior as well as future determinations.
- All critical components must be listed in the District approved I&M Plan for the facility/source.
- ARB makes critical component determinations for components subject to the ARB regulation (unless otherwise noted in the ARB/District MOA)

Vapor Collection Systems and Vapor Control Devices

- VCS systems servicing Separator and Tank Systems that are permitted as of January 1, 2018 are exempt.
- Section (d) Low NO_x requirements do not apply to:
 - NG compressor vents and/or NG pneumatics that are currently connected to a VCS.
 - Replacement separators, tanks, compressors that are currently connected to a VCS.
 - New devices that are subject to NSR and will be connected to a VCS.
- Section (d) Low NO_x requirements do apply when:
 - The operator needs to install a flare in order to comply with the regulation's VCS requirements.
 - Operators of an existing facility already with a flare are required to control *additional vapors* in order to comply with the regulation.

Recordkeeping and Reporting

- Records are required for equipment/components subject to the regulation.
- Recordkeeping/Reporting required for:
 - Production data, regardless if separator/tank connected to VCS.
 - LDAR records for components subject to local rule (per local rule).
- Recordkeeping/Reporting is required for:
 - Flash testing data.
 - Circulation tank BPM Plan.
 - LDAR records for components not subject to local rule.
 - NG compressor emission flow rate measurements/other.
 - NG pneumatic emission flow rate measurements.
 - Liquids unloading from NG well information.
 - Well casing emission flow rate data.
 - All Underground NG Storage facility required data.
- Initial Compliance Status Reports due January 1, 2018, then annually.
- ARB regulation reports due July 1 to the District, then...
- District will align reporting to match existing permits at renewal.

Implementation

- District/ARB Memorandum of Agreement (in process).
- District will implement and enforce the ARB regulation.
- *Exceptions:* Circulation tank study, Monitoring Plan approval for NG Underground Storage, and Critical Components.
- No Registration program. Existing permits already list the equipment subject to the regulation.
- Initial January 1, 2018 report for facility compliance per Section 95674(b)(2)(A). GHG Compliance Status Checklist Long/Short Form.
- Permit renewal process will incorporate terms of regulation.
- Permits are required for modifications or new controls.
- No new fees. Existing fee schedule works.
- Cost reimbursement provisions will be set up for implementation of NG Underground Storage requirements.
- On case-by-case basis, cost reimbursement to be used for facilities subject to ARB regulation LDAR requirements.

Key Deadlines

- **Now:** Revise your District I&M Plan (retract R331 exemptions).
- **Now:** Complete a GHG Compliance Status Checklist for each facility. Use either the Long/Short form. Submit to District.
- January 1, 2018:
 - Revise local I&M Plans (optional)
 - Initial Section 95674(b)(2)(A) reports (Long/Short Form).
 - Comply with LDAR requirements (Table 1/2 standards).
 - Flash testing results due.
 - Obtain Critical Component pre-approvals.
 - Circulation tank Best Practices Management Plan in place.
 - Measure seal/packing flow rates. (*annual* requirement)
 - Submit Monitoring Plan for NG Underground Storage sites.
 - Measure gas volumes: open well casing vents/NG well unloading.

Key Deadlines (Continued)

- January 1, 2019:
 - Updates to Section 95674(b)(2) Reports (wells, production data, equipment list changes)
 - Install VCS on uncontrolled Separators/Tanks (> 10 mt/yr).
 - Provide ARB report on circulation tanks.
 - NG Compressors: Comply with standards or install VCS.
 - NG Pneumatics: Retrofit or replace.
 - Implement Monitoring Plan at NG Underground Storage sites.
 - Continue required flash tests and flow rate measurements.
- January 1, 2020:
 - Updates to Section 95674(b)(2) Reports.
 - Comply with LDAR requirements (Table 3/4 standards).
 - Install VCS on circulation tanks (per ARB direction).
 - Continue required flash tests and flow rate measurements.

Webpage & Resources

- Oil & Gas Webpage
<https://www.ourair.org/oil-and-gas/>
 - This PowerPoint Presentation
 - Regulation Flow Diagrams.
 - [Separator and Tank Systems](#), [NG Reciprocating Compressors](#), [Circulation Tanks](#), [NG Centrifugal Compressors](#), [NG Powered Pneumatics](#), [Liquids Unloading NG Wells](#), [Well Casing Vents](#), [Component LDAR](#).
 - Fact Sheet ([pdf](#))
 - FAQ ([pdf](#))
 - Rule 331 LDAR Exemption Comparison Table ([pdf](#))
 - GHG Compliance Status Checklist ([Long](#) / [Short](#) PDF Forms)
- ARB Final Regulation Order
<https://www.arb.ca.gov/regact/2016/oilandgas2016/ogfro.pdf>
- ARB Oil & NG Production, Processing, and Storage Webpage
<https://www.arb.ca.gov/cc/oil-gas/oil-gas.htm>

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Questions