

**AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO**

**PROPOSED AMENDMENTS TO
RULE 69.4 - STATIONARY RECIPROCATING
INTERNAL COMBUSTION ENGINES -
REASONABLY AVAILABLE CONTROL TECHNOLOGY**

WORKSHOP REPORT

A notice for a workshop on the proposed Rule 69.4 amendments was mailed to all known owners and operators of stationary reciprocating internal combustion (IC) engines in San Diego County. Notices were also mailed to all Economic Development Corporations and Chambers of Commerce in San Diego County, the U.S Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and other interested parties. The workshop was held on November 20, 2002, and was attended by three people. Oral and written comments were received before and during the workshop. The comments and the Air Pollution Control District (District) responses are as follows:

1. ARB WRITTEN COMMENT

Subsection (e)(8) requires that the referenced records be retained for a period of at least three years. This retention period falls short of the five-year period required for the federal Title V program sources. It is recommended that Subsection (e)(8) be modified to include a five-year record retention for these sources, to comply with the Title V requirements and improve the rule's stringency.

DISTRICT RESPONSE

Title V sources will have a specific requirement to retain records for five years as a part of the federal Title V permit program. Therefore, it is not necessary to include this requirement in Rule 69.4. Moreover, should this Title V requirement change in the future, the District would not have to make corresponding amendments to Rule 69.4 and other rules which may apply to Title V sources.

2. WRITTEN COMMENT

Subsection (e)(7) of the proposed amended rule requires the installation of a Continuous Emission Monitoring System (CEMS) to measure and record oxygen and oxides of nitrogen (NOx) emission concentrations for existing gaseous-fueled engines rated at 1,000 brake horse power (bhp) or above and operating more than 2,000 hours per year. Minnesota Methane LLC operates 12 such engines in San Diego County. The cost of installation, operation and maintenance of CEMS, and accompanying data acquisition systems, would be close to a million dollars. This is financially burdensome and would potentially bankrupt the operation. In addition, the company has contracts with both local utilities and the City of San Diego to

supply power. A failure to do so would bring about legal action for breach of contracts, resulting in additional financial sanctions. This requirement would not significantly improve air quality but would severely impact Minnesota Methane LLC and similar businesses located in San Diego County.

DISTRICT RESPONSE

A continuous monitoring of large gaseous-fueled engines was included in the rule to correct an EPA identified rule deficiency. It is also consistent with the state Reasonably Available Control Technology and Best Available Retrofit Control Technology (RACT/BARCT) Guidance issued by ARB in 2001. However, the District agrees that it would result in a great financial burden on existing facilities in San Diego County. In addition, existing engines which would be subject to these requirements are presently complying with the significantly more stringent emission standards of Rule 69.4.1 (Stationary Reciprocating Internal Combustion Engines - Best Available Retrofit Control Technology) than those of Rule 69.4.

Proposed Subsection (e)(7) has been revised to exclude existing engines from the requirement to install CEMS provided that the engines undergo annual source testing. The CEMS requirement will only apply to new engines rated at 1,000 bhp or above and operating more than 2,000 hours and installed after the date of the rule adoption.

EPA has concurred with the District's position.

3. WRITTEN COMMENT

The amendment to Subsection (e)(7) has been proposed as a correction to a rule deficiency identified by EPA. If the District decides to revise this amendment as a result of the workshop comments, how would it be presented to EPA?

DISTRICT RESPONSE

As a part of regular rule development procedures, the District would conduct a preliminary discussion with EPA staff on the proposed rule changes as a result of workshop comments. The amended rule, together with the workshop report, will then be submitted to EPA for formal comments.

In this case, Subsection (e)(7) requirements have been discussed with EPA staff. They have concurred with the revision described above. (See response to Comment No. 2.)

4. WRITTEN COMMENT

Can an existing Title V permit be modified to designate a facility as a synthetic minor source for NOx if a facility has a potential to emit of approximately 51 tons per year, but had actual emissions less than 50 tons per year?

DISTRICT RESPONSE

Yes, such a facility can be designated a synthetic minor source for NO_x if it applies for and is granted practicably-enforceable permit conditions in its Title V permit limiting its potential to emit to less than 50 tons of NO_x per year.

5. WRITTEN COMMENT

Would this facility be also exempt from Rule 69.4 requirements?

DISTRICT RESPONSE

Yes, it would be exempt from Rule 69.4 which applies only to sources which have a potential to emit 50 tons per year of NO_x or more and reflects federal RACT requirements. However, the facility will still be subject to Rule 69.4.1 - Stationary Reciprocating Internal Combustion Engines - Best Available Retrofit Control Technology, which reflects more stringent state requirements and applies to all reciprocating IC engines rated 50 bhp or larger.

6. WRITTEN COMMENT

Rule 4701 of the San Joaquin Valley Unified Air Pollution Control District (APCD) is similar to Rule 69.4. Both rules were adopted to reduce NO_x emissions from reciprocating IC engines to achieve attainment of the state and federal ozone standard. San Joaquin Valley is designated by the Federal Clean Air Act as a severe ozone nonattainment area while San Diego County is a serious nonattainment area. However, Rule 4701 only requires continuous monitoring of NO_x, O₂ and CO for engines with "an external control device." Why would EPA have more stringent requirements for the area which has less severe air pollution problems?

DISTRICT RESPONSE

EPA has not yet approved current Rule 4701 into the State Implementation Plan (SIP). In fact, EPA first proposed a limited approval/limited disapproval of this rule, identifying several deficiencies including monitoring requirements, in 1998 when San Joaquin Valley was still designated as a serious ozone non-attainment area. In December 2001, EPA reclassified San Joaquin Valley as a severe ozone non-attainment area. In February 2002, EPA finalized its limited approval/limited disapproval of Rule 4701.

San Joaquin Valley APCD is presently in the process of revising Rule 4701 to correct EPA identified deficiencies. It is now proposing to require CEMS by year 2007 on all new and existing engines larger than 1,000 bhp and operating more than 2,000 hours per year to make it consistent with the state RACT/BARCT Guidance.

7. WRITTEN COMMENT

As currently written, Rule 69.4 does not allow for any type of intermediate performance testing prior to the submittal of the Construction Completion Notice. The City of San Diego Metropolitan Wastewater Department proposes to add language to the rule to allow the testing of partially installed equipment prior to installation of air pollution controls.

DISTRICT RESPONSE

The District is presently working on new Rule 24.1 – Initial Start-up and Shakedown (Commissioning) Operations for Equipment with Add-on Emission Control Devices which will address emissions and other issues that arise during the commissioning of equipment with add-on emission controls. The District is planning to present this rule for a public workshop in late 2003.

8. WORKSHOP COMMENT

Is Parametric Emission Monitoring System (PEMS) considered an alternative monitoring system by Subsection (e)(7)? Can this subsection include language for PEMS?

DISTRICT RESPONSE

Yes. Subsection (e)(7) has been revised to clarify that a PEMS is an allowed alternative to CEMS provided that it is approved by the District and EPA.

9. WORKSHOP COMMENT

Getting approval from EPA usually takes time and will slow down the process. EPA approval is not required in other sections of the rule.

DISTRICT RESPONSE

It has been EPA policy since 1987 that no alternative means of emission control and/or monitoring and reporting requirements are allowed at a local agency's discretion in a federally enforceable rule unless it is also approved by EPA.

10. WORKSHOP COMMENT

In other districts, parametric monitoring is considered equivalent to continuous emission monitoring.

DISTRICT RESPONSE

Please see the District response to Comment No. 8.

11. WORKSHOP COMMENT

Can the District persuade EPA to repeal its requirement for CEMS on large engines? The engines subject to Rule 69.4 are already required by permit conditions to monitor air to fuel ratio, which perfectly reflects exhaust oxygen concentration. A portable NOx analyzer is also used to periodically check the engine emissions. Similar monitoring has proven successful in a similar operation in Washington State.

DISTRICT RESPONSE

The District has obtained EPA concurrence to require CEMS only for new engines installed after the date of rule adoption provided that existing engines rated at 1,000 bhp or higher and operating more than 2,000 hours per year undergo an annual source test.

The air to fuel ratio may indicate oxygen concentration, but it is not necessarily sufficient for determining NOx emissions concentration. As stated in response to Comment No. 8, an alternative monitoring system is allowed provided it is approved by the District and EPA.

In regard to portable emission analyzers, engine operators may want to use them as a screening tool to periodically check NOx emissions concentration. The District does not currently require them. Also, please see the District response to Comment No. 13.

12. WORKSHOP COMMENT

Not all recordkeeping requirements of Section (e) should be necessary for engines that have CEMS.

DISTRICT RESPONSE

The District agrees. The rule has been revised to specify that only the requirements of Subsection (e)(1) are applicable to engines which have CEMS.

13. WORKSHOP COMMENT

Would the District use a portable analyzer to determine compliance status?

DISTRICT RESPONSE

The District is currently investigating the use of portable analyzers as part of a program to monitor compliance with the rule. At the present time, the District would require a follow-up source test whenever portable analyzer results indicate a potential violation of the emission standards of Rule 69.4.

14. WORKSHOP COMMENT

Would the District consider some time window for engines not having to comply with the emission standards during startups and shutdowns in source test requirements of Section (g)?

DISTRICT RESPONSE

The District is not aware that this is a problem when compliance is determined by a source test using District Test Method 100. The rule specifies a testing period to calculate NOx and CO emission concentrations of at least 30 minutes and not more than 60 minutes. This period is longer than a typical 15-minute start-up period for an engine with internal emission controls (combustion modifications). In addition, all engines subject to Rule 69.4 must also comply with more stringent emission standards of Rule 69.4.1. Therefore, excess emissions from such engines, if any, should be minimal during start-up or shutdown and should not violate Rule 69.4 limits.

15. WORKSHOP COMMENT

When will the proposed amended rule become effective?

DISTRICT RESPONSE

The amended rule will become effective on the date of its adoption by the Air Pollution Control Board. The District is planning to submit the rule to the Board for adoption in April 2003.

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PROPOSED AMENDMENTS TO RULE 69.4

Proposed Amendments to Rule 69.4 are to read as follows:

**RULE 69.4. STATIONARY RECIPROCATING INTERNAL COMBUSTION
ENGINES - REASONABLY AVAILABLE CONTROL
TECHNOLOGY** (Adopted 9/27/94; Rev. Effective 11/15/00; Rev.
Effective (date of adoption))

(a) **APPLICABILITY** (Rev. (date of adoption))

(1) Except as provided in Section (b), this rule shall apply to stationary internal combustion engines with a brake horsepower (bhp) rating of 50 or greater located at a major stationary source which emits or has a potential to emit 50 tons per year or more of oxides of nitrogen (NO_x).

(2) An engine subject to this rule or specifically exempt by Subsection (b)(1) of this rule shall not be subject to Rule 68.

(b) **EXEMPTIONS**

(1) This rule shall not apply to the following:

(i) Engines used exclusively in connection with a structure designed for and used as a dwelling for not more than four families.

(ii) Engines used exclusively in agricultural operations for the growing of crops or the raising of fowl or animals.

(iii) Any engine when operated exclusively within a permitted test cell solely for the research, development, or testing of gas turbine engines or their components.

(iv) Any engine when operated exclusively within a permitted test cell solely for the research, development, or testing of reciprocating internal combustion engines or their components.

(2) The provisions of Section (d) of this rule shall not apply to the following:

(i) Any engine which operates less than 200 hours per calendar year.

(ii) Any emergency standby engine provided that operation of the engine for non-emergency purposes does not exceed 52 hours per calendar year.

(iii) Any emergency standby engine at a nuclear power generating station subject to the requirements of the Nuclear Regulatory Commission provided that

operation of the engine for non-emergency purposes does not exceed 200 hours per calendar year.

(iv) Any engine used exclusively in conjunction with military tactical support equipment.

An owner or operator of an engine who is claiming an exemption pursuant to Subsection (b)(2) shall conduct annual maintenance of the engine as recommended by the engine manufacturer or as specified by any other maintenance procedure approved in writing by the Air Pollution Control Officer and shall maintain records in accordance with Subsections (e)(1) and (e)(2) of this rule.

(3) The provision of Subsections (e)(3), (e)(4), and (e)(5) of this rule shall not apply to any engine which is equipped with a continuous emission monitoring system (CEMS).

(c) **DEFINITIONS** (Rev. (date of adoption))

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

(1) **"Add-on Control Equipment"** means any technology that is used to reduce emissions from the exhaust gas stream of an engine and is installed downstream of the engine.

(2) **"Brake Horsepower Rating, bhp"** means the maximum continuous brake horsepower output rating as specified by the engine manufacturer and listed on the engine nameplate, if available, regardless of any de-rating.

(3) **"Emergency Standby Engine"** means an engine used exclusively in emergency situations, except as provided in Subsections (b)(2)(ii) and (b)(2)(iii), to drive an electrical generator, an air compressor or a water pump.

(4) **"Emergency Situation"** means any one of the following:

(i) An unforeseen electrical power failure from the serving utility or of on-site electrical transmission equipment.

(ii) An unforeseen flood or fire, or a life-threatening situation.

(iii) Operation of emergency generators for Federal Aviation Administration licensed or military airports for the purpose of providing power in anticipation of a power failure due to severe storm activity.

Emergency situation shall not include operation for purposes of supplying power for distribution to an electrical grid, operation for training purposes, or other foreseeable events.

(5) **"Fossil Derived Gaseous Fuel"** means gaseous fuel including, but not limited to, natural gas, methane, ethane, propane, butane, and gases stored as liquids at high pressure such as liquefied petroleum gas, but excluding waste derived gaseous fuel.

(6) **"Lean-Burn Engine"** means an engine that is designed to operate with an air-to-fuel ratio that is more than 1.1 times the Stoichiometric air-to-fuel ratio.

~~(7) **"Major Stationary Source of NOx"** means a stationary source which emits or has the potential to emit 50 tons or more of NOx per year.~~

~~(8)~~(7) **"Military Tactical Support Equipment"** means the same as defined in Rule 2.

~~(9)~~(8) **"Portable Emission Unit"** means the same as defined in Rule 20.1.

~~(10)~~(9) **"Reasonably Available Control Technology (RACT)"** means the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.

~~(11)~~(10) **"Rich-Burn Engine"** means an engine that is designed to operate with an air-to-fuel ratio less than or equal to 1.1 times the stoichiometric air-to-fuel ratio.

~~(12)~~(11) **"Stationary Internal Combustion Engine" or "Engine"** means a spark or compression ignited, reciprocating internal combustion engine which is not a portable emission unit.

~~(13)~~(12) **"Stationary Source"** means the same as is defined in Rule 2.

~~(14)~~(13) **"Stoichiometric Air-to-Fuel Ratio"** means the chemically balanced air-to-fuel ratio at which all fuel and all oxygen in the air and fuel mixture are theoretically consumed by combustion.

~~(15)~~(14) **"Uncontrolled NOx Emissions"** means NOx emissions from an engine before application of add-on control equipment.

~~(16)~~(15) **"Waste Derived Gaseous Fuel"** means gaseous fuel including, but not limited to, digester gas and landfill gas, but excluding fossil derived gaseous fuel.

(d) **STANDARDS** (Rev. (date of adoption))

(1) A person shall not operate a stationary internal combustion engine subject to this rule unless:

(i) Uncontrolled NOx emissions from the following engines are reduced with add-on control equipment by not less than the following:

<u>Engine Category</u>	<u>Weight Percent Reduction</u>
Rich-burn engines using fossil derived gaseous fuel or gasoline	90
Lean-burn engines using fossil derived gaseous fuel	80
Engines using exclusively waste derived gaseous fuel	80

or

(ii) The ~~emissions~~ emission concentration of NO_x, in parts per million by volume (ppmv), calculated as nitrogen dioxide at 15% oxygen on a dry basis, or in grams of NO_x per brake horsepower-hour, are not greater than the following:

<u>Engine Category</u>	<u>Concentration of NO_x g/bhp-hr (ppmv)</u>
Rich-burn engines using fossil derived gaseous fuel or gasoline	0.9 (50)
Lean-burn engines using gaseous fuel	2.3 (125)
Engines using exclusively waste derived gaseous fuel	2.3 (125)
Engines using diesel or kerosene fuel	9.0 (700)

(2) For all engines subject to Subsection (d)(1) of this rule, ~~the emissions~~ emission concentration of carbon monoxide (CO), calculated at 15% oxygen on a dry basis, shall not exceed 4500 ppmv.

(3) An owner or operator of an engine subject to this rule shall conduct annual maintenance of the engine as recommended by the engine manufacturer or as specified by any other maintenance procedure approved in writing by the Air Pollution Control Officer.

(e) **MONITORING AND RECORDKEEPING REQUIREMENTS** *(Rev. (date of adoption))*

(1) An owner or operator of an engine subject to this rule shall keep the following records and shall maintain these records on-site for at least the same period of time as the engine to which the records apply is located at the site:

- (i) engine manufacturer name and model number;
- (ii) brake horsepower output rating;
- (iii) combustion method (i.e. rich-burn or lean-burn);
- (iv) fuel type;

(v) a manual of recommended maintenance as provided by the engine manufacturer, or other maintenance procedure as approved in writing by the Air Pollution Control Officer; and

(vi) records of annual engine maintenance, including dates maintenance was performed.

(2) In addition to the records required by Subsection (e)(1), an owner or operator of an engine exempt pursuant to Subsection (b)(2) from the requirements of Section (d) shall maintain an operating log containing, at a minimum, the following:

(i) dates and times of engine operation. If applicable, indicate whether the operation was for non-emergency purposes or during an emergency situation and the nature of the emergency, if available; and

(ii) total cumulative hours of operation per calendar year, based on actual readings of the engine hour or fuel meter.

The records specified in Subsection (e)(2)(i) are not required if total engine operations for any purpose, including emergency situations, do not exceed 52 hours in a calendar year.

(3) In addition to the records required by Subsection (e)(1), an owner or operator of a rich-burn engine subject to the requirements of Section (d) shall measure and record at least once each calendar month those operating parameters determined necessary to ensure compliance by the Air Pollution Control Officer. Such operating parameters may include but are not limited to:

(i) temperature of the inlet and outlet of the control equipment;

(ii) engine air-to-fuel ratio; and

(iii) engine inlet manifold temperature and pressure.

(4) In addition to the records required by Subsection (e)(1), an owner or operator of a lean-burn engine using gaseous fuel subject to the requirements of Section (d) shall also measure and record at least once each calendar month those operating parameters determined necessary to ensure compliance by the Air Pollution Control Officer. Such operating parameters may include but are not limited to:

(i) engine air-to-fuel ratio or automatic air-to-fuel ratio control signal voltage;

(ii) engine exhaust gas temperature; and

(iii) engine inlet manifold temperature and pressure.

(5) In addition to the records required by Subsection (e)(1), an owner or operator of an engine using diesel fuel subject to the requirements of Section (d) shall also measure

and record at least once each calendar month those operating parameters determined necessary to ensure compliance by the Air Pollution Control Officer. Such operating parameters may include but are not limited to:

- (i) engine air-to-fuel ratio;
- (ii) engine exhaust gas temperature; and
- (iii) engine inlet manifold temperature and pressure.

(6) Except for engines exempt under Subsection (b)(1), an owner or operator of an engine subject to this rule shall install a non-resettable totalizing fuel meter or non-resettable totalizing engine operating hours meter.

(7) ~~By (12 months after date of adoption), an~~ An owner or operator of a gaseous-fueled engine rated at 1,000 bhp or greater and operated more than 2,000 hours per calendar year and installed in San Diego County after (date of adoption) shall install, operate, and maintain in calibration a continuous emission monitoring system (CEMS); to continuously measure and record oxygen concentration and NOx emissions concentration corrected to 15 percent oxygen, or an alternative system such as a Parametric Emission Monitoring System approved by the Air Pollution Control Officer and Environmental Protection Agency (EPA) ~~to continuously measure and record oxygen and NOx emission concentrations corrected to 15 percent oxygen.~~ The CEMS shall be certified, calibrated, and maintained in accordance with all applicable federal regulations including reporting requirements of Sections 60.7(c), 60.7(d), and 60.13 of 40 CFR Part 60, performance specifications of Appendix B of 40 CFR Part 60, quality assurance procedures of Appendix F of 40 CFR Part 60, and a protocol approved in writing by the Air Pollution Control Officer.

~~(6)(8)~~ (8) All records required by Subsections (e)(2) through (e)~~(5)~~(7) shall be retained on-site for at least three years and made available to the District upon request.

(f) **TEST METHODS** (Rev. (date of adoption))

~~(4)~~ (4) To determine compliance with Section (d) during a source test, measurements of NOx, CO, carbon dioxide (CO₂) and oxygen content of exhaust gas shall be conducted ~~determined~~ in accordance with San Diego County Air Pollution Control District Test Method 100, Air Resources Board (ARB) Test Method 100 or

equivalent Environmental Protection Agency (EPA) test method and a source test protocol approved in writing by the Air Pollution Control Officer.

~~(2) The averaging period to calculate NO_x and CO emission concentrations and to determine compliance shall be at least 30 minutes and not more than 60 minutes. NO_x and CO emission concentrations shall be calculated as an average of three subtests.~~

~~(3) Emissions source testing, if applicable, shall be performed at no less than 80 percent of the brake horsepower rating. If an owner or operator of an engine demonstrates to the satisfaction of the Air Pollution Control Officer that the engine cannot operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous brake horsepower rating or under the typical duty cycle or typical operational mode of the engine.~~

(g) SOURCE TEST REQUIREMENTS AND COMPLIANCE DETERMINATION
(Rev. (date of adoption))

Source tests shall be conducted according to the following:

(1) After initial compliance has been determined, any engine subject to the requirements of Subsection (d), except for engines described in Subsection (g)(2) below, shall be source tested at least once every 24 months, unless more frequent testing is specified in writing by the Air Pollution Control Officer.

(2) Any gaseous-fueled engine rated at 1,000 bhp or greater and operated more than 2,000 hours per calendar year and installed before (date of adoption) shall be tested at least once every 12 months, unless more frequent testing is specified in writing by the Air Pollution Control Officer.

(3)(3) Emissions source testing shall be conducted using the test methods specified in Section (f) and a source test protocol approved in writing by the Air Pollution Control Officer prior to testing.

(3)(4) Emissions source testing shall be performed at no less than 80 percent of the brake horsepower rating. If an owner or operator of an engine demonstrates to the satisfaction of the Air Pollution Control Officer that the engine does not operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous brake horsepower rating, or under the typical duty cycle or operational mode of the engine.

(4)(5) The averaging period to calculate NO_x and CO emission concentrations and to determine compliance shall be at least 30 minutes and not more than 60 minutes. NO_x and CO emission concentrations shall be calculated as an average of three subtests.

(5)(6) For the purposes of a compliance determination based on CEMS data, the averaging period to calculate NOx emissions concentration shall be one clock hour.