

RULE 242 STATIONARY INTERNAL COMBUSTION ENGINES

Adopted 4-10-03

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100 GENERAL

101 PURPOSE: To limit the emission of nitrogen oxides (NOx) and carbon monoxide (CO) from stationary internal combustion engines.

102 APPLICABILITY

102.1 Geographic: The provisions of this rule apply to facilities located anywhere in Placer County.

102.2 Application: This rule applies to any stationary internal combustion engine rated at more than 50 brake horsepower and using any gaseous fuel or liquid fuel, including liquid petroleum gas (LPG), gasoline or diesel fuel. This rule shall not apply to engines used directly and exclusively for agricultural operations necessary for the growing of crops or the raising of fowl and animals.

102.3 Severability: If any section, subsection, sentence, clause, phrase or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, that portion shall be deemed as a separate, distinct and independent provision, and the holding shall not affect the validity of the remaining portions of the rule.

103 EXEMPTIONS:

103.1 Exemption, Operating Hours: The provisions of this rule shall not apply to any engine operated less than 200 hours per calendar year.

103.2 Exemption, Emergency Stand-By Engines: The provisions of this rule shall not apply to permitted emergency stand-by engines operated either during an emergency or maintenance operation. Maintenance operation is limited to 100 hours per calendar year.

103.3 Exemption, Research, Testing and Evaluation: The provisions of this rule shall not apply to:

103.3.1 Engines used in research or teaching programs;

103.3.2 Test-stands used for evaluating engine performance.

103.4 Exemption, Low Capacity: The provisions of this rule shall not apply to diesel engines with a permitted capacity factor of 15 percent or less.

103.5 Exemption, Cranes and Welding: The provisions of this rule shall not apply to engines used to power cranes and welding equipment.

200 DEFINITIONS

201 ANNUAL FUEL USAGE: The amount of fuel an internal combustion engine consumes in a calendar year.

202 APCO: District Air Pollution Control Officer.

203 CALENDAR YEAR: Twelve (12) consecutive months beginning January 1 and ending December 31.

204 DIESEL ENGINE: A compression-ignited two or four-stroke engine in which liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition.

205 EMERGENCY STAND-BY ENGINE: An internal combustion engine used only as follows:

205.1 When normal power line or natural gas service fails;

205.2 For the emergency pumping of water for either fire protection or flood relief.

An emergency stand-by engine may not be operated to supplement a primary power source when the load capacity or rating of the primary power source has either been reached or exceeded.

206 ENGINE RATING: The output of an engine as determined by the engine manufacturer and listed on the nameplate of the engine, regardless of any de-rating.

207 EXISTING ENGINE: A stationary internal combustion engine whose installation commenced prior to the date of adoption of this rule.

208 LEAN-BURN ENGINE: A spark-ignited engine that is designed to operate with an air-to-fuel ratio that is greater than 1.1 times the stoichiometric air-to-fuel ratio.

209 MAINTENANCE OPERATION: The use of an emergency stand-by engine and fuel system during testing, repair and routine maintenance to verify its readiness for emergency stand-by use.

210 NITROGEN OXIDES (NO_x): The sum of nitric oxide and nitrogen dioxide compounds in the exhaust gas stream of an internal combustion engine.

211 OUTPUT: The shaft work output from an engine, plus the energy reclaimed by any useful heat recovery system.

212 PERMITTED CAPACITY FACTOR: Calculated in percent by (1) taking the annual permitted fuel use and dividing it by the product of the manufacturer's specified maximum hourly fuel consumption times 8760 hours per year, and (2) multiplying that result by 100.

213 RICH-BURN ENGINE: A spark-ignited engine that is designed to operate with an air-to-fuel ratio that is less than or equal to 1.1 times the stoichiometric air-to-fuel ratio.

214 PEAK LOAD: Maximum instantaneous operating load.

215 START OF CONSTRUCTION: The time when the owner has:

215.1 Begun a continuous program of on-site construction of the source, to be completed within a reasonable time.

or

215.2 Entered into binding agreements or contractual arrangements to undertake construction, which cannot be cancelled or modified without substantial loss to the owner or operator.

216 STATIONARY INTERNAL COMBUSTION ENGINE: Any internal combustion engine of the reciprocating type that is operated at a site for more than one year or is attached to a foundation, not including engines used for self-propulsion.

217 STOICHIOMETRIC AIR/FUEL RATIO: The chemically correct air-to-fuel ratio where all fuel and all oxygen in the air-to-fuel mixture will be consumed.

300 STANDARDS

301 LIMITS

- 301.1 After the applicable compliance date specified in Section 401 of this rule, the owner or operator of an existing stationary internal combustion engine to which this rule is applicable, shall limit the emissions from that engine to no more than the following:
- 301.1.1 Rich-burn stationary internal combustion engine NOx emissions shall not exceed 90 ppmv and CO emissions shall not exceed 2,000 ppmv.
 - 301.1.2 Lean-burn stationary internal combustion engine NOx emissions shall not exceed 150 ppmv and CO emissions shall not exceed 2,000 ppmv, if the engine rating is greater than 100 horsepower.
 - 301.1.3 Lean-burn stationary internal combustion engine NOx emissions shall not exceed 300 ppmv and CO emissions shall not exceed 2,000 ppmv, if the engine rating is equal to or less than 100 horsepower.
 - 301.1.4 Diesel-fired stationary internal combustion engine NOx emissions shall not exceed 600 ppmv and CO emissions shall not exceed 2,000 ppmv.

Where: ppmv = parts per million by volume at 15% oxygen on a dry basis

NOx = nitrogen oxides
CO = carbon monoxide

- 301.2 The owner or operator of any new or replacement stationary internal combustion engine shall limit the emissions from that engine to those levels established in Section 301.1.
- 301.3 In lieu of meeting the emission limits specified in Sections 301.1 of this rule, an owner or operator of an internal combustion engine may elect to replace the unit with an electric motor or permanently remove the engine from service in accordance with the applicable compliance schedule specified in Section 401.4 of this rule.
- 301.4 All engines subject to this rule shall be equipped with a non-resettable fuel consumption meter or a non-resettable elapsed time meter.

302 ENGINE OPERATOR INSPECTION PLAN: The operator of an engine subject to the provisions of Section 301 of this rule shall submit to the APCO an Engine Operator Inspection Plan. The plan shall be approved in writing by the APCO and updated after any change in operation. For new engines and modifications to existing engines, the plan shall be submitted to and approved by the APCO prior to issuance of the Permit to Operate. The operator may request a change to the plan at any time. The plan shall include the following:

- 302.1 The manufacturer, model number, rated horsepower and combustion method (i.e., rich-burn, lean-burn, or diesel) of the engine.
- 302.2 A description of the NOx control system installed on the engine, if any, including type (e.g., nonselective catalyst, "clean-burn" combustion, etc.), manufacturer, and a description of any ancillary equipment related to the control of emissions (e.g., automatic air/fuel ratio controller, fuel valves, etc.).
- 302.3 The company identification and location of the engine by a schematic diagram of the affected facilities.
- 302.4 A specific emission inspection procedure to assure that the engine is operated in continual compliance with the provisions of this rule. The procedure shall include an

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inspection schedule. Inspections shall be conducted every quarter or after every 2,000 hours of engine operation. In no event shall the frequency of inspections be less than once per year. Testing results from individual engines in terms of rated brake horsepower, operational conditions, fuel used and control method, may satisfy these inspection requirements. Prior to implementation of testing, test plans shall be submitted to and approved in writing by the APCO.

- 302.5 A description of each preventive or corrective maintenance procedure or practice that will be used to maintain the engine and NOx control system in continual compliance with the provisions of this rule.

400 ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULES

- 401.1 Compliance Schedule-Existing: Owners or operators of existing engines shall comply, with the applicable provisions of Section 301 of this rule in accordance with the following schedule:

No later than **90 days after the date of adoption of this rule**, submit to the APCO:

401.1.1 An Engine Operator Inspection Plan pursuant to Section 302 of this rule and a complete application for an Authority to Construct, if applicable;

or

401.1.2 Support documentation for each exempt engine, pursuant to Section 502.1 of this rule.

No later than **120 days after the date of adoption of this rule**, demonstrate full compliance with all provisions of this rule.

- 401.2 Compliance Schedule – Retrofit: Owners or operators of existing engines that require retrofit or additions to meet requirements of this rule, shall comply with the applicable provisions of Section 301.1 of the rule in accordance with the following schedule:

No later than **90 days after adoption of this rule**, submit to the APCO:

401.2.1 An Engine Operator Inspection Plan pursuant to Section 302 of this rule; or

401.2.2 Support documentation for each exempt engine, pursuant to Section 502.1 of this rule.

401.2.3 A complete application for an Authority to Construct for all modifications.

No later than **July 1, 2004**, start construction of all retrofits and/or additions of new control equipment, as approved by the APCO.

No later than **December 1, 2004**, demonstrate full compliance with the applicable provisions of this rule. Engines equipped with non-selective catalytic control reduction have until the next catalyst recharge or three (3) years, whichever occurs first, to comply with the requirements of Section 301.1.

- 401.3 Compliance Schedule – New Construction: Any owner or operator of a new or replacement unit that is constructed on or after **date of adoption of this rule**, shall complete an application for an Authority to Construct prior to beginning construction of the unit. The owner or operator shall demonstrate that the unit will be operated in

compliance with all applicable provisions of this rule within 60 days after the date of initial startup of the unit.

- 401.4 Compliance Schedule – Permanent Removal/Replacement: An owner or operator who elects to replace a stationary internal combustion engine with an electric motor as specified in Section 301.3 of this rule, or who permanently removes the engine from service shall demonstrate compliance with all the applicable requirements of this rule no later than **December 1, 2004**. The owner or operator shall submit written notification to the District for either conversion to electric power or permanent removal no later than **December 1, 2003**. The owner or operator shall start electric motor conversion of the unit no later than **May 1, 2004**, or permanently remove the engine from service by **December 1, 2004**.
- 402 REPORTING REQUIREMENTS:** Prior to the renewal of any Permit to Operate, each owner or operator subject to the provisions of this rule shall provide the APCO the following data:
- 402.1 Actual annual usage (e.g., fuel consumption and operating hours) for each affected engine;
- 402.2 Engine manufacturer, model number and permit number;
- 402.3 Location of each engine;
- 402.4 A summary of maintenance and testing reports per Section 302.4 of this rule, and an annual emission report.
- 403 EMISSION SOURCE TESTING:** Engines subject to the requirements of Sections 301.1, 301.2 and 301.3 of this rule shall be source tested for NOx and CO emissions as follows:
- 403.1 The owner or operator shall arrange for and assure that an emissions source test is performed on each stationary internal combustion engine at least once every 24 months.
- 403.2 All emission readings shall be taken at an engine's actual peak load and under the engine's typical duty cycle. Determination of emissions shall be made in accordance with the test methods listed in Sections 504.1, 504.2 and 504.3.
- 403.3 Prior to any source test required by this rule, a source test protocol shall be prepared and submitted to the APCO. The source test protocol shall be approved by the APCO prior to any testing. In addition to other information, the source test protocol shall describe which critical parameters will be established and incorporated into the Engine Operator Inspection Plan described in Section 302. Source test protocol shall conform to the requirements in Section 504.5. Emissions under normal operating conditions before any controls are considered to be Baseline emissions. Source test reports shall be submitted to the APCO or designee.
- 404 VIOLATIONS**
- 404.1 Failure to comply with any provision of this rule shall constitute a violation of this rule.
- 404.2 It is the responsibility of the engine owner or operator to demonstrate to the satisfaction of the APCO, that an engine subject to this rule is being operated in continuous compliance with all applicable provisions of this rule.
- 404.3 An engine shall be in violation if is operated out of compliance with the operating parameters of an approved Engine Operator Inspection Plan. If, however, data from a source test of the engine operating under identical conditions indicates that the engine is in compliance with the requirements of this rule, then a violation will not have occurred. The source test shall be conducted at the engine operator's

expense. The Engine Operator Inspection Plan shall be then amended to reflect the information from this source test.

500 MONITORING AND RECORDKEEPING

501 RECORDKEEPING-GENERAL: The owner or operator of any engine subject to Section 301 of this rule shall maintain an inspection log containing, at a minimum, the following data:

- 501.1 Identification and location of each engine subject to the provisions of this rule.
- 501.2 Date and results of each emission inspection.
- 501.3 A summary of any corrective maintenance measures taken to ensure compliance with the emission limits or reductions, specified in Section 301 of this rule.
- 501.4 The readings of the non-resettable fuel consumption and the non-resettable elapsed operating time indicators.
- 501.5 Any additional information required in the Engine Operator Inspection Plan.

502 RECORDKEEPING – EXEMPTIONS: Any owner or operator claiming an exemption under Section 103 of this rule shall keep support documentation identifying reasons for the exemption. Such documentation shall contain a list that provides the following for each engine:

- 502.1 Permit to Operate number, if applicable
- 502.2 Engine manufacturer
- 502.3 Engine model designation
- 502.4 Rated brake horsepower
- 502.5 Type of fuel and type of ignition
- 502.6 A log of operating hours for each engine.

503 RECORDKEEPING - RETENTION: The owner or operator shall maintain the records required in Sections 501 and 502 for a period of two (2) years after the date of each entry. The log shall be made available for inspection by the APCO, upon request.

504 TEST METHODS

- 504.1 Nitrogen Oxides: NOx emissions for compliance source tests shall be determined in accordance with EPA Method 7E or CARB Method 100.
- 504.2 Carbon Monoxide: CO emissions for compliance source tests shall be determined in accordance with EPA Method 10 or CARB Method 100.
- 504.3 Oxygen: Oxygen content for compliance source tests shall be determined in accordance with EPA Method 3A or CARB Method 100.
- 504.4 Testing Protocol: NOx emission limitations specified in Sections 301.1 and 301.2 of this rule shall be expressed as nitrogen dioxide. All ppmv emission limitations are referenced at 15 percent volume stack gas oxygen, measured on a dry basis. Source test data point intervals shall be no greater than five (5) minutes and data points shall be averaged over 15 consecutive minutes.