AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

NOTICE OF WORKSHOP

FOR DISCUSSION OF PROPOSED ADOPTION OF NEW RULE 69.4.1 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES - BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY AND PROPOSED AMENDMENTS TO RULE 69.4 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES

The San Diego County Air Pollution Control District will hold a public meeting to consider the adoption of new Rule 69.4.1 - Stationary Reciprocating Internal Combustion Engines, Best Available Retrofit Control Technology, and the amendment of current Rule 69.4 - Stationary Reciprocating Internal Combustion Engines. Comments concerning these proposals may be submitted in writing before, or made at, the workshop which is scheduled as follows:

DATE: **April 29, 1999 - Thursday**

TIME: **1:30 p.m. to 4:00 p.m.**

PLACE: **Al Bahr Shrine**
5540 Kearny Mesa Road
San Diego, CA

San Diego County is classified as a serious ozone non-attainment area by both federal and state laws. As a result, the District is required to adopt rules limiting emissions of ozone precursors: volatile organic compounds (VOCs) and oxides of nitrogen (NOx). The rules must reflect Reasonably Available Control Technology (RACT) as mandated by the Federal Clean Air Act and Best Available Retrofit Control Technology (BARCT) as required by the California Clean Air Act.

Current Rule 69.4, adopted in 1994 and subsequently approved into the State Implementation Plan (SIP), contains RACT requirements for NOx emissions from stationary reciprocating internal combustion engines located at major sources (facilities emitting 50 tons per year of NOx or more). The rule specifies allowable NOx emission concentrations and alternative NOx emission reduction criteria, monitoring and recordkeeping requirements and the test methods used to ensure compliance.

The District is now proposing to adopt new Rule 69.4.1 to implement more stringent, state-mandated BARCT to further reduce NOx emissions by regulating stationary reciprocating internal combustion engines at both major and non-major sources. The new rule will also implement a state-mandated, all feasible control measure and a commitment in the Regional Air Quality Strategy for the San Diego Air Basin.

Rule 69.4.1 will apply to any existing or new stationary reciprocating internal combustion engine in San Diego County that has an output rating of 50 brake horsepower or more. Specifically, the proposed rule will:

- Specify NOx emission concentration standards, or alternative NOx emission reduction percentages for engines with add-on control equipment, based on the engine design, level of use, and fuel (see the attached Table 1).
- Specify a carbon monoxide (CO) emission limit of 4,500 parts per million by volume (ppmv), calculated at 15% oxygen on a dry basis, for all engines subject to the rule emission standards of the rule.
- Specify a VOC emission concentration limit, calculated at 15% oxygen on a dry basis, of 250 ppmv for rich-burn engines using gaseous fuel or gasoline and 500 ppmv for all other engines subject to the rule emission standards.
- Require the use of California diesel fuel certified by the California Air Resources Board. This requirement applies to all diesel-fueled engines subject to and exempt from the emission standards of the rule, including emergency standby engines.
- Require monitoring of operational characteristics of an engine as recommended by the engine manufacturer and approved by the District. For engines with add-on control equipment, require the installation of continuous monitors to measure and record operational characteristics of the engine and the NOx emission reduction system, as determined necessary by the District to ensure compliance.
- Require installation of non-resettable fuel meters and/or non-resettable elapsed operating time meters.
- Require periodic inspections of engines and air pollution control systems.
- Require annual maintenance of engines and air pollution control systems, according to procedures recommended by the manufacturer, or an alternative procedure approved by the District.
- Specify recordkeeping requirements for all engines subject to the rule.
- Specify source test requirements, source test methods, and procedures.
- Provide compliance schedules for existing engines based on whether an engine will or will not require modification, replacement, or installation of air pollution control equipment to comply with the rule requirements.
- Specify that new or replacement engines are required to comply with all applicable provisions upon initial installation and startup.
- Specify that new engines operating on diesel or kerosene fuel and installed to replace existing engines that are exempt from the rule emission standards (except for engines used in conjunction with military tactical support equipment) are required to comply with the applicable emission limits of Section (d) and all other applicable rule requirements upon initial installation and startup.

Engines used exclusively in agricultural operations or used exclusively in connection with a dwelling for not more than four families are exempt from all rule requirements.

The following engine categories are proposed to be exempt from the emission limits of the Rule 69.4.1 provided that annual engine maintenance is conducted and the records specified in the rule are kept:

- Existing engines operated less than 200 hours per year.
- Existing emergency standby engines used either in emergency situations or for non-emergency purposes provided the operation of such engines for non-emergency purposes does not exceed 500 hours per year at nuclear power generating stations or 52 hours per year at other facilities.
- Existing aircraft ground power units not located at a major NOx source, rated 200 brake horsepower or less, and operating 750 hours per year or less.
- Engines used in conjunction with military tactical support equipment.

Concurrently, the District is proposing to amend Rule 69.4 to update existing provisions and definitions, clarify recordkeeping requirements for consistency with proposed new Rule 69.4.1, and provide other minor clarifications. In addition, the title of the rule will be revised by adding "Reasonably Available Control Technology" to indicate that the requirements of Rule 69.4 represent federal RACT.

The District intends to continue implementing current Rule 69.4 at major NOx sources until new proposed Rule 69.4.1 and amended Rule 69.4 are adopted. Following adoption, amended Rule 69.4 will be submitted to EPA for approval. Once approved by EPA as a SIP revision, amended Rule 69.4 will be the federal applicable requirement for internal combustion engines at major NOx sources under the Federal Operating Permit Program (Title V). For state and local purposes, stationary reciprocating internal combustion engines in San Diego County located at both major and non-major sources will be regulated by the new proposed Rule 69.4.1. The District is currently not proposing to submit Rule 69.4.1 to EPA for approval into the SIP.

If you would like a copy of new proposed Rule 69.4.1 or amended Rule 69.4, please call Juanita Ogata at (619) 694-8851 or visit the District's Web Site at www.sdapcd.co.san-diego.ca.us. If you have any questions concerning the proposal, please call Natalie Zlotin at (619) 694-3312 or Camqui Nguyen at (619) 694-3316.

Richard J. Smith

RICHARD J. SMITH
Assistant Director

RJS:NZ:ls
03/23/99

TABLE 1

PROPOSED NEW RULE 69.4.1

NOx EMISSION CONCENTRATION LIMITS FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES

Engine Category	NOx Concentration (ppmv)
Rich-burn engines using fossil derived gaseous fuel or gasoline	25
Rich-burn engines using exclusively waste derived gaseous fuel	50
Lean burn engines	65
Existing low-use engines and cyclic engines using diesel or kerosene fuel	700
High-use engines, or any new or replacement low-use or cyclic engine, with a rating of less than 175 bhp or more than 750 bhp and using diesel or kerosene fuel	530
High-use engines, or any new or replacement low-use or cyclic engine, with a rating of 175 bhp to 750 bhp, inclusive, and using diesel or kerosene fuel	450

or

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

Engine Category	Percent Reduction
Rich-burn engines using fossil derived gaseous fuel or gasoline	96
Lean burn engines using fossil derived gaseous fuel	90
Engines using exclusively waste derived gaseous fuel	90
High-use engines using diesel or kerosene fuel	80

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

NOTICE OF WORKSHOP

FOR DISCUSSION OF PROPOSED ADOPTION OF NEW RULE 69.4.1 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES - BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY AND PROPOSED AMENDMENTS TO RULE 69.4 - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES

The San Diego County Air Pollution Control District will hold a second public meeting to consider the adoption of new Rule 69.4.1 - Stationary Reciprocating Internal Combustion Engines, Best Available Retrofit Control Technology, and the amendment of current Rule 69.4 - Stationary Reciprocating Internal Combustion Engines. Comments concerning these proposals may be submitted in writing before, or made at, the workshop which is scheduled as follows:

DATE: February 17, 2000 - Thursday
TIME: 9:00 to 11:00 a.m.
PLACE: Al Bahr Shine Auditorium
5440 Kearny Mesa Road
San Diego, CA

(*Take 163 to Clairemont Mesa Blvd. Exit West. Turn right on Kearny Mesa Road. Al Bahr is located in back of the Hampton Inn.*)

San Diego County is classified as a serious ozone non-attainment area by both federal and state law. As a result, the District is required to adopt rules limiting emissions of ozone precursors: volatile organic compounds (VOC) and oxides of nitrogen (NOx). The rules must reflect Reasonably Available Control Technology (RACT) as mandated by the Federal Clean Air Act and Best Available Retrofit Control Technology (BARCT) and all feasible control measures as required by the California Clean Air Act.

Current Rule 69.4, adopted in 1994 and subsequently approved into the State Implementation Plan (SIP), contains RACT requirements for NOx emissions from stationary reciprocating internal combustion engines located at major sources (facilities emitting 50 tons per year of NOx or more). The rule specifies allowable NOx emission concentrations and alternative NOx emission reduction criteria, monitoring and record-keeping requirements, and test methods used to ensure compliance.

The District is now proposing to adopt new Rule 69.4.1 to implement more stringent state-mandated BARCT requirements to further reduce NOx emissions by regulating stationary reciprocating internal combustion engines at both major and non-major sources. The new rule will also implement the state-mandated all feasible control measure and a commitment in the Regional Air Quality Strategy for the San Diego Air Basin. Rule 69.4.1 applies to any existing or new stationary reciprocating internal combustion engine in San Diego County that has an output rating of 50 brake horsepower or greater.

The first workshop for Rule 69.4.1 was held on April 28, 1999. The District received numerous comments from affected sources, engine manufacturers, and distributors. The workshop report summarizing these comments and District responses was mailed to workshop participants and other interested parties on October 29, 1999.

In addition, as was suggested during the workshop, for the past six months the District has worked with a group of stakeholders to address issues related to rule applicability, emission control strategy, and administrative (recordkeeping and monitoring) requirements.

The proposed rule has been revised to reflect comments and suggestions received during and after the workshop and at the workgroup meetings. It also incorporates emission limits for stationary diesel engines similar to those in the most current federal and state regulations for off-road diesel engines.

The most significant changes in Rule 69.4.1 made after the first workshop are outlined below:

- NOx emission standards for high-use diesel engines have been revised to reflect the federal and state Tier 1 limits for off-road diesel engines.

- Administrative requirements for new or replacement emergency generators or engines operating less than 200 hours per year have been simplified. Only the recordkeeping requirements of Subsections (g)(1) and (g)(2) and the monitoring requirements of Subsection (e)(3) will be applicable to these engines.

- New rule exemptions have been added for engines operated exclusively for the research, development, and testing of turbine or reciprocating internal combustion engines or their components, and for existing engines located at natural gas transmission stations. In addition, operation of standby emergency engines for up to 100 hours per year for testing and maintenance purposes will be allowed if it is demonstrated that such operation is necessary.

- An exemption for aircraft ground power units operating less than 700 hours per year has been deleted. These units, if operated for more than 200 hours per year, will be subject to the emission standards and all other applicable requirements of the rule.

- A provision has been added specifying that monitoring requirements for engines where such monitoring is not feasible or will not reflect emission characteristics may be waived provided that the engine owner or operator conducts periodic inspection and maintenance as required by the rule.

- Recordkeeping requirements for engines without add-on control equipment have been significantly simplified. An additional provision has been added to avoid duplication of records if the most current information on the engine manufacturer, model/ serial number, rating, etc., is specified in a Permit to Operate or a Certificate of Registration.

- Air Resources Board (ARB) Test Method 100 has been added to the list of test methods that may be used to determine compliance.

- A special provision has been added regarding compliance testing for diesel or kerosene-fueled engines certified by Environmental Protection Agency (EPA) or ARB to have emission limits at or below the applicable limits of the rule. Such engines will be deemed in compliance provided that

these engine families do not participate in the federal averaging, banking, and trading program and that other specified requirements are met until an appropriate test method has been developed and approved by the District and ARB.

- Source test requirements have been revised to allow tests be performed under the typical duty cycle or typical operation mode of an engine.

- The compliance schedule has been modified to require existing diesel engines to use California diesel fuel within six months after the date of rule adoption.

- Definitions of "Certified Engine," "Engine Tampering," and "Engine Family" have been added to address compliance issues for ARB and EPA certified engines.

- Other minor clarifications and corrections have been made in response to workshop comments.

Concurrently, the District is proposing to amend Rule 69.4 to update existing provisions and definitions, clarify recordkeeping requirements for consistency with proposed new Rule 69.4.1, and provide other minor clarifications. In addition, the title of the rule will be revised by adding "Reasonably Available Control Technology" to indicate that the requirements of Rule 69.4 represent federal RACT.

The District intends to continue implementing current Rule 69.4 at major NOx sources until new proposed Rule 69.4.1 and amended Rule 69.4 are adopted. Following adoption, amended Rule 69.4 will be submitted to EPA for approval. Once approved by EPA as a SIP revision, amended Rule 69.4 will be the federal applicable requirements for internal combustion engines at major NOx sources under the Federal Operating Permit Program (Title V). For state and local purposes, stationary reciprocating internal combustion engines in San Diego County located at both major and non-major sources will be regulated by the new proposed Rule 69.4.1. The District is not proposing to submit Rule 69.4.1 to EPA for SIP approval.

If you would like a copy of new proposed Rule 69.4.1 or amended Rule 69.4, please call Juanita Ogata at (858) 694-8851 or visit the District's Web Site at www.sdapcd.co.san-diego.ca.us under Rules and Regulations, Workshop Notices. If you have any questions concerning the proposal, please call Mike Lake at (858) 694-3313 or Camqui Nguyen at (858) 694-3316.

Richard J. Smith

RICHARD J. SMITH
Assistant Director

RJS:NZ:jfo
1/11/00

SAN DIEGO AIR POLLUTION CONTROL DISTRICT

PROPOSED AMENDED RULE 69.4

Proposed amended Rule 69.4 to read as follows:

RULE 69.4. STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES - REASONABLY AVAILABLE CONTROL TECHNOLOGY

(a) **APPLICABILITY**

(1) Except as provided in Section (b), this rule shall apply to stationary internal combustion engines with a brake horsepower (bhp) ~~output~~ rating of 50 ~~bhp~~ or greater located at a major stationary source of oxides of nitrogen (NOx).

(2) An engine subject to 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 engines ~~operated either during emergency situations or for maintenance purposes,~~ provided that ~~the~~ operation of the engine for ~~maintenance~~ 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~~, either during emergency situations or for maintenance purposes,~~ provided that ~~the~~ operation of the engine for ~~maintenance~~ non-emergency purposes does not exceed 100 ~~500~~ hours per calendar year.

(iv) Any engine used exclusively in conjunction with military tactical ~~deployable~~ support equipment operated at military sites, provided that the operation of the engine does not exceed 1,000 hours per calendar year

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.

(c) **DEFINITIONS**

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

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

(2) **"Brake Horsepower ~~Output~~ 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 derating.

(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. ~~shall be considered an emergency situation.~~

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) "Existing Engine" means an engine which commenced operation in San Diego County on or before September 27, 1994.~~

(5)~~(6)~~ **"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, ~~and~~ but excluding waste derived gaseous fuel.

(6)~~(7)~~ **"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)~~(8)~~ **"Major Stationary Source of NOx"** means a stationary source ~~that~~ which emits or has the potential to emit ~~25~~ 50 tons or more of NOx per year. ~~If the San Diego County Air Pollution Control District is reclassified to a "serious" ozone non-attainment area by the federal Environmental Protection Agency, then a major stationary source of NOx will mean a stationary source that emits or has the potential to emit 50 tons or more of NOx per year.~~

(8)~~(9)~~ **"Military Tactical ~~Deployable~~ Support Equipment"** means the same as defined in Rule 20.1. ~~equipment operated by the United States armed forces or National Guard which is designed specifically for military use in an off-road, dense terrain and/or hostile environment or on board military combat vessels and is capable of being moved from one location to another. This equipment requires the ability to perform in a uniform manner with a minimum amount of maintenance which has been standardized throughout the United States military and/or NATO forces.~~

~~(10) "New Engine" means an engine installed in San Diego County which commenced operation after September 27, 1994.~~

(9)~~(11)~~ **"Portable Emissions Unit"** means the same as defined in Rule 20.1. ~~an emission unit which is designed and equipped to be easily movable and, as installed, easily capable of being moved from one stationary source to another, as determined by the Air Pollution Control Officer. Portable emission units are periodically moved and may not be located more than 180 days at any one stationary source within any consecutive 12-month period. Days when portable emission units are stored in a designated holding or storage area shall not be counted towards the 180-day limit, provided the emission unit was not operated on that calendar day except for maintenance and was in the designated holding area the entire calendar day.~~

(10) **"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)~~(12)~~ **"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)~~(13)~~ **"Stationary Internal Combustion Engine" or "Engine"** means a spark or compression ignited, reciprocating internal combustion engine which is not a portable emissions unit.

(13)~~(14)~~ **"Stationary Source"** means the same as is defined in Rule ~~20.1~~ 2.

(14)~~(15)~~ **"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)~~(16)~~ **"Uncontrolled NOx Emissions"** means NOx emissions from an engine ~~calculated in parts per million by volume as nitrogen dioxide at 15% oxygen on a dry basis or in grams of NOx per brake horsepower-hour,~~ before application of add-on ~~air pollution~~ control equipment ~~or combustion modifications~~.

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

(d) **STANDARDS**

(1) A person shall not operate a stationary internal combustion engine subject to this rule unless: *Note: Subsection (d)(1)(i) became (ii) and Subsection (d)(1)(ii) became (i).*

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

Engine Category	Weight Percent Reduction
Rich-burn engines using ~~exclusively~~ fossil derived gaseous fuel or gasoline	90
Lean-burn engines using ~~exclusively~~ fossil derived gaseous fuel	80
Engines using exclusively waste derived gaseous fuel	80
~~Engine using diesel or kerosene fuel~~	~~25~~

or

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

Engine Category	Concentration of NOx g/bhp-hr (ppmv)
Rich-burn engines using ~~exclusively~~ fossil derived gaseous fuel or gasoline	0.9 (50)
Lean-burn engines using ~~exclusively~~ fossil derived 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, emissions of carbon monoxide (CO), calculated ~~in parts per million by volume (ppmv)~~ at 15% oxygen on a dry basis, shall not exceed 4,500 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**

(1) An owner or operator of an engine subject to this rule shall keep the following records. ~~These~~ The records required by Subsection (e)(1) ~~this section~~ shall be kept on site for at least the same period of time as the engines to which the records apply ~~are~~ 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; ~~and~~

(v) a manual of the most recent 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 of maintenance performed.

(2) In addition to the records required by Subsection (e)(1), an owner or operator of an engine exempt under 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 indicating~~, if applicable,~~ whether the operation was during emergency situations or for ~~maintenance~~ non-emergency purposes and the nature of any emergency, if available ~~if known~~; and

(ii) total cumulative ~~annual~~ hours of operation~~.~~, per calendar year.

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) ~~using add-on control equipment~~ shall ~~keep the following~~ measure and record at least once each calendar month~~ly records~~ 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 ~~device~~ 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 engines using ~~exclusively~~ fossil derived gaseous fuel subject to the requirements of Section (d) shall also ~~keep the following~~ measure and record at least once each calendar month~~ly records~~ 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 ~~and~~ 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 ~~keep monthly records of operating parameters that are necessary to demonstrate continuous compliance, such as~~ measure and record at least once each calendar month those operating parameters determined necessary to ensure compliance by the Air Pollution Control Officer ~~to ensure compliance~~. 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 as otherwise specified in this rule, all~~ All records required by Subsections (e)(2) through (e)(5) shall be retained on site for at least three years and made available to the District upon request.

(f) **TEST METHODS**

(1) To determine compliance with Section (d), measurement of ~~oxides of nitrogen~~ NOx, ~~carbon monoxide~~ CO, carbon dioxide (CO_2) and ~~stack gas~~ ~~engine exhaust~~ oxygen content of exhaust gas shall be ~~conducted~~ determined in accordance with the ~~Air Resources Board (ARB)~~ 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 NOx and CO ~~carbon monoxide~~ emission concentrations and to determine compliance shall be at least ~~thirty~~ 30 minutes and not more than 60 minutes. NOx and CO ~~carbon monoxide~~ emission concentrations shall be calculated as an average of three ~~District Test Method 100~~ subtests. ~~The duration of each subtest shall be at least 30 consecutive minutes.~~

(3) Emissions source testing, if applicable, shall be performed at no less than 80 percent of the brake horsepower ~~output~~ rating. If an owner or operator of an ~~existi-~~ g 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) COMPLIANCE SCHEDULE~~

~~The owner or operator of an engine subject to the requirements of Section (d) of this rule shall meet the following increments of progress:~~

~~(1) For an existing engine which does not need modification and/or add-on control equipment, submit documentation showing that the engine is in compliance with all applicable rule requirements not later than May 31, 1995.~~

~~(2) For an existing engine which requires modification and/or add-on control equipment:~~

~~(i) By January 27, 1995, submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate a modified engine or add-on control equipment as necessary to comply with the applicable requirements of Section (d).~~

~~(ii) By May 31, 1995, modify the engine or install add-on control equipment as necessary to comply with the applicable requirements of Section (d).~~

~~(3) For a new engine, comply with all applicable requirements of this rule upon installation and startup.~~

SAN DIEGO AIR POLLUTION CONTROL DISTRICT

PROPOSED NEW RULE 69.4.1

Proposed new Rule 69.4.1 to read as follows:

RULE 69.4.1 STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES - BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY

(a) **APPLICABILITY**

(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.

(2) An engine subject to this rule and located at a major stationary source of oxides of nitrogen (NOx) is also subject to the applicable requirements of Rule 69.4.

(3) An engine subject to 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.

(v) Any engine used exclusively in conjunction with military tactical support equipment operated at military sites.

(2) The provisions of Section (d), except for Subsection (d)(5), of this rule shall not apply to the following engines:

(i) Any existing engine which operates less than 200 hours per calendar year, as determined by a non-resettable meter that measures elapsed operating time.

(ii) Any existing emergency standby engine provided that operation of the engine for non-emergency purposes does not exceed 52 hours per calendar year. Operation for testing or maintenance purposes, for not more than 100 hours per year, may be allowed provided that an owner or operator demonstrates to the satisfaction of the Air Pollution Control Officer that such additional operating time is necessary.

(iii) Any existing 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 100 ~~500~~ hours per calendar year.

~~(iv) Any existing aircraft ground power unit with a manufacturer's rating of 200 brake horsepower or less, provided that the engine is not located at a major stationary source, and operation of the engine does not exceed 750 hours per calendar year.~~

~~(v) Any engine used exclusively in conjunction with military tactical support equipment operated at military sites.~~

(iv) Existing engines located at a natural gas transmission station and manufactured before 1960, provided that each engine operates less than 300 hours per calendar year and the total operating hours for all engines are less than 800 hours per calendar year.

An owner or operator of an engine who is claiming an exemption pursuant to this 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 (g)(1) and (g)(2) of this rule.

(c) **DEFINITIONS**

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

~~(1) **"Aircraft Ground Power Unit (GPU)" means an electric generator with a piston type internal combustion engine and used to supply electrical power to an aircraft during embarking and disembarking of crew and passengers and during loading and unloading of cargo.~~

(1)~~(2)~~ **"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)~~(3)~~ **"Best Available Retrofit Control Technology (BARCT)"** means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.

(3)~~(4)~~ **"Brake Horsepower Rating, (bhp)"** means the maximum continuous brake horsepower rating as specified by the engine manufacturer and listed on the engine nameplate, if available, regardless of any derating.

(4)~~(5)~~ **"Calendar Year"** means the same as defined in Rule 2.

(5)~~(6)~~ **"California Diesel Fuel"** means any fuel that is commonly or commercially known, sold or represented as diesel fuel No. 1-D or No. 2-D, and which meets the requirements specified in Title 13, California Code of Regulations, Section 2281 and 2282.

(6)~~(7)~~ **"Capacity Factor"** means the ratio, expressed as a percentage, of the annual fuel consumption to the manufacturer's specified maximum annual fuel consumption or manufacturer's specified maximum hourly fuel consumption times 8760 hours, whichever is less.

(7) **"Certified Engine"** means an engine certified to comply with the Tier 1, Tier 2, or Tier 3 emission standards specified in Section 89.112 of the Code of Federal Regulations (40 CFR Part 89) - Control of Emissions of Air Pollution from Non-Road Diesel Engines or with the Tier 1, Tier 2, or Tier 3 emission standards specified in Section 2423 of Title 13 of the California Code of Regulations - California Regulations for New 1996 and Later Off-Road Compression-Ignition Engines.

(8) **"Cyclic Engine"** means an engine, such as gantry cranes, having an external load which varies by approximately 40 percent or more of rated capacity under normal operating conditions during any load cycle. ~~Load cycle for cyclic engines shall not be less than 30 seconds or greater than one half hour.~~

(9) **"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.

(10) **"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.

(11) **"Engine Family"** means a group of engines expected to have similar emission and other characteristics throughout their useful life as specified in Section 89.116, 40 CFR 89.

(12) **"Engine Tampering"** means removing or rendering inoperative any device or element of design of the engine or its emission control system, or the manufacturing, or the installation of a part or a component which objective is to bypass, defeat, or render inoperative a device or element of design of the engine or its emission control system.

~~(11) **"Exempt Compound"** means the same as defined in Rule 2.~~

(13)~~(12)~~ **"Existing Engine"** means an engine which commenced operation in San Diego County on or before (*date of adoption*).

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

(15)~~(14)~~ **"High-use Engine"** means an engine which is not a low-use engine.

(16)~~(15)~~ **"Lean-Burn Engine"** means an engine operating on gaseous fuel and that is designed to operate with an air-to-fuel ratio that is more than 1.1 times the stoichiometric air-to-fuel ratio.

(17)~~(16)~~ **"Load Cycle"** means the time interval between consecutive commencement of application of external load to an engine.

(18)~~(17)~~ **"Low-use Engine"** means an engine ~~with a manufacturer's rating of 350 bhp or less,~~ operating at a capacity factor of 15% or less.

(19)~~(18)~~ **"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.

(20)~~(19)~~ **"Military Tactical Support Equipment"** means the same as defined in Rule 20.1.

(21)~~(20)~~ **"New Engine"** means an engine which commenced operation in San Diego County after (*date of adoption*).

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

(23)~~(22)~~ **"Replacement Engine"** means an engine that meets the definition of a replacement emission unit in Rule 20.1.

(24)~~(23)~~ **"Rich-Burn Engine"** means an engine operating on gaseous fuel and 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.

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

(26)~~(25)~~ **"Stationary Source"** means the same as defined in Rule 2.

(27)~~(26)~~ **"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.

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

(29)~~(28)~~ **"Volatile Organic Compound (VOC)"** means the same as defined in Rule 2.

(30)~~(29)~~ **"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**

(1) A person shall not operate a stationary internal combustion engine subject to this rule unless: *Note Subsection (d)(1)(i) became (ii) and Subsection (d)(1)(ii) became (i).*

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

Engine Category	Weight Percent Reduction
Rich-burn engines using fossil derived gaseous fuel or gasoline	96
Lean-burn engines using fossil derived gaseous fuel	90
Engines using exclusively waste derived gaseous fuel	90
High-use engines using diesel or kerosene fuel	90 ~~80~~

or

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

Engine Category	~~NOx~~ Concentration of NOx g/bhp-hr (ppmv)
Rich-burn engines using fossil derived gaseous fuel or gasoline	0.45 (25)
Rich-burn engines using exclusively waste derived gaseous fuel	0.9 (50)
Lean-burn engines	1.2 (65)
Existing low-use engines and cyclic engines using diesel or kerosene fuel	9.0 (700)
High-use engines, or any new or replacement low-use or cyclic engine, ~~with a rating of less than 175 bhp or more than 750 bhp and~~ using diesel or kerosene fuel	6.9 (530)
~~High use engines, or any new or replacement low use or cyclic engine, with a rating of 175 bhp to 750 bhp, inclusive, and using diesel or kerosene fuel~~	~~450~~

(2) For all engines subject to Subsection (d)(1) of this rule, emissions of carbon monoxide (CO), calculated at 15% oxygen on a dry basis, shall not exceed 4,500 ppmv.

(3) For all rich-burn engines using fossil or waste derived gaseous fuel or gasoline and subject to Subsection (d)(1) of this rule, emissions of volatile organic compounds (VOCs), calculated as methane at 15% oxygen on a dry basis, shall not exceed 250 ppmv.

(4) For all other engines subject to Subsection (d)(1) of this rule, emissions of VOCs, calculated as methane at 15% oxygen on a dry basis, shall not exceed 750 ppmv.

(5) Effective *(~~12~~ six months after the date of adoption)*, any engine subject to this rule and operating on diesel fuel shall use only California Diesel Fuel.

(e) **MONITORING REQUIREMENTS**

(1) An owner or operator of an engine without add-on control equipment and subject to the requirements of Section (d) shall monitor the operational characteristics of the engine recommended by the engine manufacturer as approved by the Air Pollution Control Officer. Such operational characteristics may include but are not limited to:

(i) engine air-to-fuel ratio;

(ii) engine inlet manifold temperature and pressure; and

(iii) oxygen content of the exhaust gas.

Where the Air Pollution Control Officer determines that it is not feasible to monitor operating parameters of an engine or such monitoring may not be indicative of air contaminant emissions, the requirements of this subsection may be waived provided that periodic inspection and maintenance are conducted as specified in Section (f).

(2) An owner or operator of an engine with add-on control equipment shall install, operate and maintain in calibration, devices that continuously monitor the operational characteristics of the engine and any NOx emission reduction system as determined necessary to ensure compliance by the Air Pollution Control Officer. Such operational characteristics, if applicable, may include but are not limited to:

(i) engine air-to-fuel ratio;

(ii) temperature of exhaust gas at the inlet and outlet of the control equipment;

(iii) oxygen content of exhaust gas at the inlet and outlet of the control equipment; and

(iv) flow rate of NOx reducing agent added to the engine exhaust gas.

(3) An owner or operator of an engine subject to this rule shall install a non-resettable totalizing fuel meter and/or non-resettable meter that measures elapsed operating time as determined appropriate by the Air Pollution Control Officer.

(f) INSPECTION AND MAINTENANCE REQUIREMENTS

(1) An owner or operator of any engine subject to the emission limits ~~requirements~~ of Section (d) of this rule shall conduct periodic inspections of the engine and any air pollution control equipment, as applicable, to ensure that the engine and control equipment is operated in compliance with the provisions of this rule. Inspections shall be conducted ~~every~~ at least once every 4,000 hours of operation, or every six months, whichever is less.

(2) An owner or operator of any engine exempt under Subsection (b)(2) or subject to the emission limits ~~requirements~~ of Section (d) of this rule shall conduct ~~annual~~ periodic maintenance of the engine and any air pollution control equipment, as applicable, as recommended by the engine and control equipment manufacturers or as specified by any other maintenance procedure approved in writing by the Air Pollution Control Officer. The periodic maintenance shall be conducted at least once each calendar year.

(3) Notwithstanding the frequencies specified in Subsections (f)(1)and (f)(2), the Air Pollution Control Officer may require an owner or operator of an engine subject to the requirements of Section (d) to conduct inspections and/or maintenance of the engine and any associated air pollution control equipment more frequently if deemed necessary to assure compliance with this rule.

(g) RECORDKEEPING REQUIREMENTS

(1) An owner or operator of an engine subject to this rule shall keep the following records. ~~These~~ The records required by Subsection (g)(1) shall be kept 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 rating;

(iii) combustion method (i.e. rich-burn or lean-burn);

(iv) fuel type; ~~and~~

(v) California Diesel fuel certification, if applicable; and

(vi)~~(v)~~ a manual of the most recent recommended maintenance as provided by the engine manufacturer, or other maintenance procedure as approved in writing by the Air Pollution Control Officer.

Where the information specified in Subsections (g)(1)(i) through (g)(1)(iv) is contained in a District Permit to Operate or a Certificate of Registration and is the most current, an additional record of this information shall not be required.

(2) In addition to the records required by Subsection (g)(1), an owner or operator of an engine exempt under 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, indicating, if applicable, whether the operation was during emergency situations or for non-emergency purposes and the nature of any emergency, if available; ~~and~~

(ii) total cumulative annual hours of operation; and

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

The records specified in Subsection (g)(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 (g)(1), an owner or operator of an engine subject to the emission limits ~~requirements~~ of Section (d) shall maintain a log containing at a minimum, the following:

(i) records of engine inspection including dates inspection was performed; and

(ii) records of engine maintenance including dates maintenance was performed and the nature of the maintenance.

(4) In addition to the records required by Subsections (g)(1) and (g)(3), an owner or operator of an ~~rich-burn~~ engine ~~using fossil or waste-derived gaseous fuel or gasoline and~~ subject to the emission limits ~~requirements~~ of Section (d) shall measure and record at least once each calendar month ~~those~~ the applicable operating parameters, as specified in Subsections (e)(1) and (e)(2) and as 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 inlet manifold temperature and pressure; and~~

~~(iii) temperature of the inlet and outlet of the control equipment.~~

~~(5) In addition to the records required by Subsections (g)(1) and (g)(3), an owner or operator of a lean-burn engine 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) exhaust gas temperature;~~

~~(iii) engine inlet manifold temperature and pressure; and~~

~~(iv) flow rate of NOx reducing agent added to the exhaust gas.~~

(5)~~(6)~~ In addition to the records required by Subsection (g)(1) and (g)(3), an owner or operator of a~~n~~ low-use engine operating on ~~using~~ diesel or kerosene fuel and subject to the emission limits ~~requirements~~ of Section (d) shall maintain records of total annual cumulative hours of operation or annual fuel consumption, as applicable. ~~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) exhaust gas temperature;~~

~~(iii) engine inlet manifold temperature and pressure; and~~

~~(iv) flow rate of NOx reducing agent added to the exhaust gas.~~

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

(h) **TEST METHODS**

(1) All testing to determine compliance with the emission limits of Subsections (d)(1), (d)(2), (d)(3) and/or (d)(4), except as provided in Subsection (h)(4) of this rule, shall be conducted in accordance with the following procedures:

(i) Measurement of ~~oxides of nitrogen, carbon monoxide~~ NOx, CO, carbon dioxide (CO_2) and oxygen content of exhaust gas for engines operating on gaseous fuel or gasoline, or engines operating on diesel or kerosene fuel with add-on control equipment shall be determined in accordance with the 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.

(ii) Measurement of VOC emissions shall be determined in accordance with EPA Test Methods 25A and/or 18.

(iii) NOx, VOC, and CO emissions concentration shall be calculated as an average of three District Test Method 100 subtests or three ARB Test Method 100 subtests.

(iv) For any engine operating on diesel or kerosene fuel without add-on control equipment and certified by EPA or ARB at an emission rate equal to or

below the applicable emission limits of Section (d) measurements of NOx, CO, CO_2, and oxygen content of exhaust gas shall be conducted in accordance with a test method approved by the District and ARB. Until such test method is approved, such engine shall be deemed in compliance with the emission limits of Section (d) provided the requirements of Subsection (i)(5) are met and provided that such engine does not belong to an engine family participating in the federal averaging, banking, and trading (ABT) program specified in 40 CFR 89, Subpart C and adopted by reference by ARB.

(2) Specifications for California Diesel Fuel, if not provided by a vendor, shall be determined by the most current version of ASTM Test Method D975 - Standard Specification for Diesel Fuel Oils.

(i) **SOURCE TEST REQUIREMENTS**

Except as provided in Subsection (i)(5), source tests shall be conducted according to the following:

(1) Any engine subject to the requirements of Section (d) shall be tested at least once every 8,760 hours of operation or every 24 months, whichever period is shorter, unless otherwise specified in writing by the Air Pollution Control Officer.

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

(3) 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 cannot operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous horsepower rating or under the typical duty cycle or typical operational mode of the engine.

(4) The averaging period to calculate NOx and CO emission concentrations for purposes of determining compliance with this rule shall be one hour unless otherwise specified in writing by the Air Pollution Control Officer.

(5) Notwithstanding the requirements of Subsection (i)(1), any engine operating on diesel or kerosene fuel without add-on control and certified by EPA or ARB at emission rates equal to or below the applicable emission limits of Section (d) shall not require an initial or periodic source test, until an appropriate test method is approved by the District and ARB, provided that all of the following requirements are met:

(i) The engine family has been tested and certified according to EPA or ARB approved procedure, and the certification documents are provided to the District.

(ii) The engine family does not participate in the federal ABT program specified in 40 CFR 89, Subpart C and adopted by reference by ARB.

(iii) The engine and its emission control system are maintained as specified in Section (f).

(iv) There is no evidence of engine tampering.

(j) **COMPLIANCE SCHEDULE**

The owner or operator of an engine subject to the emission limits ~~requirements~~ of Section (d) of this rule shall meet the following increments of progress:

(1) For an existing engine operating on diesel fuel, comply with the requirements of Subsection (d)(5) by (*six months after date of adoption).*

(2)~~(1)~~ For an existing engine which does not need modification, replacement and/or add-on control equipment:

(i) By (*six months after date of adoption*), submit to the Air Pollution Control Officer documentation showing that the engine is in compliance with all applicable requirements of this rule.

(ii) By (*one year after date of adoption*), submit to the Air Pollution Control Officer an application to modify conditions on the Permit to Operate as necessary to comply with the applicable requirements of this rule.

(3)~~(2)~~ For an existing engine which requires modification, replacement and/or add-on control equipment:

(i) By (*one year after date of adoption*), submit to the Air Pollution Control Officer an application for Authority to Construct and Permit to Operate a modified or replacement engine and/or add-on control equipment as necessary to comply with the ~~NOx~~ emission limits specified in ~~Subsection~~ Section (d)~~(1)~~ and with all other applicable requirements of this rule.

(ii) By (*two years after date of adoption*), modify or replace the engine and/or install add-on control equipment and demonstrate compliance with the ~~NOx~~ emission limits specified in ~~Subsection~~ Section (d)~~(1)~~ and with all other applicable requirements of this rule.

(4)~~(3)~~ For a new or replacement engine comply with all applicable requirements of this rule upon installation and startup.

(5)~~(4)~~ For a new or replacement engine operating annually less than 200 hours or for a new or replacement emergency standby engine using diesel or kerosene fuel ~~and installed to replace an engine specified in Subsections (b)(2)(i) through (b)(2) (iv)~~ , comply with the applicable emission limits of Section (d) and with ~~all other applicable~~ the recordkeeping requirements of Subsections (g)(1) and (g)(2) of this rule upon installation and startup. Any other monitoring, inspection and maintenance, recordkeeping, and testing requirements of Subsections (e),(f),(g) and (h), respectively, except for Subsection (e)(3), shall not apply to these engines.