



Air Pollution Control Board

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July 2, 2007

NOTICE OF WORKSHOP

FOR DISCUSSION OF PROPOSED AMENDMENTS TO RULE 69.3.1 - STATIONARY GAS TURBINE ENGINES – BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY

The San Diego County Air Pollution Control District (District) will hold a public meeting to consider comments concerning proposed amendments to District Rule 69.3.1 – Stationary Gas Turbine Engines – Best Available Retrofit Control Technology. Comments may be submitted in writing before, or made at, the workshop, which is scheduled as follows:

DATE: Friday, August 3, 2007
TIME: 9:00 a.m. to 11:00 a.m.
PLACE: San Diego Air Pollution Control District
Main Conference Room
10124 Old Grove Road
San Diego, CA 92131

San Diego County does not meet the National and State Ambient Air Quality Standards for ozone and is classified as an ozone nonattainment area. State law requires the District to implement feasible rules that regulate emissions of ozone precursors - volatile organic compounds (VOC) and oxides of nitrogen (NOx).

Rule 69.3.1, which the District adopted in 1998, regulates emissions of NOx from any stationary gas turbine installed on or before December 16, 1998, with a power rating of 1.0 megawatt (MW) or greater, or any stationary gas turbine installed after December 16, 1998, with a power rating of 0.3 megawatt (MW) or greater. The District is proposing amendments to the rule to limit operation of some peaking power plants on forecast high ozone days, address operational issues of turbines including the startup time allowed for combined-cycle turbines, synchronize District required testing with requirements of the federal Acid Rain Program, and clarify and improve monitoring and recordkeeping requirements.

To fulfill the District's commitment in the San Diego County Regional Air Quality Strategy (RAQS) to implement all feasible control measures as required by State law, the District is proposing to limit the times when certain peaking turbines are allowed to operate throughout the year. Peaking turbines are used to ensure reliability of the electrical grid and typically operate only on days of high electrical demand. Recently constructed peaking turbines have controlled emissions far below the current rule standards. However, older peaking turbines limited to less

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than 877 hours per year of operation are currently subject to a less stringent standard than other turbines of similar size. Though these older peaking turbines do not operate for the majority of the year, the impact on air quality can be significant on the days they do operate. In order to mitigate the level of emissions from these older existing peaking turbines, the District is proposing to restrict their operation on forecast high ozone days unless they comply with the more stringent emission standard applicable to other turbines, or there is an electrical grid emergency requiring their use. The District is also proposing that no new peaking turbines would be allowed higher emission standards than other turbines of similar size.

In addition, the District is proposing to extend the 120-minute exemption from the NOx standards of the rule to 360 minutes for all startups of large combined-cycle turbines. When Rule 69.3.1 was adopted in 1998, the 120-minute startup provision was intended to minimize emissions during startup and provide a sufficient period of time for the emission control equipment to achieve the level of emissions allowed by the rule. The period of 120 minutes was determined to be an adequate period of time for startup of gas turbines for simple cycle or cogeneration units that did not utilize a steam turbine to generate additional electrical power. At that time, Rule 69.3.1 did not include requirements specific to combined-cycle gas turbines because there were no existing or proposed combined-cycle units operating in San Diego County and only a few elsewhere in the country.

A combined-cycle gas turbine is comprised of a gas turbine that is used to generate electrical energy and an associated steam turbine system that generates additional electrical energy. Heat is recovered from the gas turbine exhaust gases to generate steam. The steam is then directed through the steam turbine to generate additional electrical power. This recovery of heat to generate steam and additional power increases the thermal efficiency of a combined-cycle electrical power plant. As a result, combined-cycle power plants use less fuel and produce less pollution to generate the same amount of electrical power than other combustion driven power plants. The one combined-cycle power plant operating in San Diego County produces less than 50% of the NOx to generate the same amount of electricity as the other large electrical power plants in San Diego County. However, during startup, key components of the associated steam power system portion of the combined-cycle process undergo thermal stresses due to expansion of the metal components. These stresses are largest and the potential for damage greatest when the steam turbine has been allowed to cool for several days. Thus, the rate at which the steam system may be heated during a startup is limited to prevent damage to the equipment. As a result of these and other technological constraints on the plant equipment, combined-cycle facilities operating in California are generally allowed startup durations of more than 120 minutes.

The District is proposing to amend Rule 69.3.1 to extend the time allowed to start a combined-cycle turbine to 360 minutes, but only under certain limited conditions where a 120-minute startup might damage critical equipment. Based on recent operational experience at a large combined-cycle facility in San Diego County, the District anticipates that the allowed longer startup time will only be required a few times a year. With the proposed amendments, the much more frequent regular startups will still be limited to 120 minutes or less.

Specifically, the proposed amendments will:

- Prohibit the operation of peaking turbines on forecast ozone exceedance days (except for days on which an electrical grid emergency has been declared by the California Independent

System Operator), unless they comply with the most stringent standard in the rule applicable to that size of turbine.

- Specify that the higher NOx emission standards for peaking units operating less than 877 hours per calendar year and larger than 4 MW are only applicable to peaking units installed on or before the amended rule's adoption date.
- For combined-cycle turbines, exempt startups under certain conditions from the NOx emission standards of the rule for a maximum period of 360 minutes.
- For turbines equipped with dry low NOx combustors, exempt periods of operation at low load from the NOx emission standards of the rule. The periods of operation at low load shall not exceed 130 minutes per day, 780 minutes per year and the turbine must be equipped with a continuous emission monitoring system that monitors fuel flow and electrical output.
- Clarify monitoring and recordkeeping provisions.
- Require an owner or operator of any peaking or emergency gas turbine to install a non-resettable hour meter if deemed necessary by the District.
- Update the test method references.
- For units subject to the federal Acid Rain Program, specify that source tests are to be conducted at a frequency in accordance with 40 CFR Part 75 Appendix B Sections 2.3.1 and 2.3.3.
- Add definitions for combined-cycle gas turbine engine, dry low NOx combustor, electrical grid emergency, extended startup and period of operation at low load.
- Clarify and revise the definitions for emergency situation, manufacturer's rated thermal efficiency, power rating, shutdown and startup.

In addition, the proposed rule amendments provide other minor clarifications and updates.

If you would like a copy of the proposed amendments to Rule 69.3.1, please visit the District's website at www.sdapcd.org, under Rules & Regulations, Public Workshop; or call Luann Serbesku at (858) 586-2755. If you have any questions concerning the rule, please contact Randy Consolacion at (858) 586-2752 or Steven Moore at (858) 586-2750.



THOMAS WEEKS, Chief of Engineering
Air Pollution Control District

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SAN DIEGO AIR POLLUTION CONTROL DISTRICT

PROPOSED AMENDED RULE 69.3.1

Proposed amended Rule 69.3.1 to read as follows:

RULE 69.3.1. STATIONARY GAS TURBINE ENGINES - BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY

(Adopted and Effective 12/16/98; Rev. Effective (date of adoption))

(a) APPLICABILITY

Except as provided in Subsection (b)(1), this This rule shall apply to any existing stationary gas turbine engine with a power rating of 1.0 megawatt (MW) or greater, or to any new stationary gas turbine engine with a power rating of 0.3 MW or greater. Any unit subject to Section (d) of this rule shall not be subject to Rule 68.

(b) EXEMPTIONS

(1) The provisions of this rule shall not apply to the following:

(i) Any gas turbine engine when operated exclusively for the research, development or testing of gas turbine engines or their components.

(ii) Any portable gas turbine engine. It is the responsibility of any person claiming this exemption to maintain records indicating the dates that such gas turbine engine was located at each stationary source. These records shall be maintained for a minimum of two calendar years by the owner or operator of such gas turbine engine and made available to the District upon request.

(iii) Any stationary gas turbine engine with a power rating less than or equal to 0.4 MW used in conjunction with military tactical support equipment operated at military sites, provided that operations do not exceed 1,000 hours per calendar year. It is the responsibility of any person claiming this exemption to maintain records indicating the hours that such gas turbine engine was operated. These records shall be maintained for a minimum of two calendar years by the owner or operator of such gas turbine engine and made available to the District upon request.

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

(i) Any emergency unit provided that operation for non-emergency purposes to ensure operability in the event of an emergency situation does not exceed 80 hours per calendar year. It is the responsibility of any person claiming this exemption to maintain records in accordance with Subsections (e)(5) and (e)(8) of this rule.

(ii) Any unit during startup, shutdown or a fuel change for a period not to exceed 120 ~~continuous consecutive~~ minutes except as provided for in Subsection (b)(3). ~~It is the responsibility of any person claiming this exemption to maintain records in accordance with Subsections (e)(4) and (e)(8) of this rule.~~ Nothing in this rule shall be construed to limit the actual time needed to conduct a startup, shutdown or fuel change.

(iii) For turbines equipped with dry low oxides of nitrogen (NOx) combustors, periods of operation at low load provided that:

(A) The aggregate time of such periods does not exceed 130 minutes in any calendar day,

(B) The aggregate of all such periods does not exceed 780 minutes in any calendar year, and

(C) The turbine is equipped with a continuous emission monitoring system (CEMS) or other monitoring system that monitors and records turbine fuel flow and gross electrical output in increments of one minute or less.

(3) The provisions of Section (d) shall not apply to any combined-cycle gas turbine engine during an extended startup for a period not to exceed 360 consecutive minutes.

(c) DEFINITIONS

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

(1) **"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.

(2) **"Combined-Cycle Gas Turbine Engine"** means any stationary gas turbine engine which recovers heat from the gas turbine exhaust gases to generate steam that is used to create additional power output in a steam turbine.

(3) **"Dry Low NOx Combustor"** means any turbine combustor design which uses multiple staging, air/fuel premixing, or other modifications, in order to reduce NOx emissions to lower levels as compared to a conventional combustor.

(4) **"Electrical Grid Emergency"** means that the condition of the electrical grid as determined by the California Independent System Operator or a successor agency is, or will be, such that the reliability of the electrical grid is threatened. Electrical emergencies include, but are not limited to, Stage 1, Stage 2, or Stage 3 Emergency Notices; Transmission Emergency Notices; or System Emergencies declared by the California Independent System Operator that are applicable to San Diego County or the State as a whole. Restricted maintenance operation notices to facilities, power watches urging consumers to conserve electricity, alerts advising of marginal conditions the next day, and warnings advising of marginal conditions the next hour issued by the California Independent System Operator are not by themselves considered electrical emergencies.

~~(2)~~(5) **"Emergency Situation"** means any one of the following:

(i) ~~An~~An ~~unforeseen~~ electrical power failure of the serving utility or of onsite electrical transmission equipment that is demonstrated by the owner or operator to the Air Pollution Control Officer's satisfaction to have been beyond the reasonable control of the owner or operator; or

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

(iii) A life-threatening situation.

Emergency situation shall not include operation of any unit for training purposes or other foreseeable event, or operation of any peaking unit for the purpose of supplying power for distribution to an electrical grid.

~~(3)~~(6) **"Emergency Unit"** means a stationary gas turbine engine used only in the event of an emergency situation. A peaking unit shall not be considered an emergency unit.

~~(4)~~(7) **"Existing" or "Existing Unit"** means any stationary gas turbine engine which was installed and operating in San Diego County on or before December 16, 1998.

~~(8)~~ **"Extended startup"** means the startup of a combined-cycle gas turbine engine when, as determined by the Air Pollution Control Officer, key operational parameters, such as the steam turbine reheat bowl temperature, indicate that more than 120 consecutive minutes are needed to meet the emission limits of Section (d).

~~(5)~~~~(9)~~ **"Fuel Change"** means the transitory operating period when a switch occurs between liquid or gaseous fuels, or any combination thereof.

~~(6)~~~~(10)~~ **"Gaseous Fuel"** means natural gas, digester gas, landfill gas, methane, ethane, propane, butane, or any gas stored as a liquid at high pressure such as liquefied petroleum gas.

~~(7)~~~~(11)~~ **"Higher Heating Value (HHV)"** means the total heat liberated, including the heat of condensation of water, per mass of fuel burned (Btu per pound) when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to standard conditions.

~~(8)~~~~(12)~~ **"Liquid Fuel"** means any fuel which is a liquid at standard conditions including but not limited to distillate oils, kerosene and jet fuel. Liquefied gaseous fuels are not liquid fuels.

~~(9)~~~~(13)~~ **"Lower Heating Value (LHV)"** means the total heat liberated, excluding the heat of condensation of water, per mass of fuel burned (Btu per pound) when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to standard conditions.

~~(10)~~~~(14)~~ **"Manufacturer's Rated Thermal Efficiency (MRTE)"** means the manufacturer's continuous rated percent thermal efficiency of the gas turbine engine, including the effect of any ~~equipped with~~ air pollution control equipment if such equipment is installed, at peak load, after correction to lower heating value.

~~(11)~~~~(15)~~ **"Military Tactical Support Equipment"** means any equipment owned by the U.S. Department of Defense or the National Guard and used in combat, combat support, combat service support, tactical or relief operations, or training for such operations.

~~(12)~~~~(16)~~ **"New" or "New Unit"** means a stationary gas turbine engine installed in San Diego County after December 16, 1998.

~~(13)~~~~(17)~~ **"Peaking Unit"** means a stationary gas turbine engine that is operated intermittently for generation of electric power during periods of high energy demand.

~~(18)~~ **"Period of Operation at Low Load"** means a period of time that begins when the gas turbine power level is reduced from a higher level to below a critical level, as determined by the Air Pollution Control Officer, such that the gas turbine is unable to comply with the standards of Section (d), and ends 10 minutes after the turbine power level next exceeds the critical level provided that fuel is continuously combusted during the entire period. No period of operation at low load shall begin during a period when the provisions of Section (d) do not apply pursuant to Subsection (b)(2)(ii), or Subsection (b)(3).

~~(14)~~~~(19)~~ **"Portable Gas Turbine Engine"** means a gas turbine engine which meets the definition of a portable emission unit in Rule 20.1.

~~(15)~~~~(20)~~ **"Power Augmentation"** means an increase in the gas turbine engine shaft output, or a decrease in turbine fuel consumption, by the addition of energy recovered from exhaust heat.

~~(16)~~~~(21)~~ **"Power Rating"** means the maximum, continuous, gross power output of a unit, in megawatts (MW) or equivalent at ISO standard day conditions, as certified by the manufacturer unless limited by a condition in a District Authority to Construct or a Permit to Operate. Power augmentation shall not be included in power rating.

~~(17)~~~~(22)~~ **"Selective Catalytic Reduction (SCR)"** means a post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust gas stream where it converts ~~oxides of nitrogen (NOx)~~ to molecular nitrogen in the presence of a catalyst.

~~(18)~~~~(23)~~ **"Shutdown"** means an action necessary to cease operation of a unit and includes the amount of time needed to safely do so. For gas turbines equipped with a continuous emission monitoring system (CEMS) or other continuous monitoring system that monitors and records fuel flow in increments of one minute or less, a shutdown period ends five minutes after fuel flow to the unit ceases.

~~(19)~~~~(24)~~ **"Stationary Gas Turbine Engine"** means any gas turbine engine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

~~(20)~~~~(25)~~ **"Stationary Source"** means the same as defined in Rule 2.

~~(21)~~(26) **"Startup"** means an action necessary to begin operation of a unit and includes the amount of time needed for a unit and ancillary equipment to achieve stable operation. For gas turbines equipped with a CEMS or other continuous monitoring system that monitors and records fuel flow in increments of one minute or less, a startup period begins when fuel starts flowing to the gas turbine engine.

~~(22)~~(27) **"Unit"** means any stationary gas turbine engine.

~~(23)~~(28) **"Unit Thermal Efficiency (E)"** means the percent thermal efficiency of the gas turbine engine and is calculated as follows:

$$E = \frac{(\text{MRTE}) (\text{LHV})}{(\text{HHV})}$$

A gas turbine engine with an efficiency lower than 25 percent shall be assigned a unit efficiency of 25 percent.

(d) STANDARDS

(1) Except as provided for in Section (b) and Subsection (d)(2), the emissions concentration in parts per million by volume (ppmv) of ~~nitrogen-oxides (NOx)~~ from any unit subject to this rule, calculated as nitrogen dioxide at 15% oxygen on a dry basis, shall not exceed the following:

<u>Power Rating (Gross Megawatts)</u>	<u>NOx Emissions Concentration (ppmv @ 15% O₂)</u>	
	<u>Gaseous Fuel</u>	<u>Liquid Fuel</u>
≥0.3 and <2.9 (new units)	42	65
≥1.0 and <2.9 (existing units)	42	65
≥2.9 and <10.0	25 x E/25	65
≥10.0 without <u>installed</u> post-combustion_ air pollution control <u>equipment</u>	15 x E/25	42 x E/25
≥10.0 with <u>installed</u> post-combustion <u>air</u> pollution control <u>equipment</u>	9 x E/25	25 x E/25

(2) The emissions concentration in parts per million by volume (ppmv) of ~~nitrogen-oxides (NOx)~~ from any unit subject to this rule and described below, calculated as nitrogen dioxide at 15% oxygen on a dry basis, shall not exceed the following:

<u>Unit Description</u>	<u>NOx Emissions Concentration (ppmv @ 15% O₂)</u>	
	<u>Gaseous Fuel</u>	<u>Liquid Fuel</u>
Peaking units ≥ 4 MW, and operating less than 877 hours per calendar year <u>and installed on or before (date of adoption).</u>	42	65
Units < 4 MW and operating less than 877 hours per calendar year	42	65

(3) A person shall not operate a gas turbine engine used to generate electricity that does not comply with Subsection (d)(1) on or after July 1, 2010, unless:

(i) The Air Pollution Control Officer has determined that an exceedance of the State one-hour ambient air quality standard for ozone is not predicted at any location in the air basin at any time during the calendar day on which the gas turbine operates; or

(ii) The California Independent System Operator or a successor agency has declared an electrical grid emergency during the calendar day on which the gas turbine operates.

(e) MONITORING AND RECORDKEEPING REQUIREMENTS

(1) An owner or operator of a unit which is subject to the requirements of Section (d) shall install, calibrate and maintain continuous monitors in accordance with the manufacturer's recommended procedures to monitor and record the operational characteristics of the unit and of any NOx emissions reduction system, as applicable, to demonstrate continuous compliance, such as:

- (i) ~~exhaust gas~~fuel flow rate;
- (ii) exhaust gas temperature;
- (iii) ammonia injection rate;
- (iv) water injection rate;~~and~~
- (v) stack-gas oxygen content;
- (vi) inlet or outlet SCR catalyst temperature; and

(vii) operational parameters defining an extended startup.

The Air Pollution Control Officer may require recording of one or more of the above parameters, or other parameters, as necessary to ensure compliance.

(2) An owner or operator of any unit with a power rating of 10 MW or more that operates more than 4,000 hours per calendar year shall install and operate a ~~continuous-emission monitoring system (CEMS)~~ to measure and record NO_x emissions. The CEMS shall be certified, calibrated and maintained in accordance with all applicable federal regulations including the requirements of Sections 60.7(c), 60.7(d), and 60.13 of Title 40, Code of Federal Regulations, Part 60 (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.

(3) An owner or operator of any unit with a ~~continuous-emission monitoring system~~ CEMS which has been installed to ~~measure~~ monitor and record NO_x emissions pursuant to any federal regulation shall certify, calibrate and maintain the CEMS in accordance with applicable federal regulations including the requirements of Sections 60.7(c), 60.7(d), and 60.13 of Title 40, Code of Federal Regulations Part 60 (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.

(4) An owner or operator of any unit subject to this rule shall maintain, as applicable for the type of unit, an operating log and records of dates and times of operation, - actual times and duration of all startups, shutdowns, periods of operation at low load, and fuel changes; and records of the type and quantity of each fuel used during each calendar year.

(5) An owner or operator of an emergency unit shall maintain ~~an operating log and records of dates and times of operation, including the hours of operation~~ operating hours for non-emergency purposes and during each emergency situation. At a minimum, these records shall include the dates and ~~actual times and duration~~ of all startups and shutdowns, total cumulative ~~annual~~ hours of operation for non-emergency purposes during each calendar year, and a description of each emergency situation.

(6) An owner or operator of a peaking unit shall maintain ~~an operating log and records of dates and times of operation,~~ the hours of operation each day during periods of high energy demand, and the total cumulative hours of operation during each calendar year. The records of dates of operation shall also indicate if the peaking unit operated during a non-exceedance day of the State one-hour ozone standard or day declared an electrical emergency pursuant to Subsection (d)(3)(i) or Subsection (d)(3)(ii).

(7) An owner or operator of any unit ~~with a power rating less than 4 MW and~~ operating less than 877 hours per calendar year and subject to Subsection (d)(2) shall ~~maintain an operating log and~~ records of the total cumulative hours of operation during each calendar year.

(8) An owner or operator of any unit subject to this rule shall maintain all records required by Section (e) and records of all source tests required by Subsection (g)(2) or Subsection (g)(3) for a minimum of two calendar years. These records shall be maintained on the premises and made available to the District upon request. Records for facilities that are unmanned may be kept at an alternative location approved in writing by the Air Pollution Control Officer.

(9) An owner or operator of any peaking unit subject to Subsection (d)(2) or emergency unit subject to Subsection (b)(2)(i) shall install a non-resettable meter that measures elapsed operating time if deemed necessary by the Air Pollution Control Officer.

(f) TEST METHODS

(1) To determine compliance with Section (d), measurement of ~~oxides of nitrogen~~NO_x and stack-gas oxygen content shall be conducted in accordance with the U.S. Environmental Protection Agency (EPA) Method 7E and 3A, or District Source Test Method 100, or the Air Resources Board (ARB) Test Method 100 as approved by the EPA ~~U.S. Environmental Protection Agency (EPA).~~

(2) The higher heating value and lower heating value of a fuel shall be determined by the following methods or their most current versions and can be provided by a fuel supplier:

- (i) ASTM Test Method D240-92~~02~~ or D2382-88~~4809-06~~ for liquid fuels, and
- (ii) ASTM Test Method D1826-94(2003), or D1945-96~~03~~, in conjunction with ASTM Test Method D3588-94~~8~~(2003) for gaseous fuels.

(g) SOURCE TEST REQUIREMENTS AND COMPLIANCE DETERMINATION

(1) Any required source testing shall be performed at no less than 80% of the power rating. If an owner or operator of a gas turbine engine demonstrates to the satisfaction of the Air Pollution Control Officer that the turbine cannot operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous power rating.

(2) Except as specified in Subsection (g)(3), a A-unit subject to the requirements of Section (d) shall be tested for compliance at least once annually in the 12 month period before ending on the last day of the Permit to Operate-renewal expiration month-date, unless ~~otherwise~~ more frequent testing is specified in writing by the Air Pollution Control Officer. ~~Testing shall be conducted in accordance with Section (f) and a source test protocol approved in writing by the Air Pollution Control Officer.~~

(3) Unless more frequent testing is specified in writing by the Air Pollution Control Officer, a unit equipped with a continuous emission monitoring system (CEMS), and subject to the requirements of Section (d), and subject to the provisions of the federal Acid Rain Program, Title 40, Code of Federal Regulations, Section 72.6 of 40 CFR Part 72, shall be tested for compliance at a frequency in accordance with 40 CFR Part 75 Appendix B Section 2.3.1 and Section 2.3.3.

(4) All testing shall be conducted in accordance with the requirements of Section (f) and a source test protocol approved in writing by the Air Pollution Control Officer.

~~(3)~~(5) Test reports shall include the operational characteristics, as described in Subsection (e)(1), of the unit and of all add-on NOx control systems.

~~(4)~~(6) For the purposes of a compliance determination based on source testing, the NOx emissions concentration shall be calculated as an average of three subtests.

~~(5)~~(7) For the purposes of a compliance determination based on CEMS data, the averaging period to calculate NOx emissions concentration shall be one clock hour. For the purposes of compliance determination, the clock hour average NOx emissions concentration shall not include the data during periods of startup, shutdown, fuel change, and operation at low load.

(8) Notwithstanding provisions of this Section (g), the Air Pollution Control Officer may require source testing to determine compliance with these Rules and Regulations or to determine emissions.

(h) COMPLIANCE SCHEDULE

~~(3)~~(1) An owner or operator of a new or replacement unit shall comply with all applicable provisions of this rule upon initial installation and commencement of operation.

~~(1) An owner or operator of an existing unit requiring modification, replacement or installation of air pollution control equipment pursuant to Section (d) requirements shall meet the following increments of progress:~~

~~(i) By December 16, 1999 submit an application to the Air Pollution Control Officer for an Authority to Construct and Permit to Operate the modified or replacement air pollution control equipment necessary to meet the emission standards of Section (d) of this rule.~~

~~(ii) By December 16, 2000 demonstrate compliance with the emission standards specified in Section (d) and all other applicable provisions of this rule.~~

~~(2) By June 16, 1999 an owner or operator of an existing unit not requiring modification, replacement or installation of additional air pollution control equipment pursuant to Section (d) shall submit an application to modify conditions on the Permit to Operate as necessary to comply with the applicable requirements of Sections (d) and (e).~~