AIR POLLUTION CONTROL DISTRICT
SAN DIEGO COUNTY

SECOND WORKSHOP REPORT

RULE 68 - FUEL-BURNING EQUIPMENT OXIDES OF NITROGEN

A notice of a second workshop was mailed to owners and operators of fuel-burning equipment in San Diego County. Notices were also mailed to all Economic Development Corporations and Chambers of Commerce in San Diego County, the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and other interested parties.

The workshop was held on December 9, 1993, and was attended by 17 people.

The main purpose of the proposed amendments to Rule 68 was to meet the requirements of the 1990 Federal Clean Air Act (FCAA) which mandates the District to adopt rules reflecting Reasonably Available Control Technology (RACT) for all major stationary sources of ozone precursors. These include facilities that emit 25 tons per year or more of nitrogen oxides (NOx). The FCAA required that RACT rules for NOx be adopted by November 15, 1992. However, on February 26, 1993, EPA informed the District that it was establishing April 15, 1993, as the due date for submittal of RACT NOx rules.

On April 4, 1993, the District notified EPA that Rule 68 reflected RACT for the major sources of NOx subject to this rule. However, there were three source categories in San Diego County representing major NOx sources that were not currently controlled by the rule: jet engine test cells, gas turbine engine test cells and one cogeneration facility using internal combustion engines.

The District advised EPA it would submit the full technical documentation to support the continued exemption of jet engine and gas turbine test cells based on technological and/or economic infeasibility. The District also stated that it would amend Rule 68 to include control requirements for the cogeneration facility.

The December 9, 1993, workshop draft of the rule was submitted to EPA for comments and EPA noted some critical issues which would result in the rule's disapproval. These issues primarily reflected a change in EPA's guidance on what equipment must be subject to RACT requirements at the major sources of NOx. As a result of these comments, the District decided to develop source specific NOx control rules for separate source categories of combustion equipment such as non-utility boilers, turbines and internal combustion engines that are not currently subject to Rule 68 in order to meet federal RACT requirements.

One of these rules, Rule 69.2 -- Industrial and Commercial Boilers, Process Heaters and Steam Generators -- was presented at a public workshop on November 19, 1993. This rule is presently undergoing a socioeconomic impact assessment. It will be submitted for a public hearing by the Air Pollution Control Board in September 1994. Rule 69.3 -- Stationary Turbines, and Rule 69.4 -- Internal Combustion Engines, are currently being developed and will be presented for public workshops in the near future.

On the basis of these new developments, Rule 68 has been significantly revised and all proposed amendments related to NOx RACT emission control requirements for major stationary sources presently exempt from Rule 68 have been deleted. These currently exempt major NOx sources will now be controlled with RACT under new Rules 69.2, 69.3 or 69.4. The RACT standards limiting the NOx emission concentrations for fuel-burning equipment currently subject to the rule are retained.

Oral and written comments were received during and after the workshop from industry, ARB and EPA. The comments and District responses are as follows:

1. **WORKSHOP COMMENT:**

Does the rule apply to turbines that have a maximum heat input rating less than 50 million Btu/hr and are located at a major stationary source of Nitrogen Oxides (NOx) emissions?

DISTRICT RESPONSE:

No. Such turbines will be subject to new Rule 69.3, Control of NOx Emissions from Stationary Combustion Turbines.

2. **WORKSHOP COMMENT:**

Not all boilers have continuous emissions monitors (CEMS). Therefore, Subsection (e)(2) should be modified to clarify this.

DISTRICT RESPONSE:

The District agrees. The rule has been revised to reflect this comment.

3. **WORKSHOP COMMENT:**

How will the District address EPA's comments on the "most expeditious compliance schedule?"

DISTRICT RESPONSE:

EPA comments referred to the proposed compliance schedule for the installation of Reasonably Available Control Technology (RACT) for major sources of NOx emissions. However, as noted above, Rule 68 has been significantly revised and no longer establishes RACT requirements for the type of equipment that is currently not subject to Rule 68. Major sources of these emissions will be controlled by new Rules 67.2, 67.3 or 67.4, as applicable. All references to the compliance schedule have been deleted.

4. **WORKSHOP COMMENT:**

Has the District considered a deminimis level for combustion equipment that will not be subject to the rule?

DISTRICT RESPONSE:

Section (a) in the current rule specifies a deminimis level for combustion equipment not subject to this rule as any fuel burning equipment that has a heat input rating not exceeding 50 million Btu per hour.

5. **WORKSHOP COMMENT:**

Will a socioeconomic impact assessment (SIA) be conducted for Rule 68?

DISTRICT RESPONSE:

No. Section 40728.5 of the State Health & Safety Code requires the District to perform a socio-economic impact assessment for any new or amended rule that will significantly affect air quality or

emission limitations. Since the revised Rule 68 does not change any emission limitations and therefore will have no effect on air quality, the amendments now being proposed do not require an SIA.

6. WORKSHOP COMMENT:

How does EPA define a major source of NOx emissions? Does this definition have any time limitation?

DISTRICT RESPONSE:

The definition of a major source of volatile organic compound (VOC's) or NOx emission is provided in the Federal Clean Air Act, Section 182(d). It states that "For any severe ozone nonattainment area, a major source includes any stationary source that emits or has the potential to emit at least 25 tons per year of VOC's or NOx." Once a source is determined to be a major federal source, it will remain major unless specified conditions are met. These conditions are outlined in the EPA comments regarding the workshop draft of Rule 68.

7. WORKSHOP COMMENT:

How will EPA's comments be incorporated into the rule?

DISTRICT RESPONSE:

Most of the EPA comments related to the proposed amendments regarding application of Reasonably Available Control Technology (RACT) to major sources of NOx emissions. Since Rule 68 has been revised to delete these amendments many of the EPA comments are no longer applicable. All other EPA comments are addressed in this workshop report.

8. WORKSHOP COMMENT:

What is the EPA deadline for adopting rules reflecting RACT level of control for major NOx sources?

DISTRICT RESPONSE:

These rules must be submitted to EPA by the state Air Resources Board not later than October 21, 1994. Therefore, they must be adopted by the District Board not later than September 17 of this year to provide enough time for ARB approval and the preparation of all necessary documentation to be submitted to EPA.

9. WORKSHOP COMMENT:

Will proposed Rule 68 be presented to the public before its submittal to the Air Pollution Control Board for adoption?

DISTRICT RESPONSE:

The revised rule and the workshop report will be mailed to all workshop participants and other interested parties for their comments. In addition, the rule will be presented for approval to the District's Advisory Committee. All meetings of the Advisory Committee are open to the public.

10. WRITTEN COMMENT:

The proposed rule does not address piston-type internal combustion (IC) engines with a rated power output of 50 brake-horsepower (bhp) or less. This type of equipment is currently exempt from permit requirements under Rule 11. Would these engines remain exempt from Rule 68?

DISTRICT RESPONSE:

Yes. Rule 68 applies to fuel-burning equipment that has a maximum heat input rating of 50 million Btu per hour or more, which is approximately equivalent to IC engines with a rated power output of 8000 bhp and above. The District is presently working on the development of a rule regulating NOx emissions from stationary IC engines. It is expected that this rule will also exempt engines with a rated power output of 50 bhp or less.

11. WRITTEN COMMENT:

The definition of a "source category" should be revised to clarify how the rule applies to a particular source category.

DISTRICT RESPONSE:

As was noted previously, the proposed changes to Rule 68 have been significantly revised. The term "source category" is no longer used in the rule.

12. WRITTEN COMMENT:

The proposed compliance schedule may not be compatible with a company's budgeting process. Are other alternatives to the compliance schedule available other than filing for a variance?

DISTRICT RESPONSE:

The compliance schedule referred to was necessary to meet federal requirements. Obtaining a variance is the only allowed procedure for deviating from any compliance schedule in the District rules. However, since revised Rule 68 has no new emission standards the compliance schedule is no longer necessary.

13. WRITTEN COMMENT:

The language in the second footnote of Table 1 appears to represent an increased stringency that was not part of the original rule. It has been understood that the exemption limit may apply at any time, during any year, regardless of the frequency of pre- and post-overhaul testing periods.

DISTRICT RESPONSE:

The rule has been revised to clarify that an exceedance of Rule 68 limits during overhaul testing is allowed for not more than two times per calendar year per each boiler-steam turbine generator set. Also, the definition of "Overhaul Test" in Subsection (c)(11) clearly states that nothing in this rule limits the number of overhaul tests conducted in compliance with the emission limits of Section (d).

14. WRITTEN COMMENT:

The definition of "overhaul testing" should be revised to reflect that it may occur at a range of typical operating conditions.

DISTRICT RESPONSE:

The District agrees. Subsection (c)(12) has been revised as suggested.

15. WRITTEN COMMENT:

The proposed language in Subsection (b)(5) is contrary to the current compliance practices of Rule 68.

DISTRICT RESPONSE:

The District agrees. Subsection (b)(5) has been revised to reflect the current compliance practices of Rule 68.

16. WRITTEN COMMENT:

Subsection (e)(2)(ii) should be revised to reflect that in many cases a boiler's heat input is not recorded, but calculated from recorded values of fuel flow and the fuel's heating value.

DISTRICT RESPONSE:

The District agrees. This subsection has been revised as suggested.

17. WRITTEN COMMENT:

Subsection (f)(5) should be revised to allow for equivalent methods to measure initial steam turbine metal temperature. Innovative, cost-effective and reliable devices other than thermocouples are available.

DISTRICT RESPONSE:

The District agrees. The rule has been revised to allow alternative methods to measure the steam metal turbine temperature provided the methods are approved in advance by the District and the Environmental Protection Agency.

18. WRITTEN COMMENT:

Subsection (f)(6) requires submittal of a source test protocol. The applicability and the procedure for submittal need to be clarified, including the District's approval process, the time frame of the approval, and anticipated frequency of submittal of such protocols.

DISTRICT RESPONSE:

Subsection (f)(6) is applicable to all combustion equipment that is subject to Rule 68. The source test protocol should be submitted to the District at least 30 days before the actual date of the test. The District anticipates that once a protocol is approved and has been used, the same protocol will be used

each year unless the equipment operation is significantly modified, test methods change or the protocol requires upgrading.

19. WRITTEN COMMENT:

Diesel-fired engines used for emergency electrical power generation at nuclear power stations should be exempt from the rule because they are regulated by the U.S. Nuclear Regulatory Commission (NRC) which imposes specific time requirements for the maintenance of emergency generators to comply with the NRC safety standards.

DISTRICT RESPONSE:

The rule has been revised to exempt internal combustion engines at nuclear generating stations provided that they are only used for safety compliance testing required by the NRC. However, these engines will be likely subject to Rule 69.4 -- Internal Combustion Engines, which is currently being developed by the District unless EPA specifically approves such an exemption.

20. EPA COMMENT:

The proposed amended Rule 68 does not provide the level of NOx emission control reflecting Reasonably Available Control Technology (RACT) for some major sources of NOx emissions in San Diego County as required by the Federal Clean Air Act. Therefore, the proposed amendments to Rule 68 cannot be approved by EPA.

DISTRICT RESPONSE:

As stated earlier in this workshop report, the proposed draft of Rule 68 has been significantly revised in response to EPA comments. The NOx emission standards of Rule 68, which is part of the District's State Implementation Plan, represent a RACT level of control for major sources of NOx emissions subject to the rule. All amendments related to control requirements for other major sources of NOx emissions presently exempt from the rule have been deleted.

Because of a recent change in EPA's guidance on what equipment must be subject to RACT requirements, Rule 68 cannot be amended to apply to major sources of NOx emissions which have combustion equipment belonging to different source categories. Therefore, the District is planning to submit to EPA three source specific rules regulating NOx emissions from industrial and commercial boilers, stationary turbines and internal combustion engines that are presently exempt from Rule 68 due to their heat input ratings. These rules will satisfy federal RACT requirements for major stationary sources of NOx.

Rule 68 also currently exempts turbines and jet engine test cells that are major sources of NOx emissions. The District will provide to EPA Alternative RACT documentation to justify the technological and economic infeasibility of RACT level controls for these sources.

21. EPA COMMENT:

Sources claiming the exemption for internal combustion engines in Subsection (b)(5) should be required to maintain the appropriate records to verify this exemption.

DISTRICT RESPONSE:

The District agrees. The rule has been revised as suggested.

22. EPA COMMENT:

Subsections (e)(1), (f)(2) and (f)(4) should be revised to include federal requirements. Although these subsections refer to the District Rule 19.2 which provides requirements for sources using continuous emission monitoring, Rule 19.2 does not include the quality assurance procedures of 40 CFR 60, Appendix F. Continuous emission monitors are subject to the quality assurance procedures of 40 CFR 60, App. F, when they are used to demonstrate compliance.

DISTRICT RESPONSE:

The rule has been revised to include reference to the more recent regulation, 40 CFR 75, which provides all necessary requirements including quality assurance procedures for continuous emission monitors installed on utility boilers subject to that federal regulation. Two other sources in San Diego County, stationary turbines where continuous emission monitors are installed, will be subject to Rule 69.3 -- Stationary Combustion Turbines, which is currently being developed. This rule will have the appropriate requirements for continuous emission monitoring complying with federal regulations. Rule 69.3 will be submitted to EPA before October 21, 1994.

23. EPA COMMENT

Subsection (f)(4) should require that the one-hour average must be computed from four or more data points equally spaced over the clock-hour.

DISTRICT RESPONSE:

The District agrees. Rule 68 has been revised as suggested.

24. EPA COMMENT:

Emission factors derived from source test data are preferred over manufacturers' emissions data and AP-42 emission factors. Subsection (f)(1) should be revised to reflect this.

DISTRICT RESPONSE:

Subsection (f)(1) is not needed and has been deleted. Therefore, this comment is no longer applicable.

25. EPA COMMENT:

Test methods specified in the proposed rule which deviate from EPA-approved test methods must be submitted with validation data for evaluation. Approval of Rule 68 is contingent upon the EPA approving District Method 7.

DISTRICT RESPONSE:

The District's Method 7 is being submitted to EPA for approval. It is identical to the EPA Reference Method 7 except that the District's method requires two extra samples to be taken in case the first samples are lost or contaminated.

26. EPA COMMENT:

Subsection (b)(5) is unclear. A definition for a term "maintenance" may be appropriate.

DISTRICT RESPONSE:

Subsection (b)(5) has been revised to clarify the District's intent.

27. EPA COMMENT:

The term "no maximum" in Table 1 needs clarification.

DISTRICT RESPONSE:

The term "no maximum" means that there are no limits for operating hours at these conditions since the limits specified in Table 1 are equal to the general NOx emission standards of Section (d).

28. EPA COMMENT:

The definition of "fuel change" should state the length of a period when this change is occurred.

DISTRICT RESPONSE:

The District disagrees. There is no need to limit the length of time for the fuel change since the NOx concentration limits for this operation specified in Table 1 are the same as emission standards of Subsection (d)(1).

29. EPA COMMENT:

An equation should be provided in Section (d) for determining the allowable NOx concentration when more than one type of fuel is used.

DISTRICT RESPONSE:

The District agrees. Section (d) has been revised to describe how the allowable NOx concentration is calculated when more than one type of fuel is used.

30. ARB COMMENT:

Subsection (d)(2)(iv) requires NOx emissions to be reduced by 80 percent. This section should describe how baseline emissions are to be determined.

DISTRICT RESPONSE:

Subsection (d)(2) is not needed and has been deleted. Therefore, this comment is no longer applicable.

31. ARB COMMENT:

Section (f) should be revised to require the latest source test data approved by the Air Pollution Control Officer be used. If these data are not available, then manufacturer's data should be used. If both source test data and manufacturer's data are not available, then data from such sources as EPA's AP-42 should be used.

DISTRICT RESPONSE:

This comment is no longer applicable since the revised rule does not contain provisions in Section (f) which would require determining the total amount of NOx emissions.

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PROPOSED AMENDMENTS TO RULE 68

RULE 68. FUEL-BURNING EQUIPMENT - OXIDES OF NITROGEN

(a) APPLICABILITY

Except as provided in Section (b), this rule is applicable to any non-vehicular, fuel-burning ~~article, machine,~~ equipment ~~or other contrivance~~ which ~~having~~ has a maximum heat input rating of 50 million British Thermal Units (Btu ~~BTU~~) (12.6×10^6 kcal) per hour (gross) or more.

(b) EXEMPTIONS

The provisions of this rule shall not apply to:

(1) Any article, machine, equipment, facility, or other contrivance used exclusively for the testing of turbine engines or their components.

(2) ~~A person discharging into the atmosphere from any article, machine,~~ Any equipment or other contrivance used exclusively for the processing and combustion of municipal solid waste ~~(i.e., Group 2 Solid Waste, as defined in Section 2521 of Title 23 of the California Administrative Code)~~ provided that emissions of nitrogen oxides, calculated as nitrogen dioxide (NO_2) at three percent oxygen (O_2) on a dry basis, meet the requirements of Lowest Achievable Emission Rate (LAER) ~~Best Available Control Technology (BACT)~~ as defined in Rule 20.1. ~~For the purposes of this exemption BACT shall be determined when the applicable Authority to Construct is issued. The cost-effectiveness exemption of Rule 20.2(b) shall not apply in making this determination.~~

(3) Turbine engines during a continuous 30-minute period for startup, a continuous 30-minute period for shutdown and a continuous 30-minute period during a fuel change ~~switching~~.

(4) Diesel-fired internal combustion engines at nuclear generating stations when used only for safety compliance testing of emergency electrical power generation as required by the Nuclear Regulatory Commission .

~~(4)~~ (5) Boiler-steam turbine generator sets ~~Steam generators~~ installed prior to January 1, 1966, with a maximum heat input of 2200 million ~~BTU's~~ Btu per hour or less, ~~when in operation~~ during startup, fuel change, low load, or pre- or post-overhaul tests, provided that their operations conforms to an operating condition described in Table 1 and ~~emissions do not exceed conditions~~ that NOx emissions concentration does not exceed an applicable exemption limit specified in Table 1. ~~operations conform to and emissions do not exceed conditions~~ ~~The actual duration of the emissions specified in this exemption shall not exceed the maximum duration specified for the operating condition. "Emissions Limits" are for oxides of nitrogen, expressed as nitrogen dioxide (NO_2), calculated at three percent oxygen (O_2) on a dry basis.~~

Compliance with exemption limits specified in Table 1 shall be determined by the method described in Section (g).

It is the responsibility of any person claiming an exemption, pursuant to Subsection (b)(5), to maintain records in accordance with Section (e) of this rule.

Table 1: Exemption Limits

	Maximum Gross Heat Input Rate ~~in~~ (Million Btu ~~'~~s Per Hour)			
	Less than 1200		1200 to 2200	
	~~Average~~ Exemption Limit (ppm)	Maximum ~~Duration~~ Number of Allowable Exceedances (Clock-Hours)	~~Average~~ Exemption Limit (ppm)	Maximum ~~Duration~~ Number of Allowable Exceedances (Clock-Hours)
Operating Condition:				
Cold Startup (Gas)	175	8	250	8
Cool Startup (Gas)	175	5	250	5
Warm Startup (Gas)	175	3	200	3
Hot Startup (Gas)	175	2	200	2
Fuel Change *	225 ~~no change~~	no maximum ~~change~~	250	1
Low Load (Gas)	125 ~~no change~~	no maximum ~~change~~	175	no maximum ~~limit~~
Low Load (~~Oil~~ Liquid)	225 ~~no change~~	no maximum ~~change~~	300	no maximum ~~limit~~
Overhaul Test (Gas)**	125 ~~no change~~	no maximum ~~change~~	200	3

* For the purposes of this Subsection, a fuel change shall be considered ~~an oil~~ a liquid fuel operation.

** The exemption limit for "Overhaul Test" shall not be used more than two times per calendar year per each boiler-steam turbine generator set.

(c) **DEFINITIONS**

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

~~(1) **"Hot Startup" means initial steam turbine metal temperature is greater than 800° F.**~~

~~(2) **"Warm Startup" means initial steam turbine metal temperature is greater than 600° F.**~~

~~(3) **"Cool Startup" means initial steam turbine metal temperature is greater than 300° F.**~~

~~(4) **"Cold Startup" means initial steam turbine metal temperature is less than 300° F.**~~

~~(5) **"Fuel Change" means a temporary period during which there occurs a switch between oil, gas or any combination of oil or gas fuels.**~~

~~(6) "Low Load" means boiler operation at less than 25 percent of rated capacity.~~

~~(7) "Overhaul Test" means testing of turbine overspeed protection devices.~~

~~(8) "Average ppm" is the average of all hourly (average) emission concentrations, over the actual duration of the specified operating conditions that exceed 125 ppm for gas fuel operations and 225 ppm for oil fuel operations.~~

~~(9) "No Change" means there is no exemption and the standards of this rule are applicable.~~

(1) **"Boiler"** means any combustion equipment, excluding gas turbines, fired with liquid, gaseous and/or solid fuel and used to produce steam or to heat water. A duct burner/heat exchanger combination installed in the exhaust duct of a gas turbine or internal combustion engine shall not be considered a boiler.

(2) **"Boiler Steam-Turbine Generator Set"** means any combination of equipment consisting of a boiler used to produce steam to be expanded in a turbine generator for the generation of electric power.

(3) **"Clock-Hour"** means every 60-minute period starting on the hour.

(4) **"Cold Startup"** means that, in a boiler-steam turbine generator set, the initial steam turbine metal temperature is less than 300°F (149°C).

(5) **"Cool Startup"** means that, in a boiler-steam turbine generator set, the initial steam turbine metal temperature is greater than 300°F (149°C).

(6) **"Exemption Limit"** means the maximum, allowable concentration of oxides of nitrogen, (NOx), by volume, specified in Table 1, and expressed as nitrogen dioxide (NO_2), calculated at three percent oxygen (O_2) on a dry basis.

(7) **"Exceedance"** means an occurrence when the average clock-hour NOx emissions concentration is greater than a NOx emissions limit specified in Section (d). Such an exceedance may qualify for compliance with the exemption limits specified in Subsection (b)(5).

(8) **"Fuel Change"** means a transitory period when a switch occurs between oil, gas or any combination of liquid or gaseous fuels.

(9) **"Hot Startup"** means that, in a boiler-steam generator turbine generator set, the initial steam turbine metal temperature is greater than 800°F (427°C).

(10) **"Low Load"** means boiler operation at less than 25 percent of rated capacity, when not performing an overhaul test.

(11) **"Municipal Solid Waste"** means Group 2 Solid Waste, as defined in Section 2521 of Title 23 of the California Administrative Code.

(12) "Overhaul Test" means testing of turbine-control and protective devices, which are conducted at varying load conditions. Nothing in this rule shall be construed to limit the number, type or load conditions of overhaul tests conducted in compliance with the emission limits of Section (d).

(13) "Warm Startup" means that, in a boiler-steam turbine generator set, the initial steam turbine metal temperature is greater than 600°F (316°C).

(d) **STANDARDS**

~~(1) A person shall not discharge into the atmosphere from an article, machine, equipment or other contrivance subject to the provisions of this rule, air contaminants having a~~ Emissions of nitrogen oxides, from any non-vehicular fuel burning equipment subject to this rule, calculated as nitrogen dioxide ~~(NO_2)~~ at three percent oxygen ~~(O_2)~~ on a dry basis, shall not exceed the following levels: ~~in excess of that shown in the following table~~:

Type of Fuel	Nitrogen Oxides, Concentration Volume (parts per million [ppm])	Mass (mg/m^3, at [20°C])
(i) Gaseous	125	240
(ii) Liquid or Solid	225	430

~~Type of Fuel~~	~~Nitrogen Oxides, Parts per Million~~
~~a. Gas~~	~~125 (240 mg/m^3, mass, at 20° C)~~
~~b. Liquid or Solid~~	~~225 (430 mg/m^3, mass, at 20° C)~~

~~For purposes of this rule, in calculating the concentration of nitrogen oxides the percentage of oxygen (O_2) in the ambient air and in the source emissions shall be determined at the same time and at the same site.~~

When more than one type of fuel is used, the allowable NOx concentration shall be determined by proportioning the gross heat input for each fuel to its respective allowable concentration.

(e) **RECORDKEEPING REQUIREMENTS**

(1) When continuous emission monitors are installed on equipment subject to the provisions of this rule, pursuant to Rule 19.2, the operator shall record, at a minimum, the following information:

(i) Unit identification

(ii) Time of measurement

(iii) Fuel type burned

(iv) Measured oxygen level (%)

(v) Uncorrected NOx emission concentration (ppm) at the measured oxygen level

(vi) Corrected NOx emission concentration (ppm) at 3% O_2

(2) Notwithstanding provisions of subsection (f)(1), fuel-burning equipment subject to the requirements of 40 CFR 75 (Continuous Emission Monitoring) shall comply with all applicable provisions of that regulation.

(3) When a boiler-steam turbine generator set is operating under the criteria of Subsection (b)(5), the following information, at a minimum, shall be recorded:

(i) Unit identification

(ii) Heat input or calculated heat input (Btu/hr)

(iii) Operating conditions as specified in Table 1 and defined in Section (c)

(iv) Operating condition start and finish times and date(s)

(v) Duration of the operating condition

(vi) Initial steam turbine metal temperature (°F or °C)

(vii) Unit load (megawatts)

(viii) Fuel type burned at start of operating condition

(ix) Fuel type burned at end of operating condition

(x) Total time each fuel type was burned during operating condition

(xi) Measured oxygen level (%)

(xii) Uncorrected NOx emission concentration (ppm) at the measured oxygen level

(xiii) Each clock-hour emission concentration (ppm) over the duration of the operating condition, corrected to 3% O_2

(xiv) Average of all clock-hour emission concentrations (ppm) over the duration of the operating condition, corrected to 3% O_2

(3) The owner or operator of any unit exempt from the requirements of this rule, pursuant to Subsection (b)(3), shall maintain records of the hours of operation during the operating conditions described therein.

(4) The owner or operator of any unit subject to this rule shall maintain all records required by Section (e) for a minimum of three years. These records shall be maintained on the premises and made available to the District upon request.

(f) **TEST METHODS**

(1) Measurement of the average NOx emissions concentration subject to Section (d) shall be conducted in accordance with District Method 7 or 20, or with continuous emission monitors which are installed on equipment pursuant to District Rule 19.2, or to 40 CFR 75, as applicable. An exceedance detected by any of the methods described above shall be considered a violation of this rule.

(2) When District Method 7 or 20 is used to determine compliance with Section (d), the averaging period to calculate the average NOx emissions concentration shall be any sixty consecutive minute period.

(3) When continuous emissions monitors are installed on equipment pursuant to Rule 19.2 or to 40 CFR 75, as applicable, and are used to determine compliance with Section (d), the averaging period to calculate the average NOx emissions concentration shall be every clock-hour. The average NOx emissions concentration shall be computed from four or more data points equally spaced over the clock-hour.

(4) Measurements of emissions concentrations shall not include calibration or span check measurements of the emissions testing equipment.

(5) As specified in Subsection (b)(5) and defined in Section (c), startup conditions shall be determined by using pre-calibrated thermocouples to measure the initial steam turbine metal temperature at the first stage of the steam turbine. Other methods to measure this temperature can be used provided that they are approved in advance by the Air Pollution Control Officer and the Environmental Protection Agency.

(6) A source test protocol shall be submitted prior to testing, and approved in writing by the Air Pollution Control Officer.

(g) PROCEDURE FOR COMPLIANCE DETERMINATION WITH THE EXEMPTION LIMITS IN TABLE 1

The following procedure shall be used to determine compliance with the exemption limits specified in Subsection (b)(5), Table 1:

(1) Determine if boiler-steam turbine generator set operation conforms to an operating condition specified in Table 1.

(2) Determine the average NOx emissions concentration, C_{av}, over such operating condition using the following equation:

$$C_{av} = \frac{\sum_{i=1}^{n} Ci}{n} = \frac{C_1 + C_2 + \cdots + C_n}{n}$$

where,

C_i = the actual clock-hour NOx emissions concentration which was an exceedance of the standards specified in Section (d) during an operating condition specified in Table 1.

i = 1 through n where:

1 = the first clock-hour during the operating condition when an exceedance of the standards specified in Section (d) occurred; and

n = the actual number of clock-hours during the operating condition when an exceedance of the standards specified in Section (d) occurred. "n" shall not be greater than the maximum number of allowable exceedances of the standards of Section(d) as specified in Table 1, and shall be in chronological order following C_1.

(3) Compare C_{av} to the exemption limit corresponding to the operating condition specified in Table 1. If C_{av} is less than or equal to the exemption limit in Table 1, then the operation is in compliance with Subsection (b)(5).