

## SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

### **RULE 4305 - BOILERS, STEAM GENERATORS, AND PROCESS HEATERS**

*(Adopted December 16, 1993; Amended March 16, 1995; Amended December 19, 1996; Amended December 19, 2002)*

#### 1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen from boilers, steam generators, and process heaters.

#### 2.0 Applicability

This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with rated heat input greater than 5 million Btu per hour.

#### 3.0 Definitions

- 3.1 Annual Heat Input: the actual, total heat input of fuels burned by a unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.
- 3.2 Boiler or Steam Generator: any external combustion equipment fired with any fuel used to produce hot water or steam.
- 3.3 Box or Cabin Type Unit: a natural or induced draft unit with a rated heat input equal to or less than 40 MMBtu/hr, and which has a rectangular shaped radiant section with any horizontal distance between opposite inner walls of 12 feet or less. Said unit must be permanently installed at a gas processing plant or petroleum refinery and have a valid Permit to Operate on December 19, 1996.
- 3.4 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59° F to 60° F at one atmosphere.
- 3.5 Dryer: any unit in which material is dried in direct contact with the products of combustion.
- 3.6 Gaseous fuel: any fuel which is a gas at standard conditions.
- 3.7 Heat Input: the heat (hhv basis) released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.
- 3.8 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

- 3.9 Induced Draft Unit: a unit with an air fan located downstream of the combustion chamber, which creates negative pressure on the combustion chamber. This negative pressure draws, or induces, combustion air into the burner register.
- 3.10 Liquid Fuel: any fuel which is a liquid at standard conditions.
- 3.11 Natural Draft Unit: a unit with no combustion air fan or exhaust fan.
- 3.12 NO<sub>x</sub> Emissions: the sum of oxides of nitrogen expressed as NO<sub>2</sub> in the flue gas.
- 3.13 Parts Per Million by Volume (ppmv): the ratio of the number of gas molecules of a given species, or group of species, to the number of millions of total gas molecules.
- 3.14 Process Heater: any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams. This definition excludes: kilns or ovens used for drying, baking, cooking, calcining, or vitrifying; and unfired waste heat recovery heaters used to recover sensible heat from the exhaust of combustion equipment.
- 3.15 Rated Heat Input (million Btu per hour): the heat input capacity specified on the nameplate of the unit. If the unit has been physically modified such that its maximum heat input differs from what is specified on the nameplate, the modified maximum heat input shall be considered as the rated heat input and made enforceable by Permit to Operate.
- 3.16 Replacement Standby Unit: a unit permanently installed at a single stationary source that replaces a primary unit during breakdown or maintenance of the primary unit. Simultaneous operation of the replacement standby unit and the primary unit shall not occur except during start-up or shutdown of the primary unit.
- 3.17 Small Producer: a person who is engaged exclusively in the production of oil, and who produces an average of less than 6000 barrels of crude oil per day from all operations in any one county within the District, and who does not engage in refining, transporting or marketing of refined petroleum products.
- 3.18 Solid Fuel: any fuel which is a solid at standard conditions.
- 3.19 Standard Conditions: standard conditions as defined in Rule 1020 (Definitions).
- 3.20 Unit: any boiler, steam generator or process heater as defined in this rule.
- 3.21 Vertical Cylindrical Process Heater: a bottom-firing, cylindrical natural draft process heater with a rated heat input equal to or less than 40 million Btu/hr. Such unit shall be located at a petroleum refinery.

#### 4.0 Exemptions

- 4.1 This rule shall not apply to:
  - 4.1.1 Solid fuel fired units.
  - 4.1.2 Dryers and glass melting furnaces.
  - 4.1.3 Kilns and smelters where the products of combustion come into direct contact with the material to be heated.
  - 4.1.4 Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines.
  - 4.1.5 Any unit in which the rated heat input of each burner is less than or equal to 5 million Btu per hour as specified on the Permit to Operate, and in which each burner's products of combustion do not come into contact with the products of combustion of any other burner.
- 4.2 The requirements of Section 5.1 and 5.3 shall not apply to a unit when burning any fuel other than natural gas during natural gas curtailment provided fuels other than natural gas are burned no more than 336 cumulative hours in a calendar year plus 48 hours per calendar year for equipment testing, as limited by Permit to Operate.
- 4.3 Except for the provisions of Section 6.1 and either Section 5.2.1 or 5.2.2, this rule shall not apply to units operated exclusively in the months of November, December, January, or February for less than 500 hours during these four consecutive months as limited by Permit to Operate.
- 4.4 Equipment modified or installed for the sole purpose of complying with the requirements of this rule shall be exempt from the Best Available Control Technology (BACT) and Offset requirements of District Rule 2201 (New and Modified Stationary Source Review Rule) provided that:
  - 4.4.1 the proposed project will not result in an increase in capacity utilization of the unit being controlled.
  - 4.4.2 the facility operator demonstrates to the satisfaction of the APCO that the proposed project is environmentally beneficial and will not cause or contribute to any violation of a national ambient air quality standard (NAAQS), prevention of significant deterioration (PSD) increment, or air quality related value (AQRV) in a class I area.
- 4.5 The modification of a Permit to Operate to increase fuel use limits (billion Btu/yr) shall be exempt from the BACT and Offset requirements of Rule 2201, provided:

- 4.5.1 the existing fuel use limit was established prior to July 1, 1996 for Rule 4305 purposes,
- 4.5.2 the owner of any such unit submits a complete application for ATC, for modification of the fuel use limitation, by May 31, 1997, and
- 4.5.3 the succeeding Permit to Operate is conditioned to ensure that future fuel use does not exceed the maximum fuel use allowed before the Rule 4305 fuel use limitation was established.

5.0 Requirements

All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen in accordance with Section 8.1.

5.1 Except for units subject to Section 5.2, NOx emissions shall not exceed:

|       |  |                           |                           |
|-------|--|---------------------------|---------------------------|
| 5.1.1 |  | Operated on Gaseous fuel  | Operated on Liquid Fuel   |
|       | For all units, except box or cabin type units and vertical cylindrical process heaters | 30 ppmv or 0.036 lb/MMBtu | 40 ppmv or 0.052 lb/MMBtu |
|       | For box or cabin type units, and vertical cylindrical process heaters                  | 147 ppmv or 0.18 lb/MMBtu | 155 ppmv or 0.2 lb/MMBtu  |

5.1.2 the heat input weighted average of the limits specified in Sections 5.1.1 when operated on combinations of gaseous fuel and liquid fuel.

5.2 For each unit with an annual heat input less than 30 billion Btu as made enforceable by Permit to Operate, or any replacement standby unit with an annual heat input less than 90 billion Btu as made enforceable by Permit to Operate, the owner shall comply with one of the following:

- 5.2.1 tune the unit at least once each calendar year in which it operates by a technician that is qualified, to the satisfaction of the APCO, in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters); or
- 5.2.2 operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis; or
- 5.2.3 operate the unit in compliance with the applicable emission requirements of Sections 5.1 and 5.3.

5.3 For units subject to Section 5.1, carbon monoxide emissions shall not exceed 400 ppmv.

5.4 Monitoring Provisions

Before any unit is operated,

5.4.1 the owner of any unit which simultaneously fires gaseous and liquid fuels, and is subject to the requirements of Section 5.1 and 5.3, shall install and maintain a non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be compensated for temperature and pressure.

5.4.2 the owner of any unit equipped with NO<sub>x</sub> reduction technology shall either install and maintain continuous emissions monitoring equipment for NO<sub>x</sub>, CO, and oxygen, as identified in Rule 1080 (Stack Monitoring), or install and maintain APCO-approved alternate monitoring consisting of one or more of the following:

5.4.2.1 periodic NO<sub>x</sub> and CO exhaust emission concentrations,

5.4.2.2 periodic exhaust oxygen concentration,

5.4.2.3 flow rate of reducing agent added to exhaust,

5.4.2.4 catalyst inlet and exhaust temperature,

5.4.2.5 catalyst inlet and exhaust oxygen concentration,

5.4.2.6 periodic flue gas recirculation rate,

5.4.2.7 other operational characteristics.

5.4.3 For units without NO<sub>x</sub> reduction technology, monitor operational characteristics recommended by the manufacturer and approved by the APCO.

5.4.4 the owner of any unit subject to Section 5.2.1 or 5.2.2 shall install and maintain a non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure. A master meter, which measures fuel to all units in a group of similar units, may satisfy these requirements if approved by the APCO in writing. The cumulative annual fuel usage may be verified from utility service meters, purchase or tank fill records, or other acceptable methods, as approved by the APCO.

## 5.5 Compliance Determination

5.5.1 The owner of any unit shall have the option of complying with either the heat input (lb/MMBtu) emission limits or the concentration (ppmv) emission limits specified in Section 5.1. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

5.5.2 All emissions measurements shall be made with the unit operating at normal firing rate, air-to-fuel ratio, and fuel quality. No determination of compliance with the requirements of Section 5.1 or 5.3 shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or during start-up, shutdown, or breakdown conditions.

5.5.3 All emissions measurements shall be averaged in accordance with the applicable test methods in Section 6.2. Emissions from units with continuous monitoring systems (CEMS) shall be averaged in accordance with the requirements of 40 CFR Part 60.13. Any averaged CEMS value exceeding an applicable emission limit shall constitute a violation of this rule.

5.6 The owner of any functionally identical replacement for a box or cabin type unit shall not operate such unit in a manner which results in a measured NO<sub>x</sub> emissions concentration of greater than 30 ppmv when firing on gaseous and 40 ppmv when firing on liquid fuel.

## 6.0 Administrative Requirements

### 6.1 Recordkeeping

Records shall be maintained for two calendar years and shall be made available to the APCO upon request.

6.1.1 The owner of any unit operated under the exemption of Section 4.2 shall monitor and record for each unit the cumulative annual hours of operation on each fuel other than natural gas during curtailment and during testing.

6.1.2 The owner of any unit operated under the exemption of Section 4.3 shall monitor and record for each unit the cumulative annual hours of operation.

6.1.3 The owner of any unit subject to Section 5.2.1 or 5.2.2 shall record the amount of fuel use on a monthly basis for each unit, or for a group of units as specified in Section 5.4.4.

### 6.2 Test Methods

6.2.1 Fuel hhv shall be certified by third party fuel supplier or determined by:

- 6.2.1.1 ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels;
- 6.2.1.2 ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.
- 6.2.2 Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100.
- 6.2.3 Carbon monoxide (ppmv) - EPA Method 10, or ARB Method 100.
- 6.2.4 Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.
- 6.2.5 NOx Emission Rate (Heat Input Basis) - EPA Method 19.
- 6.2.6 Stack gas velocities - EPA Method 2.
- 6.2.7 Stack gas moisture content - EPA Method 4.

### 6.3 Compliance Testing

- 6.3.1 Each unit subject to Section 5.1 or 5.2.3 shall be tested to determine compliance with the applicable requirements of Section 5.1 and 5.3 not less than once every 12 months. Gaseous fuel fired units demonstrating compliance on two consecutive compliance source tests may defer the following source test for up to thirty-six months.
- 6.3.2 In lieu of compliance with Section 6.3.1, compliance with the applicable limits shall be demonstrated by submittal of annual emissions test results to the District from a unit or units that represents a group of units, provided:
  - 6.3.2.1 All units are initially source tested and the emissions from all units in the group are similar; and
  - 6.3.2.2 All units in a group are similar in terms of rated heat input, make and series, operational conditions, fuel used, and control method; and
  - 6.3.2.3 The group is owned by a single owner and is located at a single stationary source; and
  - 6.3.2.4 Selection of the representative unit(s) is approved by the APCO prior to testing; and
  - 6.3.2.5 The number of representative units source tested shall be at least 10% of the total number of units in the group; and
  - 6.3.2.6 All units in the group shall have received the same maintenance and tune-up procedures as the representative unit(s); and
  - 6.3.2.7 Should any of the representative units exceed the required emission limits, each of the units in the group shall demonstrate compliance by emissions testing. Failure to complete emissions

testing within 90 days of the failed test shall result in the untested units being in violation of this rule.

6.3.3 Once Section 6.3.2.7 has been satisfied, subsequent testing shall be performed pursuant to Section 6.3.1 or 6.3.2

6.4 Emission Control Plan

Effective December 19, 1996, the owner of any unit shall submit to the APCO for approval an Emissions Control Plan according to the schedule in Section 7.1. For each unit, the plan shall contain the following:

- 6.4.1 Permit to Operate number,
- 6.4.2 Fuel type and hhv,
- 6.4.3 Annual fuel consumption (Btu/yr),
- 6.4.4 Current emission level, including method used to determine emission level, and
- 6.4.5 Plan of actions, including a schedule of increments of progress, which will be taken to satisfy the requirements of Section 5.0 and the compliance schedule in Section 7.0.

7.0 Compliance Schedule

7.1 Group I through Group VII units, as defined in Sections 7.1.1 through 7.1.7, shall be in compliance with applicable requirements according to the schedule listed in Table 1:

TABLE 1 - Compliance Schedules

| Group | Emission Control Plan                      | ATC Application | Full Compliance |
|-------|--|-----------------|-----------------|
| I     | 6/16/95                                    | 6/16/95         | 12/16/97        |
| II    | 6/16/95                                    | 6/16/97         | 12/16/99        |
| III   | 6/16/95, except as provided in Section 7.3 | 6/16/98         | 12/31/2000      |
| IV    |  |                 | 12/16/94        |
| V     | 6/19/97                                    |                 | 12/19/97        |
| VI    | 6/19/97                                    | 6/19/97         | 5/31/99         |



|     |         |         |           |
|-----|---------|---------|-----------|
| VII | 6/19/97 | 5/31/99 | 5/31/2001 |
|-----|---------|---------|-----------|

- 7.1.1 Group I units are those with annual heat input equal to or greater than 90 billion Btu requiring the installation of equipment to comply with applicable requirements.
- 7.1.2 Group II units are those with annual heat input equal to or greater than 90 billion Btu requiring the installation of equipment to comply with applicable requirements, and that meet one or more of the conditions in Sections 7.1.2.1 through 7.1.2.5.
  - 7.1.2.1 On June 16, 1995, the unit's NOx emissions were within 0.025 lb/MMBtu of the applicable limit in Section 5.1, and
    - 7.1.2.1.1 the unit's Permit to Operate limited NOx emissions to within 0.025 lb/MMBtu of the applicable limit in Section 5.1, or
    - 9.6.3.5.7 a complete application for Authority to Construct had been submitted to limit the unit's NOx emissions to within 0.025 lb/MMBtu of the applicable limit in Section 5.1.
  - 7.1.2.2 On June 16, 1995, the unit had a rated heat input of less than or equal to 35 million Btu per hour; or
  - 7.1.2.3 On June 16, 1995, the unit was identified to be shutdown or replaced to comply with this rule; or
  - 7.1.2.4 On June 16, 1995, the method of achieving compliance identified a change of fuel type or quality; or
  - 7.1.2.5 On June 16, 1995, the unit was identified as, and continues to be fired exclusively on liquid fuel and is owned by a small producer.
- 7.1.3 Group III units are those associated with any petroleum refinery engaged in the production of state required reformulated fuels.
- 7.1.4 Group IV units are those with annual heat input equal to or greater than 90 billion Btu that do not require the installation of equipment to comply with applicable requirements.
- 7.1.5 Group V units are those:

7.1.5.1 with annual heat input less than 90 billion Btu that do not require the installation of equipment to comply with requirements of Section 5.1, and 5.3; or

7.1.5.2 subject to Section 5.2.1 or 5.2.2.

7.1.6 Group VI units are those:

7.1.6.1 with annual heat input less than 90 billion Btu and requiring the installation of equipment to comply with requirements of Section 5.1, and 5.3; or

7.1.6.2 natural draft units rated less than or equal to 40 MMBtu/hr; or

7.1.6.3 subject to the BACT or Offset exemption in Section 4.5; or

7.1.6.4 box or cabin type units; or

7.1.6.5 vertical cylindrical process heaters.

7.1.7 Group VII units are those:

7.1.7.1 with annual heat input less than 90 billion Btu for which the method of achieving compliance includes change of fuel type or quality; or

7.1.7.2 with annual heat input less than 90 billion Btu which will be shutdown or replaced to comply with this rule.

7.2 As shown in Table 1, the column labeled:

7.2.1 "Emission Control Plan" identifies the date by which the owner shall submit an Emission Control Plan pursuant to Section 6.4 which identifies all units subject to this rule and units exempted by Section 4.3, or an Alternative Emission Control Plan pursuant to Section 9.0. The Emission Control Plan shall identify steps to be taken to comply with this rule.

7.2.2 "ATC Application" identifies the date by which the owner shall submit a complete application for Authority to Construct for necessary modifications to each unit.

7.2.3 "Full Compliance" identifies the date by which the owner shall demonstrate that each unit is in compliance with applicable requirements.

7.3 The owner of any Group III unit shall submit an Emission Control Plan by June 19, 1997 for:

7.3.1 any unit with annual heat input less than 90 billion Btu, or

7.3.2 any natural draft unit with a rated heat input less than or equal to 40 MMBtu/hr.

7.4 The owner of any Group I, II, III, or IV unit that was not in operation on or before December 16, 1993, or any Group V, VI, or VII unit that is not in operation on or before December 19, 1996, shall:

7.4.1 comply with the schedule in Section 7.1, or

9.6.3 submit a complete application for Authority to Construct for any modifications necessary to comply with this rule prior to operation of the unit, and comply with the applicable provisions of this rule upon initial operation of the unit.

9.7 The owner of a unit which, after December 19, 1996, exceeds an hours of operation, fuel use, or heat input limit specified in Sections 4.2, 4.3, or 5.2 shall within 30 days, submit a complete application for Authority to Construct to meet the requirements of this rule . Full compliance with Sections 5.0 and 6.0 shall be demonstrated within 12 months from the date the limit is exceeded or by the appropriate full compliance date in Section 7.1, whichever is later.

## 8.0 Calculations

8.1 All ppmv emission limits specified in Section 5.0 are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen as follows:

$$[ppmNO_x]_{corrected} = \frac{17.95\%}{20.95\% - [\%O_2]_{measured}} \times [ppmNO_x]_{measured}^0$$

$$[ppmCO]_{corrected} = \frac{17.95\%}{20.95\% - [\%O_2]_{measured}} \times [ppmCO]_{measured}^0$$

8.2 All pounds per million Btu NOx emission rates shall be calculated as pounds of nitrogen dioxide per million Btu of heat input (hhv).

## 9.0 Alternative Emission Control

### 9.1 General

The single owner of two or more units may comply with Section 5.1 by controlling units in operation at the same stationary source, or at two contiguous stationary sources, to achieve an aggregated NOx emission factor no higher than the aggregated

NOx emission factor limit that would result if each unit in operation were individually in compliance with Section 5.1. The owner shall submit an Alternative Emission Control Plan (AECPP) that is enforceable by the APCO, and receive written approval of the AECPP from the APCO prior to implementation.

9.2 Eligibility

Any unit subject to Section 5.1 or Section 5.2.3 is eligible for inclusion in an AECPP.

9.3 Exclusion

No unit subject to Sections 5.2.1 or 5.2.2 shall be included in an AECPP.

9.4 AECPP Definitions

For the purposes of Section 9.0, the following definitions shall apply:

9.4.1 Aggregated emission factor limit: the sum of the NOx emissions during the previous 14 calendar days that would result if all units in the AECPP were in compliance with the lb/MMBtu limits in Section 5.1 and operating at their actual firing rates, divided by the sum of the actual 14-day heat input of all units in the AECPP. Aggregated emission factor limit is calculated as:

$$L_A = \frac{\sum L_i F_i}{\sum F_i} Q$$

where:  $L_A$  is the aggregated emission factor limit (lb/MMBtu),  
 $L_i$  is the emission factor limit (lb/MMBtu) for each unit in the AECPP:

0.036 lb/MMBtu for gaseous fuel fired units, or  
0.052 lb/MMBtu for liquid fuel fired units, or  
fuel-weighted average for dual fuel units.

$F_i$  is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during the previous 14 day period, and

$i$  identifies each unit in the AECPP.

9.4.2 Aggregated emission factor: the sum of the actual NOx emissions during the previous 14 calendar days from all units in the AECPP, divided by the sum of the actual 14-day heat input of all units in the AECPP. Aggregated emission factor is calculated as:

$$E_A = \frac{\sum E_i F_i}{\sum F_i} Q$$

where:  $E_A$  is the aggregated emission factor (lb/MMBtu),

$E_i$  is the emission factor (lb/MMBtu) for each unit in the AECF, established and verified by source testing, or continuous emission monitors,

$F_i$  is the total heat input (hhv basis) of fuel (MMBtu) combusted in each unit during the previous 14-day period, and

$i$  identifies each unit in the AECF.

## 9.5 AECF Requirements

The aggregated emission factor ( $E_A$ ) shall not exceed the aggregated emission limit ( $L_A$ ). The owner of any unit in an AECF shall notify the APCO within 24 hours of any violation of this section.

## 9.6 AECF Administrative Requirements

### 9.6.1 The AECF shall:

- 9.6.1.1 Contain all data, records, and other information necessary to determine eligibility of the units for alternative emission control, including but not limited to:
  - 9.6.1.1.1 A list of units subject to alternative emission control,
  - 9.6.1.1.2 Daily average and maximum hours of utilization for each unit,
  - 9.6.1.1.3 Rated heat input of each unit, and
  - 9.6.1.1.4 Fuel type for each unit.
- 9.6.1.2 Present the methodology for recordkeeping and reporting required by Sections 9.6.4 and 9.6.5.
- 9.6.1.3 Demonstrate that the aggregated emission factor will meet the requirements of Section 9.5 on each day.
- 9.6.1.4 Demonstrate that the schedule for achieving AECF NO<sub>x</sub> emission levels is at least as expeditious as the schedule if applicable units were to comply individually with the emission levels in Section 5.0 and the increments of progress in Section 7.0.

## 9.6.2 Revision of AECP

Owners shall demonstrate APCO approval of the AECP prior to applying for a modification to said AECP.

## 9.6.3 Determination of Emissions

9.6.3.1 NO<sub>x</sub> Emission measurements shall be in terms of pounds NO<sub>2</sub> per million Btu heat input.

9.6.3.2 NO<sub>x</sub> and carbon monoxide emission measurements shall be averaged according to procedures and test methods specified in Section 6.0, or by certified continuous emission monitor (CEM) as required by Section 9.6.3.3. Emissions from units with continuous monitoring systems (CEMS) shall be averaged in accordance with the requirements of 40 CFR Part 60.13. Any averaged CEMS value exceeding an applicable emission limit shall constitute a violation of this rule.

9.6.3.3 Each unit identified in the AECP shall be tested to determine its actual emission factor ( $E_i$ ) as required in Section 9.4.2, according to the schedules in Section 6.3. Any unit required by Permit to Operate condition to record NO<sub>x</sub> emissions with a certified CEM shall use the CEM to determine  $E_i$  on a daily basis.

9.6.3.4 All emissions measurements shall be made with the unit operating at normal firing rate, air-to-fuel ratio, and fuel quality. No determination of an actual emission factor shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or during start-up, shutdown, or breakdown conditions.

9.6.3.5 The owner of any unit equipped with NO<sub>x</sub> reduction technology shall either install and maintain continuous emissions monitoring equipment for NO<sub>x</sub>, CO, and oxygen, as identified in Rule 1080 (Stack Monitoring), or install and maintain APCO-approved alternate monitoring consisting of one or more of the following:

9.6.3.5.1 periodic NO<sub>x</sub> and CO exhaust emission concentrations,

9.6.3.5.2 periodic exhaust oxygen concentration,

9.6.3.5.3 flow rate of reducing agent added to exhaust,

9.6.3.5.4 catalyst inlet and exhaust temperature,

9.6.3.5.5 catalyst inlet and exhaust oxygen concentration,

9.6.3.5.6 periodic flue gas recirculation rate,

9.6.3.5.7 other operational characteristics.

9.6.3.6 For units without NO<sub>x</sub> reduction technology, monitor operational characteristics recommended by the manufacturer and approved by the APCO.

#### 9.6.4 AECR Recordkeeping

9.6.4.1 Records shall be maintained for two calendar years and shall be made available to the APCO upon request.

9.6.4.2 For each unit included in the AECR the owner shall maintain the following records for each day:

9.6.4.2.1 fuel type and amount used for each unit ( $F_i$ ),

9.6.4.2.2 the actual emission factor for each unit ( $E_i$ ),

9.6.4.2.3 the total emissions for all units ( $\sum E_i F_i$ ),

9.6.4.2.4 the aggregated emission factor ( $E_A$ ), and

9.6.4.2.5 the aggregated emission factor limit ( $L_A$ ).

#### 9.6.5 Reporting and Annual Updates

Notifications of any violation pursuant to Section 9.5 shall include:

9.6.5.1 name and location of facility,

9.6.5.2 list of applicable units,

9.6.5.3 cause and expected duration of exceedance,

9.6.5.4 the amount of excess emissions,

9.6.5.5 proposed corrective actions and schedule.

#### 9.7 Compliance Schedule

The AECR schedule for achieving reduced NO<sub>x</sub> emission levels shall be at least as expeditious as the schedule if applicable units were to comply individually with the emissions levels of Section 5.0 and the increments of progress in Section 7.0.

#### 9.8 Fees

This section shall be in effect until such time that Regulation III (Fees) are amended to incorporate the following: The fee for establishing or revising an Alternate Emission Control Plan shall be one filing fee pursuant to Rule 3010 (Permit Fee) and an evaluation fee calculated using the staff hours expended and the prevailing weighted labor rate.