BOARD MEETING DATE: November 3, 2023 AGENDA NO. 23

PROPOSAL: Determine That Proposed Amended Rule 2011 - Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions and Proposed Amended Rule 2012 - Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, Are Exempt from CEQA; and Amend Rules 2011 and 2012

SYNOPSIS: Rules 2011 and 2012 establish requirements for CEMS for facilities in the SOx and NOx RECLAIM program, respectively. Proposed Amended Rules 2011 and 2012 will allow an owner or operator to temporarily shutdown a CEMS, when the combustion unit is scheduled to be not operating and generating emissions for an extended period of time, provided specific conditions are met.

COMMITTEE: Stationary Source, September 15, 2023, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:
1. Determining that Proposed Amended Rule 2011 - Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions and Proposed Amended Rule 2012 - Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, are exempt from the requirements of the California Environmental Quality Act; and
2. Amending Rules 2011 and 2012.

Wayne Nastri
Executive Officer

SR:MK:MM:IS:JE

Background

South Coast AQMD has established CEMS monitoring rules to provide guidance and specifications for CEMS installation and operation, and to ensure accuracy and precision of the CEMS when determining compliance with an emission limitation or standard. Regulation XX – RECLAIM contains two rules for CEMS, Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur Emissions (Rule 2011) and Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen Emissions (Rule 2012), which establish

specifications for the installation and operation of CEMS to ensure accuracy and precision of monitoring mass emissions for SOx and NOx, respectively.

In March 2021, the Board adopted Rule 218.2 - Continuous Emission Monitoring System: General Provisions (Rule 218.2) and Rule 218.3 - Continuous Emission Monitoring: Performance Specifications (Rule 218.3) to update CEMS requirements and to prepare for the transition of facilities in NOx RECLAIM to a command-and-control regulatory program. Rule 218.2 contains provisions to address compliance requirements for CEMS under extended shutdowns of basic equipment (minimum of 168 consecutive hours) provided specific conditions are met. Rule 218.3 contains expanded alternative performance requirements for CEMS including a three-point linearity test that addresses a data gap for CEMS with dual span ranges, which may require facility permit holders to report emissions that are higher than they actually are.

The proposed amendments to Rules 2011 and 2012 incorporate existing provisions in Rule 218.2 for CEMS during extended basic equipment shutdowns and the three-point linearity error test in Rule 218.3. Proposed Amended Rule 2011 (PAR 2011) and Proposed Amended Rule 2012 (PAR 2012) are necessary to provide monitoring relief for RECLAIM facilities as they replace and/or modify equipment to comply with landing rules and will provide consistency across South Coast AQMD CEMS rules.

Public Process

The development of PAR 2011 and PAR 2012 was conducted through a public process. A Public Workshop for PAR 2011 and PAR 2012 was held on August 29, 2023.

Proposal

PAR 2011 and PAR 2012 will provide SOx and NOx RECLAIM facilities with an additional compliance pathway for operating CEMS during extended shutdowns (minimum of 168 consecutive hours) of a combustion unit. To qualify for monitoring relief, the Facility Permit holder must demonstrate non-operation of the basic equipment for the entire duration of the shutdown (e.g., disconnecting fuel line and placing blind flange(s)). Furthermore, a CEMS must record zero value data points for a minimum of four hours after the NOx and/or SOx source is shutdown and for a minimum of four hours before the NOx and/or SOx source resumes operation. Missing data procedures do not apply during the extended shutdown, provided that all requirements are met, and all required electronic reports are submitted within 48 hours of passing the CEMS calibration error test.

Additionally, PAR 2011 and PAR 2012 will incorporate a three-point linearity performance test for CEMS to address a data gap in emissions monitoring that may result in over reporting of emissions.

Emission Reductions
PAR 2011 and PAR 2012 provide technical guidelines for the installation and operation of CEMS required by South Coast AQMD rules or permit conditions. PAR 2011 and PAR 2012 do not contain emission limits and the proposed provisions to temporarily shutdown the CEMS is only if there is a prolonged period of time that the combustion unit is not operational; therefore, there are no emission reductions that will result from this rule development.

Key Issues
Throughout the rulemaking process, staff worked with stakeholders to resolve key issues. Staff is not aware of any key remaining issues.

California Environmental Quality Act
Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project (PAR 2011 and PAR 2012) is exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and is included as Attachment M to this Board letter. If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

Socioeconomic Impact Assessment
The proposed amendments to Rule 2011 and Rule 2012 are administrative in nature and do not affect air quality or emission limitations. Therefore, a socioeconomic impact assessment is not required under Health and Safety Code Sections 40440.8 and 40728.5.

Resource Impacts
Existing staff resources are adequate to implement the proposed amendments.

Attachments
A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. Proposed Amended Rule 2011
G. Proposed Amended Rule 2011 Appendix A, Chapter 2
H. Proposed Amended Rule 2011 Appendix A, Attachments A-F
I. Proposed Amended Rule 2012
J. Proposed Amended Rule 2012 Appendix A, Chapter 2
K. Proposed Amended Rule 2012 Appendix A, Attachments A-G
L. Final Staff Report
M. Notice of Exemption from CEQA
N. Board Presentation

ATTACHMENT A

SUMMARY OF PROPOSED AMENDED RULE 2011 AND PROPOSED AMENDED RULE 2012

Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions and Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions
<u>Compliance pathway for CEMS during extended basic equipment shutdowns</u> • NOx and/or SOx source must be non-operational for an extended period (at least 168 consecutive hours) • CEMS must operate for a minimum of four hours after basic equipment shutdown and show zero emissions before being brought offline • Submit a report of the CEMS shutdown to South Coast AQMD • CEMS must pass a calibration error test and run for a minimum of four hours before any emissions are generated and operations resume • Missing data procedures do not apply provided that all required electronic reports are submitted within 48 hours of passing the calibration error test <u>Expanded Alternative Performance Test Options</u> • Includes new provisions for a three-point linearity error test to measure concentrations that fall below ten percent of the higher full scale span value of any range, with the exception of the lowest vendor guaranteed span range

ATTACHMENT B

KEY ISSUES AND RESPONSES

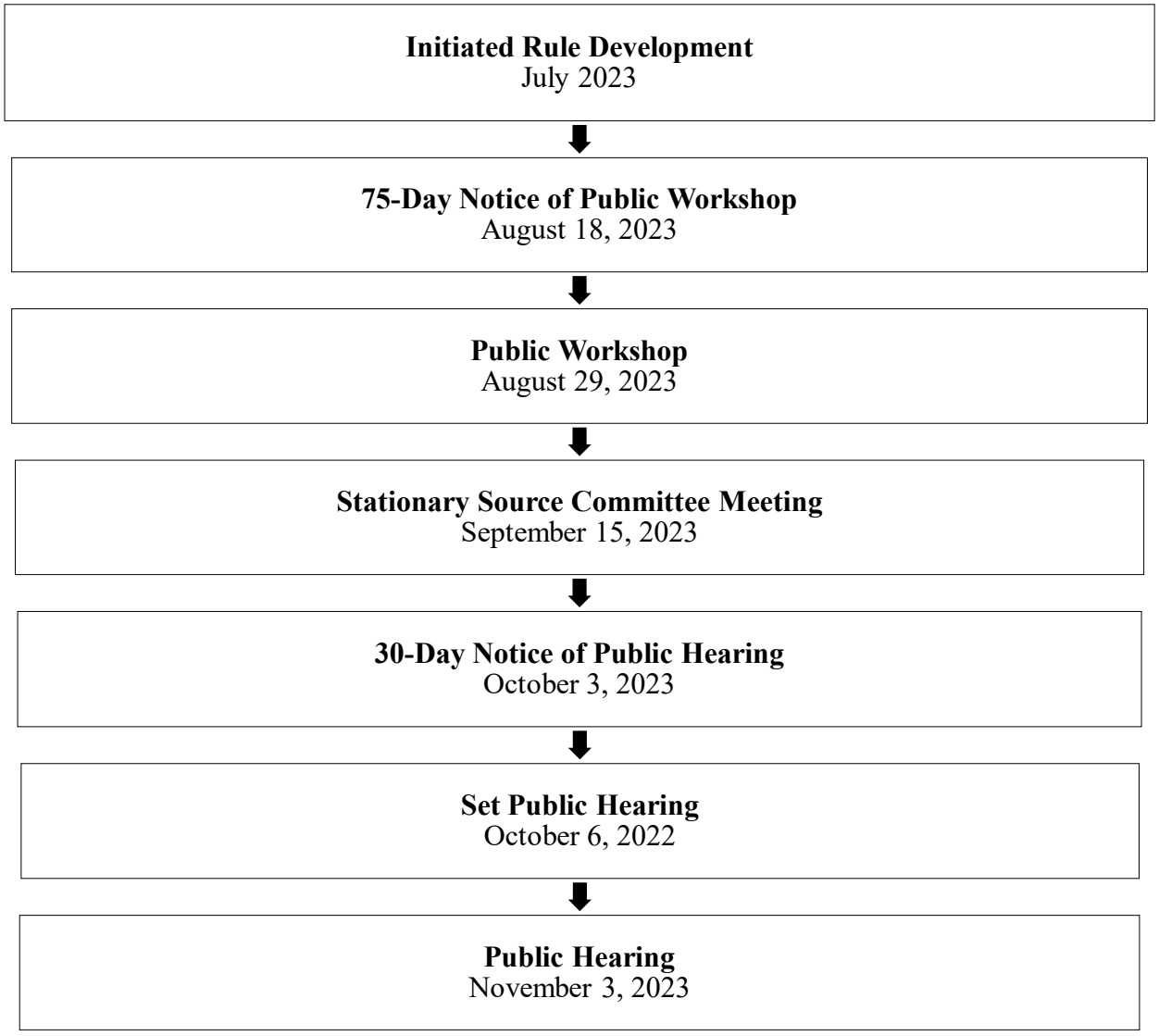
Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions
And
Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions

Throughout the rulemaking process, staff worked with stakeholders to resolve key issues. Staff is not aware of any key remaining issues.

ATTACHMENT C

RULE DEVELOPMENT PROCESS

Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions
And
Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions



Four (4) months spent in rule development
One (1) Public Workshop
One (1) Stationary Source Committee Meeting

ATTACHMENT D

KEY CONTACTS LIST

AES
California Council for Environmental and Economic Balance
Southern California Air Quality Alliance
Southern California Gas Company

ATTACHMENT E

RESOLUTION NO. 23-_____

A Resolution of the Governing Board of the South Coast Air Quality Management District (South Coast AQMD) determining that Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions and Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, are exempt from the requirements of the California Environmental Quality Act (CEQA).

A Resolution of the South Coast AQMD Governing Board amending Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions and Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions.

WHEREAS, the South Coast AQMD Governing Board finds and determines that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 are considered a "project" as defined by CEQA; and

WHEREAS, the South Coast AQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l) and has conducted a CEQA review and analysis of the proposed project pursuant to such program (South Coast AQMD Rule 110); and

WHEREAS, the South Coast AQMD Governing Board finds and determines after conducting a review of the proposed project in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA, that the proposed project is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that because the proposed project provides updates to technical guidelines for operating continuous emissions monitoring systems (CEMS) as required by South Coast AQMD rules or permit conditions without requiring physical modifications to occur, it can be seen with certainty that implementing the proposed project would not cause a significant adverse effect on the environment, and is therefore exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; and

WHEREAS, the South Coast AQMD staff has prepared a Notice of Exemption for the proposed project that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

WHEREAS, Proposed Amended Rule 2011, Proposed Amended Rule 2012, and supporting documentation, including but not limited to, the Notice of Exemption and Final Staff Report, were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, as well as has taken and considered staff testimony and public comment prior to approving the proposed project; and

WHEREAS, the South Coast AQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (Section 30.5(4)(D)(i) of the Administrative Code), that the modifications to Proposed Amended Rule 2011 and Proposed Amended Rule 2012 since the Notice of Public Hearing was published are clarifications that meet the same air quality objective and are not so substantial as to significantly affect the meaning of Proposed Amended Rule 2011 and Proposed Amended Rule 2012 within the meaning of Health and Safety Code Section 40726 because the changes to the Table of Contents in Proposed Amended Rule 2011 Appendix A, Chapter 2 are made to update page numbers and: (a) the changes do not impact emission reductions, (b) the changes do not affect the number or type of sources regulated by the rules, (c) the changes are consistent with the information contained in the Notice of Public Hearing, and (d) the consideration of the range of CEQA alternatives is not applicable because the proposed project is exempt from CEQA; and

WHEREAS, Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board has determined that a need exists to amend Rule 2011 and Rule 2012 to provide monitoring relief for RECLAIM facilities as they replace and/or modify equipment to comply with landing rules and to provide consistency across South Coast AQMD CEMS rules; and

WHEREAS, the South Coast AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from Health and Safety Code Sections 39002, 39616, 40000, 40001, 40440, 40440.1, 40441, 40702, 40725 through 40728, and 41511; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 are written and displayed so that their meaning can be easily understood by persons directly affected by them; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 are in harmony with,

and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 do not impose the same requirements as any existing state or federal regulations, and the proposed amended rules are necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD; and

WHEREAS, the South Coast AQMD Governing Board, in amending Rule 2011 and Rule 2012, references the following statute which the South Coast AQMD hereby implements, interprets or makes specific: Assembly Bill 617, Health and Safety Code Sections 39002, 39616, 40000, 40001, 40440(a), 40702, 40725 through 40728.5, and 41511; and

WHEREAS, the South Coast AQMD Governing Board finds that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 do not impose new or more stringent monitoring, reporting, or recordkeeping requirements, and therefore the requirements of Health and Safety Code Section 40727.2 are satisfied under subsection (g); and

WHEREAS, the South Coast AQMD Governing Board has determined that no socioeconomic impact assessment needs to be performed per Health and Safety Code Sections 40440.8 and 40728.5 because Proposed Amended Rule 2011 and Proposed Amended Rule 2012 are administrative in nature, thus will not directly result in any significant changes in air quality or emission limitations; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 do not include new Best Available Retrofit Control Technology (BARCT) requirements nor a feasible measure pursuant to Health and Safety Code Section 40914, therefore analyses for cost-effectiveness and incremental cost-effectiveness consistent with the Health and Safety Code Section 40920.6, are not applicable; and

WHEREAS, the South Coast AQMD staff conducted a Public Workshop regarding Proposed Amended Rule 2011 and Proposed Amended Rule 2012 on August 29, 2023; and

WHEREAS, the Public Hearing has been properly noticed in accordance with all provisions of Health and Safety Code Sections 40725 and 40440.5; and

WHEREAS, the South Coast AQMD Governing Board has held a Public Hearing in accordance with all provisions of state and federal law; and

WHEREAS, the South Coast AQMD specifies the Planning and Rules Manager overseeing the rule development for Proposed Amended Rule 2011 and Proposed Amended Rule 2012 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of this proposed project is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

WHEREAS, Proposed Amended Rule 2011 and Proposed Amended Rule 2012 will not be submitted for inclusion into the State Implementation Plan; and

NOW, THEREFORE BE IT RESOLVED, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 are exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3) – Common Sense Exemption. This information was presented to the South Coast AQMD Governing Board, whose members exercised their independent judgment and reviewed, considered, and approved the information therein prior to acting on the proposed project; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Amended Rule 2011 and Proposed Amended Rule 2012 as set forth in the attachment, and incorporated herein by reference.

DATE: _____ _____

CLERK OF THE BOARDS

ATTACHMENT F

(Adopted October 15, 1993) (Amended March 10, 1995)(Amended September 8, 1995) (Amended December 7, 1995)(Amended July 12, 1996)(Amended February 14, 1997) (Amended April 11, 1997)(Amended April 9, 1999)(Amended March 16, 2001) (Amended May 11, 2001)(Amended December 5, 2003)(Amended January 7, 2005) (Amended May 6, 2005) (Amended TBD)

PROPOSED AMENDED RULE 2011. REQUIREMENTS FOR MONITORING, REPORTING, AND RECORDKEEPING FOR OXIDES OF SULFUR (SO_X) EMISSIONS

[RULE INDEX TO BE ADDED AFTER RULE ADOPTION]

(a) Purpose

The purpose of this rule is to establish the monitoring, reporting, and recordkeeping requirements for SO_X emissions under the RECLAIM program.

(b) Applicability

The provisions of this rule shall apply to any RECLAIM SO_X source or SO_X process unit. The SO_X sources and process units regulated by this rule include, but are not limited to:

Boilers	Fluid Catalytic Cracking Units
Internal Combustion Engines	Dryers
Heaters	Fume Incinerators/Afterburners
Gas Turbines	Test Cells
Furnaces	Tail Gas Units
Kilns and Calciners	Sulfuric Acid Production
Ovens	Waste Incinerators

(c) Major SO_X Source

(1) Major SO_X source means any of the following SO_X sources, except for such SO_X sources reclassified to process units at approved Super Compliant Facilities as specified in paragraph (c)(4):

(A) any petroleum refinery fluid catalytic cracking unit;

(B) any tail gas unit;

(C) any sulfuric acid production unit;

(D) any equipment that burns refinery, landfill or sewage digester gaseous fuel, except gas flares;

(E) any existing equipment using SO_X CEMS or equivalent monitoring device, or that is required to install such monitoring device under District rules to be implemented as of October 15, 1993;

(F) any SO_X source or process unit elected by the Facility Permit holder or required by the Executive Officer or designee to be monitored with a CEMS or equivalent monitoring device;

(G) any SO_X source or process unit for which SO_X emissions reported pursuant to Rule 301 - Permit Fees, were equal to or greater than 10 tons per year for any calendar year between 1987 to 1991, inclusive, excluding any SO_X source or process unit which has reduced SO_X emissions to below 10 tons per year prior to January 1, 1994.

(2) The Facility Permit holder of a major SO_X source shall:

(A) install, maintain, and operate a direct monitoring device for each major SO_X source to continuously measure the concentration of SO_X emissions or fuel sulfur content and all other applicable variables specified in Table 2011-1 and Appendix A, Chapter 2, Table 2-A; or

(B) install, maintain, and operate an alternative monitoring device which has been determined by the Executive Officer or designee to be equivalent to CEMS in relative accuracy, reliability, reproducibility and timeliness according to the requirements set forth in Appendix A, Chapter 2.

(C) The operating requirements specified in subparagraph (c)(2)(A) or (c)(2)(B) shall not apply during any time period not to exceed 96 hours provided that all of the following are met:

(i) the Facility Permit holder reports emissions as specified in Appendix A;

(ii) the direct monitoring device has been either:

(I) shut down for maintenance performed pursuant to the facility's Quality Assurance and Quality Control Program or

(II) damaged in a fire or mechanical or electrical failure caused by circumstances beyond the Facility Permit holder's control; and

(iii) Whenever the monitoring device is non-operational for more than 24 hours, the Facility Permit holder shall submit a report to the Executive Officer within 96 hours after the device becomes non-operational. Such report shall include information as prescribed by the Executive Officer including at a minimum the cause of the shutdown, the time the monitoring device became non-operational, the time or estimated time the monitoring device returned to normal operation, and the maintenance performed or corrective and preventative actions taken to prevent future non-operational conditions.

If the source for which the CEMS is certified to monitor is not operating when the CEMS is in maintenance or being repaired, and either the flow or concentration monitor is properly operating, and clauses (c)(2)(C)(i) and (c)(2)(C)(ii) are met, then the above time period shall be extended for an additional 96 hours.

(D) If a SO_X source does not operate for a minimum of 168 consecutive hours, as demonstrated pursuant to subparagraph (c)(2)(E), the Facility Permit holder of the CEMS is not subject to the requirements of subparagraphs (c)(2)(A) and (c)(2)(B), and the emission hours are considered valid and consisting of zero value data points after zero emissions have been recorded for a minimum of 4 hours after the SO_X source shutdown, provided that the Facility Permit holder of the CEMS:

(i) Maintains the CEMS operation pursuant to subparagraphs (c)(2)(A) and (c)(2)(B) to record zero value data points for a minimum of 4 hours after the SO_X source shutdown;

(ii) Submits the report in accordance with clause (c)(2)(C)(iii);

(iii) Resumes CEMS operation and meets the requirements of subparagraphs (c)(2)(A) and (c)(2)(B) for a minimum of 4 hours before the SO_X source resumes operation or at which time any emissions are generated; and

(iv) Passes a calibration error test for each CEMS analyzer before any emissions are detected.

(E) Demonstrating a SO_X source is not operating and no emissions are generated

(i) For a SO_X source in which fuel combustion is the only source for the CEMS monitored emissions, the Facility Permit holder of the CEMS shall meet one or more of the following provisions for the entire duration:

(I) Disconnect the fuel line to the SO_X source and place blind flange(s) to prevent fuel flow;

(II) Demonstrate there is no fuel flow to the SO_X source based on a dedicated fuel flow meter that is quality assured according to manufacturer's recommendation;

(III) Provide one or more gas bills indicating zero fuel consumption for the SO_X source or the fuel line associated with the SO_X source that is not operating; or

(IV) Demonstrate the SO_X source is not operational based on a stack flow monitoring system certified according to Appendix A, or any other monitoring system approved by the Executive Officer which shows the exhaust flow is less than the lowest quantifiable rate measurable by South Coast AQMD Methods 1-4.

(ii) For a SO_X source in which fuel combustion is not the only source for the CEMS monitored emissions, the Facility Permit holder of the CEMS shall:

(I) Request the Executive Officer's written approval of the method(s) to demonstrate that the SO_X source is not operating and no emissions are generated; and

(II) Include the above approved method(s) in the QA/QC plan.

(3) The Facility Permit holder of a major SO_X source shall:

(A) install, maintain, and operate a reporting device to electronically report to the District Central SO_X Station for each major SO_X source: total daily mass emissions of SO_X and daily status codes. Such data shall be transmitted by 5:00 p.m. of the following day. If the facility experiences a power, computer, or other system failure that prevents the reporting of total daily mass emissions of SO_X and daily status codes, the Facility Permit holder shall be granted 24 hours to submit the required report. Between July 1, 1995 and December 31, 1995, SO_X emissions after the 24-hour extension, shall be calculated using interim reporting procedures set forth in Appendix A, Chapter 2. Starting January 1, 1996 and thereafter, SO_X emissions after the 24-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2. For each major SO_X source opting to comply with subparagraph (c)(10), reports of SO_X mass emissions shall be electronically filed on a monthly instead of daily basis; and

(B) submit Monthly Emissions Report aggregating SO_X emissions from all major sources within 15 days following the end of each calendar month. In its Monthly Emissions Report, the Facility Permit holder may correct daily transmitted data for that month, provided such corrections are clearly identified and justified.

(C) Notwithstanding subparagraph (c)(3)(A), starting May 11, 2001 if a power, computer, or other system failure precludes the Facility Permit holder from reporting total daily mass emissions of SO_X and daily status codes by 5:00 p.m., the Facility Permit holder shall be granted 96 hours to submit the required report provided that the raw data as obtained by the direct monitoring device is stored at the facility. SO_X emissions reported after the 96-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2. The provisions of this subparagraph shall be limited to no more than three non-consecutive occurrences per compliance year.

(D) The requirement of calculating emissions using Missing Data Procedures under subparagraph (c)(3)(A) shall not apply if the failure to report the total daily mass emissions of SO_X and daily status codes is due to a demonstrated failure at the District's Central Station preventing it from receiving the data. The Facility Permit holder shall submit the report within 48 hours of the ~~problem~~ demonstrated failure being corrected, provided that the raw data as obtained by the direct monitoring device is stored at the facility. SO_X emissions reported after the 48-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2.

(E) The requirement of calculating emissions using Missing Data Procedures under subparagraph (c)(3)(A) shall not apply if the SOx source is offline pursuant to subparagraph (c)(2)(D) and a Facility Permit holder is unable to report total daily mass emissions of SO_X and daily status codes by 5:00 p.m. The Facility Permit holder shall be granted 48 hours from the time the CEMS passes the calibration error test specified in clause (c)(2)(D)(iv) to submit all electronic reports required by subparagraph (c)(3)(A), subparagraph (c)(3)(B), and Appendix A, Chapter 7. SO_X emissions reported after the 48-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2.

(4) Super Compliant Facilities

(A) Facilities operating at or below their adjusted 2003 Allocation as of their 1994 compliance year.

(i) The Facility Permit holder of major SO_X sources may reclassify its major SO_X sources to SO_X process units provided that (1) the facility's annual SO_X emissions as properly reported in its 1994 compliance year APEP report are already at or below the level of its adjusted compliance year 2003 SO_X Allocation. The adjusted compliance year 2003 SO_X Allocation shall be the compliance year 2003 SO_X Allocation as calculated pursuant to Rule 2002 subdivision (e) plus any compliance year 2003 SO_X RTCs resulting from conversion of ERCs which the Facility Permit holder had applied to own by July 1, 1994 and has continuously owned, unless such RTCs have already been accounted for in the compliance year 2003 Allocation as established pursuant to Rule 2002 subdivision (e); and (2) it submits a complete application for SO_X Super Compliance status on or before December 2, 1996. The Executive Officer will provisionally approve for purposes of paragraph (c)(5) such application if the Facility Permit holder has retired all SO_X RTCs in excess of the facility's adjusted compliance year 2003 Allocation for each of the compliance years from the year of application submittal through the 2010 compliance year. The Facility Permit holder need not retire any RTCs (excluding converted ERCs) which are held by transfer pursuant to Rule 2007 paragraph (e)(2); however, such non-retired RTCs must be converted into RTC certificates pursuant to Rule 2007 subdivision (g), transferred to a different holder, or retired. For the purposes of this rule, converted ERCs shall mean SO_X RTCs resulting from conversion of ERCs which the Facility Permit holder had applied to own by July 1, 1994 and has continuously owned.

(ii) Final approval of SO_X Super Compliant status shall be granted if the Executive Officer or designee approves the initial source test required by subparagraph (c)(4)(C) and the facility's total annual SO_X emissions has not exceeded its adjusted compliance year 2003 Allocation.

(B) Facilities not operating at or below their adjusted 2003 Allocation as of their 1994 compliance year.

(i) On or before December 2, 1996 the facility Permit holder of major SO_X sources may submit a complete application for SO_X Super Compliant status. Such applications must also include a complete application for permit modifications to install SO_X emission reduction equipment or to make any other physical modifications to substantially reduce emissions from each major SO_X source to be reclassified as a SOx process unit. The Executive Officer shall deny the application for Super Compliant status unless the applicant demonstrates the proposed modifications would comply with all applicable District rules and would permanently reduce the facility's total annual SO_X emissions to a level not to exceed its adjusted compliance year 2003 SO_X Allocation as defined in clause (c)(4)(A)(i), would not result in any increases in the mass emissions of any other air contaminant or in emissions to any other media, and would not result in any increases in receptor concentrations of any air contaminant in excess of the values identified in Table A-2 of Rule 1303;

(ii) Upon issuance of the permit to construct for the modification specified in clause (c)(4)(B)(i), the Executive Officer shall also issue a provisional approval of the facility's application for SO_X Super Compliant status for purposes of paragraph (c)(5).

(iii) Final approval of SO_X Super Compliant status shall be granted if the following provisions are met:

(I) An approved permit to operate has been issued for the modification specified in clause (c)(4)(B)(i);

(II) The facility's total annual SO_X emissions as reported in its APEP report are at a level at or below the facility's adjusted compliance year 2003 SO_X Allocation on a permanent basis no later than the facility's 1998 compliance year;

(III) The Facility Permit holder has retired all SO_X RTCs in excess of the facility's adjusted compliance year 2003 Allocation for each of the compliance years from the earlier of the facility's 1998 compliance year or the facility's first full compliance year with SO_X Super Compliant Facility status through the facility's 2010 compliance year. The Facility Permit holder need not retire any RTCs (excluding converted ERCs as defined in clause (c)(4)(A)(i) which are held by transfer pursuant to Rule 2007 paragraph (e)(2); however, such non-retired RTCs must be converted into RTC certificates pursuant to Rule 2007 subdivision (g), transferred to a different holder, or retired; and

(IV) The facility Permit holder has an approved initial source test as required under subparagraph (c)(4)(C).

(C) The Facility Permit holder shall have initial source tests conducted to establish an equipment specific emission rate, for each major source to be reclassified as a SO_X process unit, pursuant to Appendix A, Chapter 4, Subdivision D prior to January 1, 1998 for Cycle 1 facilities and prior to July 1, 1998 for Cycle 2 facilities. In lieu of an equipment specific emission rate, the Executive Officer may approve an equipment specific concentration limit if the Facility Permit holder demonstrates to the satisfaction of the Executive Officer that there are no measurable operating parameters to establish an accurate equipment specific emission rate. The Facility Permit holder shall have initial source tests conducted in accordance with test methods listed under Rule 2011, Appendix A, Chapter 4, Subdivision A - Test Methods, to establish emission levels of the source. The Facility Permit holder shall select an equipment-specific concentration limit for each major source which will be reclassified as a SO_X process unit. The concentration limits selected shall be consistent with the source test results and at a level adequate to allow continuous compliance

and shall be enforceable through permit conditions.

(i) For facilities seeking Super Compliant status pursuant to subparagraph (c)(4)(A), the Facility Permit holder may use the concentration limit to determine emissions retroactive to the date of provisional approval of the application for SO_X Super Compliant status.

(ii) For facilities seeking Super Compliant status pursuant to subparagraph (c)(4)(B), the Facility Permit holder may use the concentration limit to determine emissions retroactive to the date of completion of modification.

(D) Requirements to maintain Super Compliant status.

Super Compliant status is contingent upon the Facility Permit holder meeting at all times the following provisions:

(i) Every major SO_X source at a Super Compliant SO_X facility which is reclassified as a SO_X process unit with an approved equipment specific emission rate shall be source tested a minimum of once every twelve months in order to establish an equipment specific emission rate, pursuant to Appendix A, Chapter 4, Subdivision D. These source tests shall be conducted every four calendar quarters after the initial source test. If a source test is not conducted within three months after the required date, the facility shall no longer be considered Super Compliant, unless upon good cause the Executive Officer has granted a written extension of time. The source test results shall, upon approval, constitute the basis for assigning equipment specific emission rates which shall be used for purposes of reporting emissions and determining compliance.

(ii) Every major SO_X source at a Super Compliant SO_X facility which is reclassified as a SO_X process unit with an approved equipment specific concentration limit shall comply with that limit on a sixty-minute basis. In addition, compliance with the approved equipment specific concentration limit shall be demonstrated by source test a minimum of once every six months. Such tests shall be conducted for a duration of sixty minutes in accordance to

test methods listed under Rule 2011, Appendix A, Chapter 4, Subdivision A - Test Methods. These source tests shall be conducted every two calendar quarters after the initial source test. If a source test is not conducted within three months after the required date, the facility shall no longer be considered Super Compliant, unless upon good cause the Executive Officer has granted a written extension of time. If the results of a source test indicate non-compliance with the concentration limit then the Facility Permit holder shall select a new concentration limit which is consistent with the source test results unless the Facility Permit holder demonstrates to the satisfaction of the Executive Officer or designee that no change is warranted. If all tests conducted pursuant to this paragraph over a two-year period comply with the equipment-specific concentration limit then the facility shall have the option of reducing the source test frequency to once every four quarters. If any test conducted on a four quarter cycle exceeds the concentration limit then the facility shall return to conducting source tests every two quarters until the facility is able to demonstrate consecutive compliance over another two year period.

(iii) The facility's total annual SO_X emissions, as reported in its APEP report, shall not exceed the facility's adjusted compliance year 2003 SO_X Allocation. If there are such exceedances for two consecutive years or in any three years, the facility shall no longer be considered Super Compliant.

(5) Any Facility Permit holder of a facility which is provisionally approved for SO_X Super Compliant status shall have the option for each major SOx source to be reclassified as a SOx process unit, in lieu of following the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii) of Appendix A Chapter 2, to monitor and report emissions pursuant to paragraph (d)(2). This option shall be available to the Facility Permit holder retroactively from July 1, 1995 if the complete application for SO_X Super Compliant status is submitted on or before January 2, 1996, or

retroactively from the date of application submittal if the complete application is submitted after January 2 and before December 3, 1996. If the facility is unsuccessful at obtaining final approval as a SO_X Super Compliant Facility then the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii) of Appendix A Chapter 2 shall apply retroactively to each major SOx source reclassified as a process unit for which SO_X emissions had been calculated pursuant to paragraph (d)(2) from the date the facility began monitoring and reporting major SO_X source emissions as SO_X process unit emissions to the date a CEMS is installed and certified.

(6) After final approval of Super Compliant status, a Facility Permit holder may elect to discontinue its Super Compliant status and increase its annual Allocations above the level of its adjusted compliance year 2003 Allocation provided it first meets all of the following requirements:

(A) The Facility Permit holder submits an application to discontinue SO_X Super Compliant status and to have all sources at the facility that were reclassified from major SO_X sources to SO_X process units pursuant to paragraph (c)(4) permanently revert back to major SO_X sources;

(B) The Facility Permit holder installs, operates, and certifies in compliance with Rule 2012 paragraphs (c)(2) and (c)(3) monitoring and reporting systems on each source at the facility that was reclassified from a major SO_X source to a SO_X process unit pursuant to paragraph (c)(4); and

(C) The Facility Permit holder acquires, pursuant to Rule 2007, sufficient RTCs to ensure that the facility continuously operates in compliance with Rule 2004 subdivision (d).

(7) If a facility designated as a SO_X Super Compliant Facility pursuant to paragraph (c)(4) exceeds its adjusted compliance year 2003 SO_X Allocation, then the facility shall acquire, pursuant to Rule 2007, sufficient RTCs to cover such exceedance and shall be considered in violation of Rule 2004(d)(1).

(8) If the Executive Officer determines that a facility designated as a SO_X Super Compliant Facility exceeds its adjusted compliance year 2003 SO_X Allocation for two consecutive years or any three years, then that facility shall no longer be considered Super Compliant. If a facility loses its

Super Compliant status pursuant to this paragraph or subparagraph (c)(4)(D), all sources at the facility that were reclassified from major SO_X sources to SO_X process units pursuant to paragraph (c)(4) shall permanently revert back to major SO_X sources and shall become subject to the monitoring and reporting requirements of paragraphs (c)(2) and (c)(3) according to the following schedule:

(A) Within 1 month from the end of the compliance year, submit a monitoring, reporting, and recordkeeping plan specifying the use of CEMS;

(B) During the shorter of the first twelve months from the end of the compliance year or until the facility complies with paragraphs (c)(2) and (c)(3), the Facility Permit holder shall comply with the monitoring requirements of paragraph (f)(3) of this rule; and

(C) Within one year from the end of the compliance year, comply with paragraphs (c)(2) and (c)(3) and have appropriate direct monitoring equipment installed and certified pursuant to Appendix A.

(9) Infrequently-Operated Major SOx Source

Subparagraphs (c)(2)(A) and (c)(2)(B) shall not apply to a major SOx source if the Facility Permit holder complies with the following requirements.

(A) The Facility Permit holder submits an application for each major SOx source to classify such source to be an infrequently-operated major SOx source, demonstrating to the satisfaction of the Executive Officer that such source will not be operated more than 30 days in the current or next compliance year, and receives written approval from the Executive Officer. The Executive Officer shall further not approve an application to classify a major source to be an infrequently-operated major SOx source if such source had been previously classified as an infrequently-operated source for any time during the 18 calendar months prior to the filing date of the application.

(B) The Facility Permit holder accepts and complies with all permit conditions imposed to ensure compliance with subparagraphs (c)(9)(C) and (c)(9)(D).

(C) The Facility Permit holder shall comply with all of the following

requirements:

(i) While the infrequently-operated major SOx source is operating, the Facility Permit holder shall comply with provisions under subparagraphs (c)(2)(A), (c)(2)(B), or Rule 2011, Appendix A, Chapter 2, Paragraph B.6. - Alternative Data Acquisition Using Reference Methods.

(ii) While the infrequently-operated major SOx source is not operating, the Facility Permit holder shall disconnect fuel or process feed line(s) and place flanges at both ends of the disconnected line(s) and install, maintain, and operate a monitoring device, which has been approved by the Executive Officer, to provide a continuous positive indicator of the operational status of the source to the remote terminal unit (RTU) for the purposes of demonstrating the source is not operating and for preparing emissions reports.

(D) A source, which has been approved as an infrequently-operated source pursuant to paragraph (c)(9), shall not be operated more than 30 days in any compliance year unless the following requirements are met:

(i) The Facility Permit holder shall provide written notification to the Executive Officer that the infrequently-operated major SOx source will be operated more than 30 days in any compliance year on or before the day that such source will be operated in excess of 30 days in any compliance year.

(ii) The infrequently-operated Major SOx source complies with subparagraph (c)(2)(A) or (c)(2)(B) on the thirty first day of operation in any compliance year except if that source qualifies for a one-time only CEMS certification period as provided in subparagraph (c)(11).

(10) Non-Operated Major SOx Source

Subparagraphs (c)(2)(A) and (c)(2)(B) shall not apply to a major SOx source if the Facility Permit holder complies with the following requirements.

(A) The Facility Permit holder submits an application for each major

SOx source to classify such source to be a non-operated major SOx source, demonstrating to the satisfaction of the Executive Officer that such source will not be operated in the current or next compliance year, and receives written approval from the Executive Officer. The Executive Officer shall further not approve an application to classify a major source to be a non-operated major SOx source if such source had previously been classified as a non-operated source for any time during the 18 calendar months prior to the filing date of the application.

(B) The Facility Permit holder accepts and complies with all permit conditions imposed to ensure compliance with subparagraphs (c)(10)(C) and (c)(10)(D).

(C) The Facility Permit holder shall comply with the requirements under either subclause (i) or (ii):

(i) The Facility Permit holder shall:

(I) disconnect fuel feed lines and place flanges at both ends of the disconnected lines, and

(II) render the source non-operational by either disconnecting the process feed lines and place flanges at both ends of the disconnected lines or removing a major component of the source necessary for its operation.

(ii) The Facility Permit holder shall monitor the source with an operating CEMS that was certified to monitor emissions from that source in accordance with District Rule 218 - Stack Monitoring or Rule 2011 and Appendix A, and maintain records demonstrating the source's non-operational status as required by either Rule 218 or these rules, whichever is applicable.

(D) A source, which has been approved as a non-operated source pursuant to paragraph (c)(10), shall not be operated until the following requirements are met:

(i) The Facility Permit holder shall provide written notification to the Executive Officer that the source will be operated. The notification shall be made no less than 30 days prior to starting operation of the source.

(ii) The source meets the requirements of subparagraph (c)(2)(A) or (c)(2)(B) no later than 30 calendar days after the start of operation except as provided under paragraph (c)(11). Until the source meets the requirements of subparagraph (c)(2)(A) or (c)(2)(B), emissions shall be determined pursuant to the Missing Data Procedures as specified under Rule 2011, Appendix A, Chapter 2, Subdivision E.

(11) An infrequently-operated or non-operated major SOx source qualifies for a one-time only CEMS certification period if:

(A) the source has never been monitored by a RECLAIM certified CEMS since October 15, 1993, and

(B) the source has been in compliance with paragraph (c)(9) or (c)(10) during the previous 12 months prior to the date the source operates in excess of the applicable operating time limit.

This one-time only CEMS certification period shall commence on the first day of any operation for non-operated major sources and the thirty-first day of any operation for infrequently operated major sources in any compliance year and ends on the date the CEMS is certified or 12 calendar months from the first day of any operation for non-operated major sources and the thirty-first day of any operation for infrequently operated major sources, whichever date is earlier. By the end of this CEMS certification period, the Facility Permit holder shall install, operate, and maintain all required monitoring, reporting, and recordkeeping systems. During this CEMS certification period, the Facility Permit holder shall comply with the monitoring, reporting, and recordkeeping requirements of paragraphs (f)(2) and (f)(3).

(12) If an approved infrequently-operated or non-operated major SOx source fails to meets the requirements of the applicable paragraph (c)(9) or (c)(10) that source shall no longer be considered an infrequently-operated or non-operated major SOx source, and the facility permit holder of the source shall be considered in violation for each day from the start of the compliance year and emissions shall be determined as if the source had been operating from the start of the compliance year according to Missing Data Procedures as specified under Rule 2011, Appendix A, Chapter 2, clause (E)(1)(d)(iii), except for those days in which the Facility Permit

holder can conclusively prove that the source has not been operated.

(d) SO_X Process Unit

(1) SO_X process unit is any piece of SO_X emitting equipment which is not a major SO_X source or a piece of equipment designated in Rule 219 - Equipment Not Requiring a Written Permit Pursuant to Regulation II.

(2) The Facility Permit holder of a SO_X process unit shall comply with paragraphs (c)(2) and (c)(3) for any SO_X process unit, or elect to comply with the following:

(A) install, maintain, and operate a totalizing fuel meter and/or timer, or any device approved by the Executive Officer or designee to be equivalent in accuracy, reliability, reproducibility and timeliness, for the SO_X process unit, to measure quarterly fuel usage or other applicable measured variables specified in Table 2011-1, and Appendix A, Chapter 3, Table 3-A; and

(B) report quarterly mass emission of SO_X to the District Central Station 30 days after the end of each of the first three quarters and 60 days after the last quarter of a compliance year for each process unit using a modem, the District Internet Web Site, or any reporting device approved by the Executive Officer to be equivalent in accuracy, reliability, and timeliness; and

(C) accept the emission factor as specified pursuant to paragraphs (d)(3), (d)(4), or (d)(5) in the Facility Permit, as the sole method for determining mass emissions for all purposes, including, but not limited to, determining:

(i) compliance with the annual allocations;

(ii) excess emissions;

(iii) the amount of penalties; and

(iv) fees.

(3) Starting January 1, 1994 for Cycle 1 facilities, and July 1, 1994 for Cycle 2 facilities, calculations of mass emissions from each process unit shall be based upon the emission factor specified in Rule 2002. The emission factor for each process unit will be specified in the Facility Permit and will remain valid unless amended by the Executive Officer or designee pursuant to paragraphs (d)(4) or (d)(5).

(4) A Facility Permit holder may apply to the Executive Officer or designee to

amend the emission factor to an equipment or category specific emission rate in the Facility Permit for a SO_X process unit at any time. If the applicant demonstrates to the Executive Officer or designee that the equipment or category specific emission rate is reliable, accurate, and representative for the purpose of calculating SO_X emissions, the Executive Officer or designee will amend the Facility Permit to incorporate the equipment or category specific emission rate. The equipment or category specific emission rate shall take effect prospectively from the date the Facility Permit is amended.

(5) The Executive Officer or designee may amend the Facility Permit at any time to specify an equipment or category specific emission rate for a SO_X process unit if the equipment or category specific emission rate is determined to be more reliable, accurate, or representative of that unit's emissions than the previous emission factor stated in the Facility Permit. The equipment or category specific emission rate shall take effect prospectively from the date the Facility Permit is amended.

(e) General Requirements

(1) A Facility Permit holder shall at all times comply with all requirements specified in subdivisions (c), (d), (e), (f) and (g) for monitoring, reporting and recordkeeping, including but not limited to, measuring, reporting, timesharing, determining mass emissions, and installing, maintaining or operating monitoring, measuring, and reporting devices, in accordance with the applicable requirements set forth in Appendix A.

(2) The monitoring system and the applicable method for determination of mass emissions for each SO_X source or process unit will be specified in the Facility Permit, in accordance with the applicable requirements set forth in Appendix A.

(3) The time-sharing of CEMS or equivalent devices among SO_X sources may be allowed by the Executive Officer or designee in accordance with the requirements for time-sharing specified in Appendix A. In such cases, the Executive Officer or designee will specify conditions in the Facility Permit upon which time-sharing may occur.

(4) Any monitoring system certified prior to October 15, 1993 requiring a change to its full scale span range in order to meet the certification requirements set forth in Appendix A, shall be recertified by the District in

accordance with the recertification requirements specified in Chapter 2, Section ~~B.15~~B.17, in Appendix A.

(5) The Executive Officer or designee may at any time require a Facility Permit holder to use a specific monitoring and reporting system if the Executive Officer or designee determines that the elected system is inadequate to accurately determine mass emissions.

(6) The sharing of totalizing fuel meters may be allowed by the Executive Officer or designee if the process units served by the fuel meters have the same emission factor.

(7) A Facility Permit holder of any SO_X major source, process unit, or piece of equipment which is exempt from permit requirements pursuant to Rule 219 - Equipment Not Requiring a Written Permit Pursuant to Regulation II, shall determine SO_X emissions according to the methodology specified in Appendix A. Process units, or pieces of equipment exempt from permit requirements pursuant to Rule 219 shall report such SO_X emissions in the Quarterly Certification of Emissions required by Rule 2004 - Requirements. Emissions from equipment exempt from permit requirements pursuant to Rule 219 shall also be reported quarterly to the District Central Station by the end of the quarterly reconciliation period as specified under Rule 2004(b) – Compliance Period and Certification of emissions. Alternatively, these emissions may be reported using the District Internet Web Site.

(8) A Facility Permit holder shall at all times comply with all applicable requirements specified in this rule and Appendix A for monitoring, reporting and recordkeeping of operations of RECLAIM SOx sources that are not included in the Facility Permit so as to determine and report to the District Central Station the quarterly emissions from these sources by the end of the quarterly reconciliation period as specified under Rule 2004(b). These sources may include, but are not limited to, rental equipment, equipment operated by contractors, and equipment operated under a temporary permit or without a District permit. In addition, the Facility Permit holder shall include emissions from these sources in the Quarterly Certification of Emissions required by Rule 2004.

(f) Compliance Schedule

(1) Facilities with existing CEMS and fuel meters as of October 15, 1993

shall continue to follow recording and reporting procedures required by District rules and regulations in effect immediately prior to October 15, 1993 until December 31, 1994 for Cycle 1 facilities and June 30, 1995 for Cycle 2 facilities.

(2) Between January 1, 1994 and December 31, 1994 for Cycle 1 facilities and between July 1, 1994 and June 30, 1995 for Cycle 2 facilities, interim emission reports shall be submitted to the District by the Facility Permit holder. The interim reports shall comply with all of the data requirements of this rule and Appendix A, except that the reporting frequency shall be monthly for major sources, and quarterly for process units. Such reports shall be submitted by the fifteenth (15^{th}) day of each month for major sources, and as specified in paragraph (b)(2) of Rule 2004 - Requirements, for process units.

(3) A Facility Permit holder shall install, maintain and operate a totalizing fuel meter or any device approved by the Executive Officer or designee to be equivalent in accuracy, reliability, reproducibility, and timeliness for each major source and process unit by January 1, 1994 for Cycle 1 facilities, and July 1, 1994 for Cycle 2 facilities, except that sharing of such devices may be allowed, pursuant to paragraph (e)(6) of this rule.

(4) All required or elected monitoring and reporting systems specified in subdivision (c) and (d) shall be installed no later than December 31, 1994 for Cycle 1 facilities and June 30, 1995 for Cycle 2 facilities. Monitoring, Reporting, and Recordkeeping (MRR) Forms will be provided by the Executive Officer or designee by November 15, 1993 for Cycle 1 facilities and April 15, 1994 for Cycle 2 facilities. The information required on such MRR forms shall be submitted no later than December 31, 1993 for Cycle 1 facilities and June 30, 1994 for Cycle 2 facilities.

(5) The Facility Permit holder of an existing facility which elects to enter RECLAIM or a facility which is required to enter RECLAIM shall install all required or elected monitoring, reporting and recordkeeping systems no later than 12 months after entry into RECLAIM. During the 12 months prior to the installation of the required or elected monitoring, reporting and recordkeeping systems, the Facility Permit holder shall comply with the monitoring, reporting, and recordkeeping requirements of paragraphs (f)(2) and (f)(3) of this rule.

(6) The Facility Permit holder which installs a new major SOx source at an

existing facility shall install, operate, and maintain all required monitoring, reporting and recordkeeping systems no later than 12 months after the initial start up of the major SOx source. During the interim period between the initial start up of the major SOx source and the provisional certification date of the CEMS, the Facility Permit holder shall comply with the monitoring requirements of paragraphs (f)(2) and (f)(3) of this rule.

(g) Recordkeeping

The Facility Permit holder of a major SO_X source or SO_X process unit shall maintain all data required to be gathered, computed or reported pursuant to this rule and Appendix A for three years after each APEP report is submitted to the District except that all data gathered or computed for intervals of less than 15 minutes shall be maintained for a minimum of 48 hours. The Facility Permit holder of a major SOx source which is required to comply with 40 CFR Part 75 may instead opt to comply with the applicable recordkeeping requirements under 40 CFR Part 75. All records shall be made available to the District staff upon request.

(h) Source Testing

All required source testing shall comply with applicable District Source Test Methods 1.1, 1.2, 2.1, 2.2, 2.3, 3.1, 4.1, 6.1, 100.1 and 307-91; ASTM Methods D3588-91, D4891-89, D1945-81, D4294-90, and D2622-92, and EPA Method 19.

(i) Exemption

The provisions of this rule shall not apply to gas flares.

(j) Appeals

The Facility Permit holder of a facility which has established Super Compliant status shall have a maximum of ten calendar days from the receipt of notification that the facility is no longer Super Compliant in which to file an appeal of such finding to the District Hearing Board in accordance with the requirements of Rule 216.

(k) Appendix A

All provisions of Appendix A are incorporated herein by reference.

Attachment: Appendix A - "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Sulfur (SO_X) Emissions."

Table 2011-1

MEASURED VARIABLES AND REPORTED DATA FOR SO_X SOURCES

SO_X SOURCES	**MEASURED VARIABLES**	**RECORDING FREQUENCY**	**REPORTED DATA**	**TRANSMITTING/REPORTING FREQUENCY**
All sources subject to Paragraphs (c)(2) and (c)(3)	Stack SO_X concentration, Exhaust flow rate, and Status codes OR SO_X concentration, Stack O_2 concentration, Fuel flow rate and Status codes OR Fuel sulfur content, Fuel flow rate, and Status codes	Once every 15 minutes	Total daily mass emissions from each source Daily status codes	Once a day for transmitting/ once a month for reporting
SO_X Process units subject to Paragraph (d)(2)	Fuel usage OR Operating time and Production/ Processing/ Feed rate	Quarterly	Total quarterly mass emissions	Once a quarter for reporting

ATTACHMENT G

RULE 2011 PROTOCOL-
CHAPTER 2

MAJOR SOURCES - CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)

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CHAPTER 2 - MAJOR SOURCES - CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)

The criteria for determining the applicable SO_X RECLAIM category for a specific piece of equipment is presented in Table 1-A for a major source. If a major source category is applicable to this equipment, then the Facility Permit holder shall be required to comply with the performance standards associated with a CEMS (Continuous Emission Monitoring System) or an approved Alternative Monitoring System (AMS).

The Facility Permit holder of a source that is required to install CEMS may request the Executive Officer to approve an alternative monitoring device (or system components) to quantify emissions of SO_X. The applicant shall demonstrate to the Executive Officer that the proposed alternative monitoring device is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that source, according to the criteria specified in 40 CFR Part 75 Subpart E. In lieu of the criteria specified in 40 CFR Part 75 Subpart E, substitute criteria is acceptable if the applicant demonstrates to the Executive Officer that the proposed alternative monitoring device is at minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that source. Upon approval by the Executive Officer, the substitute criteria shall be submitted to the federal Environmental Protection Agency as an amendment to the State Implementation Plan (SIP).

Chapter 2 describes the methodologies for measuring, monitoring, and reporting emissions from major sources. All major sources shall be monitored by a continuous emissions monitoring system (CEMS) or an alternative monitoring system (AMS). The required equipment-specific variables, both measured and reported, to be monitored are found in Tables 2-A and 2-B, respectively.

Another important requirement of major SO_X sources is the way in which they transmit data to the District's Central Station and the reporting frequency. Major sources shall electronically transmit the data via an RTU on a daily basis. In addition, the aggregated SO_x emissions from all major sources must be submitted in a Monthly Emissions Report.

During the interim period, January 1, 1994 through December 31, 1994 for Cycle 1 facilities and July 1, 1994 through June 30, 1995 for Cycle 2 facilities mass emissions for major sources shall be determined using emission factors referenced in Table 2 of Rule 2002.

Other important aspects covered in this chapter include missing data procedures and CEMS timesharing requirements.

A. MEASUREMENT REQUIREMENTS

1. Between January 1, 1994 and December 31, 1994 (Cycle 1 facilities) and between July 1, 1994 and June 30, 1995 (Cycle 2 facilities), major sources shall be allowed to use an interim reporting procedure to measure and record SO_X emissions on a monthly basis and may be extracted from SO_X emission data gathered by existing District certified continuous emissions monitoring system (CEMS). Chapter 2, Subdivision C, Paragraph 1 specifies the requirements for this interim period. On and after January 1, 1995 (Cycle 1 facilities) and July 1, 1995 (Cycle 2 facilities), the Facility Permit holder of each major source shall report a daily average of SO_x emission by 5:00 p.m. of the following day and comply with all other applicable requirements (except Chapter 2, Subdivision C, Subparagraph 1) specified in this chapter.

2. The Facility Permit holder shall by March 31, 1994 for Cycle 1 facilities and September 30, 1994 for Cycle 2 facilities, submit a CEMS plan to the Executive Officer for approval. The plan shall contain at a minimum the following items:

    a. A list of all major sources which will have CEMS installed.

    b. Details of all proposed Continuous Emission Monitors as well as the proposed flow monitors for each affected source.

    c. Details of the Quality Control/Quality Assurance Plan for the CEMS.

    d. Proposed range of each CEMS and the expected concentrations of pollutants for each source.

    e. Date by which purchase order for each system will be issued.

    f. Construction schedule for each system, and date of completion of the installation.

    g. Date by which CEMS certification test protocol will be submitted to the District for approval for each system.

    h. Date by which certification tests will be completed for each system.

    i. Date by which certification test results will be submitted for review by the District, for each system.

    j. Any other pertinent information regarding the installation and certification for each system.

    If a CEMS Plan is disapproved in whole or in part, the District staff will notify the Facility Permit holder in writing and the Facility Permit holder shall have 30 days from the date it receives the notice from the District to resubmit its plan.

3. The Facility Permit holder of each major SO_X equipment shall install, calibrate, maintain, and operate an approved CEMS to measure and record the following:

    a. Sulfur oxide concentrations in the gases discharged to the atmosphere from affected equipment.

    b. Oxygen concentrations, at each location where sulfur oxide concentration are monitored, if required for calculation of the stack gas flow rate.

    c. Stack gas volumetric flow rate. An in-stack flow meter may be used to determine mass emissions to the atmosphere from affected equipment, except:

        i. when more than one affected piece of equipment vents to the atmosphere through a single stack and there is no approvable means of determining emissions from each piece of equipment, or

ii. during periods of low flow rates when the flow rate is no longer within the applicable range of the in-stack flow meter.

d. In lieu of complying with Chapter 2, Subdivision A, Paragraph 1, Subparagraph c, the Facility Permit holder shall calculate stack gas volumetric flowrate using one of the following alternate methods:

i. Heat Input

If heat input rate is needed to determine the stack gas volumetric flow rate, the Facility Permit holder shall include in the CEMS calculations the F factors listed in 40 CFR Part 60, Appendix A, Method 19, Table 19-1. The Facility Permit holder shall submit data to develop F factors when alternative fuels are fired and obtain the approval of the Executive Officer for use of the F factors before firing any alternative fuels.

ii. Oxygen Mass Balance

Flow rate can be determined using oxygen mass balance as approved through a plan submitted to and approved by the Executive Officer, or

iii. Nitrogen Mass Balance

Flow rate can be determined using nitrogen mass balance as approved through a plan submitted to and approved by the Executive Officer.

The Facility Permit holder shall measure and record all variables necessary for the method chosen to calculate stack gas volumetric flowrate.

e. Fuel gas flow rate if the CEMS uses the fuel gas flow rate and the sulfur content of the fuel gas to determine the sulfur oxide emissions.

f. Sulfur content of the fuel if the CEMS uses the fuel input rate and the sulfur content of the fuel gas to determine the sulfur oxides emission rate.

g. All applicable variables listed in Table 2-A.

h. The Facility Permit holder shall also provide any other data necessary for calculating air contaminant emissions as determined by the Executive Officer.

i. The data generated from a monitoring system for parameters listed in Subparagraphs a, b, c, d, e, and f of Chapter 2, Subdivision A, Paragraph 3 shall be recorded by both (1) the remote terminal unit (RTU) and (2) strip chart recorder or electronic recorder. The RTU shall be capable of producing a printout of the stored data upon request from the Executive Officer or designee. The strip chart recorder or alternative electronic recorder shall be located in

parallel to the RTU. The strip chart recorder or alternative electronic recorder shall receive data independent of the RTU and serve as an independent tool for verifying data archived in the RTU or sent to the District Central SOx Station.

If a strip chart recorder is used, the strip chart shall have a minimum chart width of 10 inches, a readability of 0.5% of the span, and a minimum of 100 chart divisions. Alternatively, if an electronic recorder is used, the recorder shall be capable of writing data on a medium that is secure and tamper-proof. Possible media include, but are not limited to, "write-once-read-many" type or a data encryption system that does not permit encrypted data files to be altered after they have been created, without making the data inaccessible through standard vendor-provided decryption software, or without leaving traceable evidence of tampering. Also, at a minimum, the real-time sampling frequency of the electronic recorder shall be equal to or greater than the rate of data collection for the RTU. Furthermore, such recorded data shall be readily accessible upon request by the Executive Officer or designee. If software is required to access the recorded data, a copy of the software, and all subsequent revisions, shall be provided to the Executive Officer or designee at no cost. If a device is required to retrieve and provide a copy of such recorded data upon request to the Executive Officer or designee, the Facility Permit holder shall maintain and operate such a device at the facility.

The Facility Permit holder shall specify within the CEMS application, as required under Chapter 2, Subdivision A, Paragraph 2, the type of data recording system to be used in parallel to the RTU.

4. The Facility Permit holder must submit to the District his certification test results and supporting document for each CEMS by December 31, 1994. It must certify that the results show that the CEMS has met all the requirements of the rule if its submission is after August 31, 1994. Upon receipt of the test results and the certification that the CEMS is in compliance, the District will issue a Provisional Approval.

   After the Provisional Approval, all the data measured and recorded by the CEMS will be considered valid quality assured data, (retroactive to January 1, 1995) provided that the Executive Officer does not issue a notice of disapproval of final certification. Final certification of the CEMS will be granted if the certification test results show that the CEMS has met all the requirements of the rule.

   In the case where the test results show that the CEMS does not meet all the requirements of the rule, the Executive Officer will disapprove the final certification. If this occurs, the previously considered valid data from January 1, 1995 will have to be replaced by data as specified in the "Missing Data" section of the rule. This procedure shall be used until the time that new certification test results are submitted, and the CEMS has received final approval by the District.

5. The variables listed in Table 2-A shall be measured and recorded to track the operation of basic and control equipment independent of measurements made by

the monitoring equipment. The variables found in Table 2-B shall be reported to the District's SO_X Central Station Computer. Alternatives in Table 2-A and 2-B indicated choices which must be specified in the Facility Permit for that equipment.

6. As part of the Facility Permit Application review, the Executive Officer may modify the list of Facility Permit holder-selected variables.

7. Data on Facility Permit holder - selected variables shall be made available to the District staff upon request.

8. Source tests shall be performed by testing firms/laboratories who have received approval from the District by going through the District's laboratory approval program.

9. All Relative Accuracy Test Audits (RATA) shall be performed by testing firms/laboratories who have received approval from the District by going through the District's laboratory approval program.

B. MONITORING SYSTEMS

1. Information Required for Each 15-Minute Interval

All CEMS for affected equipment shall, at a minimum, generate and record the following data points once for each successive 15-minute period on the hour and at equally spaced intervals thereafter:

a. Sulfur oxide concentration in the stack in units of ppmv.

b. Oxygen concentration or carbon dioxide in the stack in units of percent.

c. Volumetric flow rate of stack gases in units of dry or wet standard cubic feet per hour (dscfh or wscfh). For affected equipment standard gas conditions are defined as a temperature at 68°F and one atmosphere of pressure.

d. (i) Fuel flow rates in units of standard cubic feet per hour(scfh) for gaseous fuels or pounds per hour (lb/hr) for liquid fuels if EPA Method 19 is used to calculate the stack gas volumetric flow rate, and

(ii) Fuel type.

e. Sulfur oxide mass emissions in units of lb/hour. The sulfur oxide emissions are calculated according to the following:

$$e_i = a_i \times c_i \times 1.662 \times 10^{-7} \quad \text{(Eq. 1)}$$

where:

e_i = The mass emissions of sulfur oxides (lb/hr),

a_i = The stack gas concentration of sulfur oxide (ppmv),

c_i = The stack gas volumetric flow rate (scfh).

Example Calculation:

a_i = 2.7 ppm
c_i = 90,000 scfh
e_i = $a_i \times c_i \times 1.662 \times 10^{-7}$
e_i = $(2.7)(90{,}000)(1.662 \times 10^{-7})$ = 0.04 lb/hr SO_x

When the CEMS uses the heat input rate and oxygen concentration to determine the sulfur oxide emissions, the following equation would be used to calculate the emission of sulfur oxide:

$$e_i = a_i \times [20.9/(20.9 - b_i)] \times 1.662 \times 10^{-7} \times \sum_{j=1}^{r} (F_{dii} \times d_{ii} \times V_{ii}) \qquad \text{(Eq. 2)}$$

where:

e_i = The mass emissions of sulfur oxide (lb/hr),
a_i = The stack gas concentration of sulfur oxide (ppmv),
b_i = The stack gas concentrations of oxygen (%),
r = The number of different types of fuel,
F_{dij} = The F factor for each type of fuel, the ratio of the gas volume of the products of combustion to the heat content of the fuel (scf/10^6 Btu),
d_{ij} = The metered fuel flow rate for each type of fuel measured every 15-minute period,
V_{ii} = The higher heating value of the fuel for each type of fuel.

The product ($d_{ij} \times V_{ij}$) must have units of millions of Btu per hour (10^6 Btu/hr). Equation 2 may not be used in cases where enriched oxygen is used, non-fuel sources of carbon dioxide are present (e.g., lime kilns and calciners), and the oxygen content of the stack gas is 19 percent or greater.

Example Calculation:

$$e_i = a_i \times [20.9/(20.9 - b_i)] \times 1.662 \times 10^{-7} \times \sum_{j=1}^{r} (F_{dii} \times d_{ii} \times V_{ii})$$

where:

a_i = 38.9 ppm
b_i = 5.6%
F_{dii} = 8710 dscf/10^6 Btu
d_{ii} = 10,000 dscfh
V_{ii} = 1394 Btu/dscf
e_i = $38.9 \times [20.9/(20.9 - 5.6)] \times 1.662 \times 10^{-7} \times [8710/10^6 \times 10000 \times 1394]$
e_i = 1.1 lb/hr of SO_x

When the CEMS uses the heat input rate and carbon dioxide concentration to determine the sulfur oxide emissions, the following equation shall be used to calculate the emission of sulfur oxide:

$$e_i = (a_i/t_i) \times 100 \times 1.662 \times 10^{-7} \times \sum_{j=1}^{r} (F_{cij} \times d_{ij} \times V_{ij}) \qquad \text{(Eq. 3)}$$

where:

e_i = The mass emissions of sulfur oxide (lb/hr).
a_i = The stack gas concentration of sulfur dioxide (ppmv).
t_i = The stack gas concentrations of carbon dioxide (%).
r = The number of different types of fuel.
F_{cij} = The carbon dioxide-based dry F factor for each type of fuel, the ratio of the dry gas volume of carbon dioxide to the heat content of the fuel (scf/10^6 Btu).
d_{ij} = The metered fuel flow rate for each type of fuel measured every 15-minute period.
V_{ii} = The higher heating value of the fuel for each type of fuel.

The product (d_{ij} x V_{ij}) must have units of millions of Btu per hour (10^6 Btu/hr).

Example Calculation:

$$e_i = (a_i/t_i) \times 100 \times 1.662 \times 10^{-7} \times \sum_{j=1}^{r} (F_{cii} \times d_{ii} \times V_{ii})$$

where:
a_i = 38.9 ppm
t_i = 11.0%
F_{cii} = 1040 scf/10^6 Btu
d_{ii} = 10,000 dscfh
V_{ii} = 1394 Btu/dscf
e_i = (38.9/11.0) x 100 x 1.662 x 10^{-7} x [1040/10^6 x 10000 x 1394]
e_i = 0.85 lb/hr of SO_x

When the CEMS uses the fuel gas flow rate and the sulfur content to determine the sulfur oxides emission rate, the CEMS shall use the following equation to calculate the emissions of sulfur oxide:

$$e_i = s_i \times d_i \times 1.662 \times 10^{-7} \quad \text{(Eq. 4)}$$

where:
e_i = The emissions of sulfur oxide (lb/hr),
s_i = The sulfur content of fuel gas (ppmv),
d_i = The fuel gas flow rate (scfh).

Example Calculation:
s_i = 38 ppmv
d_i = 1,576,980 scfh = 1.577 x 10^6 scfh
e_i = (38)(1.577 x 10^6 scfh)(1.662 x 10^{-7}) = 9.96 lb/hr.

f. All measurements for concentrations and stack gas flow rates, and selection of F factor shall be made on a consistent wet or dry basis.

g. CEMS status. The following codes shall be used to report the CEMS status:

1-1 - VALID DATA
2-2 - CALIBRATION
3-3 - OFF LINE

4-4 - ALTERNATE DATA ACQUISITION (e.g., manual sampling)

5-5 - OUT OF CONTROL

6-6 - FUEL SWITCH (e.g., gas to oil, coke to coal)

7-7 - 10% RANGE (may be used to report at default 10% valid range whenever actual concentration value is below 10%)

8-8 - LOWER THAN 10% RANGE (may be used to report at actual concentration value if less than 10% valid range

9-9 - NON-OPERATIONAL

h. For processes in which less than 50% of emissions are caused by fuel combustion, record the Source Classification Code (SCC) for the process conducted. SCCs are listed in the State of California Air Resources Board Document "Instructions for the Emission Data System Review and Update Report, Appendix III, Source Classification Codes and EPA Emission Factors".

i. The count of valid data points collected.

j. The count of data points in excess of 95% of span range of the monitor collected.

2. Hourly Calculations

The hourly average stack gas concentrations of sulfur oxides and oxygen, the stack gas volumetric flow rate, the fuel flow rate, the fuel sulfur content of the fuel gas, and the emission rate of sulfur oxides shall be calculated for each piece of affected equipment as follows:

$$A = \frac{\sum_{i=1}^{n} a_i}{n} \quad \text{(for } SO_x \text{ concentration)} \qquad \text{(Eq. 5)}$$

$$B = \frac{\sum_{i=1}^{n} b_i}{n} \quad \text{(for } O_2 \text{ concentration)} \qquad \text{(Eq. 6)}$$

$$C = \frac{\sum_{i=1}^{n} c_i}{n} \quad \text{(for stack gas volumetric flow rate)} \qquad \text{(Eq. 7)}$$

$$D = \frac{\sum_{i=1}^{n} d_i}{n} \quad \text{(for fuel flow rates)} \qquad \text{(Eq. 8)}$$

Calculate D for each type of fuel firing separately.

$$S = \frac{\sum_{i=1}^{n} s_i}{n} \quad \text{(for sulfur content of fuel gas)} \qquad \text{(Eq. 9)}$$

$$E_k = \frac{\sum_{i=1}^{n} e_i}{n} \quad \text{(for } SO_x \text{ emissions)} \qquad \text{(Eq. 10)}$$

All concentrations and stack gas flow rates shall be made on a consistent wet or dry basis

where:

A	=	The hourly average stack gas concentration of sulfur oxides (ppmv),
a_i	=	The measured stack gas concentrations of sulfur oxides (ppmv),
B	=	The hourly average oxygen stack concentration (%),
b_i	=	The measured stack gas concentrations of oxygen (%),
C	=	The hourly average stack gas flow rate (scfh),
c_i	=	The measured stack gas volumetric flow rates (scfh),
D	=	The hourly average metered fuel flow rates, for each type of fuel (appropriate units of volumetric flow rate for each type of fuel, e.g., scfh, gal/hr, lb/hr, bbl/hr, liters/hr, etc.),
d_i	=	The metered fuel flow rates for each type of fuel (appropriate units of volumetric flow rate for each type of fuel, e.g., scfh, gal/hr, lb/hr, bbl/hr, etc.),
S	=	the hourly average sulfur content of the fuel (ppmv),
E_k	=	The hourly average emissions of sulfur oxide (lb/hr),
e_i	=	The measured emissions of sulfur oxide (lb/hr),
n	=	Number of valid data points during the hour.

The values of A through E_k shall be recorded for each affected piece of equipment.

Example Calculation:

For SO_x concentration:

a_1 = 3.0 ppm, a_2 = 4.6 ppm, a_3 = 12.2 ppm, a_4 = 7.0 ppm.

$$A = \frac{\sum_{i=1}^{n} a_i}{n} = \frac{3.0 + 4.6 + 12.2 + 7.0}{4} = 6.7 \text{ ppm}$$

For O_2 concentration:

b_1, = 3.5% O_2, b_2 = 5.2%, b_3 = 4.4%, b_4 = 3.0%

$$B = \frac{\sum_{i=1}^{n} b_i}{n} = \frac{3.5 + 5.2 + 4.4 + 3.0}{4} = 4.0\ \%$$

For stack gas volumetric flow rate:

c_1 = 89,160 scfh c_3 = 91,980 scfh

c_2 = 90,120 scfh c_4 = 89,520 scfh

$$C = \frac{\sum_{i=1}^{n} c_i}{n} = \frac{89{,}160+90{,}120+91{,}980+89{,}520}{4} = 90{,}195 \text{ scfh}$$

For Sulfur:

$$S = \frac{\sum_{i=1}^{n} S_i}{n} \quad \text{(for sulfur content of fuel gas)}$$

S_1 = 558 ppmv H_2S S_3 = 722 ppmv H_2S

S_2 = 630 ppmv H_2S S_4 = 785 ppmv H_2S

$$S = \frac{588 + 630 + 722 + 785}{4} = 681 \text{ ppmv } H_2S$$

For fuel flow rate:

d_1 = 106,392 scfh d_3 = 101,426 scfh

d_2 = 96,504 scfh d_4 = 92,065 scfh

$$D = \frac{\sum_{i=1}^{n} d_i}{n} = \frac{106{,}392+96{,}504+101{,}406+92{,}065}{4} = 99{,}097 \text{ scfh}$$

For SO_x emission rate:

e_1 = .032 lb/hr, e_2 = .037 lb/hr, e_3 = .039 lb/hr, e_4 = .041 lb/hr

$$E_k = \frac{\sum_{i=1}^{n} e_i}{n} = \frac{.032+.037+.039+.041}{4} = .037 \text{ lb/hr.}$$

3. Daily Calculations

a. Daily mass emissions calculation
The daily emissions of sulfur oxides shall be calculated and recorded for each affected SO_X source using the following procedure:

$$G = \sum_{k=1}^{N} E_k + \sum_{m=1}^{P} E_m \quad \text{(Eq. 11)}$$

where:

G = The daily emissions of sulfur oxide (lb),

E_k = The hourly average emission rate using CEMS (lb/hr)

E_m = The hourly average emission rate of sulfur oxides using substitute data (see Chapter 2, Subdivision B, Paragraph 5, Subparagraph b and Chapter 2, Subdivision F)(lb/hr),

N = Number of hours of valid data (see Chapter 2, Subdivision B, Paragraph 5) from the CEMS coinciding with the source operating hours,

P = Number of hours using substitute data when the source is operating; and

M = Number of hours during the day.

Note that M = N + P = 24 hours

Example Calculation:

E_m	=	1.7 lb/hr
N	=	23 hrs
P	=	1 hr
M	=	24 hr
E_k	=	0.037 lb/hr
G	=	(0.037 lb/hr)(23 hr) + (1.7 lb/hr)(1hr)
G	=	2.55 lb/day SO_X

4. Operational Requirements

The CEMS shall be operated and data recorded at all times except for CEMS breakdowns and repairs. Calibration data shall be recorded during zero and span calibration checks, and zero and span adjustments. For periods of hot standby the Facility Permit holder may enter a default value for SO_X emissions. Before using any default values the Facility Permit holder must obtain the approval of the Executive Officer and must include in the CEMS applications or CEMS plans the estimates of SO_X emissions, the SO_X concentrations, the oxygen concentrations, the sulfur content of fuel gas, and the fuel input rates or the stack gas volumetric flow rates during hot standby conditions. The Executive Officer will approve only those emission values which are found to correspond to hot standby conditions.

5. Requirements for Valid Data Points

Valid data points are data points from a CEMS which meets the requirements of Chapter 2, Subdivision B, Paragraph 14, and which is not out-of-control as defined in Attachment C - Quality Assurance and Quality Control Procedures. In addition, whenever specifically allowed by these RECLAIM rules, data points obtained by the methods specified in Chapter 2, Subdivision B, Paragraph 6 or Chapter 2, Subdivision B, Paragraph 7, are considered valid. Furthermore, a data point gathered by a certified CEMS except a zero value data point, shall not be valid unless it meets the requirements of Chapter 2, Subdivision B, Subparagraph (8)(a). A zero value data point is a data point gathered while the source is not operating and is within 5% of the span range from zero value.

a. Each CEMS and component thereof shall be capable of completing a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 15-minute interval.

b. Raw data shall be gathered from the monitors at equally spaced intervals. The Facility Permit holder shall specify, within the test report for a Relative Accuracy Test Audit of a CEMS, the frequency of data gathering in a 15-minute interval. This data gathering frequency shall remain the same throughout the period following the Relative Accuracy Test Audit until a subsequent Relative Accuracy Test Audit is conducted with a different specified frequency. The specified frequency shall be the frequency for data gathering to constitute continuous measurement.

c. All valid raw data points gathered from the monitors within a 15-minute interval shall be used to compute a 15-minute average emissions data point. If only one valid data point is gathered within a 15-minute interval, that data point shall be used as the 15-minute average emission data point. No invalid data points may be used to compute the 15-minute average emission data point. A valid 15-minute average emission data point must further be based on a minimum of one valid raw data point.

d. Except for facilities which are required to comply with 40 CFR Part 75, the following data for each 15-minute period shall be computed for each CEMS:
   i. the average emissions values,
   ii. the count of valid data points, and
   iii. the count of data points in excess of 95% of span range of the monitor.

e. All SO_x concentration, volumetric flow, and SO_x emission rate data shall be reduced to 1 hour averages. Valid hour averages shall be equally computed based on four valid 15-minute average emission data points equally spaced over each 1 hour period, commencing at 12:00 a.m., except for a maximum of four 1-hour maintenance periods in each day during which CEMS maintenance activities such as calibration, quality assurance, maintenance, or CEMS repair is conducted. During these 1-hour maintenance periods a valid hour average shall consist of at least two valid 15-

minute average emission data points. A 1-hour maintenance period is defined when the operation of the CEMS is interrupted for CEMS maintenance activities at any time during any 1-hour period, and that period shall count towards the four 1-hour maintenance periods allowed regardless of the number of valid data points gathered. The CEMS shall be kept properly operational at all times unless such CEMS must be turned off for CEMS maintenance activities.

f. Failure of the CEMS to acquire the required number of valid 15-minute average emission data points within any 1-hour period shall result in the loss of such data for the entire 1-hour period and the Facility Permit holder shall record and report data by means of the data acquisition and handling system for the missing hour in accordance with the applicable procedures for substituting missing data in the Missing Data Procedures in Chapter 2 Subdivision E of this document.

6. Alternative Data Acquisition Using Reference Methods

a. When valid sulfur oxides emission data is not collected by the permanently installed CEMS, emission rate data may be obtained using District Methods 6.1 or 100.1 (for SO_X concentration in the stack gas) in conjunction with District Methods 1.1, 2.1, 3.1, and 4.1 or by using District Methods 6.1 or 100.1 in conjunction with District Method 3.1 and EPA Method 19. Emission rate data may also be obtained using District Methods 307-91 or ASTM Method D1072-90, Standard Test for Total Sulfur in Fuel Gases (for sulfur content in the fuel gas) in conjunction with the fuel gas flow rate.

b. If the Facility Permit holder chooses to use a standby CEMS (such as in a mobile van or other configuration), to obtain alternative monitoring data at such times when the permanently installed CEMS for the affected source(s) cannot produce valid data, then the standby CEMS is subject to the following requirements:

i. Standby CEMS shall be equivalent in relative accuracy, reliability, reproducibility and timeliness to the corresponding permanently installed CEMS.

ii. The Facility Permit holder shall submit a standby CEMS plan to the District for review prior to using the standby CEMS.

iii. District acceptance of standby CEMS data shall be contingent on District approval of the plan.

iv. The use of standby CEMS shall be limited to a total of 6 months for any source(s) within a calendar year.

v. The Facility Permit holder shall notify the District within 24 hours if the standby CEMS is to be used in place of the permanently installed CEMS.

vi. During the first 30 days of standby CEMS use, the Facility Permit holder shall conduct a Certified Gas Audit (CGA) of the standby CEMS.

vii. The Facility Permit holder shall notify the District within the 30-day period if the standby CEMS shall be used longer than 30 days.

viii. After the first 30 days of using the standby CEMS, the Facility Permit holder shall conduct at least one RATA of the standby CEMS and the RATA shall be conducted within 90 days of the initial use of the standby CEMS.

ix. All RATA and CGA shall be performed by testing firms/laboratories who have received approval from the District by going through the District's laboratory approval program.

x. Immediately prior to obtaining data from the source(s) to be monitored, the standby CEMS shall be quality assured in accordance with District Method 100.1

7. Alternative Data Acquisition Using Process Curves or Other Means

Process curves of SO_X emissions or other alternative means of SO_X emission data generation shall be used to obtain sulfur oxides emission data, provided the Facility Permit holder has obtained the approval of the Executive Officer prior to using alternate means of SO_X emission data generation. The process curves and the alternate means of SO_X emission data generation mentioned in this paragraph shall not be used more than 72 hours per calendar month and shall only be used if no CEMS data or reference method data gathered under Chapter 2, Subdivision B, Paragraph 6 is available. Process curves may be used on units which have air pollution control devices for the control of sulfur oxides emissions provided the Facility Permit holder submits a complete list of operating conditions that characterize the permitted operation. The conditions must be specified in the Facility Permit for that equipment. The process variables specified in the Facility Permit conditions must be monitored by the source.

8. Span Range Requirements for SO_x Analyzers or Fuel Gas Sulfur Analyzers and O_2 Analyzers

a. Full scale span ranges for the SO_x analyzers and O_2 analyzers used as part of a stack gas volumetric flow system at each source shall be set on an individual basis. The full scale span range of the SO_x analyzers and O_2 analyzers shall be set so that all data points gathered by the CEMS lie within 10 - 95 percent of the full scale span range. However, any data points that fall below 10 percent of the full scale span range may be reported in accordance with 8(b), 8(c), or 8(d) as applicable. Missing Data Procedures as prescribed in Chapter 2, Subdivision E shall be substituted for any data points falling above 95 percent range of the full scale span range.

b. For CEMS with RECLAIM certified multiple span ranges, the Facility Permit holder shall report data that falls below 10 percent of the higher full scale span range and above 95 percent of the lower full scale span range, at the 10 percent value of the higher full scale span range.

i. The Facility Permit holder electing (or who may be required) to measure concentrations that fall below 10 percent of the higher full scale span value of any range (other than the lowest vendor guaranteed span range), shall perform a linearity test according to the procedure in Attachment F, Section B "Linearity Error", to satisfy the performance requirements.

c. In the event that any data points gathered by the CEMS fall below 10 percent of the full scale span range, the Facility Permit holder may elect to report SO_x concentrations at the 10 percent full scale span range value.

d. In the event that any data points gathered by the CEMS fall below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS (defined as the lowest full scale span range that the vendor guarantees to be capable of meeting all current certification requirements of RECLAIM in Rule 2011 Protocols, Appendix A), the Facility Permit holder may elect to use the following procedures to measure and report SO_x concentrations.

i. Report all monitored concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS at the 10 percent lowest vendor guaranteed full scale span range value, or

ii. Report all monitored concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS at the actual measured value, provided that the CEMS meets the Alternative Performance Requirements prescribed in Attachment F.

The Alternative Performance Requirements prescribed in Attachment F shall be imposed in place of the semiannual assessments as required pursuant to Attachment C (B)(2).

e. The Facility Permit holder electing to use (B)(8)(c) and (B)(8)(d)(i) to report SO_x concentrations that fall below 10 percent of full scale span range or 10 percent of the lowest vendor guaranteed full scale span range for that CEMS, shall meet the following:

i. In the event any of the specified testing requirements as prescribed in Attachment C (B)(2) are not met, the Facility Permit holder shall no longer use (B)(8)(c) or (B)(8)(d)(i) to report SO_x concentrations below 10 percent of the full scale span range until compliance is demonstrated. Missing Data Procedures specified in Chapter 2,

Subdivision E shall apply retroactively from the date in which the Facility Permit holder last demonstrated compliance with Attachment C (B)(2).

ii. From September 8, 1995 to the beginning of the compliance year (January 1, 1995 for Cycle 1 and July 1, 1995 for Cycle 2), the Facility Permit holder may retroactively report concentrations that fell below 10 percent of the full scale span range at the 10 percent span range value, in lieu of using the Missing Data Procedures specified in Chapter 2, Subdivision E.

f. The Facility Permit holder electing to use (B)(8)(d)(ii) to measure and report SO_x concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS, shall meet the following:

i. Submit an application, with the appropriate fees, supporting documentation, and if necessary test protocols to the Executive Officer or designee in order to amend their CEMS Certification Plan to include the selected criteria. The application shall be approved by the Executive Officer or designee prior to using (B)(8)(d)(ii).

ii. (B)(8)(d)(ii) may only be chosen after initial tests as prescribed in Attachment F are completed and demonstrate that the CEMS is capable of measuring SO_x concentrations at below 10 percent of the full scale span range.

iii. In the event any of the specified reporting and testing requirements for (B)(8)(d)(ii) as prescribed in Attachment F are not met, the Facility Permit holder shall no longer use (B)(8)(d)(ii) to measure SO_x concentrations below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS until compliance with (B)(8)(d)(ii) is demonstrated. Missing Data Procedures described in Chapter 2, Subdivision E shall apply retroactively from the date in which the Facility Permit holder last demonstrated compliance with (B)(8)(d)(ii), unless the Facility Permit holder can demonstrate compliance with Attachment C (B)(2), then the Facility Permit holder may report concentrations retroactively at the 10 percent lowest vendor guaranteed span range value and may continue to report at the 10 percent lowest vendor guaranteed span range value until compliance is demonstrated with (B)(8)(d)(ii).

iv. In the event that the SO_x concentrations are at levels such that the Facility Permit holder cannot complete the low level spike recovery test or alternative reference method test for low level concentrations pursuant to Attachment F, then the Facility Permit holder may elect to report all monitored concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range at the 10

percent lowest vendor guaranteed full scale span range value, in lieu of using Missing Data Procedures.

v. Upon approval of the CEMS application to use (B)(8)(d)(ii), the Facility Permit holder may retroactively report concentrations at the 10 percent lowest vendor guaranteed span range value in lieu of using the Missing Data Procedures specified Chapter 2, Subdivision E, from the beginning of the compliance year for which the application was submitted up until the application approval date.

g. Up until July 1, 1996, Facility Permit holders whose CEMS have been provisionally or finally certified prior to September 8, 1995, and have used Missing Data Procedures as prescribed in Chapter 2, Subdivision E to report mass emissions that have been measured by the CEMS in the 10 percent to less than 20 percent of full scale span range, may report the actual concentrations measured in this range as valid data retroactively from the beginning of the current compliance year.

9. Calibration Drift Requirements

The CEMS design shall allow determination of calibration drift (both negative and positive) at zero level (0 to 10 percent of full scale and high-level (80 to 100 percent of full scale) values. Alternative low-level and high-level span values shall be allowed with the prior written approval of the Executive Officer.

10. Relative Accuracy Requirements for Stack Gas Volumetric Flow Measurement Systems

The stack gas volumetric flow measurement system shall meet a relative accuracy requirement of being less than or equal to 15 percent of the mean value of the reference method test data in units of standard cubic feet per hour (scfh). Relative accuracy is calculated by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2. Alternatively, for cases where the mean stack gas velocity obtained by reference method test is less than 15 feet per second, the flow relative accuracy requirement may be met if equation 11a is satisfied.

$$|d| + |cc| <= 2 \text{ feet per second} \times A \times cf \qquad \text{(Eq. 11a)}$$

Where

d = average of differences between stack gas volumetric flow measurement system reading and the corresponding reference method test data in units of standard cubic feet per hour.

cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.

A = Stack cross sectional area in the plane of measurement.

cf = conversion factor to standard cubic feet per hour.

The volumetric flow measurement system shall also meet the specifications in Attachment B (BIAS TEST) of this protocol. Prior to conducting a certification or re-certification test, the Facility Permit holder shall perform a flow profile study to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The results of such study shall be part of the certification test report.

There shall be a minimum of nine sets of tests conducted. All data collected shall be submitted to the Executive Officer and shall be used to determine relative accuracy except data may be rejected per the technical guidance or for unusual problems and/or occurrences during testing (e.g., process upsets, CEMS malfunction, testing failure) if the number of tests exceeds nine sets. Any exclusion of data must be substantiated with appropriate documentation and is subject to approval by the Executive Officer.

In situations where the stack gas velocity is low (less than 10 ft./sec.) and the above relative accuracy procedure provides results that have a low level of accuracy and precision, the relative accuracy of the fuel flow meter may be determined according to one of the following alternatives:

a. Calibrate the facility CEMS fuel flow meter in accordance with the procedures outlined in 40 CFR Part 75, Appendix D, either in-line or off-line.

b. Calibrate a test fuel flow meter in accordance with the procedures outlined in 40 CFR Part 75, Appendix D. Use the calibrated test fuel meter to calibrate the facility CEMS fuel flow meter to the same level of accuracy and precision as in 40 CFR Part 75, Appendix D.

c. Calibrate a test fuel flow meter according to the procedure outlined in (B)(10)(b) and install this meter in line with the facility CEMS fuel flow meter and use 40 CFR Part 60, Method 19 (F-factor approach) to determine relative accuracy to the same level of accuracy as in (B)(10).

Other alternative techniques (e.g., tracer gas approach, electronic micro-manometer) may be used to determine relative accuracy of fuel flow meters where low stack volumetric flow rates exist, if these techniques are approved in writing by the District.

11. Quality Assurance for Fuel Flow Meters

Fuel flow measuring devices used for obtaining stack flow in conjunction with F-factors shall be tested as installed for relative accuracy using reference methods to determine stack flow.

If the flow device manufacturer has a method or device that permits the fuel flow measuring device to be tested as installed for relative accuracy, the Facility Permit holder shall request approval from the Executive

Officer. Approval will be granted in cases where the Facility Permit holder can demonstrate to the satisfaction of the Executive Officer that no suitable testing location exists in the exhaust stacks or ducts and that it would be an inordinate cost burden to modify the exhaust stack configuration to provide a suitable testing location. The method or device used for relative accuracy testing shall be traceable to NIST standards. This method shall be used only if natural gas, fuel oil, or other fuels can be shown, by the Facility Permit holder to have stable F-factors and gross heating values, or if the Facility Permit holder measures the F-factor and gross heating value of the fuel. A stable F-Factor is defined as not varying by more than +/-2.5 % from the constant value used for F-Factor. For the fuels listed in 40 CFR 60, Appendix A, Method 19, Table 19-1, the F-Factors are assumed to be stable at the value cited in Table 19-1. Any F-Factor cited in Regulation XX shall supersede the F-Factor in Table 19-1. For fuels not listed in the citations above, but which the Facility Permit holder can demonstrate that the source-specific F-Factor meets the same stability criteria, periodic reporting of F-Factor may be accepted and the adequacy to the frequency of analysis shall be demonstrated by the facility such that the probability that any given analysis will differ from the previous analysis by more than 5% (relative to the previous analysis) is less than 5%. Analysis records shall be maintained, including all charts and laboratory notes.

12. Relative Accuracy Requirements for Mass Emission Rate Measurement

The mass emission rate measurement shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of lb/hr. Relative accuracy is calculated by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2. The emission rate measurement shall also meet the specifications in Attachment B (BIAS TEST) of this Appendix A. Alternatively, for cases where the mean SOx concentration obtained by reference test method is less than or equal to 10.0 ppm, or the mean stack gas velocity obtained by reference test method is less than 15 feet per second, the mass emission rate measurement relative accuracy requirement may be met if equation 11b is satisfied.

$$|d| + |cc| <= (c \times s \times A) \times cf \qquad \text{(Eq. 11b)}$$

Where
d = average of differences between mass emission rate determined by the CEMS and the corresponding reference method test data in units of pounds per hour.
cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.
A = Stack cross sectional area in the plane of measurement.
c = 2.0 ppm or mean concentration obtained by reference test method, whichever is greater.
s = 2 feet per second or mean stack gas velocity obtained by reference test method, whichever is greater.
cf = conversion factor to pounds per hour.

There shall be a minimum of nine sets of tests conducted. All data collected shall be submitted to the Executive Officer and shall be used to determine relative accuracy except data may be rejected per the technical guidance or for unusual problems and/or occurrences during testing (e.g., process upsets, CEMS malfunction, testing failure) if the number of tests exceeds nine sets. Any exclusion of data must be substantiated with appropriate documentation and is subject to approval by the Executive Officer.

13. Relative Accuracy Requirements for Analyzers

The sulfur oxides gas analyzers shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of ppmv for sulfur oxides. Relative accuracy is calculated by the equations in Section 8 of 40 CFR, Part 60, Appendix B, Performance Specification 2. Alternatively, for cases where the mean value of the reference method test data is less than 10 ppmv, the SOx concentration relative accuracy requirement may be met if equation 11c is satisfied.

$$|d| + |cc| <= 2.0 \text{ ppmv} \qquad \text{(Eq. 11c)}$$

Where:

d = average of differences between the SOx concentration measurement system reading and the corresponding reference method test data in units of ppmv.

cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.

The oxygen and carbon dioxide gas analyzers shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of volume percent. Relative accuracy is calculated by the equations in Section 8 of 40 CFR, Part 60, Appendix B, Performance Specification 2. Alternatively, for cases where the mean value of the reference method test data for oxygen or carbon dioxide concentration is less than 5.0 volume percent, the relative accuracy requirement for oxygen or carbon dioxide concentration may be met if equation 11d is satisfied.

$$|d| + |cc| <= 1.0 \text{ volume percent} \qquad \text{(Eq. 11d)}$$

Where:

d = average of differences between the oxygen or carbon dioxide concentration measurement system reading and the corresponding reference method test data.

cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.

The portion of the CEMS which samples, conditions, analyzes, and records the sulfur in the fuel gas shall be certified using the specifications in 40 CFR, Part 60, Appendix B, Performance Specification 2 with the exception that District Method 307-91 shall be used for reference method to determine the sulfur content in the fuel gas. Units using monitors with more than one span range must perform the calibration error test on all span ranges. This portion of the CEMS shall also meet the specifications in Attachment B of this Appendix A.

There shall be a minimum of nine sets of tests conducted. All data collected shall be submitted to the Executive Officer and shall be used to determine relative accuracy except data may be rejected per the technical guidance or for unusual problems and/or occurrences during testing (e.g., process upsets, CEMS malfunction, testing failure) if the number of tests exceeds nine sets. Any exclusion of data must be substantiated with appropriate documentation and is subject to approval by the Executive Officer.

14. Certification

a. Provisional Approval

The Facility Permit holder of a major source shall submit certification test results and supporting documents to the District for each CEMS within the applicable time period required by Rule 2011 to install, operate, and maintain a CEMS. The Facility Permit holder shall certify that the results show that the CEMS has met all the requirements of the protocol if its submission is after August 31, 1994. Upon receipt of the test results and the certification that the CEMS is in compliance, the District will issue a Provisional Approval. The effective date of Provisional Approval shall be the last date of source testing if the test results are submitted within 60 days from the last date of source testing. However, if the test results are submitted more than 60 days after the last date of source testing, the effective date of Provisional Approval shall be the date of submittal of the testing results. After the Provisional Approval, the Facility Permit holder shall comply with the requirements under Attachment C - Quality Assurance and Quality Control Procedures.

b. Final Certification

After the Provisional Approval, all the data measured and recorded by the CEMS will be considered valid quality assured data provided that the Executive Officer does not issue a notice of disapproval of final certification. Final certification of the CEMS will be granted if the certification test results show that the CEMS has met all the requirements of the protocol, including Subdivision B, Paragraphs 10, 12, and 13 of this Chapter.

In the case where the test results show that the CEMS does not meet all the requirements of the rule, the Executive Officer will disapprove the final certification. If this occurs, the previously considered valid data from the date of Provisional Approval shall

be replaced by data as specified in subdivision (E) -Missing Data Procedures. This procedure shall be used until the time that new certification test results are submitted, and the CEMS has received final approval by the District. After the Provisional Approval, the Facility Permit holder shall comply with the requirements under Attachment C - Quality Assurance and Quality Control Procedures. Data collected by the CEMS shall not be valid unless the CEMS is demonstrated to meet the requirements under Attachment C.

c. Re-certification

The Facility Permit holder shall conduct tests to re-certify a certified CEMS whenever the CEMS is modified in accordance with paragraph (B)(17).

15. Sampling Location Requirements

Each affected piece of equipment shall have sampling locations which meet the "Guidelines for Construction of Sampling and Testing Facilities" in the District Source Test Manual. If an alternate location (not conforming to the criteria of eight duct diameters downstream and two diameters upstream from a flow disturbance) is used, the absence of flow disturbance shall be demonstrated by using the District method in the Source Test Manual, Chapter X, Section 1.4 or 40 CFR, Part 60, Appendix A, Method 1. Section 2.5 and the absence of stratification shall be demonstrated using District method in the Source Test Manual, Chapter X, Section 13.

16. Sampling Line Requirement

The CEMS sample line from the CEMS probe to the sample conditioning system shall be heated to maintain the sample temperature above the dew point of the sample. This requirement does not apply to dilution probe systems where no sample condensation occurs.

17. Recertification Requirements

The District will reevaluate the monitoring systems at any affected piece of equipment where changes to the basic process equipment or air pollution control equipment occur, to determine the proper full span range of the monitors. Any monitor system requiring change to its full span range in order to meet the criteria in Chapter 2, Subdivision B shall be recertified according to all the specifications in Chapter 2, Subdivision B, Paragraphs 8, 10, 11, and 12, as applicable, including the relative accuracy tests, the calibration drift tests, and the calibration error tests. A new CEMS plan shall be submitted for each CEMS which is reevaluated.

The recertification for any reevaluated CEMS, including existing, modified or new CEMS, monitoring an existing or modified major source that was previously permitted under RECLAIM, shall be completed within 90 days of the start-up of the newly changed or modified equipment monitored by such CEMS. The Facility Permit holder shall calculate and report SO_x emission data for the period prior to the CEMS recertification by means of the automated data acquisition and handling system according to the following procedures:

a. For any CEMS which is recertified within 90 days of start-up of the newly modified equipment, the emission data recorded by the CEMS prior to the recertification would be considered valid and shall be used for calculating and reporting SO_X emissions for the equipment it serves.

b. For any CEMS which is not recertified within 90 days of start-up of the newly modified equipment, the 90th percentile emission data (lb/day) for the previous 90 unit operating days recorded by the CEMS prior to the recertification shall be used for calculating and reporting SO_X emissions for the equipment it serves.

18. Quality Assurance Procedures for Analyzers

The quality assurance and quality control requirements for analyzers, flow monitors, and SO_2 emission rate systems are given in Attachment C (QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES) of these guidelines. The quality assurance plans required by Attachment C of these protocols shall be submitted along with the CEMS certification application to the District for the approval of the Executive Officer. Source test and monitoring equipment inspection reports required by the Protocols shall be kept on-site for at least three years. The reference method tests are those methods specified in Chapter 6 (Reference Methods). Any CEMS which is deemed out-of-control by Attachment C shall be corrected, retested by the appropriate audit procedure, and restored to in-control status within 24 hours after being deemed out-of-control. If the CEMS is not in-control at the end of the 24-hour period, the CEMS data shall be gathered using the methods in Chapter 2, Subdivision B, Paragraph 6 and Chapter 2, Subdivision B, Paragraph 7. All data which is gathered in order to comply with Attachment C shall be maintained for three years and be made available to the Executive Officer upon request. Any such data which is invalidated shall be identified and reasons provided for any data invalidation. The sulfur oxides, oxygen, and fuel gas sulfur monitors shall also meet the specifications in Attachment B (BIAS TEST).

19. Calibration Gas Traceability

All calibration gases used during certification tests and quality assurance and quality control activities shall be NIST/EPA approved standard reference materials (SRM), certified reference materials (CRM), or shall be certified according to ”EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards,” September 1997, EPA 600/R-97/121 or any subsequent version published by EPA.

20. Relative Accuracy Test Audits Report Submittal

A test report shall be submitted to the District for each semi-annual or annual assessment test of a CEMS as required under Paragraph (B)(2) of Attachment C - Quality Assurance and Quality Control Procedures. Such report shall be submitted on or before the end of the quarter following the date of a required test.

21. Concentration Stratification

a. The owner or operator shall demonstrate at the time of certification and re-certification the absence of stratification for locating a facility CEMS gas sampling probe through testing performed according to the method in Chapter X, "Non-Standard Methods and Techniques", of the District Source Testing Manual. The number of tests shall be determined as follows:

i. A minimum of one test shall be conducted if the owner or operator demonstrates to the satisfaction of the Executive Officer that the equipment operates within a 20 percent load range for at least 80 percent of the time;

ii. A minimum of two tests shall be conducted if the equipment operates between 20 and 50 percent load range for at least 80 percent of the time; or,

iii. A minimum of three tests shall be conducted if the equipment operates outside of the criteria in clauses (i) and (ii) above.

The absence of stratification is considered verified if the difference between the highest measured concentration (time normalized) and the lowest measured concentration (time normalized) divided by the average measured concentration (time normalized), when expressed as a percentage, is less than or equal to 10 percent. Upon verification of the absence of stratification, the owner or operator may position the CEMS sampling probe at any point within the stack with the exception of those points that are adjacent to the stack wall. The CEMS sampling probe should be located in the stack at least one-third of the stack diameter. The RM for RATA may be conducted at a single point within the stack that is not adjacent to the stack wall and does not interfere with the sampling and the operation of the facility CEMS.

b. If testing demonstrates the presence of stratification, the owner or operator shall elect one of the following alternatives:

i. The owner or operator may use a single point sampling probe, if the stratification is greater than 10 percent but the difference between the highest measured concentration (time normalized) and the lowest measured concentration (time normalized) is less than or equal to 2.0 ppmv:

I. Then the CEMS sampling probe may be located at any point within the stack except any points that are

adjacent to the stack wall or adjacent to either the highest measured concentration (time normalized) or the lowest measured concentration (time normalized), or

II. If it is not possible to avoid using a point adjacent to either the highest measured concentration (time normalized) or the lowest measured concentration (time normalized), then locate the CEMS sampling probe such that the placement minimizes the difference between the concentration; at the proposed probe location and the concentration at the point of highest measured concentration (time normalized) or the lowest measured concentration (time normalized).

ii. The owner or operator may use a single point sampling probe, if there exists a representative CEMS probe location such that all of the following criteria are met:

I. Each traverse point concentration is within 10.0% of the average of all traverse point concentrations (time normalized), or the difference between each traverse concentration and the average of all traverse point concentrations is less than or equal to 2.0 ppm, and

II. at least one traverse point concentration, not located next to the stack or duct wall, is within 10.0% of each adjacent traverse point concentration, or the difference between each traverse point concentration and the average of all traverse point concentrations is less than or equal to 2.0 ppm, whichever is greater, and,

III. if more than one traverse point meets the criteria listed in subclause (ii)(II), the CEMS probe shall be located at (or as near as practical) the traverse point with minimum adjacent traverse point concentration fluctuations as determined in section (ii)(II), above.

iii. The owner or operator may use a multipoint sampling probe and determine a representative multiple point sampling configuration as approved by the Executive Officer.

iv. The owner or operator may elect to modify the stack and/or CEMS sampling probe location and retest for the absence of stratification.

C. REPORTING PROCEDURES

1. Interim Reporting Procedures

a. From January 1, 1994 until December 31, 1994 (Cycle 1 facilities) and July 1, 1994 until June 30, 1995 (Cycle 2 facilities), the

Facility Permit holder shall be allowed to use an interim procedure for data reporting and storage. The Facility Permit holder shall submit as part of the Facility Permit application, the methodology for interim data reporting and storage. The Facility Permit application shall be subject to the approval of the Executive Officer and shall, at a minimum, meet the requirements of Chapter 2, Subdivision C, Paragraph 1, Subparagraphs b, c and d.

b. All the data required in Chapter 2, Subdivision C, Paragraph 1, Subparagraphs c and d shall be made available to the Executive Officer.

c. For each affected piece of equipment the following information shall be stored on site in a format approved by the Executive Officer.

i. Calendar dates covered in the reporting period.

ii. Each daily emissions (lb/day) and each hourly emissions (lb/hour).

iii. Identification of the operating hours for which a sufficient number of valid data points has not been taken; reasons for not taking sufficient data; and a description of corrective action taken.

d. The following information for the entire facility shall be reported on a monthly basis in a format approved by the Executive officer:

i. Calendar dates covered in the reporting period.

ii. The sum of the daily emissions (lb/day) from each affected SO_X RECLAIM sources.

e. All data required by Chapter 2, Subdivision B, Paragraphs 1,2,3,4,5 and Chapter 2, Subdivision C, Paragraph 1, Subparagraphs c and d shall be recorded and/or transmitted to the District in a format approved by the Executive Officer.

2. Final Reporting Procedures

a. On and after January 1, 1995 (Cycle 1 facilities) and July 1, 1995 (Cycle 2 facilities), the RTU installed at each location shall be used to electronically report total daily mass emissions of SO_X and daily status codes to the District Central SO_X Station.

b. On and after January 1, 1995 (Cycle 1 Facilities) and July 1, 1995 (Cycle 2 Facilities), the Facility Permit holder shall submit to the Executive Officer a Monthly Emissions Report in the manner and form specified by the Executive Officer within 15 days following the end of each calendar month.

c. On and after January 1, 1995, (Cycle 1 facilities) and July 1, 1995 (Cycle 2 facilities), all or part of the interim data storage systems shall remain as continuous backup systems.

d. An alternate backup data storage system shall be implemented, upon request.

D. ALTERNATIVE PROCEDURES FOR EMISSION STACK FLOW RATE DETERMINATION

1. Multiple Sources Venting to a Common Stack

In the event that more than one source vents to a common stack, the alternative reference method for determining individual source flow rates shall use the F-factors in EPA Method 19 and the following equation:

$$c_i = [20.9/(20.9 - b_i)] \times \sum_{j=1}^{r} (F_{dij} \times d_{ij} \times V_{ij}) \qquad \text{(Eq. 12)}$$

where:

c_i	=	The stack gas volumetric flow rate (scfh),
b_i	=	The stack gas concentrations of oxygen (%),
r	=	The number of different types of fuel,
F_{dij}	=	The oxygen-based dry F factor for each type of fuel, the ratio of the gas volume of the products of combustion to the 0heat content of the fuel (scf/10^6 Btu),
d_{ij}	=	The metered fuel flow rate for each type of fuel measured every 15-minute period,
V_{ij}	=	The higher heating value of the fuel for each type of fuel

The product (d_{ij} x V_{ij}) must have units of millions of Btu per hour (10^6 Btu/hr). All concentrations and stack gas flow rates shall be calculated on a consistent wet or dry basis. The measurement of wet concentration and wet F factor shall be allowed provided that wet concentration of SO_x is measured.

Example Calculation:

Gaseous Fuel

B_i = 4.2% O_2
F_{dij} = 8710 dscf/10^6 Btu
d_{ij} = 50,000 scfh
V_{ij} = 1050 Btu/dscf
C_{ig} = [20.9/(20.9 - 4.2)] x [(8710/10^6)(50,000)(1050)
C_{ig} = 570,938 dscfh

Liquid Fuel:

B_i = 4.2% O_2
F_{ij} = 9,190 dscf/10^6 Btu
d_{ij} = 500 gal/hr.
V_{ij} = 136,000 Btu/gal.
C_{il} = (20.9/20.9 - 4.2)(9,190/10^6)(136,000)(500) = 781,150 dscfh

Total Stack Flow Rate = $c_{ig} + c_{jl}$ = 570,938 + 781,150 = 1,352,088 dscfh

This method shall be used for applicable sources before and after the interim period mentioned in Chapter 2, Subdivision C, Paragraph 1. The orifice plates used in each affected piece of equipment vented to a common stack shall meet the requirements in Chapter 2, Subdivision D, Paragraph 2.

2. Quality Assurance for Orifice Plate Measurements

Each orifice plate used to measure the fuel gas flow rate shall be checked once every 12 months using Reference Methods. If the orifice plate cannot be checked using Reference Methods, it may be checked using other methods that can show traceability to NIST Standards. If the orifice plate cannot be checked by Reference Methods or other methods that can show traceability to NIST standards, the orifice plate shall be removed from the gas supply line for an inspection once every 12 months, and the following inspection procedure shall be followed:

a. Each orifice plate shall be visually inspected for any nicks, dents, corrosion, erosion, or any other signs of damage according to the orifice plate manufacturer's specifications.

b. The diameter of each orifice shall be measured using the method recommended by the orifice plate manufacturer.

c. The flatness of the orifice plate shall be checked according to the orifice plate manufacturer's instructions. The departure from flatness of an orifice plate shall not exceed 0.010 inches per inch of dam height (D-d/2) along any diameter. Here D is the inside pipe diameter and d is the orifice diameter at its narrowest constriction.

d. The pressure gauge or other device measuring pressure drop across the orifice shall be calibrated against a manometer, and shall be replaced if it deviates more than ±2 percent across the range.

e. The surface roughness shall be measured using the method recommended by the orifice plate manufacturer. The surface roughness of an orifice plate shall not exceed 50 microinches.

f. The upstream edge of the measuring orifice shall be square and sharp so that it shall not show a beam of light when checked with an orifice gauge.

g. In centering orifice plates, the orifice shall be concentric with the inside of the meter tube or fitting. The concentricity shall be maintained within 3 percent of the inside diameter of the tube or fitting along all diameters.

h. Any other calibration tests specified by the orifice plate manufacturer shall be conducted at this time.

If an orifice plate fails to meet any of the manufacturer's specifications, it shall be replaced within two weeks.

3. **Fuel flow measuring devices used for obtaining stack flow in conjunction with F-factors shall be tested as installed for relative accuracy using reference methods to determine stack flow**.

If the flow device manufacturer has a method or device that permits the fuel flow measuring device to be tested as installed for relative accuracy, the Facility Permit holder shall request approval from the Executive Officer. Approval will be granted in cases where the Facility Permit holder can demonstrate to the satisfaction of the Executive Officer that no suitable testing location exists in the exhaust stacks or ducts and that it would be an inordinate cost burden to modify the exhaust stack configuration to provide a suitable testing location. The method or device used for relative accuracy testing shall be traceable to NIST standards. This method shall be used only if natural gas, fuel oil, or other fuels can be shown, by the Facility Permit holder to have stable F-factors and gross heating values, or if the Facility Permit holder measures the F-factor and gross heating value of the fuel. A stable F-Factor is defined as not varying by more than +/-2.5 % from the constant value used for F-Factor. For the fuels listed in 40 CFR 60, Appendix A, Method 19, Table 19-1, the F-Factors are assumed to be stable at the value cited in Table 19-1. Any F-Factor cited in Regulation XX shall supersede the F-Factor in Table 19-1. For fuels not listed in the citations above, but which the Facility Permit holder can demonstrate that the source-specific F-Factor meets the same stability criteria, periodic reporting of F-Factor may be accepted and the adequacy to the frequency of analysis shall be demonstrated by the facility such that the probability that any given analysis will differ from the previous analysis by more than 5% (relative to the previous analysis) is less than 5%. Analysis records shall be maintained, including all charts and laboratory notes.

E. MISSING DATA PROCEDURES

The following Missing Data Procedures shall be used to determine substitute data whenever a valid hour of SO_X emission data or fuel gas total sulfur content data has not been obtained or recorded.

1. Procedures for Missing SO_X Concentration Data or Fuel Gas Sulfur Content Data

For each equipment, whenever a valid hour of SO_X pollution concentration or fuel gas total sulfur content data has not been obtained or recorded, the Facility Permit holder shall provide substitute data using the procedures below. Alternatively, a facility may provide SO_X pollution concentration missing data using the procedure in 40 CFR Part 75 Subpart D if the relative accuracy of the pollutant analyzer and flow measurement system during the last CEMS certification test and/or RATA are both less than 10%.

a. The Facility Permit holder shall calculate on a daily basis the percent data availability from the SO_X pollutant concentration monitoring analyzer or the fuel gas sulfur content monitoring analyzer according to the following procedures.

i. Calculate on a daily basis a rolling percentage of the operating hours of each equipment that each concentration monitoring system was available for the period from the date the SO_x pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

ii. Record on a daily basis the percent annual concentration monitor availability using the following equation:

$$W = Y/Z \times 100\% \quad \text{(Eq.13)}$$

where:

W = the percent annual monitor availability

Y = the total operating hours for which the monitor provided quality-assured data during the period from the date the SO_x pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Z = the total operating hours of the affected piece of equipment during the period from the date the SO_x pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Example Calculation:

Y	=	1,680 hrs
Z	=	2,160 hrs
W	=	Y/Z x 100%
W	=	(1,680/2,160) x 100%
W	=	78%

b. Whenever the percent annual monitor availability is 95 percent or more, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period less than or equal to 24 hours, substitute data shall be calculated using the 1N Procedure in Attachment A. If insufficient data is available to perform this calculation, substitute data shall be calculated pursuant to clause E(1)(b)(ii).

ii. For a missing data period greater than 24 hours, substitute data shall be calculated using the maximum hourly concentration recorded by the concentration monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(1)(c)(i)(III).

c. i. Whenever the percent annual monitor availability is 90-percent or more but less than 95-percent, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

I. For a missing data period of less than or equal to 3 hours, substitute data shall be calculated using the average of the recorded concentration for the hour immediately before the missing data period and the hour immediately after the missing data period. If no emissions occurred during the hour immediately before the missing data period or the hour immediately after the missing data period, substitute data shall be calculated pursuant to clause E(1)(c)(i)(II).

II. For a missing data period of more than 3 hours but less than or equal to 24 hours, substitute data shall be calculated using the maximum hourly concentration recorded by the concentration monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(1)(c)(i)(III).

III. For a missing data period of greater than 24 hours, substitute data shall be calculated using the maximum hourly concentration recorded by the

concentration monitor for the previous 365 days. If no emissions occurred during the previous 365 days, substitute data shall be calculated pursuant to clause E(1)(c)(ii).

ii. Whenever the percent annual monitor availability is less than 90 percent, substitute data shall be calculated using the highest hourly concentration recorded during the service of the monitoring system. For the purpose of this subparagraph, service of the monitoring system shall start from the initial certification date of the analyzer or the date when a decrease in the valid range of the monitoring system is approved by the Executive Officer.

d. For missing data periods where there is no prior CEMS data available or the highest CEMS data is zero:

i. for less than or equal to 24 hours, the mass emissions shall be calculated using totalized fuel usage and the starting emission factor specified in Table 2 of Rule 2002 or any alternative emission factor used in the determination of initial allocations; or

ii. For less than or equal to 24 hours and where fuel usage is not available, the mass emissions shall be calculated using the equipment maximum rated capacity, 100 percent equipment uptime, and the starting emission factor specified in Table 2 of Rule 2002; or

iii for greater than 24 hours, the mass emissions shall be calculated using the equipment maximum rated capacity, 100 percent uptime, and uncontrolled emission factors. An uncontrolled emission factor is an emission factor representative of the emissions prior to any emission control equipment from the source. An uncontrolled emission factor can be determined based on the starting emission factor used in the determination of initial allocations discounted by any control efficiency, or based on source test data. In determining a control efficiency, the facility permit holder may use source test data.

iv. Retroactively from January 1, 1995 and ending June 30, 1995, for Cycle 1 Facility Permit holders with major SO_X sources that do not have an approved RECLAIM certified CEMS, may calculate SO_X daily mass emissions in lieu of the procedures specified in the above clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii), using (1) the emission factor specified in Table 2 of Rule 2002 or any alternative factor used in the determination of initial allocations or specified in the facility permit and (2) the totalized fuel usage or process throughput.

v. Facility Permit holders with SO_x major sources which demonstrate to the satisfaction of the Executive Officer or

designee that standard equipment is not available for measuring exhaust emissions for the purpose of RECLAIM CEMS certification may submit an application by December 31, 1995 to use an alternative exhaust gas and/or pollutant concentration measuring equipment. Such equipment must employ commercially available technology, and must be demonstrated to meet all the requirements of CEMS certification. Upon approval of the application, the Facility Permit holder may calculate SO_x daily mass emissions in lieu of the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii), using the alternate method of (1) the emission factor specified in the facility permit and (2) the totalized fuel usage or process throughput. Such calculation of SO_x mass emissions may be done retroactively from July 1, 1995 and ending December 31, 1997 or until the CEMS is finally certified, whichever is earlier. The alternate method of calculating mass emissions shall be applied after the proposed equipment has been approved by the Executive Officer. If the CEMS is not certified by December 31, 1997, then SO_X daily mass emissions shall be calculated by the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii) retroactive to July 1, 1995.

vi. If the Facility Permit holder demonstrates that standard equipment is not available but alternative equipment is commercially available as set forth in (E)(1)(d)(v) and also demonstrates to the satisfaction of the Executive Officer or designee that their CEMS cannot be certified because (1) there is an inordinate cost burden for flow monitoring as specified under (B)(11) and (2) that the Reference Methods, as specified in Rule 2011(h)(1) and Appendix A, cannot be applied because no suitable testing location exists in the exhaust stacks or ducts, then the Facility Permit holder may submit an alternative CEMS plan for certification by December 31, 1995. This plan must demonstrate that the proposed monitoring system complies with all other requirements of CEMS certification and is the most technically feasible in measurement accuracy. Until the alternative CEMS is certified or up until December 31, 1997, whichever is earlier, and retroactive to July 1, 1995, the Facility Permit holder may calculate SO_x daily mass emissions in lieu of the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii), using the alternate method of (1) the emission factor specified in the facility permit and (2) the totalized fuel usage or process throughput. If the CEMS is not certified by December 31, 1997, then SO_x daily mass emissions shall be calculated by the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii).

2. Procedures for Missing Stack Exhaust Gas Flow Rate Data

For each equipment, whenever a valid hour of stack exhaust gas flow rate data has not been obtained or recorded, the Facility Permit holder shall provide substitute data using the procedures below. Alternatively, a facility may provide stack exhaust gas flow rate missing data using the procedure in 40 CFR Part 75 Subpart D if the relative accuracy of the pollutant analyzer, flow measurement system, and emission rate measurement during the last CEMS certification test and/or RATA are all less than 10%.

a. The Facility Permit holder shall calculate on a daily basis the percent data availability from the flow monitoring system according to the following procedures.

i. Calculate on a daily basis a rolling percentage of the operating hours of each equipment that each flow monitoring system was available for the period from the date the SO_x pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

ii. Record on a daily basis the percent annual flow monitor availability using the following equation:

$$W = Y/Z \times 100\% \quad \text{(Eq. 14)}$$

where:

W = the percent annual flow monitor availability

Y = the total operating hours for which the monitor provided quality-assured data during the period from the date the SO_x pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Z = the total operating hours of the affected piece of equipment during the period from the date the SO_x pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Example Calculation:

Y	=	1,680 hrs
Z	=	2,160 hrs
W	=	Y/Z x 100%
W	=	(1,680/2,160) x 100%
W	=	78%

b. Whenever the percent annual flow monitor availability is 95 percent or more, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period less than or equal to 24 hours, substitute data shall be calculated using the 1N Procedure in Attachment-A. If insufficient data is available to perform this calculation, substitute data shall be calculated pursuant to clause E(2)(b)(ii).

ii. For a missing data period greater than 24 hours, substitute data shall be calculated using the maximum hourly flow recorded by the flow monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(2)(c)(iii).

c. Whenever the percent annual flow monitor availability is 90-percent or more but less than 95-percent, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period of less than or equal to 3 hours, substitute data shall be calculated using the average of the recorded flow rate for the hour immediately before the missing data period and the hour immediately after the missing data period. If no emissions occurred during the hour immediately before the missing data period or the hour immediately after the missing data period, substitute data shall be calculated pursuant to clause E(2)(c)(ii).

ii. For a missing data period of more than 3 hours but less than or equal to 24 hours, substitute data shall be calculated using the maximum hourly flow rate recorded by the flow monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(2)(c)(iii).

iii. For a missing data period of greater than 24 hours, substitute data shall be calculated using the maximum hourly flow rate recorded by the flow monitor for the previous 365 days. If no emissions occurred during the previous 365 days, substitute data shall be calculated pursuant to subparagraph E(2)(d).

d. Whenever the percent annual flow monitor availability is less than 90 percent, substitute data shall be calculated using the highest hourly flow rate recorded during the service of the monitoring system. For the purpose of this subparagraph, service of the monitoring system shall start from the initial certification date of the analyzer or the date when a decrease in the valid range of the monitoring system is approved by the Executive Officer.

3. Procedures for Missing Stack Exhaust Gas Flow Rate Data and Missing SO_x Concentration Data

For each equipment, whenever a valid hour of both stack exhaust gas flow rate data and SO_x pollution concentration data have not been obtained or recorded, the Facility Permit holder shall provide substitute data using emissions data and the procedures below.

a. The Facility Permit holder shall calculate and record on a daily basis the percent annual emission availability. The percent annual emission availability shall be equal to the lesser of the percent annual concentration monitor availability as determined in subparagraph E(1)(a) or the percent annual flow monitor availability as determined in subparagraph E(2)(a).

b. Whenever the percent annual emission availability is 95 percent or more, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period less than or equal to 24 hours, substitute data shall be calculated using the 1N Procedure in Attachment-A. If insufficient data is available to perform this calculation, substitute data shall be calculated pursuant to clause E(3)(b)(ii).

ii. For a missing data period greater than 24 hours, substitute data shall be calculated using the maximum hourly emissions for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(3)(c)(iii).

c. Whenever the percent annual emission availability is 90-percent or more but less than 95-percent, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period of less than or equal to 3 hours, substitute data shall be calculated using the average of the recorded emissions for the hour immediately before the missing data period and the hour immediately after the missing data period. If no emissions occurred during the hour immediately before the missing data period or the hour immediately after the missing data period, substitute data shall be calculated pursuant to clause E(3)(c)(ii).

ii. For a missing data period of more than 3 hours but less than or equal to 24 hours, substitute data shall be calculated using the maximum hourly emissions recorded for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(3)(c)(iii).

iii. For a missing data period of greater than 24 hours, substitute data shall be calculated using the maximum hourly emissions for the previous 365 days. If no emissions occurred during the previous 365 days, substitute data shall be calculated pursuant to subparagraph E(3)(d).

d. Whenever the percent annual emission availability is less than 90 percent, substitute data shall be calculated using the highest hourly emissions recorded during the service of the monitoring system. For the purpose of this subparagraph, service of the monitoring system shall start from the initial certification date of the analyzer or the date when a decrease in the valid range of the monitoring system is approved by the Executive Officer.

F. TIME-SHARING

1. Time-sharing is where an analyzer and possibly the associated sample conditioning system is used on more than one source. Timesharing is allowed for SO_X RECLAIM sources provided the CEMS can meet the following requirements in addition to the other requirements in this document for each source that is timeshared.

2. All sources shall have mutually compatible span range(s). The span range(s) must be able to meet the criteria in Chapter 2, Subdivision B. Paragraph 8.

3. Each source must have a data reading period greater than or equal to 3 times the longest response time of the system. For shared systems the response time is measured at the input or probe at each source. A demonstration of response time for each source must be made during certification testing. Data is not to be collected following a switch of sampled sources until an amount of time equal to the response time has passed.

4. The CEMS must be able to perform and record zero and span calibrations at each source.

TABLE 2-A

MEASURED VARIABLES FOR MAJOR SO_X SOURCES

EQUIPMENT TYPE : FLUID CATALYTIC CRACKING UNITS

EQUIPMENT	MEASURED VARIABLES
FCCUs	1. Stack SO_x concentration and exhaust flow rate; 2. Status code; 3. Feed rate.
FCCUs with feed hydrodesulfurization	All variables identified for FCCUs.
FCCUs with SO_x reducing catalyst	All variables identified for FCCUs; AND 4. Type and amount of catalyst used.
FCCUs with wet flue gas desulfurization (e.g., slurry of $Ca(OH)_2/CaCO_3$ or $NaOH/Na_2CO_3$)	All variables identified for FCCUs; AND 4. Scrubber solution injection rate.
FCCUs with dry flue gas desulfurization (e.g., dried slurry of $Ca(OH)_2/CaCO_3$ or $NaOH/Na_2CO_3$)	All variables identified for FCCUs; AND 4. Scrubber solution injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR SO_x SOURCES

EQUIPMENT TYPE : TAIL GAS UNITS

EQUIPMENT	MEASURED VARIABLES
Tail gas units	1. Stack SO_x concentration and exhaust flow rate; 2. Status code; 3. Production rate;
Tail gas units with amine treatment (e.g. MEA, DEA, SCOT)	All variables identified for tail gas units; AND 4. Amine solution injection rate
Tail gas units with caustic wash (e.g., MEROX w NaOH, catalyst)	All variables identified for tail gas units; AND 4. Caustic solution injection rate
Tail gas units with metal based wash (e.g., CHEMSWEET with ZnO and Zn Acetate, IRON SPONGE with wood chips w iron oxide)	All variables identified for tail gas units; AND 4. Metal based solution injection rate
Tail gas units with carbonate wash (e.g., CATACARB with K_2CO_3, catalyst, and inhibitor)	All variables identified for tail gas units; AND 4. Carbonate solution injection rate
Tail gas units with REDOX processes (e.g., STRETFORD with Vanadium based solution, WELLMAN-LORD SULFEROX with iron w/chelating agent)	All variables identified for tail gas units; AND 4. REDOX solution injection rate
Tail gas units with other catalytic conversion processes to H_2S (e.g., Hydrotreating)	All variables identified for tail gas units

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR SO_x SOURCES

EQUIPMENT TYPE : SULFURIC ACID PRODUCTION PLANTS

EQUIPMENT	MEASURED VARIABLES
Sulfuric acid production plants with dual absorption processes	1. Stack SO_x concentration and exhaust flow rate; 2. Status code; 3. Sulfuric acid production rate; 4. Strength of acid produced; 5. Inlet SO_2, O_2 concentrations to 1st and 2nd stage converters; 6. Inlet SO_3 to absorption tower; 7. Conversion efficiency of 1st and 2nd stage converters; 8. Conversion efficiency of absorption tower; 9. Efficiency of acid mist control devices; 10. Type and amount of fuel usage for furnace.
Sulfuric acid production plants with sodium sulfite/bisulfite/ammonia scrubbing processes	1. Stack SO_x concentration and exhaust flow rate; 2. Status code; 3. Sulfuric acid production rate; 4. Strength of acid produced 5. Sodium sulfite/bisulfite/ammonia injection rate; 6. Scrubber solution pH 7. Conversion efficiency of absorption tower 8. Efficiency of acid mist control devices; 9. Type and amount of fuel usage for furnace.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR SO_x SOURCES

EQUIPMENT TYPE : EQUIPMENT BURNING REFINERY, LANDFILL OR DIGESTER GASEOUS FUELS

EQUIPMENT	MEASURED VARIABLES
Combustion equipment	1 Stack SO_x, O_2 concentrations, and fuel flow rate; OR Fuel sulfur content and fuel flow rate; 2. Status code;
Combustion equipment with wet scrubber (e.g., Lime CaO, Limestone $CaCO_3$, Sodium Sulfite Na_2SO_3, Double alkali $Na_2SO_3/CaO/CaCO_3$, Magnesium oxide $Mg(OH)_2$)	All variables identified for combustion equipment; AND 3. Scrubber solution injection rate.
Combustion equipment with spray dryer or dry scrubber (e.g., absorption with Na_2CO_3 or slaked lime solution)	All variables identified for combustion equipment; AND 3. Scrubber solution injection rate;
Combustion equipment with carbon adsorption	All variables identified for combustion equipment.

TABLE 2-B

REPORTED VARIABLES FOR ALL MAJOR SO_x SOURCES

EQUIPMENT	REPORTED VARIABLES
Fluid Catalytic Cracking Units Tail Gas Units Sulfuric Acid Production Equipment that burns refinery, landfill or sewage digester gaseous fuel except gas flares. Any existing equipment using SO_x CEMS or equivalent monitoring device, or that is required to install such monitoring device under District rules to be implemented as of [date of adoption]. Any SO_x source or process unit elected by the Facility Permit holder or required by the Executive Officer to be monitored with CEMS or equivalent monitoring device. Any SO_x source or process unit whose reported SO_x emissions was equal to or greater than 10 tpy for any calendar year from 1987 to 1991, inclusive, excluding any SO_X source or process unit which has reduced SO_X emissions below 10 tons per year prior to January 1, 1994.	1. Total Daily SO_x mass emissions from each source; 2. Daily status codes

ATTACHMENT H

RULE 2011 PROTOCOL - ATTACHMENT A

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1 N PROCEDURE

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ATTACHMENT A
1 N PROCEDURE

A. APPLICABILITY

1. This procedure may be used to provide substitute data for affected sources that meet the specified conditions in Chapter 2, Subdivision E, Paragraph 1, Subparagraph b, clause i~~, and~~ Chapter 2, Subdivison E, Paragraph 2, Subparagraph b~~c~~, clause i, and Chapter 2, Subdivision E, Paragraph 3, Subparagraph b, clause i.

B. PROCEDURE

1. Where N is the number of hours of missing emissions data, determine the substitute hourly SO_X concentration (in ppmv), the fuel gas sulfur content (in ppmv), or the hourly flow rate (in scfh) by averaging the measured or substituted values for the 1N hours immediately before the missing data period and the 1N hours immediately after the missing data period.

2. Where 1N hours before or after the missing data period includes a missing data hour, the substituted value previously recorded for such hour(s) pursuant to the missing data procedure shall be used to determine the average in accordance with Subdivision B, Paragraph 1 above.

3. Substitute the calculated average value for each hour of the N hours of missing data.

EXAMPLES OF 1 N PROCEDURE

EXAMPLE 1

HOUR	DATA POINT (LB/HR)
1:00 A.M.	30
2:00 A.M.	25
3:00 A.M	32
4:00 A.M.	34
5:00 A.M.	Missing
6:00 A.M.	Missing
7:00 A.M.	Missing
8:00 A.M.	27
9:00 A.M.	22
10:00 A.M.	25
11:00 A.M	30

To fill in the missing three hours, take the data points from the 3 hours before and the 3 hours after the missing data period to determine an average emission over the 3 hours

$$\text{average emissions} = \frac{25 + 32 + 34 + 27 + 22 + 25}{6} = 27.5 \text{ lb/hr.}$$

The filled in data set should read as follows:

EXAMPLE 1 (continued)

HOUR	DATA POINT (LB/HR)
1:00 A.M.	30
2:00 A.M.	25
3:00 A.M.	32
4:00 A.M.	34
5:00 A.M.	27.5
6:00 A.M.	27.5
7:00 A.M.	27.5
8:00 A.M.	27
9:00 A.M.	22
10:00 A.M.	25
11:00 A.M.	30

EXAMPLES OF 1 N PROCEDURE

EXAMPLE 2

HOUR	DATA POINT (LB/HR)
1:00 A.M.	45
2:00 A.M.	50

3:00 A.M.	53
4:00 A.M.	Missing
5:00 A.M.	Missing
6:00 A.M.	Missing
7:00 A.M.	58
8:00 A.M.	Missing
9:00 A.M.	48
10:00 A.M.	45

In this example the missing data point at 8 A.M. is in the 3-hour period after the 3- hour missing data period. We first fill the 8.A.M. slot.

average emissions for 8 A.M. = $\frac{58+48}{2}$ = 53

The filled in data sheet at this point should read as follows:

EXAMPLE 2 (continued)

HOUR	DATA POINT (LB/HR)
1:00 A.M.	45
2:00 A.M.	50
3:00 A.M.	53
4:00 A.M.	Missing
5:00 A.M.	Missing
6:00 A.M.	Missing
7:00 A.M.	58
8:00 A.M.	53
9:00 A.M.	48
10:00 A.M.	45

The average for the three hour missing data period is:

average emissions = $\frac{45+50+53+58+53+48}{6}$ = 51.2

The completed filled in data sheet should read as follows:

EXAMPLE 2 (continued)

HOUR	DATA POINT (LB/HR)
1:00 A.M.	45
2:00 A.M.	50
3:00 A.M.	53
4:00 A.M.	51.2
5:00 A.M.	51.2
6:00 A.M.	51.2
7:00 A.M.	58
8:00 A.M.	53
9:00 A.M.	48
10:00 A.M.	45

RULE 2011 PROTOCOL-
ATTACHMENT B

BIAS TEST

ATTACHMENT B

BIAS TEST

The bias of the data shall be determined based on the relative accuracy (RA) test data sets and the relative accuracy test audit (RATA) data sets for SOx pollutant concentration monitors, fuel gas sulfur content monitors, flow monitors, and emission rate measurement systems using the procedures outlined below.

1. Calculate the mean of the difference using Equation 2-1 of 40 CFR, Part 60, Appendix B, Performance Specification 2. To calculate bias for an SOx pollutant concentration monitor, "d" shall, for each paired data point, be the difference between the SOx concentration values (in ppmv) obtained from the reference method and the monitor. To calculate bias for a fuel gas sulfur content monitor, "d" shall, for each paired data point, be the difference between the fuel gas sulfur concentration values (in ppmv) obtained from the reference method and the -monitor. To calculate bias for a flow monitor, "d" shall, for each paired data point, be the difference between the flow rate values (in scfh) obtained from the reference method and the monitor. To calculate bias for an emission rate measurement system, "d" shall, for each paired data point, be the difference between the emission rate values (in lb/hr) obtained from the reference method and the monitoring system.

2. Calculate the standard deviation, Sd, of the data set using Equation 2-2 of 40 CFR, Part 60, Appendix B, Performance Specification 2.

3. Calculate the confidence coefficient, cc, of the data set using Equation 2-3 of 40 CFR, Part 60, Appendix B, Performance Specification 2.

4. The monitor passes the bias test if it meets either of the following criteria:

    a. the absolute value of the mean difference is less than |cc|.

    b. the absolute value of the mean difference is less than 1 ppmv.

5. Alternatively, if the monitoring device fails to meet the bias test requirement, the Facility Permit holder may choose to use the bias adjustment procedure as follows:

    a. If the CEMS is biased high relative to the reference method, no correction will be applied.

b. If the CEMS is biased low relative to the reference method, the data shall be corrected for bias using the following procedure:

$$CEM_i^{adjusted} = CEM_i^{monitored} \times BAF \quad \text{(Eq. B-1)}$$

where:

$CEM_i^{adjusted}$ = Data value adjusted for bias at time i.

$CEM_i^{monitored}$ = Data provided by the CEMS at time i.

BAF = Bias Adjustment Factor

$$BAF = 1 + (|d|/CEM) \quad \text{(Eq. B-2)}$$

where:

d = Arithmetic mean of the difference between the CEMS and the reference method measurements during the determination of the bias.

CEM = Mean of the data values provided by the CEMS during the determination of bias.

If the bias test failed in a multi-level RA or RATA, calculate the 13AF for each operating level. Apply the largest BAF obtained to correct for the CEM data output using equation B-1. The facility permit holder shall have the option to apply this adjustment to either all directly monitored data or to emission rates from the time and date of the failed bias test until the date and time of a RATA that does not show bias. These adjusted values shall be used in all forms of missing data computation, and in calculating the mass emission rate.

The BAF is unique for each CEMS. If backup CEMS is used, any BAF applied to primary CEMS shall be applied to the backup CEMS unless there are RATA data for the backup CEMS within the previous year.

If the BAF changes during a RATA, the new BAF must be applied to the emissions data from the time and date of the RATA until the time and date of the next RATA.

The BAF is unique for each CEMS. If backup CEMS is used, any BAF applied to primary CEMS shall be applied to the backup CEMS unless there are RATA data for the backup CEMS within the previous year.

RULE 2011 PROTOCOL - ATTACHMENT C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

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ATTACHMENT C - QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

ATTACHMENT C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

A. QUALITY CONTROL PROGRAM

Develop and implement a quality control program for the continuous emission monitoring systems and their components. As a minimum, include in each quality control program a written plan that describes in detail complete, step-by-step procedures and operations for each of the following activities:

1. Calibration Error Test Procedures

Identify calibration error test procedures specific to the CEMS that may require variance from the procedures used during certification (for example, how the gases are to be injected, adjustments of flow rates and pressures, introduction of reference values, length of time for injection of calibration gases, steps for obtaining calibration error, determination of interferences, and when calibration adjustments should be made).

2. Calibration and Linearity Adjustments

Explain how each component of the CEMS shall be adjusted to provide correct responses to calibration gases, reference values, and/or indications of interference both initially and after repairs or corrective action. Identify equations, conversion factors, assumed moisture content, and other factors affecting calibration of each CEMS.

3. Preventative Maintenance

Keep a written record of procedures, necessary to maintain the CEMS in proper operating condition and a schedule for those procedures.

4. Audit Procedures

Keep copies of written reports received from testing firms/laboratories of procedures and details specific to the installed CEMS that were to be used by the testing firms/laboratories for relative accuracy test audits, such as sampling and analysis methods. The testing firms/laboratories shall have received approval from the District by going through the District's laboratory approval program.

5. Record Keeping Procedures

Keep a written record describing procedures that shall be used to implement the record keeping and reporting requirements.

Specific provisions of Section A-3 and A-5 above of the quality control programs shall constitute specific guidelines for facility personnel. However, facilities shall be required to take reasonable steps to monitor and assure implementation of such specific guidelines. Such reasonable steps may include periodic audits, issuance of periodic reminders, implementing training classes, discipline of employees as necessary, and other appropriate measures. Steps that a facility commits to take to monitor and assure implementation of the specific guidelines shall be set forth in the written plan and shall be the only elements of Section A-3 and A-5 that constitute enforceable requirements under the written plan, unless other program provisions are independently enforceable pursuant to other requirements of the SOx protocols or District or federal rules or regulations.

B. FREQUENCY OF TESTING

There are three situations which will result in an out-of-control period. These include failure of a calibration error test, failure of a relative accuracy test audit, and failure of a BIAS test, and are detailed in this subdivision. Data collected by a CEMS during an out-of-control period shall not be considered valid.

The frequency at which each quality assurance test must be given is as follows:

1. Periodic Assessments

For each monitor or CEMS, perform the following assessments during each day in which the unit combusts any fuel or processes any material (hereafter referred to as a "unit operating day"), or for a monitor or a CEMS on a bypass stack/duct, during each day that emissions pass through the bypass stack or duct. These requirements are effective as of the date when the monitor or CEMS completes certification testing.

a. Calibration Error Testing Requirements for Pollutant Concentration Monitors, Fuel Gas Sulfur Content Monitors, and O_2 Monitors

Test, record, and compute the calibration error of each SO_2 pollutant concentration monitor, fuel gas sulfur content monitor, if applicable, and O_2 monitor at least once on each unit operating day, or for monitors or monitoring systems on bypass stacks/ducts on each day that emissions pass through the bypass stack or duct. Conduct calibration error checks, to the extent practicable, approximately 24 hours apart. Perform the daily calibration error test according to the procedure in Chapter 2, Subdivision B, Paragraph 1, Subparagraph a, Clause ii of this Attachment.

For units with more than one span range, perform the daily calibration error test on each scale that has been used since the last

calibration error test. For example, if the emissions concentration or the fuel gas sulfur content has not exceeded the low-scale span range since the previous calendar day, the calibration error test may be performed on the low-scale only. If, however, the emissions concentration or the fuel gas sulfur content has exceeded the low-scale span range since the previous calibration error test, perform the calibration error test on both the low- and high-scales.

i. Design Requirements for Calibration Error Testing of SO_X Concentration Monitors, the Fuel Gas Sulfur Content Monitors, and O_2 Monitors

Design and equip each SO_X concentration monitor, fuel gas sulfur content monitor, and O_2 monitor with a calibration gas injection port that allows a check of the entire measurement system when calibration gases are introduced. For extractive and dilution type monitors, all monitoring components exposed to the sample gas, (for example, sample lines, filters, scrubbers, conditioners, and as much of the probe as practical) are included in the measurement system. For in situ type monitors, the calibration must check against the injected gas for the performance of all electronic and optical components (for example, transmitter, receiver, analyzer).

Design and equip each pollutant concentration monitor, fuel gas sulfur content and O_2 monitor to allow daily determinations of calibration error (positive or negative) at the zero-level (0 to 20 percent of each span range) and high-level (80 to 100 percent of each span range) concentrations.

ii. Calibration Error Test for SO_X Concentration Monitors, Fuel Gas Sulfur Content Monitors, and O_2 Monitors

Measure the calibration error of each SO_2 concentration analyzer, fuel gas sulfur analyzer, and O_2 monitor once each day according to the following procedures:

If any manual or automatic adjustments to the monitor settings are made, conduct the calibration error test in a way that the magnitude of the adjustments can be determined and recorded.

Perform calibration error tests at two concentrations: (1) zero-level and (2) high level. Zero level is 0 to 20 percent of each span range, and high level is 80 to 100 percent of

each span range. All calibration gases used during certification tests and quality assurance and quality control activities shall be NIST/EPA approved standard reference materials (SRM), certified reference materials (CRM), or shall be certified according to "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards," September 1997, EPA 600/R-97/121 or any subsequent version published by EPA.

Introduce the calibration gas at the gas injection port as specified above. Operate each monitor in its normal sampling mode. For extractive and dilution type monitors, pass the audit gas through all filters, scrubbers, conditioners, and other monitor components used during normal sampling and through as much of the sampling probe as practical. For in situ type monitors, perform calibration checking on all active electronic and optical components, including the transmitter, receiver, and analyzer. Challenge the SO_X concentration monitors, the fuel gas sulfur content monitors, and the O_2 monitors once with each gas. Record the monitor response from the data acquisition and handling system. Use the following equation to determine the calibration error at each concentration once each day:

$$CE = \frac{|R - A|}{S} \times 100 \qquad \text{(Eq. C-1)}$$

Where:

CE = Percentage calibration error based on the span range

R = Reference value of zero- or high-level calibration gas introduced into the monitoring system.

A = Actual monitoring system response to the calibration gas.

S = Span range of the instrument

b. Calibration Error Testing Requirements for Stack Flow Monitors

Test, compute, and record the calibration error of each stack flow monitor at least once within every 14 calendar day period during which at anytime emissions flow through the stack; or for monitors or monitoring systems on bypass stacks or ducts, at least once within every 14 calendar day period during which at anytime emissions flow through the bypass stack or duct. Introduce a zero reference value to the transducer or transmitter. Record flow

monitor output from the data acquisition and handling systems before and after any adjustments. Calculate the calibration error using the following equation :

$$CE = \frac{|R - A|}{S} \times 100 \qquad \text{(Eq. C-2)}$$

Where:

CE = Percentage calibration error based on the span range

R = Zero reference value introduced into the transducer or transmitter.

A = Actual monitoring system response.

S = Span range of the flow monitor.

c. Interference Check for Stack Flow Monitors

Perform the daily flow monitor interference checks specified in Chapter 2, Subdivision B, Paragraph 1, Subparagraph c of this Attachment at least once per operating day (when the unit(s) operate for any part of the day).

Design Requirements for Flow Monitor Interference Checks

Design and equip each flow monitor with a means to ensure that the moisture expected to occur at the monitoring location does not interfere with the proper functioning of the flow monitoring system. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver, or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic backpurging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on at least a daily basis to prevent sensing interference, and (2) a means to detecting leaks in the system at least on a quarterly basis (a manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain

sufficiently clean (for example, backpurging the system) to prevent velocity sensing interference.

d. Recalibration

Adjust the calibration, at a minimum, whenever the calibration error exceeds the limits of the applicable performance specification for the SOx monitor, O_2 monitor or stack flow monitor to meet such specifications. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective. Document the adjustments made.

e. Out-of-Control Period – Calibration Test

An out-of-control period occurs when the calibration error of an SO_2 concentration monitor or a fuel gas sulfur content monitor exceeds 5.0 percent based upon the span range value, when the calibration error of an O_2 monitor exceeds 1.0 percent O_2, or when the calibration error of a flow monitor exceeds 6.0 percent based upon the span range value, which is twice the applicable specification. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion of following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out-of-control if 2 or more valid readings are obtained during that hour as required by Chapter 2, Subdivision B, Paragraph 5, Subparagraph a.

An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of the failed interference check and ends with the hour of completion of an interference check that is passed.

f. Data Recording

Record and tabulate all calibration error test data according to the month, day, clock-hour, and magnitude in ppm, dscfh, and percent volume. Program monitors that automatically adjust data to the calibrated corrected calibration values (for example, microprocessor control) to record either: (1) the unadjusted concentration or flow rate measured in the calibration error test prior to resetting the calibration, or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

2. Semi-annual Assessments

a. For each CEMS, perform the following assessments once semi-annually thereafter, as specified below for the type of test. These semi-annual assessments shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested for certification purposes (initial and recertification) or within three months of the end of the calendar quarter in which the District sent notice of a provisional approval for a CEMS, whichever is later. Thereafter, the semi-annual tests shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested. For CEMS on bypass stacks/ducts, the assessments shall be performed once every two successive operating quarters in which the bypass stacks/ducts were operated. These tests shall be performed after the calendar quarter in which the CEMS was last tested as part of the CEMS certification, as specified below for the type of test.

Relative accuracy tests may be performed on an annual basis rather than on a semi-annual basis if the relative accuracies during the previous audit for the SO_X pollutant concentration monitor, flow monitoring system, and SOx emission rate measurement system are 7.5 percent or less.

b. For CEMS on any stack or duct through which no emissions have passed in two or more successive quarters, the semi-annual assessments must be performed within 14 unit operating days after emissions pass through the stack/duct.

c. The due date for a semi-annual or annual assessment of a major source may be postponed to within 14 unit operating days from the first re-firing of the major source if the major source is physically incapable of being operated and all of the following are met:

i. All fuel feed lines to the major source are either disconnected or opened and either flanges or equivalent sealing devices are placed at both ends of the disconnected or opened lines, and

ii. The fuel meter(s) for the disconnected fuel or opened feed lines are maintained and operated and associated fuel records showing no fuel flow are maintained on site.

This paragraph applies separately for each unrelated, independent event. For any hour that fuel flow records are not available to verify no fuel flow, SOx emissions shall be calculated using the maximum valid hourly emissions from the last 30 days of operation.

Prior to re-starting operation of the major source, the Facility Permit Holder shall: (1) provide written notification to the District no later than 72 hours prior to starting up the source, (2) start the CEMS no later than 24 hours prior to the start-up of the major source, and (3) conduct and pass a Cylinder Gas Analysis (CGA) prior to the start-up of the major source. The emissions data from the CEMS after the re-start of operations is considered valid only if the Facility Permit Holder passes the CGA test. Otherwise, for a non-passing CGA, the CEMS data is considered invalid until the semi-annual or annual assessment is performed and passed. As such, SOx emissions shall be calculated using the maximum valid hourly emissions from the last 30 days of operation commencing with the hour of start up and continuing through the hour prior to performing and passing the semi-annual or annual assessment.

d. An electrical generating facility that either only operates under a California Independent System Operator (Cal ISO) contract or is owned and operated by a municipality may postpone the due date for a semi-annual or annual assessment of a major source to the next calendar quarter provided that the facility shows:

i. The semi-annual or annual assessment was scheduled to be performed during the first 45 days of the calendar quarter in which the assessment was due;

ii. The assessment was not completed due to lack of adequate operational time; and

iii. A CGA was conducted and passed within the calendar quarter when the assessment was due.

e. Relative Accuracy Test Audit

Perform relative accuracy test audits and bias tests semi-annually and no less than 3 months apart for each $S0_2$ pollutant concentration monitor, fuel gas sulfur content monitor, stack gas volumetric flow rate measurement systems, and the $S0_2$ mass emission rate measurement system in accordance with Chapter 2, Subdivision B, Paragraphs 10, 11, 12, and 13 and Attachment B of the Protocol for Rule 2011. The relative accuracy of the pollutant concentration monitor and the mass emission rate measurement system shall be less than or equal to 20.0 percent, and the relative accuracy of the stack gas volumetric flow rate measurement system shall be less than or equal to 15.0 percent. For monitors on bypass stacks/ducts, perform relative accuracy test audits once every two successive bypass operating quarters in accordance with

Chapter 2, Subdivision B, Paragraphs 10, 11, 12, and 13 and Attachment B (bias test) of the Protocol for Rule 2011.

f. Out-of-Control Period – Relative Accuracy Test Audit

An out-of-control period occurs under any of the following conditions: (1) The relative accuracy of an SO_2 pollutant concentration monitor, a fuel gas sulfur content monitor, or the $S0_2$ emission rate measurement system exceeds 20.0 percent; (2) the relative accuracy of the flow rate monitor exceeds 15.0 percent; or (3) failure to conduct a relative accuracy test audit by the due date for a semi-annual assessment. The out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit.

g. Out-of-Control Period – BIAS Test

An out-of-control period occurs if all the following conditions are met:

i. Failure of a bias test as specified in Attachment B of this Appendix;

ii. The CEMS is biased low relative to the reference method (i.e. Bias Adjustment Factor (BAF), as determined in Attachment B of this Appendix, is greater than 1); and

iii. The Facility Permit holder does not apply the BAF to the CEMS data.

The out-of-control period begins with the hour of completion of the failed bias test audit and ends with the hour of completion of a satisfactory bias test.

h. Alternative Relative Accuracy Test Audit

i. The Facility Permit holder of a major source, that has received written approval from the Executive Officer as an intermittently operated source, may postpone the due date for a semi-annual assessment to the end of the next calendar quarter if the Facility Permit holder:

I. operated the source no more than 240 cumulative operating hours and no more than 72 consecutive hours during the calendar quarter when a semi-annual assessment is due; and

II. conducted a relative accuracy test audit on the CEMS serving the source during the previous four calendar quarters and meeting the accuracy criteria as set forth under Subparagraph B.2.e.; and

III. conducted an alterative relative accuracy test audit on the CEMS serving the source during the calendar quarter when a semi-annual assessment is due and meeting the criteria specified under Clause B.2.h.iii.

If any of the requirements under Subclauses B.2.h.i.I, II and III is not met and the source did not have passing RATA during the calendar quarter when the semi-annual assessment is due, emissions from the source shall be determined pursuant to the Missing Data Procedures as specified under Rule 2011, Appendix A, Chapter 2, Subdivision E after the semi-annual assessment due date until the hour of completion of a satisfactory relative accuracy test audit.

ii. The Facility Permit holder may submit a written request to designate a major source as an intermittently operated source provided the Facility Permit holder demonstrates that:

I. During any calendar quarter within the previous two compliance years, the source was operated no more than 240 cumulative operating hours and no more than 72 consecutive hours ; or

II. During any calendar quarter within the next two compliance years, the source will be operated no more than 240 cumulative operating hours and no more than 72 consecutive hours.

iii. An alternative relative accuracy shall consist of a Cylinder Gas Analysis (CGA) method as defined under 40 CFR, Part 60, Appendix F, combined with a flow accuracy verification. For sources equipped with stack flow monitors, the flow accuracy shall be verified by calibrating the transducers and transmitters installed on the stack flow monitors using procedures under Paragraph B.3 of this attachment. For sources equipped with fuel flow meters and no stack flow monitors, the flow accuracy shall be verified by calibrating the fuel flow meters either in-line or offline in accordance with the procedures outlined in

40CFR Part 75, Appendix D. Passing flow accuracy verification results that were obtained within the past 4 quarters may be used in lieu of performing a flow accuracy verification during the calendar quarter when a semi-annual assessment is due. The calculated accuracy for the analyzer responses for NO_x and O_2 concentration shall be within 15 percent or 1 ppm, whichever is greater, as determined by the CGA method as defined under 40 CFR, Part 60, Appendix F. Successive alternative relative accuracy test audits shall be performed no less than 45 days apart.

3. Calibration of Transducers and Transmitters on Stack Flow Monitors

All transducers and transmitters installed on stack flow monitors must be calibrated every two operating calendar quarters, in which an operating calendar quarter is any calendar quarter during which at anytime emissions flow through the stack. Calibration must be done in accordance with Executive Officer approved calibration procedures that employ materials and equipment that are NIST traceable.

When a calibration produces for a transducer and transmitter a percentage accuracy of greater than ± 1%, the Facility Permit holder shall calibrate the transducer and transmitter every calendar operating quarter until a subsequent calibration which shows a percentage accuracy of less than ± 1% is achieved. An out-of-control period occurs when the percentage accuracy exceeds ±2%. If an out-of-control period occurs, the Facility Permit holder shall take corrective measures to obtain a percentage accuracy of less than ±2% prior to performing the next RATA. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion of following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out-of-control if two or more valid data readings are obtained during that hour as required by Chapter 2, Subdivision B, Paragraph 5, Subparagraph a.

R U L E 2 0 1 1 P R O T O C O L
A T T A C H M E N T D

LIST OF ACRONYMS AND ABBREVIATIONS

LIST OF ACRONYMS AND ABBREVIATIONS

APEP	Annual Permit Emission Program
API	American Petroleum Institute
ASTM	American Society for Testing & Materials
BACT	Best Available Control Technology
bhp	Brake Horsepower
bpd	Barrels per Day
Btu	British Thermal Unit
CEMS	Continuous Emission Monitoring System
CPMS	Continuous Process Monitoring System
CPU	Central Processing Unit
CSCACS	Central Station Compliance Advisory Computer System
DAS	Data Acquisition System
DM	District Method
dscfh	Dry Standard Cubic Feet per Hour
FCCU	Fluid Catalytic Cracking Unit
F_d	Dry F Factor
FGR	Flue Gas Recirculation
gpm	Gallons per Minute
ICE	Internal Combustion Engine
ID	Inside Diameter
ISO	International Standards Organization
lbmole	Pound mole
LNB	Low NO_x Burner
MRR	Monitoring, Reporting and Recordkeeping
NIST	National Institute of Standards for Testing
NO_x	Oxides of Nitrogen
NSCR	Non-Selective Catalytic Reduction
O_2	Oxygen
ppmv	Parts per Million Volume
ppmw	Parts per Million by Weight
RAA	Relative Accuracy Audit
RATA	Relative Accuracy Test Audit
RECLAIM	Regional Clean Air Incentives Market

RM	Reference Method
RTC	RECLAIM Trading Credits
RTCC	Real Time Calendar/Clock
RTU	Remote Terminal Unit
scfh	Standard Cubic Feet per Hour
scfm	Standard Cubic Feet per Minute
SCR	Selective Catalytic Reduction
SDD	Software Design Description
SNCR	Selective Non-Catalytic Reduction
SO_X	Oxides of Sulfur
SRG	Software/Hardware Requirement Guideline
swi	Steam Water Injection
tpd	Tons per day
tpy	Tons per year
WAN	Wide Area Network

RULE 2011 PROTOCOL-
ATTACHMENT E

DEFINITIONS

DEFINITIONS

(1) AFTERBURNERS, also called VAPOR INCINERATORS, are air pollution control devices in which combustion converts the combustible materials in gaseous effluents to carbon dioxide and water.

(2) ALTERNATIVE EMISSION FACTOR is a SOx emission value expressed in units of pounds per million standard cubic feet or pounds per thousand gallons derived using the methodology specified in Appendix A, Protocols for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions, Chapters 3 and 4.

(3) ANNUAL PERMIT EMISSIONS PROGRAM (APEP) is the annual facility permit compliance reporting, review, and fee reporting program.

(4) BOILER is any combustion equipment used to produce steam, including a carbon monoxide boiler. This does not include a process heater that transfers heat from combustion gases to process streams, a waste heat recovery boiler that is used to recover sensible heat from the exhaust of process equipment such as a combustion turbine, or a recovery furnace that is used to recover process chemicals. Boilers used primarily for residential space and/or water heating are not affected by this section.

(5) BURN means to combust any gaseous fuel, whether for useful heat or by incineration without recovery, except for flaring or emergency vent gases.

(6) BYPASS OPERATING QUARTER means each calendar quarter that emissions pass through the bypass stack or duct.

(7) CALCINER is a rotary kiln where calcination reaction is carried out between 1315 ^{o}C to 1480 ^{o}C.

(8) CEMENT KILN is a device for the calcining and clinkering of limestone, clay and other raw materials, and recycle dust in the dry-process manufacture of cement.

(9) CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) is the total equipment required for the determination of concentrations of air contaminants and diluent gases in a source effluent as well as mass emission rate. The system consists of the following three major subsystems:

(A) SAMPLING INTERFACE is that portion of the monitoring system that performs one or more of the following operations: extraction, physical/chemical separation, transportation, and conditioning of a sample of the source effluent or protection of the analyzer from the hostile aspects of the sample or source environment.

(B) ANALYZERS

(i) AIR CONTAMINANT ANALYZER is that portion of the monitoring system that senses the air contaminant and generates a signal output which is a function of the concentration of that contaminant.

(ii) DILUENT ANALYZER is that portion of the monitoring system that senses the concentration of oxygen or carbon dioxide or other diluent gas as applicable, and generates a signal output which is a function of a concentration of that diluent gas.

(C) DATA RECORDER is that portion of the monitoring system that provides a permanent record of the output signals in terms of concentration units, and includes additional equipment such as a computer required to convert the original recorded value to any value required for reporting.

(10) CONTINUOUS PROCESS MONITORING SYSTEM is the total equipment required for the measurement and collection of process variables (e.g., fuel usage rate, oxygen content of stack gas, or process weight). Such CPMS data shall be used in conjunction with the appropriate fuel sulfur limit or fuel sulfur content to determine SOx emissions.

(11) CONTINUOUSLY MEASURE means to measure at least once every 15 minutes except during period of routine maintenance and calibration as specified in 40 CFR Part 60.13(e)(2).

(12) DAILY means a calendar day starting at 12 midnight and continuing through to the following 12 midnight hour.

(13) DIRECT MONITORING DEVICE is a device that directly measures the variables specified by the Executive Officer to be necessary to determine mass emissions of a RECLAIM pollutant and which meets all the standards of performance for CEMS set forth in the protocols for NOx and SOx.

(14) DRYER is equipment that removes substances by heating or other processes.

(15) ELECTRONICALLY TRANSMITTING means transmitting measured data without human alteration between the point/source of measurement and transmission.

(16) EMISSION FACTOR is the value specified in Tables 1 (NOx) or 2 (SOx) of Rule 2002-Baselines and Rates of Reduction for NOx and SOx.

(17) EXISTING EQUIPMENT is any equipment which can emit SOx at a SOx RECLAIM facility, for which on or before (Rule Adoption date) has:

(A) A valid permit to construct or permit to operate pursuant to Rule 201 and/or Rule 203 has been issued; or

(B) An application for a permit to construct or permit to operate has been deemed complete by the Executive Officer; or

(C) An equipment which is exempt from permit per Rule 219 and is operating on or before (Rule Adoption date).

(18) F_d FACTOR is the dry F factor for each fuel, the ratio of the dry gas volume of the products of combustion to the heat content of the fuel (dscf/10^6 Btu).

(19) GAS FLARE is a combustion equipment used to prevent unsafe operating pressures in process units during shut downs and start-ups and to handle miscellaneous hydrocarbon leaks and process upsets.

(20) FLUID CATALYTIC CRACKING UNIT (FCCU) breaks down heavy petroleum products into lighter products using heat in the presence of finely divided catalyst maintained in a fluidized state by the oil vapors. The fluid catalyst is continuously circulated between the reactor and the regenerator, using air, oil vapor, and steam as the conveying media.

(21) FURNACE is an enclosure in which energy in a nonthermal form is converted to heat.

(22) GAS TURBINES are turbines that use gas as the working fluid. It is principally used to propel jet aircraft. Their stationary uses include electric power generation (usually for peak-load demands), end-of-line voltage booster service for long distance transmission lines, and for pumping natural gas through long distance pipelines. Gas turbines are used in combined (cogeneration) and simple-cycle arrangements.

(23) GASEOUS FUELS include, but are not limited to, any natural, process, synthetic, landfill, sewage digester, or waste gases with a gross heating value of 300 Btu per cubic foot or higher, at standard conditions.

(24) HEAT VALUE is the heat generated when one lb. of combustible is completely burned.

(25) HEATER is any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams.

(26) HIGH HEAT VALUE is determined experimentally by colorimeters in which the products of combustion are cooled to the initial temperature and the heat absorbed by the cooling media is measured.

(27) HOT STAND BY is the period of operation when the flow or emission concentrations are so low they can not be measured in a representative manner.

(28) INCINERATOR is equipment that consumes substances by burning.

(29) INTERNAL COMBUSTION ENGINE is any spark or compression-ignited internal combustion engine, not including engines used for self-propulsion.

(30) LIQUID FUELS include, but are not limited to, any petroleum distillates or fuels in liquid form derived from fossil materials or agricultural products for the purpose of creating useful heat.

(31) MASS EMISSION OF SOx in lbs/hr is the measured emission rates of sulfur oxides.

(32) MAXIMUM RATED CAPACITY means maximum design heat input in Btu per hour at the higher heating value of the fuels.

(33) MODEM converts digital signals into audio tones to be transmitted over telephone lines and also convert audio tones from the lines to digital signals for machine use.

(34) MONTHLY FUEL USE REPORTS could be sufficed by the monthly gas bill or the difference between the end and the beginning of the calendar month's fuel meter readings.

(35) NINETIETH (90th) PERCENTILE means a value that would divide an ordered set of increasing values so that at least 90 percent are less than or equal to the value and at least 10 percent are greater than or equal to the value

(36) OVEN is a chamber or enclosed compartment equipped to heat objects.

(37) PEAKING UNIT means a turbine used intermittently to produce energy on a demand basis and does not operate more than 1300 hours per year.

(38) PORTABLE EQUIPMENT is an equipment which is not attached to a foundation and is not operated at a single facility for more than 90 consecutive days in a year and is not a replacement equipment for a specific application which lasts or is intended to last for more than one year.

(39) PROCESS HEATER means any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to process streams.

(40) PROCESS WEIGHT means the total weight of all materials introduced into any specific process which may discharge contaminants into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid gaseous fuels and air shall not.

(41) RATED BRAKE HORSEPOWER (bhp) is the maximum rating specified by the manufacturer and listed on the nameplate of that equipment.

(42) RATED HEAT INPUT CAPACITY is the heat input capacity specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.

(43) RECLAIM FACILITY is a facility that has been listed as a participant in the Regional Clean Air Incentives Market (RECLAIM) program.

(44) REMOTE TERMINAL UNIT (RTU) is a data collection and transmitting device used to transmit data and calculated results to the District Central Station Computer.

(45) RENTAL EQUIPMENT is equipment which is rented or leased for operation by someone other than the owner of the equipment

(46) SHUTDOWN is that period of time during which the equipment is allowed to cool from a normal operating temperature range to a cold or ambient temperature.

(47) SOLID FUELS include, but are not limited to, any solid organic material used as fuel for the purpose of creating useful heat.

(48) STANDARD GAS CONDITIONS are defined as one atmosphere of pressure and a temperature of 68 ^{O}F or 60 ^{O}F, provided that one of these temperatures is used throughout the facility.

(49) START-UP is that period of time during which the equipment is heated to operating temperature from a cold or ambient temperature.

(50) SULFURIC ACID PRODUCTION UNIT means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

(51) TAIL GAS UNIT is a SOx control equipment associated with refinery sulfur recovery plant.

(52) TEST CELLS are devices used to test the performance of engines such as internal combustion engine and jet engines.

(53) TIMESHARING OF MONITOR means the use of a common monitor for several sources of emissions.

(54) TURBINES are machines that convert energy stored in a fluid into mechanical energy by channeling the fluid through a system of stationary and moving vanes.

(55) UNIT OPERATING DAY means each calendar day that emissions pass through the stack or duct.

(56) UNIVERSE OF SOURCES FOR NOx is a list of RECLAIM facilities that emit NOx.

(57) UNIVERSE OF SOURCES FOR SOx is a list of RECLAIM facilities that emit SOx.

(58) AP 42 is a publication published by Environmental Protection Agency (EPA) which is a compilation of air pollution emission rates used to determine mass emission.

(59) ASTM METHOD D1945-81 Method for Analysis of natural gas by gas chromatography.

(60) ASTM METHOD 2622-82 Test Method for sulfur in petroleum products (Xray Spectrographic method)

(61) ASTM METHOD 3588-91 method for calculating colorific value and specific gravity (relative density) of gaseous fuels.

(62) ASTM METHOD 4294-90 test method for sulfur in petroleum products by non-dispersive Xray fluorescence spectrometry.

(63) ASTM METHOD 4891-84 test method for heating value of gases in natural gas range by stoichiometric combustion.

(64) DISTRICT METHOD 2.1 measures gas flow rate through stacks greater than 12 inch in diameter.

(65) DISTRICT METHOD 7.1 colorimetric determination of nitrogen oxides except nitrous oxide emissions from stationary sources by using the phenoldisulfonic acid (pds) procedure or ion chromatograph procedures. Its range is 2 to 400 milligrams NOx (as NO_2 per DSCM).

(66) DISTRICT METHOD 100.1 is an instrumental method for measuring gaseous emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, carbon dioxide, and oxygen.

(67) DISTRICT METHOD 307-91 laboratory procedure for analyzing total reduced sulfur compounds and SO_2.

(68) EPA METHOD 19 is the method of determining sulfur dioxide removal efficiency and particulate, sulfur dioxide and nitrogen oxides emission rates from electric utility steam generators.

(69) EPA METHOD 450/3-78-117 air pollutant emission rate for Military and Civil Aircraft.

RULE 2011 PROTOCOL-
ATTACHMENT F

SUPPLEMENTAL AND ALTERNATIVE CEMS PERFORMANCE REQUIREMENTS FOR LOW SOx CONCENTRATIONS

ATTACHMENT F

SUPPLEMENTAL AND ALTERNATIVE CEMS PERFORMANCE REQUIREMENTS FOR LOW SOx CONCENTRATIONS

Abbreviations used in this Attachment are:
√ Low Level Spike Recovery/Bias Factor Determination (LLSR/BFD)
√ High Level Spike Recovery/Bias Factor Determination (HLSR/BFD)
√ Low Level RATA/Bias Factor Determination (LLR/BFD)
√ Low Level Calibration Error (LLCE)
√ Relative Accuracy Test Audit (RATA)
√ Relative Accuracy (RA)
√ Full Scale Span (FSS)
√ National Institute of Standards Traceability (NIST)

A. Applicability of Supplemental and Alternative Performance Requirements

The Facility Permit holder electing to use (B)(8)(d)(ii), in Chapter 2 of Rule 2011, Appendix A to measure SO_X concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range, shall satisfy the performance requirements as specified in Table F-1 listed below.

TABLE F-1
Alternative Performance Requirement(s)

CEMS RECLAIM Certified per SOx Protocol, Appendix A Yes or No	**Performance Requirements**			
	LLSR/BFD	HLSR/BFD	LLR/BFD	LLCE
Yes	×		+	×
No	×	×	+	×

1. + (plus) denotes an additional performance requirement that shall be conducted if the mandatory performance requirement(s) cannot be met.

2. If the concentration of the CEMS is such that the specifications for the low level spike recovery/bias factor determination cannot be met, the Facility Permit holder shall conduct a low level RATA/bias factor determination.

3. The provisions of Table F-1 do not apply to (B)(8)(c) or (B)(8)(d)(i), in Chapter 2.

The Facility Permit holder electing (or who may be required) to measure concentrations that fall below 10 percent of the higher full scale span value of any range (other than the lowest vendor guaranteed span range), shall perform a linearity test according to the procedure in Attachment F, Section B "Linearity Error", to satisfy the performance requirements as specified in Table F-2 listed below.

TABLE F-2
Linearity Performance Test – Ranges Other Than Lowest Vendor Guaranteed Span Range

Calibration Gas	Value
1	Lowest Non-Zero Value Chosen in Span Range Tested
2	Mid-point (40-60%) of Calibration Gases 1 and 3
3	Nominal Concentration at 10% of Span Range Tested

B. Test Definitions, Performance Specifications and Test Procedures

This section explains in detail how each performance requirement is to be conducted.

Low Level Calibration Error

The low level calibration error test is defined as challenging the CEMS (from probe to monitor) with certified calibration gases at three levels in the 0-20 percent full scale span range. Since stable or certifiable cylinder gas standards (e.g. Protocol 1 or NIST traceable) may not be available at the concentrations required for this test, gas dilution systems may be used, with District approval, if they are used according to either District or EPA protocols for the verification of gas dilution systems in the field. The CEMS high level calibration gas may be diluted for the purpose of conducting the low level calibration error test.

1. Performance Specifications

   Introduce pollutant concentrations at approximately the 20 percent, 10 percent, and 5 percent of full scale span levels through the normal CEMS calibration system. No low level calibration error shall exceed 2.5 percent of full scale span.

2. Testing Procedures

a. Perform a standard zero/span check; if zero or span check exceeds 2.5 percent full scale span, adjust monitor and redo zero/span check.

b. After zero/span check allow the CEMS to sample stack gas for at least 15 minutes.

c. Introduce any of the low level calibration error standards through the CEMS calibration system.

d. Read the CEMS response to the calibration gas starting no later than three system response times after introducing the calibration gas; the CEMS response shall be averaged for at least three response times and for no longer than six response times.

e. After the low level calibration error check allow the CEMS to sample stack gas for at least 15 minutes.

f. Repeat steps c through e until all three low level calibration error checks are complete.

g. Conduct post test calibration and zero checks.

Spike Recovery and Bias Factor Determinations

Spiking is defined as introducing know concentrations of the pollutant of interest and an appropriate non-reactive, non-condensable and non-soluble tracer gas from a single cylinder (Protocol 1 or NIST traceable if no Protocol 1 is available) near the probe and upstream of any sample conditioning systems, at a flow rate not to exceed 10 percent of the total sample gas flow rate. The purpose of the 10 percent limitation is to ensure that the gas matrix (water, CO2, particulates, interferences) is essentially the same as the stack gas alone. The tracer gas is monitored in real time and the ratio of the monitored concentration to the certified concentration in the cylinder is the dilution factor. The expected pollutant concentration (dilution factor times the certified pollutant concentration in the cylinder) is compared to the monitored pollutant concentration.

High Level Spike Recovery/Bias Factor Determination

The high level spike recovery/bias factor determination is used when the CEMS has not been certified per the standard RECLAIM requirements. The spiking facility/interface shall be a permanently installed part of the CEMS sample

acquisition system and accessible to District staff as well as the Facility Permit holder.

1. Performance Specifications

   The CEMS shall demonstrate a RA </= 20 percent, where the spike value is used in place of the reference method in the normal RA calculation, as described below. The bias factor, if applicable, shall also be determined according to Attachment B.

2. Testing Procedures

   a. Spike the sample to the CEMS with a calibration standard containing the pollutant of interest and CO or other non-soluble, non-reacting alternative tracer gas (alternative tracer gas) at a flow rate not to exceed 10 percent of the CEMS sampling flow rate and of such concentrations as to produce an expected 40-80 percent of full scale span for the pollutant of interest and a quantifiable concentration of CO (or alternative tracer gas) that is at least a factor of 10 higher than expected in the unspiked stack gas. The calibration standards for both pollutant of interest and CO (or alternative tracer gas) must meet RECLAIM requirements specified in Attachment A.

   b. Monitor the CO (or alternative tracer gas) using an appropriate continuous (or semi-continuous if necessary) monitor meeting the requirements of Method 100.1 and all data falling within the 10-95 percent full scale span, and preferably within 30-70 percent full scale span.

   c. Alternate spiked sample gas and unspiked sample gas for a total of nine runs of spiked sample gas and ten runs of unspiked sample gas. Sampling times should be sufficiently long to mitigate response time and averaging effects.

   d. For each run, the average CEMS reading must be between 40 percent full scale span and 80 percent full scale span. If not, adjust spiking as necessary and continue runs; but expected spike must represent at least 50 percent of the total pollutant value read by the CEMS.

e. Calculate the spike recovery for both the pollutant and the CO (or alternative tracer gas) for each run by first averaging the pre- and post-spike values for each run and subtracting that value from the spiked value to yield nine values for recovered spikes.

f. Using the CO (or alternative tracer gas) spike recovery values for each run and the certified CO (or alternative tracer gas) concentration, calculate the dilution ratio for each run. Multiply the certified pollutant concentration by the dilution factor for each run to determine the expected diluted pollutant concentrations. Using the expected diluted concentrations as the "reference method" value calculate the Relative Accuracy as specified in Appendix A. The RA shall be </= 20 percent. Determine the bias factor, if applicable, according to Attachment B.

Low Level Spike Recovery/Bias Factor Determination

The low level spike recovery/bias factor determination is used to determine if a significant bias exists at concentrations near the 10 percent full scale span level. The spiking facility/interface shall be a permanently installed part of the CEMS sample acquisition system and accessible to District staff as well as the Facility Permit holder.

1. Performance Specifications

   There are no pass/fail criteria with respect to the magnitude of the percent relative accuracy. There are performance criteria for the range of concentration on the CEMS and the extent to which the spike must be greater than the background pollutant level.

2. Testing Procedures

   a. Spike the sample to the CEMS with a calibration standard containing the pollutant of interest and CO or other non-soluble, non-reacting alternative tracer gas (alternative tracer gas) at a flow rate not to exceed 10 percent of the CEMS sampling flow rate and of such concentrations as to produce an expected 10-25 percent of full scale span for the pollutant of interest and a quantifiable concentration of CO (or alternative tracer gas) that is at least a factor of 10 higher than expected in the unspiked stack gas. The

calibration standards for both pollutant of interest and CO (or alternative tracer gas) must meet RECLAIM requirements specified in Appendix A.

b. Monitor the CO (or alternative tracer gas) using an appropriate continuous (or semi-continuous if necessary) monitor meeting the requirements of Method 100.1 and all data falling within the 10-95 percent full scale span, and preferably within 30-70 percent full scale span.

c. Alternate spiked sample gas and unspiked sample gas for a total of nine runs of spiked sample gas and ten runs of unspiked sample gas. Sampling times should be sufficiently long to mitigate response time and averaging effects.

d. For each run, the average CEMS reading must be below 25 percent full scale span and > 10 percent full scale span. If not, adjust spiking as necessary and continue runs; but expected spike must represent at least 50 percent of the total pollutant value read by the CEMS.

e. Calculate the spike recovery for both the pollutant and the CO (or alternative tracer gas) for each run by first averaging the pre- and post-spike values for each run and subtracting that value from the spiked value to yield nine values for recovered spikes.

f. Using the CO (or alternative tracer gas) spike recovery values for each run and the certified CO (or alternative tracer gas) concentration, .calculate the dilution ratio for each run. Multiply the certified pollutant concentration by the dilution factor for each run to determine the expected diluted pollutant concentrations. Using the expected diluted concentrations as the "reference method" value calculate the Relative Accuracy as specified in Appendix A. If the average difference is less than the confidence coefficient then no low level bias factor is applied. If the average difference is greater than the confidence coefficient and the average expected spike is less than the average CEMS measured spike, then no low level bias factor is applied. If the average difference is greater than the confidence coefficient and the

average expected spike is greater than the average CEMS measured spike, then a low level bias factor equal to the absolute value of the average difference is added to data reported at or below the 10 percent of full scale span.

Low Level RATA/Bias Factor Determination using Enhanced Reference Method 6.1

A low level RATA/bias factor determination is designed to determine if there exists a statistically significant bias at low level concentrations. It consists of nine test runs that measure the stack concentration and the CEMS concentration concurrently.

1. Performance Specifications

   There are no pass/fail criteria with respect to the magnitude of the percent relative accuracy. There are performance criteria for the special RATA with respect to the reference method and range of concentration on the CEMS.

2. Testing Procedures

   The reference method for the low level RATA/bias factor determination is Method 100.1

   a. Perform a minimum of nine runs of low level RATA for CEMS versus the reference method at actual levels (unspiked).

   b. The full scale span range for the reference method shall be such that all data falls with 10 - 95 percent of full scale span range.

   c. The reference method shall meet all Method 100.1 performance criteria.

   d. Calculate the average difference (d = CEMS - reference method, ppm) and confidence coefficient (cc = statistical calculated, ppm).

   e. If $d > 0$ then the bias = 0 ppm; if $d < 0$ and $|d| > cc$ then bias = d; if $d < 0$ and $|d| < cc$ then bias = 0 ppm.

Linearity Error

The linearity error is defined as the percentage error in linearity, calculated pursuant to the equation in Table F-3, expressed in terms of the ratio of the absolute value of the difference between the reference value and the mean CEMS response value, to the reference value.

1. Performance Specifications

   Introduce calibration gas concentrations in accordance with Table F-2. The linearity error shall not exceed 5.0 percent.

2. Testing Procedures

   a. A linearity error test shall be comprised of three data points for each of three calibration gases listed in Table F-2 for each span range.

   b. Each low level linearity test shall be performed by introducing calibration gas into the CEMS at the span range values specified in Table F-2.

   c. The test sequence (low, middle, and high) shall be repeated until three data points have been acquired for each calibration gas. The same calibration gas shall not be used twice in succession during the linearity error tests.

   d. Linearity error shall not exceed 5.0 percent of the calibration gas concentration, as calculated pursuant to the equation in Table F-3.

TABLE F-3
Linearity Error Test Equation

Test	Equation	Where
Linearity Error	$LE = \frac{\left\|R - \overline{C}\right\|}{R} \times 100$	$\overline{C}$ = Mean of the CEMS response values R = Certified gas concentration as reference value

C. Testing Frequency

For each CEMS, perform the aforementioned performance requirements once semiannually thereafter, as specified below for the type of test. These semiannual assessments shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested for certification purposes (initial and recertification) or within three months of the end of the calendar quarter in which the District sent notice of a provisional approval for a CEMS, whichever is later. Thereafter, the semiannual tests shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested. For CEMS on bypass stacks/ducts, the assessments shall be performed once every two successive operating quarters in which the bypass stacks/ducts were operated. These tests shall be performed after the calendar quarter in which the CEMS was last tested as part of the CEMS certification, as specified below for the type of test.

Relative accuracy tests may be performed on an annual basis rather than on a semiannual basis if the relative accuracies during the previous audit for the SO_X CEMS are 7.5 percent or less.

For CEMS on any stack or duct through which no emissions have passed in two or more successive quarters, the semiannual assessments must be performed within 14 operating days after emissions pass through the stack/duct.

ATTACHMENT I

(Adopted October 15, 1993) (Amended March 10, 1995)(Amended September 8, 1995)
(Amended December 7, 1995)(Amended July 12, 1996)(Amended February 14, 1997)
(Amended April 11, 1997)(Amended April 9, 1999)(Amended March 16, 2001)
(Amended May 11, 2001)(Amended December 5, 2003)(Amended January 7, 2005)
(Amended May 6, 2005) (Amended TBD)

PROPOSED AMENDED RULE 2012. **REQUIREMENTS FOR MONITORING, REPORTING, AND RECORDKEEPING FOR OXIDES OF NITROGEN (NOx) EMISSIONS**

[RULE INDEX TO BE ADDED AFTER RULE ADOPTION]

(a) Purpose

The purpose of this rule is to establish the monitoring, reporting and recordkeeping requirements for NO_X emissions under the RECLAIM program.

(b) Applicability

The provisions of this rule shall apply to any RECLAIM NO_X source or NO_X process unit. The NO_X sources and process units regulated by this rule include, but are not limited to:

Boilers	Fluid Catalytic Cracking Units
Internal Combustion Engines	Dryers
Heaters	Fume Incinerators/Afterburners
Gas Turbines	Test Cells
Furnaces	Tail Gas Units
Kilns and Calciners	Sulfuric Acid Production
Ovens	Waste Incinerators

(c) Major NO_X Source

(1) Major NO_X Source means any of the following NO_X sources, except for such NO_X sources reclassified as large NOx sources at approved Super Compliant Facilities as specified in paragraph (c)(4):

(A) any boiler, furnace, oven, dryer, heater, incinerator, test cell and any solid, liquid or gaseous fueled equipment with a maximum rated capacity:

(i) greater than or equal to 40 but less than 500 million Btu per hour and an annual heat input greater than 90 billion Btu per year; or

(ii) 500 million Btu per hour or more irrespective of annual heat input;

(B) any internal combustion engine with rated brake horsepower (bhp) greater than or equal to 1,000 bhp and operating more than 2,190 hours per year;

(C) any gas turbine rated greater than or equal to 2.9 megawatts excluding any emergency standby equipment or peaking unit;

(D) any petroleum refinery fluid catalytic cracking unit;

(E) any petroleum refinery tail gas unit;

(F) any kiln or calciner with a rated process weight greater than or equal to 10 tons per hour and processing more than 21,900 tons per year, except brick kilns;

(G) any equipment burning or incinerating solid fuels or materials;

(H) any existing equipment using NO_X CEMS or that is required to install CEMS under District rules to be implemented as of October 15, 1993;

(I) any NO_X source or process unit elected by the Facility Permit holder or required by the Executive Officer or designee to be monitored and to report emissions with a CEMS meeting the requirements of paragraphs (c)(2) and (c)(3);

(J) any NO_X source or process unit for which NO_X emissions reported pursuant to Rule 301 - Permit Fees, were equal to or greater than 10 tons per year for any calendar year between 1987 to 1991, inclusive, excluding NO_X sources or process units listed under subparagraphs (d)(1)(A) through (d)(1)(E), and (e)(1)(A) through (e)(1)(D) and excluding any NO_X source or process unit which has reduced NO_X emissions to below 10 tons per year prior to January 1, 1994.

(2) The Facility Permit holder of a major NO_X source shall:

(A) install, maintain and operate a direct monitoring device for each major NO_X source to continuously measure the concentration of NO_X emissions and all other applicable variables specified in Table 2012-1 and Appendix A, Chapter 2, Table 2-A; or

(B) install, maintain, and operate an alternative monitoring device which has been determined by the Executive Officer or designee to be equivalent to CEMS in relative accuracy, reliability, reproducibility and timeliness according to the requirements set forth in Appendix A, Chapter 2.

(C) The operating requirements specified in subparagraph (c)(2)(A) or (c)(2)(B) shall not apply during any time period not to exceed 96 hours provided that all of the following are met:

(i) the Facility Permit holder reports emissions as specified in Appendix A;

(ii) the direct monitoring device has been either:

(I) shut down for maintenance performed pursuant to the facility's Quality Assurance and Quality Control Program or

(II) damaged in a fire or mechanical or electrical failure caused by circumstances beyond the Facility Permit holder's control; and

(iii) Whenever the monitoring device is non-operational for more than 24 hours, the Facility Permit holder shall submit a report to the Executive Officer within 96 hours after the device becomes non-operational. Such report shall include information as prescribed by the Executive Officer including at a minimum the cause of the shutdown, the time the monitoring device became non-operational, the time or estimated time the monitoring device returned to normal operation, and the maintenance performed or corrective and preventative actions taken to prevent future non-operational conditions.

If the source for which the CEMS is certified to monitor is not operating when the CEMS is in maintenance or being repaired, and either the flow or concentration monitor is properly operating, and clauses (c)(2)(C)(i) and (c)(2)(C)(ii) are met, then the above time period shall be extended for an additional 96 hours.

(D) If a NO_X source does not operate for a minimum of 168 consecutive hours, as demonstrated pursuant to subparagraph (c)(2)(E), the Facility Permit holder of the CEMS is not subject to the requirements of subparagraphs (c)(2)(A) and (c)(2)(B), and the emission hours are considered valid and consisting of zero value data points after zero emissions have been recorded for a minimum of 4 hours after the NO_X source shutdown, provided that the Facility Permit holder of the CEMS:

(i) Maintains the CEMS operation pursuant to subparagraphs (c)(2)(A) and (c)(2)(B) to record zero value data points for a minimum of 4 hours after the NO_X source shutdown;

(ii) Submits the report in accordance with clause (c)(2)(C)(iii);

(iii) Resumes CEMS operation and meets the requirements of subparagraphs (c)(2)(A) and (c)(2)(B) for a minimum of 4 hours before the NO_X source resumes operation or at which time any emissions are generated; and

(iv) Passes a calibration error test for each CEMS analyzer before any emissions are detected.

(E) Demonstrating a NO_X source is not operating and no emissions are generated

(i) For a NO_X source in which fuel combustion is the only source for the CEMS monitored emissions, the Facility Permit holder of the CEMS shall meet one or more of the following provisions for the entire duration:

(I) Disconnect the fuel line to the NO_X source and place blind flange(s) to prevent fuel flow;

(II) Demonstrate there is no fuel flow to the NO_X source based on a dedicated fuel flow meter that is quality assured according to manufacturer's recommendation;

(III) Provide one or more gas bills indicating zero fuel consumption for the NO_X source or the fuel line associated with the NO_X source that is not operating; or

(IV) Demonstrate the NO_X source is not operational based on a stack flow monitoring system certified according to Appendix A, or any other monitoring system approved by the Executive Officer which shows the exhaust flow is less than the lowest quantifiable rate measurable by South Coast AQMD Methods 1-4.

(ii) For a NO_X source in which fuel combustion is not the only source for the CEMS monitored emissions, the Facility Permit holder of the CEMS shall:

(I) Request the Executive Officer's written approval of the method(s) to demonstrate that the NO_X source is not operating and no emissions are generated; and

(II) Include the above approved method(s) in the QA/QC plan.

(3) The Facility Permit holder of a major NO_X source shall:

(A) install, maintain and operate a reporting device to electronically report total daily mass emissions of NO_X and daily status codes to the District Central NO_X Station for each major NO_X source. Such data shall be reported by 5:00 p.m., of the following day. If the facility experiences a power, computer, or other system failure that prohibits the reporting of total daily mass emissions of NO_X and daily status codes, the Facility Permit holder shall be granted 24 hours to submit the required report. Between July 1, 1995 and December 31, 1995, NO_X emissions after the 24-hour extension, shall be calculated using interim reporting procedures set forth in Appendix A, Chapter 2. Starting January 1, 1996 and thereafter, NO_X emissions after the 24-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2. For each major NO_X source opting to comply with subparagraph (c)(9), reports of NO_X mass emissions shall be electronically filed on a monthly instead of daily basis; and

(B) submit Monthly Emissions Reports aggregating NO_X emissions from all major sources within 15 days following the end of each calendar month. In its Monthly Emissions Report the Facility Permit holder may correct daily transmitted data for that month provided such corrections are clearly identified and justified.

(C) Notwithstanding subparagraph (c)(3)(A), starting May 11, 2001 if a power, computer, or other system failure precludes the Facility Permit holder from reporting total daily mass emissions of NO_X and daily status codes by 5:00 p.m., the Facility Permit holder shall be granted 96 hours to submit the required report provided that the raw data as obtained by the direct monitoring device is stored at the facility. NO_X emissions reported after the 96-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2. The provisions of this subparagraph shall

be limited to no more than three non-consecutive occurrences per compliance year.

(D) The requirement of calculating emissions using Missing Data Procedures under subparagraph (c)(3)(A) shall not apply if the failure to report the total daily mass emissions of NO_X and daily status codes is due to a demonstrated failure at the District's Central Station preventing it from receiving the data. The Facility Permit holder shall submit the report within 48 hours of the ~~problem~~ demonstrated failure being corrected, provided that the raw data as obtained by the direct monitoring device is stored at the facility. NO_X emissions reported after the 48-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2.

(E) The requirement of calculating emissions using Missing Data Procedures under subparagraph (c)(3)(A) shall not apply if the NOx source is offline pursuant to subparagraph (c)(2)(D) and a Facility Permit holder is unable to report total daily mass emissions of NO_X and daily status codes by 5:00 p.m. The Facility Permit holder shall be granted 48 hours from the time the CEMS passes the calibration error test specified in clause (c)(2)(D)(iv) to submit all electronic reports required by subparagraph (c)(3)(A), subparagraph (c)(3)(B), and Appendix A, Chapter 7. NO_X emissions reported after the 48-hour extension shall be calculated pursuant to the missing data requirements set forth in Appendix A, Chapter 2.

(4) Super Compliant Facilities

(A) Facilities operating at or below their adjusted 2003 Allocation as of their 1994 compliance year.

(i) The Facility Permit holder of major NO_X sources may reclassify its major NO_X sources to large NO_X sources provided that (1) the facility's annual NO_X emissions as properly reported in its 1994 compliance year APEP report are already at or below the level of its adjusted compliance year 2003 NO_X Allocation. The adjusted compliance year 2003 NO_X Allocation shall be the compliance year 2003 NO_X Allocation as calculated pursuant to Rule 2002 subdivision (e) plus any compliance year 2003 NO_X RTCs

resulting from conversion of ERCs which the Facility Permit holder had applied to own by July 1, 1994 and has continuously owned, unless such RTCs have already been accounted for in the compliance year 2003 Allocation as established pursuant to Rule 2002 subdivision (e) and (2) it submits a complete application for NO_X Super Compliant status on or before December 2, 1996. The Executive Officer will provisionally approve for purposes of paragraph (c)(5) such application if the Facility Permit holder has retired all NO_X RTCs in excess of the facility's adjusted compliance year 2003 Allocation for each of the compliance years from the year of application submittal through the 2010 compliance year. The Facility Permit holder need not retire any RTCs (excluding converted ERCs) which are held by transfer pursuant to Rule 2007 paragraph (e)(2); however, such non-retired RTCs must be converted into RTC certificates pursuant to Rule 2007 subdivision (g), transferred to a different holder, or retired. For the purposes of this rule, converted ERCs shall mean NO_X RTCs resulting from conversion of ERCs which the Facility Permit holder had applied to own by July 1, 1994 and has continuously owned.

(ii) Final approval of NO_X Super Compliant status shall be granted if the Executive Officer or designee approves the initial source test required by subparagraph (c)(4)(C) and the facility's total annual NO_X emissions has not exceeded its adjusted compliance year 2003 Allocation.

(B) Facilities not operating at or below their adjusted 2003 Allocation as of their 1994 compliance year.

(i) On or before December 2, 1996 the facility Permit holder of major NO_X sources may submit a complete application for NO_X Super Compliant status. Such application must also include a complete application for permit modifications to install NO_X emission reduction equipment or to make any other physical modifications to substantially reduce emissions from each major NO_X source to be reclassified as a large NOx source. The Executive Officer

shall deny the application for Super Compliant status unless the applicant demonstrates the proposed modifications would comply with all applicable District rules and would permanently reduce the facility's total annual NO_X emissions to a level not to exceed its adjusted compliance year 2003 NO_X Allocation as defined in clause (c)(4)(A)(i), would not result in any increases in the mass emissions of any other air contaminant or in emissions to any other media, and would not result in any increases in receptor concentrations of any air contaminant in excess of the values identified in Table A-2 of Rule 1303;

(ii) Upon issuance of the permit to construct for the modification specified in clause (c)(4)(B)(i), the Executive Officer shall also issue a provisional approval of the facility's application for NO_X Super Compliant status for purposes of paragraph (c)(5).

(iii) Final approval of NO_X Super Compliant status shall be granted if the following provisions are met:

(I) An approved permit to operate has been issued for the modification specified in clause (c)(4)(B)(i);

(II) The facility's total annual NO_X emissions as reported in its APEP report are at a level at or below the facility's adjusted compliance year 2003 NO_X Allocation on a permanent basis no later than the facility's 1998 compliance year;

(III) The Facility Permit holder has retired all NO_X RTCs in excess of the facility's adjusted compliance year 2003 Allocation for each of the compliance years from the earlier of the facility's 1998 compliance year or the facility's first full compliance year with NO_X Super Compliant Facility status through the facility's 2010 compliance year. The Facility Permit holder need not retire any RTCs (excluding converted ERCs as defined in clause (c)(4)(A)(i) which are held by transfer pursuant to Rule 2007 paragraph (e)(2); however, such non-retired RTCs must be

converted into RTC certificates pursuant to Rule 2007 subdivision (g), transferred to a different holder, or retired; and

(IV) The facility Permit holder has an approved initial source test as required under subparagraph (c)(4)(C).

(C) The Facility Permit holder shall have initial NO_X source tests conducted for each major NO_X source to be reclassified as a large NO_X source. The initial source tests shall be conducted pursuant to Appendix A, Chapter 5, Subdivisions A and D and shall be completed prior to January 1, 1998 for Cycle 1 facilities and prior to July 1, 1998 for Cycle 2 facilities. Additionally, the Facility Permit holder shall select an equipment-specific concentration limit for each major source which will be reclassified as a large NO_X source. For each major source which will be reclassified as a large NO_X source that operates at two or more separate and significantly distinct operating loads, the Facility Permit holder may select no more than two equipment specific concentration limits, and assign one for each different operating load. The concentration limits selected shall be consistent with the source test results and at a level adequate to allow continuous compliance and shall be enforceable through permit conditions.

(D) Requirements to maintain Super Compliant status

Super Compliant status is contingent upon the Facility Permit holder meeting at all times the following provisions:

(i) Every major NO_X source at a Super Compliant NO_X facility which is reclassified as a large NO_X source shall be source tested a minimum of once every six months in order to verify compliance with the equipment-specific concentration limit. The source test shall be conducted pursuant to Appendix A, Chapter 5, Subdivisions A, B, and D and shall constitute the basis for assigning concentration limits. These source tests shall be conducted every two calendar quarters after the initial source test. If a source test is not conducted within three months after the required date, the facility shall no longer be considered Super Compliant, unless upon good cause the Executive Officer

has granted a written extension of time. If the results of a source test indicate non-compliance with the concentration limit then the Facility Permit holder shall select a new concentration limit which is consistent with the source test results unless the Facility Permit holder demonstrates to the satisfaction of the Executive Officer or designee that no change is warranted. If all tests conducted pursuant to this paragraph over a two-year period comply with the equipment-specific concentration limit then the facility shall have the option of reducing the source test frequency to once every four quarters. If any test conducted on a four quarter cycle exceeds the concentration limit then the facility shall return to conducting source tests every two quarters.

(ii) The facility's total annual NO_X emissions, as reported in its APEP report, shall not exceed the facility's adjusted compliance year 2003 NO_X Allocation. If there are such exceedances for two consecutive years or any three years, the facility shall no longer be considered Super Compliant. NOx emissions from portable equipment used in the manufacturing of asphalt rubber binder, which is owned and operated by a person other than the Facility Permit holder and used at a Super Compliant facility for not more than 1,500 hours in any one compliance year, need not be included in the APEP report.

(5) The Facility Permit holder of a facility which is provisionally approved for NO_X Super Compliant status shall have the option for each major NOx source to be reclassified as a large NOx source, in lieu of following the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii) of Appendix A Chapter 2, to monitor and report emissions pursuant to paragraph (d)(2). This option shall be available to the Facility Permit holder retroactively from July 1, 1995 if the complete application for NO_X Super Compliant status is submitted on or before January 2, 1996, or retroactively from the date of application submittal if the complete application is submitted after January 2 and before December 3, 1996. If the facility is unsuccessful at obtaining designation as a NO_X Super Compliant Facility then the procedures specified in clauses E(1)(d)(i),

E(1)(d)(ii), and E(1)(d)(iii) of Appendix A Chapter 2 shall apply retroactively to each major NOx source reclassified as a large NOx source for which NO_X emissions had been calculated pursuant to paragraph (d)(2) from the date the facility began monitoring and reporting major NO_X source emissions as large NO_X source emissions to the date a CEMS is installed and certified.

(6) After final approval of Super Compliant status, a Facility Permit holder may elect to discontinue its Super Compliant status and increase its annual Allocations above the level of its adjusted compliance year 2003 Allocation provided it first meets all of the following requirements:

(A) The Facility Permit holder submits an application to discontinue NO_X Super Compliant status and to have all sources at the facility that were reclassified from major NO_X sources to large NO_X sources pursuant to paragraph (c)(4) permanently revert back to major NO_X sources;

(B) The Facility Permit holder installs, operates, and certifies in compliance with Rule 2012 paragraphs (c)(2) and (c)(3) monitoring and reporting systems on each source at the facility that was reclassified from a major NO_X source to a large NO_X source pursuant to paragraph (c)(4); and

(C) The Facility Permit holder acquires, pursuant to Rule 2007, sufficient RTCs to ensure that the facility continuously operates in compliance with Rule 2004 subdivision (d).

(7) If a facility designated as a NO_X Super Compliant Facility pursuant to paragraph (c)(4) exceeds its adjusted compliance year 2003 NO_X Allocation, then the facility shall acquire, pursuant to Rule 2007, sufficient RTCs to cover such exceedance and shall be considered in violation of Rule 2004(d)(1).

(8) If the Executive Officer determines that a facility designated as a NO_X Super Compliant Facility exceeds its adjusted compliance year 2003 NO_X Allocation for two consecutive years or any three years, then that facility shall no longer be considered Super Compliant. If a facility loses its Super Compliant status pursuant to this paragraph or subparagraph (c)(4)(D), all sources at the facility that were reclassified from major NO_X sources to large NO_X sources pursuant to paragraph (c)(4) shall permanently revert back to major NO_X sources and shall become subject to the monitoring and

reporting requirements of paragraphs (c)(2) and (c)(3) according to the following schedule:

(A) Within one month from the end of the compliance year, submit a monitoring, reporting, and recordkeeping plan specifying the use of CEMS;

(B) During the shorter of the first twelve months from the end of the compliance year or until the facility complies with paragraphs (c)(2) and (c)(3), the Facility Permit holder shall comply with the monitoring requirements of paragraph (h)(3) of this rule; and

(C) Within one year from the end of the compliance year, comply with paragraphs (c)(2) and (c)(3) and have appropriate direct monitoring equipment installed and certified pursuant to Appendix A.

(9) Non-Operated Major NOx Source

Subparagraphs (c)(2)(A) and (c)(2)(B) shall not apply to a major NOx source if the Facility Permit holder complies with the following requirements.

(A) The Facility Permit holder submits an application for each major NOx source to classify such source to be a non-operated major NOx source, demonstrating to the satisfaction of the Executive Officer that such source will not be operated in the current or next compliance year, and receives written approval from the Executive Officer. The Executive Officer shall further not approve an application to classify a major source to be a non-operated major NOx source if such source had previously been classified as a non-operated source for any time during the 18 calendar months prior to the filing date of the application.

(B) The Facility Permit holder accepts and complies with all permit conditions imposed to ensure compliance with subparagraph (c)(9)(C) and (c)(9)(D).

(C) The Facility Permit holder shall comply with the requirements under either subclause (i) or (ii):

(i) The Facility Permit holder shall:

(I) disconnect fuel feed lines and place flanges at both ends of the disconnected lines, and

(II) render the source non-operational by either disconnecting the process feed lines and place flanges at both ends of the disconnected lines or

removing a major component of the source necessary for its operation.

(ii) The Facility Permit holder shall monitor the source with an operating CEMS that was certified to monitor emissions from that source in accordance with District Rule 218 - Stack Monitoring, Rule 1135 - Emissions of Oxides of Nitrogen from Electric Power Generating Systems, or Rule 2012 and Appendix A and maintain records demonstrating the source's non-operational status as required by the applicable rule.

(D) A source, which has been approved as a non-operated source pursuant to paragraph (c)(9), shall not be operated until the following requirements are met:

(i) The Facility Permit holder shall provide written notification to the Executive Officer that the source will be operated. The notification shall be made no less than 30 days prior to starting operation of the source.

(ii) The source meets the requirements of subparagraph (c)(2)(A) or (c)(2)(B) no later than 30 days after the start of operation except as provided under paragraph (c)(10). Until the source meets the requirements of subparagraph (c)(2)(A) or (c)(2)(B), emissions shall be determined pursuant to the Missing Data Procedures as specified under Rule 2012, Appendix A, Chapter 2, Subdivision E.

(10) A non-operated major NOx source qualifies for a one-time only CEMS certification period if:

(A) the source has never been monitored by a RECLAIM certified CEMS since October 15, 1993, and

(B) the source has been in compliance with paragraph (c)(9) during the 12 months prior to the date the source was operated.

This one-time only CEMS certification period shall commence on the first day of any operation in any compliance year and ends on the date the CEMS is certified or 12 calendar months from the first day of operation, whichever date is earlier. By the end of this CEMS certification period, the Facility Permit holder shall install, operate, and maintain all required monitoring, reporting, and recordkeeping systems. During this CEMS certification period, the Facility Permit holder shall comply with the

monitoring, reporting, and recordkeeping requirements of paragraphs (h)(2) and (h)(3).

(11) If an approved non-operated major NOx source fails to meets the requirements of the paragraph (c)(9) that source shall no longer be considered a non-operated major NOx source, and the facility permit holder of the source shall be considered in violation for each day from the start of the compliance year and emissions shall be determined as if the source had been operating from the start of the compliance year according to Missing Data Procedures as specified under Rule 2012, Appendix A, Chapter 2, clause (E)(1)(d)(iii), except for those days in which the Facility Permit holder can conclusively prove that the source has not been operated.

(d) Large NO_X Source

(1) Large NO_X Source is any one of the following NO_X emitting equipment:

(A) any boiler, furnace, oven, dryer, heater, incinerator, test cell and any liquid or gaseous fueled equipment with a maximum rated capacity:

(i) greater than or equal to 40 but less than 500 million Btu per hour and an annual heat input of 90 billion Btu per year or less; or

(ii) greater than or equal to 10 but less than 40 million Btu per hour and an annual heat input greater than 23 billion Btu per year.

(B) any internal combustion engine with rated brake horsepower:

(i) greater than or equal to 1,000 bhp and operating 2,190 hours per year or less; or

(ii) greater than or equal to 200 but less than 1,000 bhp and operating more than 2,190 hours per year;

(C) any gas turbine rated greater than or equal to 0.2 but less than 2.9 megawatts, excluding any emergency standby equipment or peaking unit;

(D) any kiln or calciner with rated process weight less than 10 tons per hour or processing less than 21,900 tons per year;

(E) any sulfuric acid production unit;

(F) any source at a Super Compliant Facility subject to, and meeting, the requirements of paragraph (c)(4) and which would otherwise be a major NO_X source.;

(G) any NO_X source or process unit elected by the Facility Permit holder or required by the Executive Officer to be monitored with a CPMS;

(H) any NO_X source or process unit for which NO_X emissions reported pursuant to Rule 301 - Permit Fees, were equal to or greater than 4 tons per year but less than 10 tons per year for any calendar year from 1987 to 1991, inclusive, excluding NO_X sources or process units listed under subparagraphs (c)(1)(A) through (c)(1)(H), and (e)(1)(A) through (e)(1)(D).

(2) The Facility Permit holder of a large NO_X source shall comply with either paragraphs (c)(2) and (c)(3); or (c)(2), (d)(2)(B) and Appendix A, Chapter 3, Subdivision K for any large source; or elect to comply with the following:

(A) install, maintain and operate a totalizing fuel meter and any other device specified by the Executive Officer or designee as necessary to determine monthly fuel usage, and all other applicable variables specified in Appendix A, Chapter 3, Table 3-A; and

(B) install, maintain and operate a modem or any reporting device approved by the Executive Officer or designee to be equivalent in accuracy, reliability, and timeliness, or use the District Internet Web Site to report total monthly mass emissions of NO_X to the District Central NO_X Station for each large NO_X source. Such data shall be reported within 15 days following the end of each calendar month; and

(C) accept the emission factor, equipment-specific emission rate or concentration limit, as specified pursuant to subdivision (f) in the Facility Permit, as the sole method for determining mass emissions for all purposes, including, but not limited to, determining:

(i) compliance with the annual Allocations;

(ii) excess emissions;

(iii) the amount of penalties; and

(iv) fees; and

(D) monitor one or more measured variables as specified in Appendix A in order to ensure the applicability and accuracy of any equipment-specific emission rate specified in the Facility Permit; and

(E) comply with all applicable provisions of subdivision (f).

(e) NO_X Process Unit

(1) NO_X Process Unit means any piece of the following NO_X emitting equipment:

(A) any boiler, furnace, oven, dryer, heater, incinerator, test cell and any liquid- or gaseous-fueled equipment with maximum rated capacity:

(i) greater than or equal to 10 but less than 40 million Btu per hour and an annual heat input of 23 billion Btu per year or less;

(ii) greater than 2 but less than 10 million Btu per hour; or

(iii) less than or equal to 2 million BTU per hour if the equipment is subject to permit requirements.

(B) any internal combustion engine with rated brake horsepower:

(i) greater than or equal to 200 but less than 1,000 bhp and operating 2,190 hours per year or less;

(ii) greater than 50 but less than 200 bhp; or

(iii) less than or equal to 50 bhp if the equipment is subject to permit requirements.

(C) any portable combustion equipment which is not a major or large source;

(D) any emergency standby equipment or peaking unit ;

(E) any other NO_X source that is not a large or major NO_X source or equipment designated in Rule 219 - Equipment Not Requiring a Written Permit Pursuant to Regulation II.

(2) The Facility Permit holder of a NO_X process unit shall comply with paragraph (c)(2), and (c)(3), or paragraph (d)(2), for any process unit, or elect to comply with the following:

(A) install, maintain and operate a totalizing fuel meter and/or timer or any device approved by the Executive Officer or designee to be equivalent in accuracy, reliability, reproducibility, and timeliness for the NO_X process unit, to measure quarterly fuel usage or other applicable variables specified in Table 2012-1, and Appendix A, Chapter 4, Table 4-A; and

(B) report quarterly mass emissions of NO_X to the District Central Station 30 days after the end of each of the first three quarters and 60 days after the last quarter of a compliance year for each process unit using a modem, the District Internet Web Site or any reporting

device approved by the Executive Officer to be equivalent in accuracy, reliability, and timeliness; and

(C) accept the emission factor, concentration limit, or equipment-specific or category-specific emission rate, as specified pursuant to subdivision (f) of this Rule and in the Facility Permit, as the sole method for determining mass emissions for all purposes, including, but not limited to, determining:

(i) compliance with the annual Allocations;

(ii) excess emissions;

(iii) the amount of penalties; and

(iv) fees; and

(D) comply with all applicable provisions of subdivision (f).

(E) Facility Permit holders that opt for a concentration limit in Subparagraph (e)(2)(C) for a process unit shall comply at all times with that NO_X concentration limit in ppm measured over any continuous 60 minutes as specified in the Facility Permit for that source.

(f) Permit Conditions for Large Sources and Process Units

(1) Starting January 1, 1994 for Cycle 1 facilities and starting July 1, 1994 for Cycle 2 facilities, calculations of mass emissions from each large source or process unit shall be based upon the emission factor specified in Rule 2002 - Allocations for Oxides of Nitrogen (NO_X) and Oxides of Sulfur (SO_X). The emission factor for each large source or process unit will be specified in the Facility Permit, and will remain valid unless amended by the Executive Officer pursuant to paragraphs (f)(2), (f)(3) or (f)(4).

(2) On and after January 1, 1995 for Cycle 1 facilities and July 1, 1995 for Cycle 2 facilities, the Facility Permit holder of a large source shall:

(A) comply at all times with an equipment-specific NO_X concentration limit in ppm measured over any continuous 60 minutes as specified in the Facility Permit for that source; according to the requirements specified in Appendix A, Chapter 3 (large sources); or

(B) establish an equipment-specific emission rate that is reliable, accurate and representative of that source's emissions, according to the requirements specified in Appendix A, Chapter 5.

(3) A Facility Permit holder may apply to the Executive Officer or designee to amend the concentration limit or equipment-specific emission rate for a large source, or to amend the emission factor to a concentration limit,

equipment-specific emission rate, or category-specific emission rate for a process unit, in the Facility Permit, at any time. If the applicant demonstrates to the Executive Officer or designee that the equipment-specific or category-specific emission rate is reliable, accurate and representative for the purpose of calculating NO_X emissions, the Executive Officer or designee will amend the Facility Permit to incorporate the equipment-specific or category-specific emission rate. No demonstration will be required to amend the Facility Permit to incorporate the alternative concentration limit, provided the large source or process unit complies with that limit in ppm over any continuous 60 minutes. The alternative concentration limit or equipment-specific emission rate for a large source, and the concentration limit, equipment-specific emission rate, or category-specific emission rate for a process unit, shall take effect prospectively from the date the Facility Permit is amended.

(4) The Executive Officer or designee may amend the Facility Permit at any time to specify a concentration limit or an equipment-specific emission rate for a large source, or a concentration limit, equipment-specific emission rate, or category-specific emission rate for a process unit, if the concentration limit, equipment-specific emission rate, or category-specific emission rate is determined to be more reliable, accurate, or representative of that source's or unit's emissions than the previous emission factor, or concentration limit or emission rate specified in the Facility Permit. The alternative concentration limit or equipment-specific emission rate for a large source, or concentration limit, equipment-specific emission rate or category-specific emission rate for a process unit shall take effect prospectively from the date the Facility Permit is amended.

(g) General Requirements

(1) A Facility Permit holder shall at all times comply with all requirements specified in subdivisions (c), (d), (e), (f), (g), (h), and (i) for monitoring, reporting and recordkeeping, including but not limited to, measuring, reporting, time-sharing, determining mass emissions, and installing, maintaining or operating monitoring, measuring and reporting devices, in accordance with the applicable requirements set forth in Appendix A.

(2) The monitoring system and the applicable method for determination of mass emissions for each NO_X source or process unit will be specified in the Facility Permit, in accordance with the applicable requirements set forth in Appendix A.

(3) The time-sharing of CEMS among NO_X sources may be allowed by the Executive Officer or designee in accordance with the requirements for time-sharing specified in Appendix A. In such cases, the Executive Officer or designee will specify conditions in the Facility Permit upon which time-sharing may occur.

(4) Any monitoring system certified prior to October 15, 1993 requiring a change to its full scale span range in order to meet the certification requirements set forth in Appendix A, shall be recertified by the Executive Officer or designee in accordance with the recertification requirements specified in Chapter 2, Section ~~B.15~~B.16, in Appendix A.

(5) The Executive Officer or designee may at any time require a Facility Permit holder to use a specific monitoring and reporting system if it is determined that the elected system is inadequate to accurately determine mass emissions.

(6) The sharing of totalizing fuel meters may be allowed by the Executive Officer or designee if the fuel meter serves large sources or process units which have the same emission factor or concentration limit or emission rate. The sharing of totalizing fuel meters shall not be allowed:

(A) if the fuel meters measure annual heat input as specified in clauses (d)(1)(A)(i) and (e)(1)(A)(i); or

(B) between large sources and process units.

(7) A Facility Permit holder of any NO_X source, process unit, or piece of equipment which is exempt from permit requirements pursuant to Rule 219 - Equipment Not Requiring A Written Permit Pursuant to Regulation II, shall determine NO_X emissions according to the methodology specified in Appendix A. Process units or equipment exempt from permit requirements pursuant to Rule 219 shall report such NO_X emissions in the Quarterly Certification of Emissions required by Rule 2004 - Requirements. Emissions from equipment exempt from permit requirements pursuant to Rule 219 shall also be reported quarterly to the District Central Station by the end of the quarterly reconciliation period as specified under Rule 2004(b) – Compliance Period and Certification of emissions. Alternatively, these emissions may be reported using the District Internet Web Site.

(8) A Facility Permit holder shall at all times comply with all applicable requirements specified in this rule and Appendix A for monitoring, reporting and recordkeeping of operations of RECLAIM NOx sources that

are not included in the Facility Permit so as to determine and report to the District Central Station the quarterly emissions from these sources by the end of the quarterly reconciliation period as specified under Rule 2004(b). These sources may include, but are not limited to, rental equipment, equipment operated by contractors, and equipment operated under a temporary permit or without a District permit. In addition, the Facility Permit holder shall include emissions from these sources in the Quarterly Certification of Emissions required by Rule 2004.

(h) Compliance Schedule

(1) Facilities with existing CEMS and fuel meters as of October 15, 1993 shall continue to follow recording and reporting procedures required by District rules and regulations in effect immediately prior to October 15, 1993, until December 31, 1994 for Cycle 1 facilities and June 30, 1995 for Cycle 2 facilities.

(2) Between January 1, 1994 and December 31, 1994 for Cycle 1 facilities and between July 1, 1994 and June 30, 1995 for Cycle 2 facilities, interim emission reports shall be submitted to the District by the Facility Permit holder. The interim reports shall comply with all of the requirements of this rule and Appendix A, except that the reporting frequency shall be monthly for major and large sources and quarterly for process units. Such reports shall be submitted by the fifteenth (15^{th}) day of each month for major and large sources and as specified in paragraph (b)(2) of Rule 2004 - Requirements, for process units.

(3) A Facility Permit holder shall install, maintain and operate a totalizing fuel meter for each major source and a totalizing fuel meter and/or timer or any device approved by the Executive Officer or designee to be equivalent in accuracy, reliability, reproducibility, and timeliness for each large source or process unit by January 1, 1994 for Cycle 1 facilities and July 1, 1994 for Cycle 2 facilities, except that sharing of such devices may be allowed pursuant to paragraph (g)(6).

(4) All required or elected monitoring and reporting systems specified in subdivisions (c), (d), (e), (f), and (g) shall be installed no later than December 31, 1994 for Cycle 1 facilities and June 30, 1995 for Cycle 2 facilities. Monitoring, Reporting, and Recordkeeping (MRR) Forms will be provided by the Executive Officer or designee by November 15, 1993 for Cycle 1 facilities and April 15, 1994 for Cycle 2 facilities. The information required on such MRR forms shall be submitted no later than

December 31, 1993 for Cycle 1 facilities and June 30, 1994 for Cycle 2 facilities.

(5) The Facility Permit holder of an existing or new facility which elects to enter RECLAIM or a facility which is required to enter RECLAIM shall install all required or elected monitoring, reporting and recordkeeping systems no later than 12 months after entry into RECLAIM. During the 12 months prior to the installation of the required or elected monitoring, reporting and recordkeeping systems the Facility Permit holder shall comply with the monitoring reporting, and recordkeeping requirements of paragraphs (h)(2) and (h)(3) of this rule.

(6) The Facility Permit holder which installs a new major NOx source at an existing facility shall install, operate, and maintain all required or elected monitoring, reporting and recordkeeping systems no later than 12 months after the initial start up of the major NOx source. During the interim period between the initial start up of the major NOx source and the provisional certification date of the CEMS, the Facility Permit holder shall comply with the monitoring requirements of paragraph (h)(2) and (h)(3) of this rule.

(i) Recordkeeping

The Facility Permit holder of a major or large NO_X source or NO_X process unit shall maintain all data required to be gathered, computed or reported pursuant to this rule and Appendix A for three years after each APEP report is submitted to the District except that all data gathered or computed for intervals of less than 15 minutes shall be maintained for a minimum of 48 hours. The Facility Permit holder of a major NOx source which is required to comply with 40 CFR Part 75 may instead opt to comply with the applicable recordkeeping requirements under 40 CFR Part 75. All records shall be made available to the District staff upon request.

(j) Source Testing

(1) All required source testing shall comply with applicable District Source Test Methods 1.1, 1.2, 2.1, 2.2, 2.3, 3.1, 4.1, 7.1, 100.1, and EPA Method 19.

(2) Every large NO_X source shall be source tested no later than December 31, 1996 for Cycle 1 facilities and June 30, 1997 for Cycle 2 facilities, and subsequently tested within every three-year period thereafter. Any source test conducted to satisfy this requirement must be conducted at least 12

months following the tests submitted to satisfy the previous three-year period. Such source test results shall be submitted to the District within 60 days of the date the source test was conducted. In lieu of submitting the first source test report, the Facility Permit holder may submit the results of a source test not more than three years old which meets applicable requirements of this rule when conducted. If a large source has not been operated within the same quarter of the date a source test is required, the source test may be conducted by the end of seven consecutive days or 15 cumulative days of resumed operation. The Facility Permit holder shall keep daily records to demonstrate that the large source had not been operated for the three month period and upon resumption of operation the Facility Permit holder shall keep records of each day operated until the required test. The source testing requirement does not apply to large sources which comply with paragraphs (c)(2) and (c)(3), or paragraphs (c)(2), (d)(2)(B), and Appendix A, Chapter 3, Subdivision K.

(3) An equipment-specific emission rate or category-specific emission rate for process units shall comply with source testing guidelines to be established by the Executive Officer or designee by March 31, 1994.

(4) Every process unit that is approved by the Executive Officer to use a concentration limit for emission reporting shall be source tested every five-year period, with the first five-year period ending on December 31, 2004 for Cycle 1 facilities and June 30, 2005 for Cycle 2 facilities. The compliance date for the first source test shall be within 12 months of the approval of the concentration limit by the Executive Officer but, no later than the last day of the five-year period in which the use of a concentration limit is approved by the Executive Officer. Any source test conducted to satisfy this requirement must be conducted at least 12 months following the tests submitted to satisfy the previous five-year period. Such source test results shall be submitted to the District within 60 days of the date the source test was conducted. If a process unit has not been operated within the prior quarter of the date a source test is required, the source test may be conducted by the end of either seven consecutive days or 15 cumulative days of resumed operation. The Facility Permit holder shall keep daily records to demonstrate that the process unit had not been operated for the three month period and upon resumption of operation the Facility Permit holder shall keep records of each day operated until the required test. Test firings of emergency standby equipment, which are less than 60 minutes

in duration, are not considered operation for the purposes of these source test requirements so long as such test firings are done to verify availability of the unit for their intended use and once such test firings are completed the units are shutdown. Records of the date and duration when the unit is test fired shall be maintained for a period of three years, and shall be made accessible to the Executive Officer upon request.

(k) Exemption

The provisions of this rule shall not apply to gas flares.

(l) Appeals

The Facility Permit holder of a facility which has established Super Compliant status shall have a maximum of ten calendar days from the receipt of notification that the facility is no longer Super Compliant in which to file an appeal of such finding to the District Hearing Board in accordance with the requirements of Rule 216.

(m) Appendix A

All provisions of Appendix A are incorporated herein by reference.

Attachment: Appendix A - "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NO_X) Emissions."

Table 2012-1

MEASURED VARIABLES AND REPORTED DATA FOR NO_X SOURCES

NO_X SOURCES	**MEASURED VARIABLES**	**RECORDING FREQUENCY**	**REPORTED DATA**	**TRANSMITTING/ REPORTING FREQUENCY**
All sources subject to Paragraphs (c)(2) and (c)(3)	Stack NO_X concentration, Exhaust flow rate, and Status codes OR Stack NO_X concentration, Stack O_2 concentration, Fuel flow rate, and Status codes	Once every 15 minutes	Total daily mass emissions from each source Daily status codes	Once a day for transmitting/ once a month for reporting
Large sources subject to Paragraph (d)(2)	Fuel usage OR Exhaust flow rate (for systems with stack flow monitors)	Monthly	Total Monthly mass emissions from each source	Once a month for reporting

NO_X Process units subject to Paragraph (e)(2)	Fuel usage OR Exhaust flow rate (for sources with stack flow monitors) OR Operating time and Production/ Processing/Feed rate (for sources permitted with emission rates corresponding to the measured variable)	Quarterly	Total quarterly mass emissions	Once a quarter for reporting

ATTACHMENT J

RULE 2012 PROTOCOL
CHAPTER 2

MAJOR SOURCES - CONTINUOUS

EMISSION MONITORING SYSTEM

(CEMS)

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CHAPTER 2 - MAJOR SOURCES - CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)

Between January 1, 1994 and December 31, 1994 (Cycle 1 facilities) and between July 1, 1994 and June 30, 1995 (Cycle 2 facilities), major sources shall be allowed to use an interim reporting procedure to measure and record NOx emissions on a monthly basis according to the requirements specified in Chapter 3 "Large Sources - Continuous Process Monitoring System (CPMS)" or by extracting NO_X emission data from existing District certified continuous emissions monitoring system (CEMS). Chapter 2, Subdivision C, Paragraph 1 specifies the requirements for this interim period. On and after January 1, 1995 (Cycle 1 facilities) and July 1,1995 (Cycle 2 facilities), the Facility Permit holder of each major source shall report the daily NOx emissions by 5:00 p.m. of the following day and comply with all other applicable requirements (except Chapter 2, Subdivision C, Paragraph 1) specified in this chapter.

The Facility Permit holder of a source that is required to install CEMS may request the Executive Officer to approve an alternative monitoring device (or system components) to quantify the emissions of NO_X. The applicant shall demonstrate to the Executive Officer that the proposed alternative monitoring device is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that source, according to the criteria specified in 40 CFR Part 75 Subpart E. In lieu of the criteria specified in 40 CFR Part 75 Subpart E, substitute criteria is acceptable if the applicant demonstrates to the Executive Officer that the proposed alternative monitoring device is at minimum equivalent in relative accuracy precision, reliability, and timeliness to a CEMS for that source. Upon approval by the Executive Officer, the substitute criteria shall be submitted to the federal Environmental Protection Agency as an amendment to the State Implementation Plan (SIP).

A. MEASUREMENT REQUIREMENTS

1. The Facility Permit holder of each major NO_X equipment shall install, calibrate, maintain, and operate an approved CEMS to measure and record the following:

    a. Nitrogen oxide concentrations in the gases discharged to the atmosphere from affected equipment;

    b. Oxygen concentrations, at each location where nitrogen oxide concentrations are monitored, if required for calculation of the stack gas flow rate;

    c. Stack gas volumetric flow rate. An in-stack flow meter may be used to determine mass emissions to the atmosphere from affected equipment, except:

        i. when more than one affected piece of equipment vents to the atmosphere through a single stack and there is no approvable means of determining emissions from each piece of equipment; or

ii. during periods of low flow rates when the flow rate is no longer within the applicable range of the in-stack flow meter.

d. In lieu of complying with Chapter 2, Subdivision A, Paragraph 1, Subparagraph c, the Facility Permit holder shall calculate stack gas volumetric flowrate using one of the following alternate methods:

i. Heat Input

If heat input rate is needed to determine the stack gas volumetric flow rate, the Facility Permit holder shall include in the CEMS calculations the F_d factors listed in 40 CFR Part 60, Appendix A, Method 19, Table 19-1. The Facility Permit holder shall submit data to develop F factors when alternative fuels are fired and obtain the approval of the Executive Officer for use of the F factors before firing any alternative fuel,

ii. Oxygen Mass Balance

Flow rate can be determined using oxygen mass balance as approved through a plan submitted to and approved by the Executive Officer, or

iii. Nitrogen Mass Balance

Flow rate can be determined using nitrogen mass balance as approved through a plan submitted to and approved by the Executive Officer.

The Facility Permit holder shall measure and record all variables necessary for the method chosen to calculate stack gas volumetric flowrate.

e. All applicable variables listed in Table 2-A.

f. The Facility Permit holder shall also provide any other data necessary for calculating air contaminant emission rates as determined by the Executive Officer.

g. The data generated from a monitoring system for parameters listed in subparagraphs a, b, c and d of Chapter 2, Subdivision A, Paragraph 1 shall be recorded by both (1) the remote terminal unit (RTU) and (2) strip chart recorder or electronic recorder. The RTU shall be capable of producing a printout of the stored data upon

request from the Executive Officer or designee. The strip chart recorder or alternative electronic recorder shall be located in parallel to the RTU. The strip chart recorder or alternative electronic recorder shall receive data independent of the RTU and serve as an independent tool for verifying data archived in the RTU or sent to the District Central NOx Station.

If a strip chart recorder is used, the strip chart shall have a minimum chart width of 10 inches, a readability of 0.5% of the span, and a minimum of 100 chart divisions. Alternatively, if an electronic recorder is used, the recorder shall be capable of writing data on a medium that is secure and tamper-proof. Possible media include, but are not limited to, "write-once-read-many" type or a data encryption system that does not permit encrypted data files to be altered after they have been created, without making the data inaccessible through standard vendor-provided decryption software, or without leaving traceable evidence of tampering. Also, at a minimum, the real-time sampling frequency of the electronic recorder shall be equal to or greater than the rate of data collection for the RTU. Furthermore, such recorded data shall be readily accessible upon request by the Executive Officer or designee. If software is required to access the recorded data, a copy of the software, and all subsequent revisions, shall be provided to the Executive Officer or designee at no cost. If a device is required to retrieve and provide a copy of such recorded data upon request to the Executive Officer or designee, the Facility Permit holder shall maintain and operate such a device at the facility.

The Facility Permit holder shall specify within the CEMS application, as required under Chapter 2, Subdivision A, Paragraph 2, the type of data recording system to be used in parallel to the RTU.

2. The Facility Permit holder shall by March 31, 1994 for Cycle 1 facilities and September 30, 1994 for Cycle 2 facilities, submit a CEMS plan to the Executive Officer for approval. The plan shall contain at a minimum the following items:

   a. A list of all major sources which will have CEMS installed.

   b. Details of the proposed Continuous Emission Monitors as well as the proposed flow monitors for each affected source.

   c. Details of the Quality Control/Quality Assurance Plan for the CEMS.

d. Proposed range of each CEMS and the expected concentrations of pollutants for each source.

e. Date by which purchase order for each system will be issued.

f. Construction schedule for each system, and date of completion of installation.

g. Date by which CEMS certification test protocol will be submitted to the District for approval for each system.

h. Date by which certification tests will be completed for each system.

i. Date by which certification test results will be submitted for review by the District, for each system.

j. Any other pertinent information regarding the installation and certification for each system.

If a CEMS plan is disapproved in whole or in part, the District staff will notify the Facility Permit holder in writing and the Facility Permit holder shall have 30 days from the date it receives the notice from the District to resubmit its plan.

3. The variables listed in Table 2-A shall be measured and recorded at the facility to determine mass emission and track the operation of basic and control equipment. The variables listed in Table 2-B shall be reported to the District's NO_X Central Station Computer. Alternatives indicated in Tables 2-A and 2-B indicate choices which shall be specified in the Facility Permit for that equipment.

4. As part of the Facility Permit Application review, the Executive Officer may modify the list of Facility Permit holder-selected tracking variables.

5. Data on Facility Permit holder selected variables shall be made available to the District staff upon request.

6. Source tests shall be performed by testing firms/laboratories who have received approval from the District by going through the District's laboratory approval program.

7. All Relative Accuracy Test Audits (RATA) shall be performed by testing firms/laboratories who have received approval from the District by going through the District's laboratory approval program.

B. MONITORING SYSTEMS

1. Information Required for Each 15-Minute Interval

All CEMS for affected equipment shall, at a minimum, generate and record the following data points once for each successive 15-minute period on the hour and at equally spaced intervals thereafter:

a. Nitrogen oxides concentration in the stack in units of ppmv;

b. Oxygen concentration or carbon dioxide concentration in the stack in units of percent;

c. Volumetric flow rate of stack gases in units of dry or wet standard cubic feet per hour (dscfh or wscfh). For affected equipment standard gas conditions are defined as a temperature at 68°F and one atmosphere of pressure;

d. (i) Fuel flow rates in units of standard cubic feet per hour (scfh) for gaseous fuels or pounds per hour (lb/hr) for liquid fuels if EPA Method 19 is used to calculate the stack gas volumetric flow rate, and

(ii) Fuel type;

e. Nitrogen oxide mass emission in units of lb/hour. The nitrogen oxide mass emissions is calculated according to the following:

$$e_i = a_i \times c_i \times 1.195 \times 10^{-7} \quad \text{(Eq. 1)}$$

where:

e_i = The mass emissions of nitrogen oxides in pounds per hour.

a_i = The stack gas concentration of nitrogen oxides (ppmv).

c_i = The stack gas volumetric flow rate (scfh).

Example Calculation:

a_i = 40 ppm
c_i = 150,000 scfh
e_i = 40 x 150,000 x 1.195 x 10^{-7}
e_i = 0.72 lb/hr

When the CEMS uses the heat input rate and oxygen concentration to determine the nitrogen oxide mass emissions, the following equation shall be used to calculate the emissions of nitrogen oxides:

$$e_i = a_i \times [20.9/(20.9 - b_i)] \times 1.195 \times 10^{-7} \times \sum_{j=1}^{r} (F_{dij} \times d_{ij} \times V_{ij}) \qquad \text{(Eq. 2)}$$

where:

e_i = The mass emissions of nitrogen oxides in pounds per hour
ai = The stack gas concentration of nitrogen oxides (ppmv)
bi = The stack gas concentrations of oxygen (%)
r = The number of different types of fuel
F_{dij} = The oxygen-based dry F factor for each type of fuel, the ratio of the gas volume of the products of combustion to the heat content of the fuel (scf/106 Btu)
dij = The fuel flow rate for each type of fuel measured every 15-minute period
Vij = The higher heating value of the fuel for each type of fuel

The product (d_{ij} x V_{ij}) shall have units of millions of Btu per hour (10^6 Btu/hr).

Equation 2 may not be used in cases where enriched oxygen is used, non-fuel sources of carbon dioxide are present (e.g., lime kilns and calciners), and the oxygen content of the stack gas is 19 percent or greater.

Example Calculation:

a_i = 40 ppm
b_i = 3.5%

F_{dij} = 8710 dscf/10^6 Btu
d_{ij} = 5,000 dscf
V_{ij} = 1050 Btu/scf or 1050 mmBtu/mmscf

$$e_i = a_i \times [20.9/(20.9 - b_i)] \times 1.195 \times 10\text{-}7 \times \sum_{j=1}^{r} (F_{dij} \times d_{ij} \times V_{ij})$$

e_i = 40 x [20.9/(20.9 - 3.5)] x 1.195 x 10^{-7} x [8710/10^6 x 5000 x 1050]
e_i = 0.26 lb/hr

When the CEMS uses the heat input rate and carbon dioxide concentration to determine the nitrogen oxide mass emissions, the following equation shall be used to calculate the emissions of nitrogen oxides:

$$e_i = (a_{i/ti}) \times 100 \times 1.195 \times 10^{-7} \times \sum_{j=1}^{r} (F_{cij} \times d_{ii} \times V_{ii}) \qquad \text{(Eq. 3)}$$

where:

e_i = The mass emissions of nitrogen oxides in pounds per hour.
a_i = The stack gas concentration of nitrogen oxides (ppmv).
t_i = The stack gas concentrations of carbon dioxide (%).
r = The number of different types of fuel.
F_{cij} = The carbon dioxide-based dry F factor for each type of fuel, the ratio of the dry gas volume of carbon dioxide to the heat content of the fuel (scf/10^6 Btu).
dij = The fuel flow rate for each type of fuel measured every 15-minute period.
V_{ij} = The higher heating value of the fuel for each type of fuel.

The product (d_{ij} x V_{ij}) shall have units of millions of Btu per hour (10^6 Btu/hr).

Example Calculation:

a_i = 40 ppm
ti = 11.0%
F_{Cij} = 1040 scf/10^6 Btu
dij = 5,000 dscf
Vij = 1050 Btu/scf or 1050 mmBtu/mmscf

$$ei = ai/ti \times 100 \times 1.195 \times 10^{-7} \times \sum_{j=1}^{r} (Fcij \times dij \times Vij)$$

$$ei = 40/11.0 \times 100 \times 1.195 \times 10^{-7} \times [1040 \times 5000 \times 1050 \times 10^{-6}]$$

ei = 0.24 lb/hr

f. All measurements for concentrations and stack gas flow rates, and selection of F factor shall be made on a consistent wet or dry basis.

g. CEMS status. The following status codes shall be used to report the CEMS status:

1-1 VALID DATA

2-2 CALIBRATION

3-3 OFF LINE

4-4 ALTERNATE DATA ACQUISITION (e.g., manual sampling)

5-5 OUT OF CONTROL

6-6 FUEL SWITCH (e.g., gas to oil, coke to coal)

7-7 10% RANGE (may be used to report at default 10% valid range whenever actual concentration value is below 10%)

8-8 LOWER THAN 10% RANGE (may be used to report at actual concentration value if less than 10% valid range

9-9 NON-OPERATIONAL

h. For processes in which less than 50% of emissions are caused by fuel combustion, record the Source Classification Code (SCC) for the process conducted. SCCs are listed in the State of California Air Resources Board Document "Instructions for the Emission Data System Review and Update Report, Appendix III, Source Classification Codes and EPA Emission Factors".

i. the count of valid data points collected.

j. the count of data points in excess of 95% of span range of the monitor collected.

2. Hourly Calculations

The hourly average stack gas concentrations of nitrogen oxides and oxygen, the stack gas volumetric flow rate, the fuel flow rate and the emission rate of nitrogen oxides shall be calculated for each equipment as follows:

$$A = \frac{\sum_{i=1}^{n} a_i}{n} \quad \text{(for } NO_x \text{ concentration)} \qquad \text{(Eq. 4)}$$

$$B = \frac{\sum_{I=1}^{n} b_i}{n} \quad \text{(for } O_2 \text{ concentration)} \qquad \text{(Eq. 5)}$$

$$C = \frac{\sum_{i=1}^{n} c_i}{n} \quad \text{(for stack gas volumetric flow rate)} \qquad \text{(Eq. 6)}$$

$$D_i = \frac{\sum_{i=1}^{n} d_i}{n} \quad \text{(for fuel flow rates)} \qquad \text{(Eq. 7)}$$

Calculate D for each type of fuel firing separately.

$$E_k = \frac{\sum_{i=1}^{n} e_i}{n} \quad \text{(for } NO_x \text{ emissions)} \qquad \text{(Eq. 8)}$$

All concentrations and stack gas flow rates shall be calculated on a consistent wet or dry basis.

where:

A = The hourly average stack gas concentration of nitrogen oxides (ppmv)

a_i = The measured stack gas concentrations of nitrogen oxides (ppmv)

B = The hourly average oxygen stack concentration (%)

b_i = The measured stack gas concentrations of oxygen (%)

C = The hourly average stack gas flow rate (dscfh)

c_i = The measured stack gas volumetric flow rates (dscfh)

D = The hourly average fuel flow rates, for each type of fuel (appropriate units of volumetric flow rate for each type of fuel, e.g., scfh, gal/hr, lb/hr, bbl/hr, liters/hr, etc.)

d_i = The measured fuel flow rates for each type of fuel (appropriate units of volumetric flow rate for each type of fuel, e.g., scfh, gal/hr, lb/hr, bbl/hr, etc.)

E_k = The hourly average emissions of nitrogen oxides (lb/hr)

e_i = The measured mass emissions of nitrogen oxides in pounds per hour

n = Number of valid data points during the hour

The values of A through E_k shall be recorded for each affected piece of equipment.

3. Daily Calculations

a. Daily mass emissions calculation

The daily emissions of nitrogen oxides shall be calculated and recorded for each affected NO_x source using the following procedure:

$$G = \sum_{k=1}^{N} E_k + \sum_{m=1}^{P} E_m + \sum_{o=1}^{Q} E_{st} + \sum_{r=1}^{S} E_{sh} \quad \text{(Eq. 9)}$$

where:

G = The daily emissions of nitrogen oxides (lb)

E_m = The hourly average emissions of nitrogen oxides using substitute data (see Chapter 2, Subdivision B, Paragraph 5, Subparagraph b and Chapter 2 Subdivision F)(lb/hr)

E_k = The hourly average emissions of nitrogen oxides using data recorded by CEMS (lbs/hr)

E_{st} = The hourly average emissions of nitrogen oxides during startup (lb/hr) (see Chapter 2 Subdivision G)

E_{sh} = The hourly average emissions of nitrogen oxides during shutdown (lbs/hr) (see Chapter 2 Subdivision G)

N = Number of hours of valid data (see Chapter 2, Subdivision B, Paragraph 5) from the CEMS coinciding with the source operating hours

P = Number of hours using substitute data when the source is operating

Q = The number of hours during startup period

S = The number of hours during shutdown period

and,

M = Number of hours during the day.

Note that: $M = N + P + Q + S = 24$ hours.

Example Calculation:

E_k = 0.5 lb/hr E_{st} = 0 lb/hr Q = 0 hr

E_m = 0.7 lb/hr E_{sd} = 0 lb/hr S = 0 hr

N = 21 hr

P = 3 hr

M = 24 hr

G = (0.5 lb/hr)(21 hr) + (0.7 lb/hr)(3 hr) + (0 lb/hr)(0 hr)+ (0 lb/hr)(0 hr)

G = 10.5 + 2.1 = 12.6 lb

4. Operational Requirements

The CEMS shall be operated and data recorded at all times except for CEMS breakdowns and repairs. Calibration data shall be recorded during zero and span calibration checks, and zero and span adjustments. For periods of hot standby the Facility Permit holder may enter a default value for NO_x emissions. Before using any default values the Facility Permit holder shall obtain the approval of the Executive Officer and must include in the CEMS applications or CEMS plans the estimates of NO_x emissions, the NO_x concentrations, the oxygen concentrations, and the fuel input rates or the stack gas volumetric flow rates during hot standby conditions. The Executive Officer will disapprove those emission values which do not correspond to hot standby conditions.

5. Requirements for Valid Data Points

Valid data points are data points from a CEMS which meets the requirements of Chapter 2, Subdivision B, Paragraph 13, and which is not out-of-control as defined in Attachment C - Quality Assurance and Quality Control Procedures. In addition, whenever specifically allowed by these RECLAIM rules, data points obtained by the methods specified in Chapter 2, Subdivision B, Paragraph 6 and Chapter 2, Subdivision B, Paragraph 7, are considered valid. Furthermore, a data point gathered by a certified CEMS except a zero value data point, shall not be valid unless it meets the requirements of Chapter 2, Subdivision B, Subparagraph (8)(a). A zero value data point is a data point gathered while the source is not operating and is within 5% of the span range from zero value.

a. Each CEMS and component thereof shall be capable of completing a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 15-minute interval.

b. Raw data shall be gathered from the monitors at equally spaced intervals. The Facility Permit holder shall specify, within the test

report for a Relative Accuracy Test Audit of a CEMS, the frequency of data gathering in a 15-minute interval. This data gathering frequency shall remain the same throughout the period following the Relative Accuracy Test Audit until a subsequent Relative Accuracy Test Audit is conducted with a different specified frequency. The specified frequency shall be the frequency for data gathering to constitute continuous measurement.

c. All valid raw data points gathered from the monitors within a 15-minute interval shall be used to compute a 15-minute average emissions data point. If only one valid data point is gathered within a 15-minute interval, that data point shall be used as the 15-minute average emission data point. No invalid data points may be used to compute the 15-minute average emission data point. A valid 15-minute average emission data point must further be based on a minimum of one valid raw data point.

d. Except for facilities which are required to comply with 40 CFR Part 75, the following data for each 15-minute period shall be computed for each CEMS:
   i. the average emissions values,
   ii. the count of valid data points, and
   iii. the count of data points in excess of 95% of span range of the monitor.

e. All NO_x concentration, volumetric flow, and NO_x emission rate data shall be reduced to 1 hour averages. Valid hour averages shall be equally computed based on four valid 15-minute average emission data points equally spaced over each 1 hour period, commencing at 12:00 a.m., except for a maximum of four 1-hour maintenance periods in each day during which CEMS maintenance activities such as calibration, quality assurance, maintenance, or CEMS repair is conducted. During these 1-hour maintenance periods a valid hour average shall consist of at least two valid 15-minute average emission data points. A 1-hour maintenance period is defined when the operation of the CEMS is interrupted for CEMS maintenance activities at any time during any 1-hour period, and that period shall count towards the four 1-hour maintenance periods allowed regardless of the number of valid data points gathered. The CEMS shall be kept properly operational at all times unless such CEMS must be turned off for CEMS maintenance activities.

f. Failure of the CEMS to acquire the required number of valid 15-minute average emission data points within any 1-hour period shall result in the loss of such data for the entire 1-hour period and the Facility Permit holder shall record and report data by means of the

data acquisition and handling system for the missing hour in accordance with the applicable procedures for substituting missing data in the Missing Data Procedures in Chapter 2 Subdivision E of this document.

6. Alternative Data Acquisition Using Reference Methods

a. When valid nitrogen oxides emission data is not collected by the permanently installed CEMS, emission rate data may be obtained using District Methods 7.1 or 100.1 (for NO_x concentration in the stack gas) in conjunction with District Methods 1.1, 2.1, 3.1, and 4.1 or by using District Methods 7.1 or 100.1 in conjunction with District Method 3.1 and EPA Method 19. For District Method 7.1 a minimum of 12 samples, equally spaced over a one-hour period, shall be taken. Each sample shall represent the five-minute period in which it was taken.

b. If the Facility Permit holder chooses to use a standby CEMS (such as in a mobile van or other configuration), to obtain alternative monitoring data at such times when the permanently installed CEMS for the affected source(s) cannot produce valid data, then the standby CEMS is subject to the following requirements:

i. Standby CEMS shall be equivalent in relative accuracy, reliability, reproducibility and timeliness to the corresponding permanently installed CEMS.

ii. The Facility Permit holder shall submit a standby CEMS plan to the District for review prior to using the standby CEMS.

iii. District acceptance of standby CEMS data shall be contingent on District approval of the plan.

iv. The use of standby CEMS shall be limited to a total of 6 months for any source(s) within a calendar year.

v. The Facility Permit holder shall notify the District within 24 hours if the standby CEMS is to be used in place of the permanently installed CEMS.

vi. During the first 30 days of standby CEMS use, the Facility Permit holder shall conduct a Certified Gas Audit (CGA) of the standby CEMS.

vii. The Facility Permit holder shall notify the District within the 30-day period if the standby CEMS shall be used longer than 30 days.

viii. After the first 30 days of using the standby CEMS , the Facility Permit holder shall conduct at least one RATA of the standby CEMS and the RATA shall be conducted within 90 days of the initial use of the standby CEMS.

ix. All RATA and certification tests shall be performed by testing firms/laboratories who have received approval from the District by going through the District's laboratory approval program.

x. Immediately prior to obtaining data from the source(s) to be monitored, the standby CEMS shall be quality assured in accordance with District Method 100.1

7. Alternative Data Acquisition Using Process Curves or Other Means

Process curves of NO_X emission rates or other alternative means of NO_X emission rate data generation may be used to obtain nitrogen oxides emission data, provided the Facility Permit holder has obtained the approval of the Executive Officer prior to using alternate means of NO_X emission rate data generation. The process curves and the alternate means of NO_x emission data generation mentioned in this paragraph shall not be used more than 72 hours per calendar month and may only be used if no CEMS data or reference method data gathered under Chapter 2, Subdivision B, Paragraph 6 is available. Process curves may be used on units which have air pollution control devices for the control of NO_x emissions provided the Facility Permit holder submits a complete list of operating conditions that characterize the permitted operation. The conditions will be specified in the Facility Permit for that equipment. The process variables specified in the Facility Permit conditions shall be monitored by the source.

8. Span Range Requirements for NOx Analyzers and O_2 Analyzers

a. Full scale span ranges for the NO_x analyzers and O_2 analyzers used as part of a stack gas volumetric flow system at each source shall be set on an individual basis. The full scale span range of the NO_x analyzers and O_2 analyzers shall be set so that all data points gathered by the CEMS lie within 10 - 95 percent of the full scale span range. However, any data points that fall below 10 percent of the full scale span range may be reported in accordance with 8(b), 8(c), or 8(d) as applicable. Missing Data Procedures as prescribed in Chapter 2, Subdivision E shall be substituted for any data points falling above 95 percent range of the full scale span range.

b. For CEMS with RECLAIM certified multiple span ranges, the Facility Permit holder shall report data that falls below 10 percent of the higher full scale span range and above 95 percent of the lower full scale span range, at the 10 percent value of the higher full scale span range.

i. The Facility Permit holder electing (or who may be required) to measure concentrations that fall below 10 percent of the higher full scale span value of any range (other than the lowest vendor guaranteed span range), shall perform a linearity test according to the procedure in Attachment G, Section B "Linearity Error", to satisfy the performance requirements.

c. In the event that any data points gathered by the CEMS fall below 10 percent of the full scale span range, the Facility Permit holder may elect to report NO_x concentrations at the 10 percent span range value.

d. In the event that any data points gathered by the CEMS fall below 10 percent of the lowest vendor guaranteed full scale span for that CEMS (defined as the lowest full scale span range that the vendor guarantees to be capable of meeting all current certification requirements of RECLAIM in Rule 2012 Protocols, Appendix A), the Facility Permit holder may elect to use the following procedures to measure and report NO_x concentrations.

i. Report all monitored concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS at the 10 percent lowest vendor guaranteed span range value, or

ii. Report all monitored concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span

range for that CEMS at the actual measured value, provided that the CEMS meets the Alternative Performance Requirements prescribed in Attachment G.

The Alternative Performance Requirements prescribed in Attachment G shall be imposed in place of the semiannual assessments as required pursuant to Attachment C (B)(2).

e. The Facility Permit holder electing to use (B)(8)(c) and (B)(8)(d)(i) to report NO_x concentrations that fall below 10 percent of full scale span range or 10 percent of the lowest vendor guaranteed full scale span range for that CEMS, shall meet the following:

i. In the event any of the specified testing requirements as prescribed in Attachment C (B)(2) are not met, the Facility Permit holder shall no longer use (B)(8)(c) or (B)(8)(d)(i) to report NO_x concentrations below 10 percent of the full scale span range until compliance is demonstrated. Missing Data Procedures specified in Chapter 2, Subdivision E shall apply retroactively from the date in which the Facility Permit holder last demonstrated compliance with Attachment C (B)(2).

ii. From September 8, 1995 to the beginning of the compliance year (January 1, 1995 for Cycle 1 and July 1, 1995 for Cycle 2), the Facility Permit holder may retroactively report concentrations that fell below 10 percent of the full scale span range at the 10 percent span range value, in lieu of using the Missing Data Procedures specified in Chapter 2, Subdivision E.

f. The Facility Permit holder electing to use (B)(8)(d)(ii) to measure and report NO_x concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS, shall meet the following:

i. Submit an application, with the appropriate fees, supporting documentation, and if necessary test protocols to the Executive Officer or designee in order to amend their CEMS Plan to include the selected criteria. The application shall be approved by the Executive Officer or designee prior to using (B)(8)(d)(ii).

ii. (B)(8)(d)(ii) may only be chosen after initial tests as prescribed in Attachment G are completed and demonstrate

that the CEMS is capable of measuring NO_x concentrations at below 10 percent of the full scale span range.

iii. In the event any of the specified reporting and testing requirements for (B)(8)(d)(ii) as prescribed in Attachment G are not met, the Facility Permit holder shall no longer use (B)(8)(d)(ii) to measure NO_x concentrations below 10 percent of the lowest vendor guaranteed full scale span range for that CEMS until compliance with (B)(8)(d)(ii) is demonstrated. Missing Data Procedures described in Chapter 2, Subdivision E shall apply retroactively from the date in which the Facility Permit holder last demonstrated compliance with (B)(8)(d)(ii), unless the Facility Permit holder can demonstrate compliance with Attachment C (B)(2), then the Facility Permit holder may report concentrations retroactively at the 10 percent lowest vendor guaranteed span range value and may continue to report at the 10 percent lowest vendor guaranteed span range value until compliance is demonstrated with (B)(8)(d)(ii).

iv. In the event that the NO_x concentrations are at levels such that the Facility Permit holder cannot complete the low level spike recovery test or alternative reference method test for low level concentrations pursuant to Attachment G, then the Facility Permit holder may elect to report all monitored concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range at the 10 percent lowest vendor guaranteed full scale span range value in lieu of using Missing Data Procedures..

v. Upon approval of the CEMS application to use (B)(8)(d)(ii), the Facility Permit holder may retroactively report concentrations at the 10 percent lowest vendor guaranteed span range value in lieu of using the Missing Data Procedures specified Chapter 2, Subdivision E, from the beginning of the compliance year for which the application was submitted up until the application approval date.

g. Up until July 1, 1996, Facility Permit holders whose CEMS have been provisionally or finally certified prior to September 8, 1995, and have used Missing Data Procedures as prescribed in Chapter 2, Subdivision E to report mass emissions that have been measured by the CEMS in the 10 percent to less than 20 percent of full scale span range, may report the actual concentrations measured in this range as valid data retroactively from the beginning of the current compliance year.

9. Calibration Drift Requirements

The CEMS design shall allow determination of calibration drift (both negative and positive) at zero-level (0 to 20 percent of full scale) and high-level (80 to 100 percent of full scale) values. Alternative low-level and high-level span values may be allowed with the prior written approval of the Executive Officer.

10. Relative Accuracy Requirements for Stack Gas Volumetric Flow Measurement Systems

The stack gas volumetric flow measurement system shall meet a relative accuracy requirement of being less than or equal to 15 percent of the mean value of the reference method test data in units of standard cubic feet per hour (scfh). Relative accuracy is calculated by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2. Alternatively, for cases where the mean stack gas velocity obtained by reference method test is less than 15 feet per second, the flow relative accuracy requirement may be met if equation 9a is satisfied.

$$|d| + |cc| <= 2 \text{ feet per second} \times A \times cf \qquad \text{(Eq. 9a)}$$

Where

d = average of differences between stack gas volumetric flow measurement system reading and the corresponding reference method test data in units of standard cubic feet per hour.

cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.

A = Stack cross sectional area in the plane of measurement.

cf = conversion factor to standard cubic feet per hour.

The volumetric flow measurement system shall also meet the specifications in Appendix B of these protocols. Prior to conducting a certification or re-certification test, the Facility Permit holder shall perform a flow profile study to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The results of such study shall be part of the certification test report.

There shall be a minimum of nine sets of tests conducted. All data collected shall be submitted to the Executive Officer and shall be used to determine relative accuracy except data may be rejected per the technical guidance or for unusual problems and/or occurrences during testing (e.g., process upsets, CEMS malfunction, testing failure) if the number of tests exceeds nine sets. Any exclusion of data must be substantiated with appropriate documentation and is subject to approval by the Executive Officer.

In situations where the stack gas velocity is low (less than 10 ft./sec.) and the above relative accuracy procedure provides results that have a low level of accuracy and precision, the relative accuracy of the fuel flow meter may be determined according to one of the following alternatives:

a. Calibrate the facility CEMS fuel flow meter in accordance with the procedures outlined in 40 CFR Part 75, Appendix D, either in-line or off-line.

b. Calibrate a test fuel flow meter in accordance with the procedures outlined in 40 CFR Part 75, Appendix D. Use the calibrated test fuel meter to calibrate the facility CEMS fuel flow meter to the same level of accuracy and precision as in 40 CFR Part 75, Appendix D.

c. Calibrate a test fuel flow meter according to the procedure outlined in (B)(10)(b) and install this meter in line with the facility CEMS fuel flow meter and use 40 CFR Part 60, Method 19 (F-factor approach) to determine relative accuracy to the same level of accuracy as in (B)(10).

Other alternative techniques (e.g., tracer gas approach, electronic micro-manometer) may be used to determine relative accuracy of fuel flow meters where low stack volumetric flow rates exist, if these techniques are approved in writing by the District.

11. Relative Accuracy Requirements for Mass Emission Rate Measurement

The mass emission rate measurement shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of lb/hr. Relative accuracy is calculated by the equations in Section 8 of 40 CFR, Part 60, Appendix B, Performance Specification 2. The emission rate measurement shall also meet the specifications in Attachment-B of this document. Alternatively, for cases where the mean NOx concentration obtained by reference test method is less than or equal to 5.0 ppm, or the mean stack gas velocity obtained by reference test method is less than 15 feet per second, the mass emission rate measurement relative accuracy requirement may be met if equation 9b is satisfied.

$$|d| + |cc| <= (c \times s \times A) \times cf \qquad \text{(Eq. 9b)}$$

Where

d = average of differences between mass emission rate determined by the CEMS and the corresponding reference method test data in units of pounds per hour.

cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.
A = Stack cross sectional area in the plane of measurement.
c = 1.0 ppm or mean concentration obtained by reference test method, whichever is greater.
s = 2 feet per second or mean stack gas velocity obtained by reference test method, whichever is greater.
cf = conversion factor to pounds per hour.

There shall be a minimum of nine sets of tests conducted. All data collected shall be submitted to the Executive Officer and shall be used to determine relative accuracy except data may be rejected per the technical guidance or for unusual problems and/or occurrences during testing (e.g., process upsets, CEMS malfunction, testing failure) if the number of tests exceeds nine sets. Any exclusion of data must be substantiated with appropriate documentation and is subject to approval by the Executive Officer.

12. Relative Accuracy Requirements for Analyzers

The nitrogen oxides gas analyzers shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of ppmv for nitrogen oxides. Relative accuracy is calculated by the equations in Section 8 of 40 CFR, Part 60, Appendix B, Performance Specification 2. Alternatively, for cases where the mean value of the reference method test data is less than 5 ppmv, the NOx concentration relative accuracy requirement may be met if equation 9c is satisfied.

$$|d| + |cc| <= 1.0 \text{ ppmv} \qquad \text{(Eq. 9c)}$$

Where:
d = average of differences between the NOx concentration measurement system reading and the corresponding reference method test data in units of ppmv.
cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.

The oxygen and carbon dioxide gas analyzers shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of volume percent. Relative accuracy is calculated by the equations in Section 8 of 40 CFR, Part 60, Appendix B, Performance Specification 2. Alternatively, for cases where the mean value of the reference method test data for oxygen or carbon dioxide concentration is less than 5.0 volume percent, the

relative accuracy requirement for oxygen or carbon dioxide concentration may be met if equation 9d is satisfied.

$$|d| + |cc| <= 1.0 \text{ volume percent} \quad \text{(Eq. 9d)}$$

Where:

d = average of differences between the oxygen or carbon dioxide concentration measurement system reading and the corresponding reference method test data.

cc = confidence coefficient as determined by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.

Units using monitors with more than one span range must perform the calibration error test on all span ranges. This portion of the CEMS shall also meet the specifications in Attachment B (BIAS TEST) of these protocols.

There shall be a minimum of nine sets of tests conducted. All data collected shall be submitted to the Executive Officer and shall be used to determine relative accuracy except data may be rejected per the technical guidance or for unusual problems and/or occurrences during testing (e.g., process upsets, CEMS malfunction, testing failure) if the number of tests exceeds nine sets. Any exclusion of data must be substantiated with appropriate documentation and is subject to approval by the Executive Officer.

13. Certification

a. Provisional Approval

The Facility Permit holder of a major source shall submit, certification test results and supporting documents to the District for each CEMS within the applicable time period required by Rule 2012 to install, operate, and maintain a CEMS. The Facility Permit holder shall certify that the results show that the CEMS has met all the requirements of the protocol if its submission is after August 31, 1994. Upon receipt of the test results and the certification that the CEMS is in compliance, the District will issue a Provisional Approval. The effective date of Provisional Approval shall be the last date of source testing if the test results are submitted within 60 days from the last date of source testing. However, if the test results are submitted more than 60 days after the last date of source testing, the effective date of Provisional Approval shall be the date of submittal of the testing results. After the Provisional Approval, the Facility Permit holder shall comply with the requirements under Attachment C - Quality Assurance and Quality Control Procedures.

b. Final Certification

After the Provisional Approval, all the data measured and recorded by the CEMS will be considered valid quality assured data provided that the Executive Officer does not issue a notice of disapproval of final certification. Final certification of the CEMS will be granted if the certification test results show that the CEMS has met all the requirements of the protocol, including Subdivision B, Paragraphs 10, 11, and 12 of this Chapter.

In the case where the test results show that the CEMS does not meet all the requirements of the rule, the Executive Officer will disapprove the final certification. If this occurs, the previously considered valid data from the date of Provisional Approval shall be replaced by data as specified in subdivision (E) - Missing Data Procedures. This procedure shall be used until the time that new certification test results are submitted, and the CEMS has received final approval by the District. After the Provisional Approval, the Facility Permit holder shall comply with the requirements under Attachment C - Quality Assurance and Quality Control Procedures. Data collected by the CEMS shall not be valid unless the CEMS is demonstrated to meet the requirements under Attachment C.

c. Re-certification

The Facility Permit holder shall conduct tests to re-certify a certified CEMS whenever the CEMS is modified in accordance with paragraph (B)(16).

14. Sampling Location Requirements

Each affected piece of equipment shall have sampling locations which meet the "Guidelines for Construction of Sampling and Testing Facilities" in the District Source Test Manual. If an alternate location (not conforming to the criteria of eight duct diameters downstream and two diameters upstream from a flow disturbance) is used, the absence of flow disturbance shall be demonstrated by using the District method in the Source Test Manual, Chapter X, Section 1.4, or 40 CFR, Part 60, Appendix A, Method 1. Section 2.5 and the absence of stratification shall be demonstrated using District method in the Source Test Manual, Chapter X, Section 13.

15. Sampling Line Requirement

The CEMS sample line from the CEMS probe to the sample conditioning system shall be heated to maintain the sample temperature above the dew

point of the sample. This requirement does not apply to dilution probe systems where no sample condensation occurs.

16. Recertification Requirements

The District will reevaluate the monitoring systems at any affected piece of equipment where changes to the basic process equipment or air pollution control equipment occur, to determine the proper full span range of the monitors. Any monitor system requiring change to its full span range in order to meet the criteria in Chapter 2, Subdivision B shall be recertified according to all the specifications in Chapter 2, Subdivision B, Paragraphs 8, 10, 11, and 12, as applicable, including the relative accuracy tests, the calibration drift tests, and the calibration error tests. A new CEMS application shall be submitted for each CEMS which is reevaluated.

The recertification for any reevaluated CEMS, including existing, modified, or new CEMS, monitoring an existing or modified major source that was previously permitted under RECLAIM, shall be completed within 90 days of the start-up of the newly changed or modified equipment monitored by such CEMS. The Facility Permit holder shall calculate and report NOx emission data for the period prior to the CEMS recertification by means of the automated data acquisition and handling system according to the following procedures:

a. For any CEMS which is recertified within 90 days of start-up of the newly modified equipment, the emission data recorded by the CEMS prior to the recertification would be considered valid and shall be used for calculating and reporting NO_X emissions for the equipment it serves.

b. For any CEMS which is not recertified within 90 days of start-up of the newly modified equipment, the 90th percentile emission data (lbs per day) for the previous 90 unit operating days recorded by the CEMS prior to the recertification shall be used for calculating and reporting NO_X emissions for the equipment it serves.

17. Quality Assurance Procedures for Analyzers

The quality assurance and quality control requirements for analyzers, flow monitors, and NO_X emission rate systems are given in Attachment C (QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES) of these protocols. The quality assurance plans required by Attachment C of these protocols shall be submitted along with the CEMS certification application to the District for the approval of the Executive Officer . Source test and monitoring equipment inspection reports required by the Protocols shall be kept on-site for at least three

years. The reference method tests are those methods in Chapter 8 - Reference Methods of these protocols. Any CEMS which is deemed out-of-control by Attachment C of these protocols shall be corrected, retested by the appropriate audit procedure, and restored to in-control condition within 24 hours after being deemed out-of-control. If the CEMS is not in-control at the end of the 24-hour period, the CEMS data shall be gathered using the methods in Chapter 2, Subdivision B, Paragraph 6 and Chapter 2, Subdivision B, Paragraph 7 of these requirements or using the Missing Data Procedures in Chapter 2 Subdivision E. All data which is gathered in order to comply with Attachment C of these protocols shall be maintained for three years and be made available to the Executive Officer upon request. Any such data which is invalidated shall be identified and reasons provided for any data invalidation. The nitrogen oxides and oxygen monitors shall also meet the specifications in Attachment B (BIAS TEST) of these protocols.

18. **Quality Assurance for Fuel Flow Meters**

Fuel flow measuring devices used for obtaining stack flow in conjunction with F-factors shall be tested as installed for relative accuracy using reference methods to determine stack flow.

If the flow device manufacturer has a method or device that permits the fuel flow measuring device to be tested as installed for relative accuracy, the Facility Permit holder shall request approval from the Executive Officer. Approval will be granted in cases where the Facility Permit holder can demonstrate to the satisfaction of the Executive Officer that no suitable testing location exists in the exhaust stacks or ducts and that it would be an inordinate cost burden to modify the exhaust stack configuration to provide a suitable testing location. The method or device used for relative accuracy testing shall be traceable to NIST standards. This method shall be used only if natural gas, fuel oil, or other fuels can be shown, by the Facility Permit holder to have stable F-factors and gross heating values, or if the Facility Permit holder measures the F-factor and gross heating value of the fuel. A stable F-Factor is defined as not varying by more than +/-2.5% from the constant value used for F-Factor. For the fuels listed in 40 CFR 60, Appendix A, Method 19, Table 19-1, the F-Factors are assumed to be stable at the value cited in Table 19-1. Any F-Factor cited in Regulation XX shall supersede the f-Factor in Table 19-1. For fuels not listed in the citations above, but which the Facility Permit holder can demonstrate that the source-specific F-Factor meets the same stability criteria, periodic reporting of F-Factor may be accepted and the adequacy of the frequency of analyses shall be demonstrated by the facility such that the probability that any given analysis will differ from the previous analysis by more than 5% (relative to the previous analysis) is less than 5%. Analysis records shall be maintained, including all charts and laboratory notes.

19. Calibration Gas Traceability

All calibration gases used during certification tests and quality assurance and quality control activities shall be NIST/EPA approved standard reference materials (SRM), certified reference materials (CRM), or shall be certified according to "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards," September 1997, EPA 600/R-97/121 or any subsequent version published by EPA.

20. Relative Accuracy Test Audits Report Submittal

A test report shall be submitted to the District for each semi-annual or annual assessment test of a CEMS as required under Paragraph (B)(2) of Attachment C - Quality Assurance and Quality Control Procedures. Such report shall be submitted on or before the end of the quarter following the date of a required test.

21. Concentration Stratification

a. The owner or operator shall demonstrate at the time of certification and re-certification the absence of stratification for locating a facility CEMS gas sampling probe through testing performed according to the method in Chapter X, "Non-Standard Methods and Techniques", of the District Source Testing Manual. The number of tests shall be determined as follows:

   i. A minimum of one test shall be conducted if the owner or operator demonstrates to the satisfaction of the Executive Officer that the equipment operates within a 20 percent load range for at least 80 percent of the time;

   ii. A minimum of two tests shall be conducted if the equipment operates between 20 and 50 percent load range for at least 80 percent of the time; or,

   iii. A minimum of three tests shall be conducted if the equipment operates outside of the criteria in clauses (i) and (ii) above.

   The absence of stratification is considered verified if the difference between the highest measured concentration (time normalized) and the lowest measured concentration (time normalized) divided by the average measured concentration (time normalized), when expressed as a percentage, is less than or equal to 10 percent. Upon verification of the absence of stratification, the owner or operator may position the CEMS sampling probe at any point within the stack with the exception of those points that are adjacent to the stack wall. The CEMS sampling probe should be located in the stack at least one-third of the stack diameter. The RM for RATA may be conducted at a single point within the stack that is not

adjacent to the stack wall and does not interfere with the sampling and the operation of the facility CEMS.

b. If testing demonstrates the presence of stratification, the owner or operator shall elect one of the following alternatives:

i. The owner or operator may use a single point sampling probe, if the stratification is greater than 10 percent but the difference between the highest measured concentration (time normalized) and the lowest measured concentration (time normalized) is less than or equal to 1.0 ppmv:

I. Then the CEMS sampling probe may be located at any point within the stack except any points that are adjacent to the stack wall or adjacent to either the highest measured concentration (time normalized) or the lowest measured concentration (time normalized), or

II. If it is not possible to avoid using a point adjacent to either the highest measured concentration (time normalized) or the lowest measured concentration (time normalized), then locate the CEMS sampling probe such that the placement minimizes the difference between the concentration; at the proposed probe location and the concentration at the point of highest measured concentration (time normalized) or the lowest measured concentration (time normalized).

ii. The owner or operator may use a single point sampling probe, if there exists a representative CEMS probe location such that all of the following criteria are met:

I. Each traverse point concentrations is within 10.0% of the average of all traverse point concentrations (time normalized), or the difference between each traverse concentration and the average of all traverse point concentrations is less than or equal to 1.0 ppm, and

II. at least one traverse point concentration, not located next to the stack or duct wall, is within 10.0% of each adjacent traverse point concentration, or the difference between each traverse point concentration and the average of all traverse point concentrations is less than or equal to 1.0 ppm, whichever is greater, and,

III. if more than one traverse point meets the criteria listed in subclause (ii)(II), the CEMS probe shall be located at (or as near as practical) the traverse point with minimum adjacent traverse point concentration fluctuations as determined in section (ii)(II), above.

iii. The owner or operator may use a multipoint sampling probe and determine a representative multiple point sampling configuration as approved by the Executive Officer.

iv. The owner or operator may elect to modify the stack and/or CEMS sampling probe location and retest for the absence of stratification.

C. REPORTING PROCEDURES

1. Interim Reporting Procedures

a. From January 1, 1994 until December 31, 1994 (Cycle 1 facilities) and July 1, 1994 until June 30, 1995 (Cycle 2 facilities), the Facility Permit holder shall be allowed to use an interim procedure for data reporting and storage. The Facility Permit holder shall submit as part of the Facility Permit application, the methodology for interim data reporting and storage. The Facility Permit application shall be subject to the approval of the Executive Officer and shall, at a minimum, meet the requirements of Chapter 2, Subdivision C, Paragraph 1 Subparagraphs b, c, and d

b. All the data required in Chapter 2, Subdivision C, Paragraph 1, Subparagraphs c and d shall be made available to the Executive Officer.

c. For each piece of equipment the following information shall be stored on site and be made available to the Executive Officer upon request:

i. Calendar dates covered in the reporting period;

ii. Each monthly emissions (lb NO_X/month) and each hourly emissions (lb NO_X/hour);

iii. Identification of the operating hours for which a sufficient number of valid data points has not been taken, reasons for not taking sufficient data, and a description of corrective action taken;

iv. Identification of F_d factor for each type of fuel used for calculations and the type of fuel burned;

d. The following information for the entire facility shall be on a monthly basis in a format approved by the Executive Officer:

i. Calendar dates covered in the reporting period;

ii. The sum of the daily emissions (lb NO_X/day) from all NO_X RECLAIM sources.

e. All data required by Chapter 2, Subdivision C, Paragraph 1, Subparagraphs c and d shall be recorded and/or transmitted to the District in a format specified by the Executive Officer.

2. Final Reporting Procedures

a. On and after January 1, 1995 (Cycle 1 facilities) and July 1, 1995 (Cycle 2 facilities), the RTU installed at each location shall be used to electronically report total daily mass emissions of NO_x and daily status codes to the District Central NO_x Station.

b. On and after January 1, 1995 (Cycle 1 facilities) and July 1, 1995 (Cycle 2 facilities), the Facility Permit holder shall submit to the Executive Officer a Monthly Emissions Report in the manner and form specified by the Executive Officer within 15 days following the end of each calendar month.

c. On and after January 1, 1995 (Cycle 1 facilities) and July 1, 1995 (Cycle 2 facilities), all or part of the interim data storage systems shall remain as continuous backup systems.

d. An alternate backup data storage system may be implemented, upon request.

D. ALTERNATIVE PROCEDURES FOR EMISSION STACK FLOW RATE DETERMINATION

1. Multiple Sources Venting to a Common Stack

In the event that more than one source vents to a common stack, the alternative reference method for determining individual source flow rates shall use the F-factors in EPA Method 19 and the following equation:

$$c_i = [20.9/(20.9 - b_i)] \times \sum_{j=1}^{r} (F_{dij} \times d_{ij} \times V_{ij}) \qquad \text{(Eq. 10)}$$

where:

c_i = The stack gas volumetric flow rate for the individual source(scfh),

b_i = The stack gas concentration of oxygen (percent),

F_{dij} = The oxygen-based dry F factor for each type of fuel, the ratio of the dry gas volume of the products of combustion to the heat content of the fuel (scf/mm Btu)

d_{ij} = The fuel flow rate for each type of fuel for individual source measured every 15-minute period

V_{ij} = The higher heating value of the fuel for each type of fuel

The product d_{ij} x V_{ij} shall have units of millions of Btu per hour (mmBtu/hr)

The measurement of wet concentration and wet F factor shall be allowed provided that wet concentration of NO_x is measured.

Example Calculation:

b_i = 4.2 percent O_2

F_{dij} = 8710 dscf/10^6 Btu

d_{ij} = 3000 dscfh

V_{ij} = 1050 Btu/scf

c_i = [20.9/(20.9 - 4.2)] x [(8710/10^6)(3000)(1050)

c_i = 34,337 dscfh

This method may be used for applicable sources before and after the interim period mentioned in Chapter 2, Subdivision C, Paragraph 1. The orifice plates used in each affected piece of equipment vented to a common stack shall meet the requirements in Chapter 2, Subdivision D, Paragraph 2.

2. Quality Assurance for Orifice Plate Measurements

Each orifice plate used to measure the fuel gas flow rate shall be checked once every 12 months using Reference Methods. If the orifice plate cannot be checked using Reference Methods, it may be checked using other methods that can show traceability to NIST standards. If the orifice plate cannot be checked by Reference Methods or other methods that can show traceability to NIST standards, the orifice plate shall be removed from the gas supply line for an inspection once every 12 months, and the following inspection procedure shall be followed:

a. Each orifice plate shall be visually inspected for any nicks, dents, corrosion, erosion, or any other signs of damage according to the orifice plate manufacturer's specifications.

b. The diameter of each orifice shall be measured using the method recommended by the orifice plate manufacturer.

c. The flatness of the orifice plate shall be checked according to the orifice manufacturer's instructions. The departure from flatness of an orifice plate shall not exceed 0.010 inches per inch of dam height (D-d/2) along any diameter. Here, D is the inside pipe diameter, and d is the orifice diameter at its narrowest constriction.

d. The pressure gauge or other device measuring pressure drop across the orifice shall be calibrated against a manometer, and shall be replaced if it deviates by more than ±2 percent across the range.

e. The surface roughness shall be measured using the method recommended by the orifice plate manufacturer. The surface roughness of an orifice plate shall not exceed 50 microinches.

f. The upstream edge of the measuring orifice shall be square and sharp so that it shall not show a beam of light when checked with an orifice gauge.

g. In centering orifice plates, the orifice shall be concentric with the inside of the meter tube or fitting. The concentricity shall be maintained within 3 percent of the inside diameter of the tube or fitting along all diameters.

h. Any other calibration tests specified by the orifice manufacturer shall be conducted at this time.

If an orifice plate fails to meet any of the manufacturer's specifications, it shall be replaced within two weeks of the inspection.

E. MISSING DATA PROCEDURES

The following Missing Data Procedures shall be used to determine substitute data whenever a valid hour of NO_x emission data has not been obtained or recorded.

1. Procedures for Missing NO_X Concentration Data

For each equipment, whenever a valid hour of NO_X pollution concentration data has not been obtained or recorded, the Facility Permit holder shall provide substitute data using the procedures below. Alternatively, a facility may provide NO_X pollution concentration missing data using the procedure in 40 CFR Part 75 Subpart D for SO_2 emissions (in lb/hr) if the relative accuracy of the pollutant analyzer and flow measurement system during the last CEMS certification test and/or RATA are both less than 10 percent.

a. The Facility Permit holder shall calculate on a daily basis the percent data availability from the NO_X pollutant concentration monitoring analyzer according to the following procedures:

i. Calculate on a daily basis a rolling percentage of the operating hours of each equipment that each concentration monitoring system was available for the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

ii. Record on a daily basis the percent annual concentration monitor availability using the following equation:

$$W = Y/Z \times 100\% \quad \text{(Eq.13)}$$

where:

W = the percent annual monitor availability

Y = the total operating hours for which the monitor provided quality-assured data during the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Z = the total operating hours of the affected piece of equipment during the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Example Calculation:

Y = 1,680 hrs

Z = 2,160 hrs

W = Y/Z x 100%

W = (1,680/2,160) x 100%

W = 77.78 percent

b. Whenever the percent annual monitor availability is 95 percent or more, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period less than or equal to 24 hours, substitute data shall be calculated using the 1N Procedure in Attachment A. If insufficient data is available to perform this calculation, substitute data shall be calculated pursuant to clause E(1)(b)(ii).

ii. For a missing data period greater than 24 hours, substitute data shall be calculated using the maximum hourly concentration recorded by the concentration monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(1)(c)(i)(III).

c. i. Whenever the percent annual monitor availability is 90-percent or more but less than 95-percent, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

I. For a missing data period of less than or equal to 3 hours, substitute data shall be calculated using the average of the recorded concentration for the hour immediately before the missing data period and the hour immediately after the missing data period. If no emissions occurred during the hour immediately before the missing data period or the hour immediately after the missing data period, substitute data shall be calculated pursuant to clause E(1)(c)(i)(II).

II. For a missing data period of more than 3 hours but less than or equal to 24 hours, substitute data shall be calculated using the maximum hourly

concentration recorded by the concentration monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(1)(c)(i)(III).

III. For a missing data period of greater than 24 hours, substitute data shall be calculated using the maximum hourly concentration recorded by the concentration monitor for the previous 365 days. If no emissions occurred during the previous 365 days, substitute data shall be calculated pursuant to clause E(1)(c)(ii).

ii. Whenever the percent annual monitor availability is less than 90 percent, substitute data shall be calculated using the highest hourly concentration recorded during the service of the monitoring system. For the purpose of this subparagraph, service of the monitoring system shall start from the initial certification date of the analyzer or the date when a decrease in the valid range of the monitoring system is approved by the Executive Officer.

d. For missing data periods where there is no prior CEMS data available or the highest CEMS data is zero:

i. for less than or equal to 24 hours, the mass emissions shall be calculated using totalized fuel usage and the starting emission factor specified in Table 1 of Rule 2002 or any alternative emission factor used in the determination of initial allocations; or

ii. for less than or equal to 24 hours and where fuel usage is not available, the mass emissions shall be calculated using the equipment maximum rated capacity, 100 percent equipment uptime, and the starting emission factor specified in Table 1 of Rule 2002; or

iii. for greater than 24 hours, the mass emissions shall be calculated using the equipment maximum rated capacity, 100 percent equipment uptime, and the uncontrolled emission factors specified in Table 3-D. An uncontrolled emission factor is an emission factor representative of the emissions prior to any emission control equipment from the source. For equipment not specified in Table 3D, an uncontrolled emission factor can be determined based on the starting emission factor used in the determination of

initial allocations discounted by any control efficiency, or based on source test data. In determining a control efficiency, the facility permit holder may use source test data, or the default control efficiency as listed in Table 3-E.

iv. Retroactively from January 1, 1995 and ending June 30, 1995, for Cycle 1 Facility Permit holders with major NO_x sources that do not have an approved RECLAIM certified CEMS, may calculate NO_x daily mass emissions in lieu of the procedures specified in the above clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii), using (1) the emission factor specified in Table 1 of Rule 2002 or any alternative factor used in the determination of initial allocations or specified in the facility permit and (2) the totalized fuel usage or process throughput.

v. Facility Permit holders with NO_x major sources which demonstrate to the satisfaction of the Executive Officer or designee that standard equipment is not available for measuring exhaust emissions for the purpose of RECLAIM CEMS certification may submit an application by December 31, 1995 to use an alternative exhaust gas and/or pollutant concentration measuring equipment. Such equipment must employ commercially available technology, and must be demonstrated to meet all the requirements of CEMS certification. Upon approval of the application, the Facility Permit holder may calculate NO_x daily mass emissions in lieu of the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii), using the alternate method of (1) the emission factor specified in the facility permit and (2) the totalized fuel usage or process throughput. Such calculation of NO_x mass emissions may be done retroactively from July 1, 1995 and ending December 31, 1997 or until the CEMS is finally certified, whichever is earlier. The alternate method of calculating mass emissions shall be applied after the proposed equipment has been approved by the Executive Officer. If the CEMS is not certified by December 31, 1997, then NO_x daily mass emissions shall be calculated by the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii) retroactive to July 1, 1995.

vi. If the Facility Permit holder demonstrates that standard equipment is not available but alternative equipment is commercially available as set forth in (E)(1)(d)(v) and also demonstrates to the satisfaction of the Executive Officer or designee that their CEMS cannot be certified because (1)

there is an inordinate cost burden for flow monitoring as specified under (B)(11) and (2) that the Reference Methods, as specified in Rule 2012(j)(1) and Appendix A, cannot be applied because no suitable testing location exists in the exhaust stacks or ducts, then the Facility Permit holder may submit an alternative CEMS plan for certification by December 31, 1995. This plan must demonstrate that the proposed monitoring system complies with all other requirements of CEMS certification and is the most technically feasible in measurement accuracy. Until the alternative CEMS is certified or up until December 31, 1997, whichever is earlier, and retroactive to July 1, 1995, the Facility Permit holder may calculate NO_x daily mass emissions in lieu of the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii), using the alternate method of (1) the emission factor specified in the facility permit and (2) the totalized fuel usage or process throughput. If the CEMS is not certified by December 31, 1997, then NO_x daily mass emissions shall be calculated by the procedures specified in clauses E(1)(d)(i), E(1)(d)(ii), and E(1)(d)(iii).

2. Procedures for Missing Stack Exhaust Gas Flow Rate Data

For each equipment, whenever a valid hour of stack exhaust gas flow rate data has not been obtained or recorded, the Facility Permit holder shall provide substitute data using the procedures below. Alternatively, a facility may provide stack exhaust gas flow rate data using the procedure in 40 CFR Part 75 Subpart D if the relative accuracy of the pollutant analyzer, flow measurement system, and emission rate measurement during the last CEMS certification test and/or RATA are all less than 10 percent.

a. The Facility Permit holder shall calculate on a daily basis the percent data availability from the flow monitoring system according to the following procedures:

i. Calculate on a daily basis a rolling percentage of the operating hours of each equipment that each flow monitoring system was available for the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

ii. Record on a daily basis the percent annual flow monitor availability using the following equation:

$$W = Y/Z \times 100\% \quad \text{(Eq. 12)}$$

where:

W = the percent annual flow monitor availability

Y = the total operating hours for which the monitor provided quality-assured data during the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Z = the total operating hours of the affected piece of equipment during the period from the date the NOx pollutant concentration monitoring analyzer was provisionally certified or 365 days prior to the current date (not counting the current day), whichever date is later, to the day previous to the current date.

Example Calculation:

Y = 1,680 hrs

Z = 2,160 hrs

W = Y/Z x 100%

W = (1,680/2,160) x 100%

W = 77.78 percent

b. Whenever the percent annual flow monitor availability is 95 percent or more, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period less than or equal to 24 hours, substitute data shall be calculated using the 1N Procedure in Attachment-A. If insufficient data is available to perform this calculation, substitute data shall be calculated pursuant to clause E(2)(b)(ii).

ii. For a missing data period greater than 24 hours, substitute data shall be calculated using the maximum hourly flow recorded by the flow monitor for the previous 30 days. If

no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(2)(c)(iii).

c. Whenever the percent annual flow monitor availability is 90-percent or more but less than 95-percent, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period of less than or equal to 3 hours, substitute data shall be calculated using the average of the recorded flow rate for the hour immediately before the missing data period and the hour immediately after the missing data period. If no emissions occurred during the hour immediately before the missing data period or the hour immediately after the missing data period, substitute data shall be calculated pursuant to clause E(2)(c)(ii).

ii. For a missing data period of more than 3 hours but less than or equal to 24 hours, substitute data shall be calculated using the maximum hourly flow rate recorded by the flow monitor for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(2)(c)(iii).

iii. For a missing data period of greater than 24 hours, substitute data shall be calculated using the maximum hourly flow rate recorded by the flow monitor for the previous 365 days. If no emissions occurred during the previous 365 days, substitute data shall be calculated pursuant to subparagraph E(2)(d).

d. Whenever the percent annual flow monitor availability is less than 90 percent, substitute data shall be calculated using the highest hourly flow rate recorded during the service of the monitoring system. For the purpose of this subparagraph, service of the monitoring system shall start from the initial certification date of the analyzer or the date when a decrease in the valid range of the monitoring system is approved by the Executive Officer.

3. Procedures for Missing Stack Exhaust Gas Flow Rate Data and Missing NO_X Concentration Data

For each equipment, whenever a valid hour of both stack exhaust gas flow rate data and NO_X pollution concentration data have not been obtained or recorded, the Facility Permit holder shall provide substitute data using emissions data and the procedures below.

a. The Facility Permit holder shall calculate and record on a daily basis the percent annual emission availability. The percent annual emission availability shall be equal to the lesser of the percent annual concentration monitor availability as determined in subparagraph E(1)(a) or the percent annual flow monitor availability as determined in subparagraph E(2)(a).

b. Whenever the percent annual emission availability is 95 percent or more, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period less than or equal to 24 hours, substitute data shall be calculated using the 1N Procedure in Attachment-A. If insufficient data is available to perform this calculation, substitute data shall be calculated pursuant to clause E(3)(b)(ii).

ii. For a missing data period greater than 24 hours, substitute data shall be calculated using the maximum hourly emissions for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(3)(c)(iii).

c. Whenever the percent annual emission availability is 90-percent or more but less than 95-percent, the Facility Permit holder shall calculate substitute data for each hour according to the following procedures.

i. For a missing data period of less than or equal to 3 hours, substitute data shall be calculated using the average of the recorded emissions for the hour immediately before the missing data period and the hour immediately after the missing data period. If no emissions occurred during the hour immediately before the missing data period or the hour immediately after the missing data period, substitute data shall be calculated pursuant to clause E(3)(c)(ii).

ii. For a missing data period of more than 3 hours but less than or equal to 24 hours, substitute data shall be calculated using the maximum hourly emissions recorded for the previous 30 days. If no emissions occurred during the previous 30 days, substitute data shall be calculated pursuant to clause E(3)(c)(iii).

iii. For a missing data period of greater than 24 hours, substitute data shall be calculated using the maximum hourly emissions for the previous 365 days. If no

emissions occurred during the previous 365 days, substitute data shall be calculated pursuant to subparagraph E(3)(d).

d. Whenever the percent annual emission availability is less than 90 percent, substitute data shall be calculated using the highest hourly emissions recorded during the service of the monitoring system. For the purpose of this subparagraph, service of the monitoring system shall start from the initial certification date of the analyzer or the date when a decrease in the valid range of the monitoring system is approved by the Executive Officer.

F. TIME-SHARING

1. Time-sharing is where an analyzer and possibly the associated sample conditioning system is used on more than one source. Time-sharing is allowed for NO_X RECLAIM sources provided the CEMS can meet the following requirements in addition to the other requirements in this document for each source that is time-shared.

2. All sources shall have mutually compatible span range(s). The span range(s) shall be able to meet the criteria in Chapter 2, Subdivision B, Paragraph 8.

3. Each source shall have a data reading period greater than or equal to 3 times the longest response time of the system. For shared systems the response time is measured at the input or probe at each source. A demonstration of response time for each source shall be made during certification testing. Data is not to be collected following a switch of sampled sources until an amount of time equal to the response time has passed.

4. The CEMS shall be able to perform and record zero and span calibrations at each source.

G. EMISSIONS DURING STARTUP OR SHUTDOWN PERIODS

The Facility Permit holder of a major source with startup or shutdown periods during which the pollutant or diluent concentrations do not fall within 10 - 95 percent of the normal operation span range(s) shall apply the following methodology; otherwise, the Facility Permit holder shall comply with Chapter 2, Subdivision E, Paragraph 1 - Missing Data Procedures:

1. During equipment startup or shutdown the Facility Permit holder shall apply the unregulated emission factor specified in Table 3-D; or

2. If the emission factors in Table 3-D do not reflect the emission factors during startup and shutdown periods, the Facility Permit holder shall

propose emission factors for the approval of the Executive Officer and shall submit source test data to substantiate the proposed emission factors. The hourly average emissions during startup and shutdown periods shall be calculated and reported according to:

$$E_{st} = D_{st} \times EF_{st} \quad \text{(Eq.13)}$$

where:

E_{st} = The hourly mass emission of nitrogen oxides during startup period (lb/hr).

D_{st} The hourly average fuel flow rate for each type of fuel during startup period (mmscf/hr or mgal/hr).

EF_{st} The unregulated or Facility Permit holder-specified emission factor during startup period (lb/mmscf or lb/mgal).

$$E_{sh} = D_{sh} \times EF_{sh} \quad \text{(Eq.14)}$$

where:

E_{sh} = The hourly mass emission of nitrogen oxides during shutdown period (lb/hr).

D_{sh} = The of hourly fuel flow rate for each type of fuel during shutdown period (mmscf/hr or mgal/hr).

EF_{sh} = The unregulated or Facility Permit holder-specified emission factor during shutdown period (lb/mmscf or lb/mgal).

TABLE 2-A

MEASURED VARIABLES FOR MAJOR NO_x SOURCES

EQUIPMENT TYPE : BOILERS

EQUIPMENT	MEASURED VARIABLES
Boilers	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Steam production rate;
Boilers with low NO_x burners	All variables identified for boilers.
Boilers with staged combustion	All variables identified for boilers.
Boilers with FGR	All variables identified for boilers; AND 4. Flue gas recirculation rate.
Boilers with SCR	All variables identified for boilers; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Boilers with SNCR	All variables identified for boilers; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;
Boilers with NSCR	All variables identified for boilers; AND 4. Natural gas (or other HC) injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : FURNACES

EQUIPMENT	MEASURED VARIABLES
Furnaces	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
Furnaces with low NO_x burners	All variables identified for furnaces.
Furnaces with combustion modification	All variables identified for furnaces.
Furnaces with SCR	All variables identified for furnaces; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Furnaces with SNCR	All variables identified for furnaces; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : OVENS

EQUIPMENT	MEASURED VARIABLES
Ovens	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
Ovens with low NO_x burners	All variables identified for ovens.
Ovens with combustion modification	All variables identified for ovens.
Ovens with SCR	All variables identified for ovens; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Ovens with SNCR	All variables identified for ovens; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : DRYERS

EQUIPMENT	MEASURED VARIABLES
Dryers	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
Dryers with low NO_x burners	All variables identified for dryers.
Dryers with combustion modification	All variables identified for dryers.
Dryers with FGR	All variables identified for dryers; AND 4. Flue gas recirculation rate.
Dryers with SCR	All variables identified for dryers; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Dryers with SNCR	All variables identified for dryers; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;
Dryers with NSCR	All variables identified for dryers; AND 4. Natural gas (or other HC) injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : PROCESS HEATERS

EQUIPMENT	MEASURED VARIABLES
Process heaters	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
Process heaters with low NO_x burners	All variables identified for process heaters.
Process heaters with combustion modification	All variables identified for process heaters.
Process heaters with FGR	All variables identified for process heaters; AND 4. Flue gas recirculation rate.
Process heaters with SCR	All variables identified for process heaters; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Process heaters with SNCR	All variables identified for process heaters; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;
Process heaters with NSCR	All variables identified for process heaters; AND 4. Natural gas (or other HC) injection rate.
Process heaters with water (or steam) injection	All variables identified for process heaters; AND 4. Water (or steam) injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : INCINERATORS

EQUIPMENT	MEASURED VARIABLES
Incinerators	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
Incinerators with SCR	All variables identified for incinerators; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Incinerators with SNCR	All variables identified for incinerators; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;

Table 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : REFINERY TAIL GAS UNITS

Refinery tail gas units	1. Stack NO_x concentration and exhaust flow rate; OR; Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : TEST CELLS

EQUIPMENT	MEASURED VARIABLES
Test cells	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Shaft horsepower output or other measure of system output;
Test cells with SCR	All variables identified for test cells; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Test cells with Packed Chemical Scrubber	All variables identified for test cells; AND 4. Chemical injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : INTERNAL COMBUSTION ENGINES

EQUIPMENT	MEASURED VARIABLES
Internal combustion engines	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Throttle setting shaft horsepower output or other measure of system output;
Internal combustion engines with combustion modification	All variables identified for internal combustion engines.
Internal combustion engines with Injection Timing Retard 4 degree	All variables identified for internal combustion engines.
Internal combustion engines with turbocharger, aftercooler, intercooler.	All variables identified for internal combustion engines.
Internal combustion engines with SCR	All variables identified for internal combustion engines; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Internal combustion engines	All variables identified for internal combustion engines; with NSCR AND 4. Natural gas (or other HC) injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : GAS TURBINES

EQUIPMENT	MEASURED VARIABLES
Gas turbines	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Shaft horsepower output or other measure of system output;
Gas turbines with Water or Steam Injection	All variables identified for gas turbines; AND 4. Water or steam injection rate;
Gas turbines with SCR and Steam Injection	All variables identified for gas turbines; AND 4. Ammonia injection rate; or 5. Steam injection rate 6. Temperature of the inlet gas stream to SCR;
Gas turbines with SCR and Water Injection	All variables identified for gas turbines; AND 4. Ammonia injection rate; or 5. Water injection rate 6. Temperature of the inlet gas stream to SNCR;

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : KILNS AND CALCINERS

EQUIPMENT	MEASURED VARIABLES
Kilns and calciners	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
Kilns and calciners with low NO_x burners	All variables identified for kilns and calciners.
Kilns and calciners with combustion modifications	All variables identified for kilns and calciners.
Kilns and calciners with FGR	All variables identified for kilns and calciners; AND 4. Flue gas recirculation rate.
Kilns and calciners with SCR	All variables identified for kilns and calciners; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
Kilns and calciners with SNCR	All variables identified for kilns and calciners; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;
Kilns and calciners with NSCR	All variables identified for kilns and calciners; AND 4. Natural gas (or other HC) injection rate.

TABLE 2-A (CONTINUED)

MEASURED VARIABLES FOR MAJOR NO_X SOURCES

EQUIPMENT TYPE : FLUID CATALYTIC CRACKING UNITS

EQUIPMENT	MEASURED VARIABLES
FCCUs (CO Boilers)	1. Stack NO_x concentration and exhaust flow rate; OR Stack NO_x, and O_2 concentrations, and fuel flow rate; 2. Status codes; 3. Production rate;
FCCUs with combustion modifications	All variables identified for refinery tail gas units.
FCCUs with SCR	All variables identified for refinery tail gas units; AND 4. Ammonia injection rate; 5. Temperature of the inlet gas stream to SCR;
FCCUs with SNCR	All variables identified for refinery tail gas units; AND 4. Ammonia (or urea) injection rate; 5. Temperature of the inlet gas stream to SNCR;
FCCUs with NSCR	All variables identified for refinery tail gas units; AND 4. Natural gas (or other HC) injection rate.

TABLE 2-B

REPORTED VARIABLES FOR ALL MAJOR NO_X SOURCES

EQUIPMENT	REPORTED VARIABLES
All Major NO_X sources	1. Total daily mass emissions from each source; 2. Daily Status codes.

ATTACHMENT K

RULE 2012 PROTOCOL-ATTACHMENT A

1N PROCEDURES

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ATTACHMENT A - 1N PROCEDURE

ATTACHMENT A
1 N PROCEDURE

A. APPLICABILITY

1. This procedure may be used to provide substitute data for affected sources that meet the specified conditions in Chapter 2, Subdivision E, Paragraph 1, Subparagraph b, Clause i, Chapter 2, Subdivision E, Paragraph 2, Subparagraph b, Clause i, and Chapter 2, Subdivision E, Paragraph 3, Subparagraph b, Clause i. ~~and Chapter 3, Subdivision I, Paragraph 2, Subparagraph a.~~

B. PROCEDURE

1. Where N is the number of hours of missing emissions data, determine the substitute hourly NO_X concentration (in ppmv), or the hourly flow rate (in scfh) by averaging the measured or substituted values for the 1N hours immediately before the missing data period and the 1N hours immediately after the missing data period.

2. Where 1N hours before or after the missing data period includes a missing data hour, the substituted value previously recorded for such hour(s) pursuant to the missing data procedure shall be used to determine the average in accordance with Subdivision B, Paragraph 1 above.

3. Substitute the calculated average value for each hour of the N hours of missing data.

EXAMPLES OF 1 N PROCEDURE

EXAMPLE 1

HOUR	DATA POINT (LB/HR)
1:00 A.M.	30
2:00 A.M.	25
3:00 A.M.	32
4:00 A.M.	34
5:00 A.M.	Missing
6:00 A.M.	Missing
7:00 A.M.	Missing
8:00 A.M.	27
9:00 A.M.	22
10:00 A.M.	25
11:00 A.M.	30

To fill in the missing three hours, take the data points from the 3 hours before and the 3 hours after the missing data period to determine an average emission over the 3 hours

average emissions = $\frac{25 + 32 + 34 + 27 + 22 + 25}{6}$ = 27.5 lb/hr.

The filled in data set should read as follows:

EXAMPLE 1 (continued)

HOUR	DATA POINT (LB/HR)
1:00 A.M.	30
2:00 A.M.	25
3:00 A.M.	32
4:00 A.M.	34
5:00 A.M.	27.5
6:00 A.M.	27.5
7:00 A.M.	27.5
8:00 A.M.	27
9:00 A.M.	22
10:00 A.M.	25
11:00 A.M.	30

EXAMPLES OF 1 N PROCEDURE

EXAMPLE 2

HOUR	DATA POINT (LB/HR)
1:00 A.M.	45
2:00 A.M.	50
3:00 A.M.	53
4:00 A.M.	Missing
5:00 A.M.	Missing
6:00 A.M.	Missing
7:00 A.M.	58
8:00 A.M.	Missing
9:00 A.M.	48
10:00 A.M.	45

In this example the missing data point at 8 A.M. is in the 3-hour period after the 3- hour missing data period. We first fill the 8.A.M. slot.

average emissions for 8 A.M. $= \frac{58 + 48}{2} = 53$

The filled in data sheet at this point should read as follows:

EXAMPLE 2 (continued)

HOUR	DATA POINT (LB/HR)
1:00 A.M.	45
2:00 A.M.	50
3:00 A.M.	53
4:00 A.M.	Missing
5:00 A.M.	Missing
6:00 A.M.	Missing
7:00 A.M.	58
8:00 A.M.	53
9:00 A.M.	48
10:00 A.M.	45

The average for the three hour missing data period is:

average emissions $= \frac{45 + 50 + 53 + 58 + 53 + 48}{6} = 51.2$

The completed filled in data sheet should read as follows:

EXAMPLE 2 (continued)

HOUR	DATA POINT (LB/HR)
1:00 A.M.	45
2:00 A.M.	50
3:00 A.M.	53
4:00 A.M.	51.2
5:00 A.M.	51.2
6:00 A.M.	51.2
7:00 A.M.	58
8:00 A.M.	53
9:00 A.M.	48
10:00 A.M.	45

RULE 2012 PROTOCOL-
ATTACHMENT B

BIAS TEST

ATTACHMENT B

BIAS TEST

The bias of the data shall be determined based on the relative accuracy (RA) test data sets and the relative accuracy (RATA) test audit data sets for NO_X pollutant concentration monitors, fuel gas sulfur content monitors, flow monitors, and emission rate measurement systems using the procedures outlined below.

1. Calculate the mean of the difference using Equation 2-1 of 40 CFR, Part 60, Appendix B, Performance Specification 2. To calculate bias for a NO_X pollutant concentration monitor, "d" shall, for each paired data point, be the difference between the NO_X concentration values (in ppmv) obtained from the reference method and the monitor. To calculate bias for a flow monitor, "d" shall, for each paired data point, be the difference between the flow rate values (in scfh) obtained from the reference method and the monitor. To calculate bias for an emission rate measurement system, "d" shall, for each paired data point, be the difference between the emission rate values (in lb/hr) obtained from the reference method and the monitoring system.

2. Calculate the standard deviation, S_d, of the data set using Equation 2-2 of 40 CFR, Part 60, Appendix B, Performance Specification 2.

3. Calculate the confidence coefficient, cc, of the data set using Equation 2-3 of 40 CFR, Part 60, Appendix B, Performance Specification 2.

4. The monitor passes the bias test if it meets either of the following criteria:

    a. the absolute value of the mean difference is less than |cc|.

    b. the absolute value of the mean difference is less than 1 ppmv.

5. Alternatively, if the monitoring device fails to meet the bias test requirement, the Facility Permit holder may choose to use the bias adjustment procedure as follows:

    a. If the CEMS is biased high relative to the reference method, no correction will be applied.

    b. If the CEMS is biased low relative to the reference method, the data shall be corrected for bias using the following procedure:

$$CEM_i^{adjusted} = CEM_i^{monitored} \times BAF \quad \text{(Eq. B-1)}$$

where:

$CEM_i^{adjusted}$ = Data value adjusted for bias at time i.

$CEM_i^{monitored}$ = Data provided by the CEMS at time i.

BAF = Bias Adjustment Factor

$$BAF = 1 + (|d|/CEM) \quad \text{(Eq. B-2)}$$

where:

d = Arithmetic mean of the difference between the CEMS and the reference method measurements during the determination of the bias.

CEM = Mean of the data values provided by the CEMS during the determination of bias.

If the bias test failed in a multi-level RA or RATA, calculate the BAF for each operating level. Apply the largest BAF obtained to correct for the CEM data output using equation B-1. The facility permit holder shall have the option to apply this adjustment to either all directly monitored data or to emission rates from the time and date of the failed bias test until the date and time of a RATA that does not show bias. These adjusted values shall be used in all forms of missing data computation, and in calculating the mass emission rate.

The BAF is unique for each CEMS. If backup CEMS is used, any BAF applied to primary CEMS shall be applied to the backup CEMS unless there are RATA data for the backup CEMS within the previous year.

If the BAF changes during a RATA, the new BAF must be applied to the emissions data from the time and date of the RATA until the time and date of the next RATA.

RULE 2012 PROTOCOL-ATTACHMENT C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

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ATTACHMENT C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

A. Quality Control Program

Develop and implement a quality control program for the continuous emission monitoring systems and their components. As a minimum, include in each quality control program a written plan that describes in detail complete, step-by-step procedures and operations for each of the following activities:

1. Calibration Error Test Procedures

   Identify calibration error test procedures specific to the CEMS that may require variance from the procedures used during certification (for example, how the gases are to be injected, adjustments of flow rates and pressures, introduction of reference values, length of time for injection of calibration gases, steps for obtaining calibration error, determination of interferences, and when calibration adjustments should be made).

2. Calibration and Linearity Adjustments

   Explain how each component of the CEMS will be adjusted to provide correct responses to calibration gases, reference values, and/or indications of interference both initially and after repairs or corrective action. Identify equations, conversion factors, assumed moisture content, and other factors affecting calibration of each CEMS.

3. Preventative Maintenance

   Keep a written record of procedures, necessary to maintain the CEMS in proper operating condition and a schedule for those procedures.

4. Audit Procedures

   Keep copies of written reports received from testing firms/laboratories of procedures and details specific to the installed CEMS that were to be used by the testing firms/laboratories for relative accuracy test audits, such as sampling and analysis methods. The testing firms/laboratories shall have received approval from the District by going through the District's laboratory approval program.

5. Record Keeping Procedures

   Keep a written record describing procedures that will be used to implement the record keeping and reporting requirements.

Specific provisions of Section A-3 and A-5 above of the quality control programs shall constitute specific guidelines for facility personnel. However facilities shall be required to take reasonable steps to monitor and assure implementation of such specific guidelines. Such reasonable steps may include periodic audits, issuance of periodic reminders, implementing training classes, discipline of employees as necessary, and other appropriate measures. Steps that a facility commits to take to monitor and assure implementation of the specific guidelines shall be set forth in the written plan and shall be the only elements of Section A-3 and A-5 that constitute enforceable requirements under the written plan, unless other program provisions are independently enforceable pursuant to other requirements of the NO_X protocols or District or federal rules or regulations.

B. FREQUENCY OF TESTING

There are three situations which will result in an out-of-control period. These include failure of a calibration error test, failure of a relative accuracy test audit, and failure of a BIAS test, and are detailed in this subdivision. Data collected by a CEMS during an out-of-control period shall not be considered valid.

The frequency at which each quality assurance test must be performed is as follows:

1. Periodic Assessments

For each monitor or CEMS, perform the following assessments on each day during which the unit combusts any fuel or processes any material (hereafter referred to as a "unit operating day"), or for a monitor or a CEMS on a bypass stack/duct, on each day during which emissions pass through the bypass stack or duct. These requirements are effective as of the date when the monitor or CEMS completes certification testing.

a. Calibration Error Testing Requirements for Pollutant Concentration Monitors and O_2 Monitors

Test, record, and compute the calibration error of each NO_X pollutant concentration monitor and O_2 monitor at least once on each unit operating day, or for monitors or monitoring systems on bypass stacks/ducts on each day that emissions pass through the bypass stack or duct. Conduct calibration error checks, to the extent practicable, approximately 24 hours apart. Perform the daily calibration error test according to the procedure in Paragraph B.1.a.ii. of this Attachment.

For units with more than one span range, perform the daily calibration error test on each scale that has been used since the last calibration error test. For example, if the emissions concentration has not exceeded the low-scale span range since the previous

calendar day, the calibration error test may be performed on the low-scale only. If, however, the emissions concentration has exceeded the low-scale span range since the previous calibration error test, perform the calibration error test on both the low- and high-scales

i. Design Requirements for Calibration Error Testing of NO_X Concentration Monitors and O_2 Monitors

Design and equip each NO_X concentration monitor and O_2 monitor with a calibration gas injection port that allows a check of the entire measurement system when calibration gases are introduced. For extractive and dilution type monitors, all monitoring components exposed to the sample gas, (for example, sample lines, filters, scrubbers, conditioners, and as much of the probe as practical) are included in the measurement system. For in situ type monitors, the calibration must check against the injected gas for the performance of all electronic and optical components (for example, transmitter, receiver, analyzer).

Design and equip each pollutant concentration monitor and O_2 monitor to allow daily determinations of calibration error (positive or negative) at the zero-level (0 to 20 percent of each span range) and high-level (80 to 100 percent of each span range) concentrations.

ii. Calibration Error Test for NO_X Concentration Monitors and O_2 Monitors

Measure the calibration error of each NO_X concentration analyzer and O_2 monitor once each day according to the following procedures:

If any manual or automatic adjustments to the monitor settings are made, conduct the calibration error test in a way that the magnitude of the adjustments can be determined and recorded.

Perform calibration error tests at two concentrations: (1) zero-level and (2) high level. Zero level is 0 to 20 percent of each span range, and high level is 80 to 100 percent of each span range. All calibration gases used during certification tests and quality assurance and quality control activities shall be NIST/EPA approved standard reference materials (SRM), certified reference materials CRM), or shall be certified according to “EPA Traceability Protocol

for Assay and Certification of Gaseous Calibration Standards," September 1997, EPA 600/R-97/121 or any subsequent version published by EPA.

Introduce the calibration gas at the gas injection port as specified above. Operate each monitor in its normal sampling mode. For extractive and dilution type monitors, pass the audit gas through all filters, scrubbers, conditioners, and other monitor components used during normal sampling and through as much of the sampling probe as practical. For in situ type monitors, perform calibration checking all active electronic and optical components, including the transmitter, receiver, and analyzer. Challenge the NO_X concentration monitors and the O_2 monitors once with each gas. Record the monitor response from the data acquisition and handling system. Use the following equation to determine the calibration error at each concentration once each day:

$$CE = \frac{|R-A|}{S} \times 100 \qquad \text{(Eq. C-1)}$$

Where:

CE = The percentage calibration error based on the span range

R = The reference value of zero- or high-level calibration gas introduced into the monitoring system.

A = The actual monitoring system response to the calibration gas.

S = The span range of the instrument

b. Calibration Error Testing Requirements for Stack Flow Monitors

Test, compute, and record the calibration error of each stack flow monitor at least once within every 14 calendar day period during which at anytime emissions flow through the stack; or for monitors or monitoring systems on bypass stacks or ducts, at least once within every 14 calendar day period during which at anytime emissions flow through the bypass stack or duct. Introduce a zero reference value to the transducer or transmitter. Record flow monitor output from the data acquisition and handling systems before and after any adjustments. Calculate the calibration error using the following equation:

$$CE = \frac{|R - A|}{S} \times 100 \qquad \text{(Eq. C-2)}$$

Where:

CE = Percentage calibration error based on the span range

R = Zero reference value introduced into the. transducer or transmitter.

A = Actual monitoring system response.

S = Span range of the flow monitor.

c. Interference Check for Stack Flow Monitors

Perform the daily flow monitor interference checks specified in Paragraph B.1.c.i. of this Attachment at least once per operating day (when the unit(s) operate for any part of the day).

i. Design Requirements for Flow Monitor Interference Checks

Design and equip each flow monitor with a means to ensure that the moisture expected to occur at the monitoring location does not interfere with the proper functioning of the flow monitoring system. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver, or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic backpurging

(simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on at least a daily basis to prevent sensing interference, and (2) a means to detecting leaks in the system at least on a quarterly basis (a manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (for example, backpurging the system) to prevent velocity sensing interference.

d. Recalibration

Adjust the calibration, at a minimum, whenever the calibration error exceeds the limits of the applicable performance specification for the NO_X monitor, O_2 monitor or stack flow monitor to meet such specifications. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective. Document the adjustments made.

e. Out-of-Control Period – Calibration Test

An out-of-control period occurs when the calibration error of an NO_X concentration monitor exceeds 5.0 percent based upon the span range value, when the calibration error of an O_2 monitor exceeds 1.0 percent O_2, or when the calibration error of a flow monitor exceeds 6.0 percent based upon the span range value, which is twice the applicable specification. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out-of-control if 2 or more valid readings are obtained during that hour as required by Chapter 2, Subdivision B, Paragraph 5.

An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of the failed interference check and ends with the hour of completion of an interference check that is passed.

f. Data Recording

Record and tabulate all calibration error test data according to the month, day, clock-hour, and magnitude in ppm, DSCFH, and percent volume. Program monitors that automatically adjust data to the calibrated corrected calibration values (for example, microprocessor control) to record either: (1) the unadjusted concentration or flow rate measured in the calibration error test prior to resetting the calibration, or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

2. Semi-annual Assessments

a. For each CEMS, perform the following assessments once semi-annually thereafter, as specified below for the type of test. These semi-annual assessments shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested for certification purposes (initial and recertification) or within three months of the end of the calendar quarter in which the District sent notice of a provisional approval for a CEMS, whichever is later. Thereafter, the semi-annual tests shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested. For CEMS on bypass stacks/ducts, the assessments shall be performed once every two successive operating quarters in which the bypass stacks/ducts were operated. These tests shall be performed after the calendar quarter in which the CEMS was last tested as part of the CEMS certification, as specified below for the type of test.

Relative accuracy tests may be performed on an annual basis rather than on a semi-annual basis if the relative accuracies during the previous audit for the NO_X pollutant concentration monitor, flow monitoring system, and NOx emission rate measurement system are 7.5 percent or less.

b. For CEMS on any stack or duct through which no emissions have passed in two or more successive quarters, the semi-annual assessments must be performed within 14 unit operating days after emissions pass through the stack/duct.

c. The due date for a semi-annual or annual assessment of a major source may be postponed to within 14 unit operating days from the

first re-firing of the major source if the major source is physically incapable of being operated and all of the following are met:

i. All fuel feed lines to the major source are either disconnected or opened and either flanges or equivalent sealing devices are placed at both ends of the disconnected or opened lines, and

ii. The fuel meter(s) for the disconnected or opened fuel feed lines are maintained and operated and associated fuel records showing no fuel flow are maintained on site.

This paragraph applies separately for each unrelated, independent event. For any hour that fuel flow records are not available to verify no fuel flow, NOx emissions shall be calculated using the maximum valid hourly emissions from the last 30 days of operation.

Prior to re-starting operation of the major source, the Facility Permit Holder shall: (1) provide written notification to the District no later than 72 hours prior to starting up the source, (2) start the CEMS no later than 24 hours prior to the start-up of the major source, and (3) conduct and pass a Cylinder Gas Analysis (CGA) prior to the start-up of the major source. The emissions data from the CEMS after the re-start of operations is considered valid only if the Facility Permit Holder passes the CGA test. Otherwise, for a non-passing CGA, the CEMS data is considered invalid until the semi-annual or annual assessment is performed and passed. As such, NOx emissions shall be calculated using the maximum valid hourly emissions from the last 30 days of operation commencing with the hour of start up and continuing through the hour prior to performing and passing the semi-annual or annual assessment.

d. An electrical generating facility that either only operates under a California Independent System Operator (Cal ISO) contract or is owned and operated by a municipality may postpone the due date for a semi-annual or annual assessment of a major source to the next calendar quarter provided that the facility shows:

i. The semi-annual or annual assessment was scheduled to be performed during the first 45 days of the calendar quarter in which the assessment was due;

ii. The assessment was not completed due to lack of adequate operational time; and

iii. A CGA was conducted and passed within the calendar quarter when the assessment was due.

e. Relative Accuracy Test Audit

Perform relative accuracy test audits and bias tests semi-annually and no less than 3 months apart for each NO_X pollutant concentration monitor, stack gas volumetric flow rate measurement systems, and the NO_X mass emission rate measurement system in accordance with Chapter 2, Subdivision B, Paragraphs 10, 11, 12, and 18. The relative accuracy of the pollutant concentration monitor and the mass emission rate measurement system shall be less than or equal to 20.0 percent, and the relative accuracy of the stack gas volumetric flow rate measurement system shall be less than or equal to 15.0 percent. For monitors on bypass stacks/ducts, perform relative accuracy test audits once every two successive bypass operating quarters in accordance with Chapter 2, Subdivision B, Paragraphs 10, 11, 12, and 18.

f. Out-of-Control Period – Relative Accuracy Test Audit

An out-of-control period occurs under any of the following conditions: (1) The relative accuracy of an NO_X pollutant concentration monitor or the NO_X emission rate measurement system exceeds 20.0 percent; (2) the relative accuracy of the flow rate monitor exceeds 15.0 percent; or (3) failure to conduct a relative accuracy test audit by the due date for a semi-annual assessment. The out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit.

g. Out-of-Control Period – BIAS Test

An out-of-control period occurs if all the following conditions are met:

i. Failure of a bias test as specified in Attachment B of this Appendix;

ii. The CEMS is biased low relative to the reference method (i.e. Bias Adjustment Factor (BAF), as determined in Attachment B of this Appendix, is greater than 1); and

iii. The Facility Permit holder does not apply the BAF to the CEMS data.

The out-of-control period begins with the hour of completion of the failed bias test audit and ends with the hour of completion of a satisfactory bias test.

h. Alternative Relative Accuracy Test Audit

i. The Facility Permit holder of a major source, that has received written approval from the Executive Officer as an intermittently operated source, may postpone the due date for a semi-annual assessment to the end of the next calendar quarter if the Facility Permit holder:

I. operated the source no more than 240 cumulative operating hours and no more than 72 consecutive hours during the calendar quarter when a semi-annual assessment is due; and

II. conducted a relative accuracy test audit on the CEMS serving the source during the previous four calendar quarters and meeting the accuracy criteria as set forth under Subparagraph B.2.e.; and

III. conducted an alterative relative accuracy test audit on the CEMS serving the source during the calendar quarter when a semi-annual assessment is due and meeting the criteria specified under Clause B.2.h.iii.

If any of the requirements under Subclauses B.2.h.i.I, II and III is not met and the source did not have passing RATA during the calendar quarter when the semi-annual assessment is due, emissions from the source shall be determined pursuant to the Missing Data Procedures as specified under Rule 2012, Appendix A, Chapter 2, Subdivision E after the semi-annual assessment due date until the hour of completion of a satisfactory relative accuracy test audit.

ii. The Facility Permit holder may submit a written request to designate a major source as an intermittently operated source provided the Facility Permit holder demonstrates that:

I. During any calendar quarter within the previous two compliance years, the source was operated no more than 240 cumulative operating hours and no more than 72 consecutive hours; or

II. During any calendar quarter within the next two compliance years, the source will be operated no more than 240 cumulative operating hours and no more than 72 consecutive hours.

iii. An alternative relative accuracy shall consist of a Cylinder Gas Analysis (CGA) method as defined under 40 CFR, Part 60, Appendix F, combined with a flow accuracy verification. For sources equipped with stack flow monitors, the flow accuracy shall be verified by calibrating the transducers and transmitters installed on the stack flow monitors using procedures under Paragraph B.3 of this attachment. For sources equipped with fuel flow meters and no stack flow monitors, the flow accuracy shall be verified by calibrating the fuel flow meters either in-line or offline in accordance with the procedures outlined in 40CFR Part 75, Appendix D. Passing flow accuracy verification results that were obtained within the past 4 quarters may be used in lieu of performing a flow accuracy verification during the calendar quarter when a semi-annual assessment is due. The calculated accuracy for the analyzer responses for NO_x and O_2 concentration shall be within 15 percent or 1 ppm, whichever is greater, as determined by the CGA method as defined under 40 CFR, Part 60, Appendix F. Successive alternative relative accuracy test audits shall be performed no less than 45 days apart.

3. Calibration of Transducers and Transmitters on Stack Flow Monitors

All transducers and transmitters installed on stack flow monitors must be calibrated every two operating calendar quarters, in which an operating calendar quarter is any calendar quarter during which at anytime emissions flow through the stack. Calibration must be done in accordance with Executive Officer approved calibration procedures that employ materials and equipment that are NIST traceable.

When a calibration produces for a transducer and transmitter a percentage accuracy of greater than ± 1%, the Facility Permit holder shall calibrate the transducer and transmitter every calendar operating quarter until a subsequent calibration which shows a percentage accuracy of less than ± 1% is achieved. An out-of-control period occurs when the percentage accuracy exceeds ±2%. If an out-of-control period occurs, the Facility Permit holder shall take corrective measures to obtain a percentage

accuracy of less than ±2% prior to performing the next RATA. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion of following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out-of-control if two or more valid data readings are obtained during that hour as required by Chapter 2, Subdivision B, Paragraph 5, Subparagraph a.

RULE 2012 PROTOCOL-
ATTACHMENT D

EQUIPMENT TUNING PROCEDURES

TABLE OF CONTENTS

EQUIPMENT TUNING PROCEDURES

A. PROCEDURES

Nothing in this Equipment Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant regulations and requirements.

1. Operate the unit at the firing rate most typical of normal operation. If the unit experiences significant load variations during normal operation, operate it at its average firing rate.

2. At this firing rate, record stack-gas temperature, oxygen concentration, and CO concentration (for gaseous fuels) or smoke-spot number 2 (for liquid fuels), and observe flame conditions after unit operation stabilizes at the firing rate selected. If the excess oxygen in the stack gas is at the lower end of the range of typical minimum values, and if CO emissions are low and there is no smoke, the unit is probably operating at near optimum efficiency at this particular firing rate.

3. Increase combustion air flow to the furnace until stack-gas oxygen levels increase by one to two percent over the level measured in Step 2. As in Step 2, record the stack-gas temperature, CO concentration (for gaseous fuels) or smoke-spot number (for liquid fuels), and observe flame conditions for these higher oxygen levels after boiler operation stabilizes.

4. Decrease combustion air flow until the stack gas oxygen concentration is at the level measure in Step 2. From this level, gradually reduce the combustion air flow in small increments. After each increments, record the stack-gas temperature, oxygen concentration, CO concentration (for gaseous fuels), and smoke-spot number (for liquid fuels). Also observe the flame and record any changes in its condition.

5. Continue to reduce combustion air flow stepwise, until one of these limits is reached:

    a. Unacceptable flame conditions, such as flame impingement on furnace walls or burner parts, excessive flame carryover, or flame instability; or

b. Stack gas CO concentrations greater than 400 ppm; or

c. Smoking at the stack; or

d. Equipment-related limitations, such as low windbox/furnace pressure differential, built in air-flow limits, etc.

6. Develop an O2/CO curve (for gaseous fuels) or O2/smoke curve (for liquid fuels) using the excess oxygen and CO or smoke-spot number data obtained at each combustion air flow setting.

7. From the curves prepared in Step 6, find the stack-gas oxygen levels where the CO emissions or smoke-spot number equal the following values:

Fuel	Measurement	Value
Gaseous	CO emissions	400 ppm
#1 and #2 oils	smoke-spot number	number 1
#4 oil	smoke-spot number	number 2
#5 oil	smoke-spot number	number 3
Other oils	smoke-spot number	number 4

The above conditions are referred to as the CO or smoke thresholds, or as the minimum excess oxygen level.

Compare this minimum value of excess oxygen to the expected value provided by the combustion unit manufacturer. If the minimum level found is substantially higher than the value provided by the combustion unit manufacturer, burner adjustments can probably be made to improve fuel and air mixing, thereby allowing operation with less air.

8. Add 0.5 to 2.0 percent of the minimum excess oxygen level found in Step 7 and reset burner controls to operate automatically at this higher stack-gas oxygen level. This margin above the minimum oxygen level accounts for fuel variations, variations in atmospheric conditions, load changes, and nonrepeatability or play in automatic controls.

9. If the load of the combustion unit varies significantly during normal operation, repeat Steps 1-8 for firing rates that represent the upper and lower limits of the range of the load. Because control adjustments at one firing rate may affect conditions at other firing rates, it may not be possible to establish the optimum

excess oxygen level at all firing rates. If this is the case, choose the burner control settings that give best performance over the range of firing rates. If one firing rate predominates, settings should optimize conditions at that rate.

10. Verify that the new settings can accommodate the sudden load changes that may occur in daily operation without adverse effects. Do this by increasing and decreasing load rapidly while observing the flame and stack. If any of the conditions in Step 5 result, reset the combustion controls to provide a slightly higher level of excess oxygen at the affected firing rates. Next, verify these new recorded at steady-rate operating conditions for future reference.

R U L E 2 0 1 2 P R O T O C O L -
A T T A C H M E N T E

LIST OF ACRONYMS AND ABBREVIATIONS

LIST OF ACRONYMS AND ABBREVIATIONS

APEP	Annual Permit Emission Program
API	American Petroleum Institute
ASTM	American Society for Testing & Materials
BACT	Best Available Control Technology
bhp	Brake Horsepower
bpd	Barrels per Day
Btu	British Thermal Unit
CEMS	Continuous Emission Monitoring System
CPMS	Continuous Process Monitoring System
CPU	Central Processing Unit
CSCACS	Central Station Compliance Advisory Computer System
DAS	Data Acquisition System
DM	District Method
dscfh	Dry Standard Cubic Feet per Hour
FCCU	Fluid Catalytic Cracking Unit
F_d	Dry F Factor
FGR	Flue Gas Recirculation
gpm	Gallons per Minute
HRG	Hardware Requirement Guideline
ICE	Internal Combustion Engine
ID	Inside Diameter
ISO	International Standards Organization
lb mole	Pound mole
LNB	Low NO_X Burner
MRR	Monitoring, Reporting and Recordkeeping
NO_X	Oxides of Nitrogen
NIST	National Institute for Standards and Testing
NSCR	Non-Selective Catalytic Reduction
O_2	Oxygen
ppmv	Parts per Million Volume
ppmw	Parts per Million by Weight

RAA	Relative Accuracy Audit
RATA	Relative Accuracy Test Audit
RECLAIM	Regional Clean Air Incentives Market
RM	Reference Method
RTC	RECLAIM Trading Credits
RTCC	Real Time Calendar/Clock
RTU	Remote Terminal Unit
scfh	Standard Cubic Feet per Hour
scfm	Standard Cubic Feet per Minute
SCR	Selective Catalytic Reduction
SDD	Software Design Description
SNCR	Selective Non-Catalytic Reduction
SO_X	Oxides of Sulfur
SRG	Software/Hardware Requirement Guideline
swi	Steam Water Injection
tpd	Tons per day
tpy	Tons per year
WAN	Wide Area Network

RULE 2012 PROTOCOL-
ATTACHMENT F

DEFINITIONS

DEFINITIONS

(1) AFTERBURNERS, also called VAPOR INCINERATORS, are air pollution control devices in which combustion converts the combustible materials in gaseous effluents to carbon dioxide and water.

(2) ANNUAL PERMIT EMISSIONS PROGRAM (APEP) is the annual facility permit compliance reporting, review, and fee reporting program.

(3) BOILER should generally be considered as any combustion equipment used to produce steam, including a carbon monoxide boiler. This would generally not include a process heater that transfers heat from combustion gases to process streams, a waste heat recovery boiler that is used to recover sensible heat from the exhaust of process equipment such as a combustion turbine, or a recovery furnace that is used to recover process chemicals. Boilers used primarily for residential space and/or water heating are not affected by this section.

(4) BURN means to combust any gaseous fuel, whether for useful heat or by incineration without recovery, except for flaring or emergency vent gases.

(5) BYPASS OPERATING QUARTER means each calendar quarter that emissions pass through the bypass stack or duct.

(6) CALCINER is a rotary kiln where calcination reaction is carried out between 1315 ^{o}C to 1480 ^{o}C.

(7) CEMENT KILN is a device for the calcining and clinkering of limestone, clay and other raw materials, and recycle dust in the dry-process manufacture of cement.

(8) CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) is the total equipment required for the determination of concentrations of air contaminants and diluent gases in a source effluent as well as mass emission rate. The system consists of the following three major subsystems:

(A) SAMPLING INTERFACE is that portion of the monitoring system that performs one or more of the following operations: extraction, physical/chemical separation, transportation, and conditioning of a sample of the source effluent or protection of the analyzer from the hostile aspects of the sample or source environment.

(B) ANALYZERS

(i) AIR CONTAMINANT ANALYZER is that portion of the monitoring system that senses the air contaminant and generates a signal output which is a function of the concentration of that contaminant.

(ii) DILUENT ANALYZER is that portion of the monitoring system that senses the concentration of oxygen or carbon dioxide or other diluent gas as applicable, and generates a signal output which is a function of a concentration of that diluent gas.

(C) DATA RECORDER is that portion of the monitoring system that provides a permanent record of the output signals in terms of concentration units, and includes additional equipment such as a computer required to convert the original recorded value to any value required for reporting.

(9) CONTINUOUS PROCESS MONITORING SYSTEM is the total equipment required for the measurement and collection of process variables (e.g., fuel usage rate, oxygen content of stack gas, or process weight). Such CPMS data shall be used in conjunction with the appropriate emission rate to determine NO_X emissions.

(10) CONTINUOUSLY MEASURE means to measure at least once every 15 minutes except during period of routine maintenance and calibration, as specified in 40CFR Part 60.13(e)(2).

(11) DAILY means a calendar day starting at 12 midnight and continuing through to the following 12 midnight hour.

(12) DIRECT MONITORING DEVICE is a device that directly measures the variables specified by the Executive Officer to be necessary to determine mass emissions of a RECLAIM pollutant and which meets all the standards of performance for CEMS set forth in the protocols for NO_X and SO_X.

(13) DRYER is equipment that removes substances by heating or other processes.

(14) ELECTRONICALLY TRANSMITTING means transmitting measured data without human alteration between the point/source of measurement and transmission.

(15) EMISSION FACTOR is the value specified in Tables 1 (NOx) or 2 (SOx) of Rule 2002-Baselines and Rates of Reduction for NOx and SOx.

(16) EMISSION RATE (ER) - is a value expressed in terms of NO_X mass emissions per unit of heat input, and derived using the methodology specified in the "Protocol for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_X) Emissions" Chapter .

(17) EXISTING EQUIPMENT is any equipment which can emit NO_X at a NO_X RECLAIM facility, for which on or before (Rule Adoption date) has:

(A) A valid permit to construct or permit to operate pursuant to Rule 201 and/or Rule 203 has been issued; or

(B) An application for a permit to construct or permit to operate has been deemed complete by the Executive Officer; or

(C) An equipment which is exempt from permit per Rule 219 and is operating on or before (Rule Adoption date).

(18) F_d FACTOR is the dry F factor for each fuel, the ratio of the dry gas volume of the products of combustion to the heat content of the fuel (dscf/10^6 Btu). F factors are available in 40 CFR Part 60, Appendix A, Method 19.

(19) FLUID CATALYTIC CRACKING UNIT (FCCU) breaks down heavy petroleum products into lighter products using heat in the presence of finely divided catalyst maintained in a fluidized state by the oil vapors. The fluid catalyst is continuously circulated between the reactor and the regenerator, using air, oil vapor, and steam as the conveying media.

(20) FURNACE is an enclosure in which energy in a nonthermal form is converted to heat.

(21) GAS FLARE is a combustion equipment used to prevent unsafe operating pressures in process units during shut downs and start-ups and to handle miscellaneous hydrocarbon leaks and process upsets.

(22) GAS TURBINES are turbines that use gas as the working fluid. It is principally used to propel jet aircraft. Their stationary uses include electric power generation (usually for peak-load demands), end-of-line voltage booster service for long distance transmission lines, and for pumping natural gas through long distance pipelines. Gas turbines are used in combined (cogeneration) and simple-cycle arrangements.

(23) GASEOUS FUELS include, but are not limited to, any natural, process, synthetic, landfill, sewage digester, or waste gases with a gross heating value of 300 Btu per cubic foot or higher, at standard conditions.

(24) HEAT VALUE is the heat generated when one lb. of combustible is completely burned.

(25) HEATER is any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams.

(26) HIGH HEAT VALUE is determined experimentally by colorimeters in which the products of combustion are cooled to the initial temperature and the heat absorbed by the cooling media is measured.

(27) HOT STAND-BY is the period of operation when the flow or emission concentration are so low they can not be measured in a representative manner.

(28) INCINERATOR is equipment that consumes substances by burning.

(29) INTERNAL COMBUSTION ENGINE is any spark or compression-ignited internal combustion engine, not including engines used for self-propulsion.

(30) LIQUID FUELS include, but are not limited to, any petroleum distillates or fuels in liquid form derived from fossil materials or agricultural products for the purpose of creating useful heat.

(31) MASS EMISSION OF NO_x in lbs/hr is the measured emission rates of nitrogen oxides.

(32) MAXIMUM RATED CAPACITY means maximum design heat input in Btu per hour at the higher heating value of the fuels.

(33) MODEM converts digital signals into audio tones to be transmitted over telephone lines and also convert audio tones from the lines to digital signals for machine use.

(34) MONTHLY FUEL USE REPORTS could be sufficed by the monthly gas bill or the difference between the end and the beginning of the calendar month's fuel meter readings.

(35) NINETIETH (90TH) PERCENTILE means a value that would divide an ordered set of increasing values so that at least 90 percent are less than or equal to the value and at least 10 percent are greater than or equal to the value.

(36) OVEN is a chamber or enclosed compartment equipped to heat objects.

(37) PEAKING UNIT means a turbine used intermittently to produce energy on a demand basis and does not operate more than 1300 hours per year.

(38) PORTABLE EQUIPMENT is an equipment which is not attached to a foundation and is not operated at a single facility for more than 90 days in a year and is not a replacement equipment for a specific application which lasts or is intended to last for more than one year.

(39) PROCESS HEATER means any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to process streams.

(40) PROCESS WEIGHT means the total weight of all materials introduced into any specific process which may discharge contaminants into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid gaseous fuels and air shall not.

(41) RATED BRAKE HORSEPOWER (bhp) is the maximum rating specified by the manufacturer and listed on the nameplate of that equipment. If not available, then the rated brake horsepower of an internal combustion engine can be calculated by multiplying the maximum fuel usage per unit time, heating value of fuel,

equipment efficiency provided by the manufacturer, and the conversion factor (one brake horsepower = 2,545 Btu).

(42) RATED HEAT INPUT CAPACITY is the heat input capacity specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.

(43) RECLAIM FACILITY is a facility that has been listed as a participant in the Regional Clean Air Incentives Market (RECLAIM) program.

(44) REMOTE TERMINAL UNIT (RTU) is a data collection and transmitting device used to transmit data and calculated results to the District Central Station Computer.

(45) RENTAL EQUIPMENT is equipment which is rented or leased for operation by someone other than the owner of the equipment.

(46) SHUTDOWN is that period of time during which the equipment is allowed to cool from a normal operating temperature range to a cold or ambient temperature.

(47) SOLID FUELS include, but are not limited to, any solid organic material used as fuel for the purpose of creating useful heat.

(48) STANDARD GAS CONDITIONS are defined as one atmosphere of pressure and a temperature of 68 ^{O}F or 60 ^{O}F, provided that one of these temperatures is used throughout the facility.

(49) START-UP is that period of time during which the equipment is heated to operating temperature from a cold or ambient temperature.

(50) SULFURIC ACID PRODUCTION UNIT means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans or acid sludge, but does not include facilities where conversion to sulfuric acid as utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

(51) TAIL GAS UNIT is a SO_X control equipment associated with refinery sulfur recovery plant.

(52) TEST CELLS are devices used to test the performance of engines such as internal combustion engine and jet engines.

(53) TIMESHARING OF MONITOR means the use of a common monitor for several sources of emissions.

(54) TURBINES are machines that convert energy stored in a fluid into mechanical energy by channeling the fluid through a system of stationary and moving vanes.

(55) UNIT OPERATING DAY means each calendar day that emissions pass through the stack or duct.

(56) UNIVERSE OF SOURCES FOR NO_x is a list of RECLAIM facilities that emit NO_x.

(57) UNIVERSE OF SOURCES FOR SO_x is a list of RECLAIM facilities that emit SO_x.

(58) AP 42 is a publication published by Environmental Protection Agency (EPA) which is a compilation of air pollution emission rates used to determine mass emission.

(59) ASTM METHOD D1945-81 Method for Analysis of natural gas by gas chromatography.

(60) ASTM METHOD 2622-82 Test Method for sulfur in petroleum products (Xray Spectrographic method)

(61) ASTM METHOD 3588-91 method for calculating colorific value and specific gravity (relative density) of gaseous fuels.

(62) ASTM METHOD 4294-90 test method for sulfur in petroleum products by non-dispersive Xray fluorescence spectrometry.

(63) ASTM METHOD 4891-84 test method for heating value of gases in natural gas range by stoichiometric combustion.

(64) DISTRICT METHOD 2.1 measures gas flow rate through stacks greater than 12 inch in diameter.

(65) DISTRICT METHOD 7.1 colorimetric determination of nitrogen oxides except nitrous oxide emissions from stationary sources by using the phenoldisulfonic acid (pds) procedure or ion chromatograph procedures. Its range is 2 to 400 milligrams NO_x (as NO_2 per DSCM).

(66) DISTRICT METHOD 100.1 is an instrumental method for measuring gaseous emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, carbon dioxide, and oxygen.

(67) DISTRICT METHOD 307-91 laboratory procedure for analyzing total reduced sulfur compounds and SO_2.

(68) EPA METHOD 19 is the method of determining sulfur dioxide removal efficiency and particulate, sulfur dioxide and nitrogen oxides emission rates from electric utility steam generators.

(69) EPA METHOD 450/3-78-117 air pollutant emission rate for Military and Civil Aircraft.

R U L E 2 0 1 2 P R O T O C O L -
A T T A C H M E N T G

SUPPLEMENTAL AND ALTERNATIVE CEMS PERFORMANCE REQUIREMENTS FOR LOW NOx CONCENTRATIONS

ATTACHMENT G

SUPPLEMENTAL AND ALTERNATIVE CEMS PERFORMANCE REQUIREMENTS FOR LOW NOx CONCENTRATIONS

Abbreviations used in this Attachment are:
- ✓ Low Level Spike Recovery/Bias Factor Determination (LLSR/BFD)
- ✓ High Level Spike Recovery/Bias Factor Determination (HLSR/BFD)
- ✓ Low Level RATA/Bias Factor Determination (LLR/BFD)
- ✓ Low Level Calibration Error (LLCE)
- ✓ Relative Accuracy Test Audit (RATA)
- ✓ Relative Accuracy (RA)
- ✓ Full Scale Span (FSS)
- ✓ National Institute of Standards Traceability (NIST)

A. Applicability of Supplemental and Alternative Performance Requirements

The Facility Permit holder electing to use (B)(8)(d)(ii), in Chapter 2 of Rule 2012, Appendix A to measure NO_x concentrations that fall below 10 percent of the lowest vendor guaranteed full scale span range, shall satisfy the performance requirements as specified in Table G-1 listed below.

TABLE G-1
Alternative Performance Requirement(s)

CEMS RECLAIM Certified per NOx Protocol, Appendix A Yes or No	**Performance Requirements**			
	LLSR/BFD	HLSR/BFD	LLR/BFD	LLCE
Yes	**x**		**+**	**x**
No	**x**	**x**	**+**	**x**

1. + (plus) denotes an additional performance requirement that shall be conducted if the mandatory performance requirement(s) cannot be met.

2. If the concentration of the CEMS is such that the specifications for the low level spike recovery/bias factor determination cannot be met, the Facility Permit holder shall conduct a low level RATA/bias factor determination.

3. The provisions of Table G-1 do not apply to (B)(8)(c) or (B)(8)(d)(i), in Chapter 2.

The Facility Permit holder electing (or who may be required) to measure concentrations that fall below 10 percent of the higher full scale span value of any range (other than the lowest vendor guaranteed span range), shall perform a linearity test according to the procedure in Attachment G, Section B "Linearity Error", to satisfy the performance requirements as specified in Table G-2 listed below.

TABLE G-2
Linearity Performance Test – Ranges Other Than Lowest Vendor Guaranteed Span Range

Calibration Gas	Value
1	Lowest Non-Zero Value Chosen in Span Range Tested
2	Mid-point (40-60%) of Calibration Gases 1 and 3
3	Nominal Concentration at 10% of Span Range Tested

B. Test Definitions, Performance Specifications and Test Procedures

This section explains in detail how each performance requirement is to be conducted.

Low Level Calibration Error

The low level calibration error test is defined as challenging the CEMS (from probe to monitor) with certified calibration gases (NO in N2) at three levels in the 0-20 percent full scale span range. Since stable or certifiable cylinder gas standards (e.g. Protocol 1 or NIST traceable) may not be available at the concentrations required for this test, gas dilution systems may be used, with District approval, if they are used according to either District or EPA protocols for the verification of gas dilution systems in the field. The CEMS high level calibration gas may be diluted for the purpose of conducting the low level calibration error test.

1. Performance Specifications

   Introduce pollutant concentrations at approximately the 20 percent, 10 percent, and 5 percent of full scale span levels through the normal CEMS calibration system. No low level calibration error shall exceed 2.5 percent of full scale span.

2. Testing Procedures

   a. Perform a standard zero/span check; if zero or span check exceeds 2.5 percent full scale span, adjust monitor and redo zero/span check.

b. After zero/span check allow the CEMS to sample stack gas for at least 15 minutes.

c. Introduce any of the low level calibration error standards through the CEMS calibration system.

d. Read the CEMS response to the calibration gas starting no later than three system response times after introducing the calibration gas; the CEMS response shall be averaged for at least three response times and for no longer than six response times.

e. After the low level calibration error check allow the CEMS to sample stack gas for at least 15 minutes.

f. Repeat steps c through e until all three low level calibration error checks are complete.

g. Conduct post test calibration and zero checks.

Spike Recovery and Bias Factor Determinations

Spiking is defined as introducing know concentrations of the pollutant of interest (gas standard to contain a mixture of NO and NO2 is representative of the ratio of NO and NO2 in stack gas) and an appropriate non-reactive, non-condensable and non-soluble tracer gas from a single cylinder (Protocol 1 or NIST traceable to 2 percent analytical accuracy if no Protocol 1 is available) near the probe and upstream of any sample conditioning systems, at a flow rate not to exceed 10 percent of the total sample gas flow rate. The purpose of the 10 percent limitation is to ensure that the gas matrix (water, CO2, particulates, interferences) is essentially the same as the stack gas alone. The tracer gas is monitored in real time and the ratio of the monitored concentration to the certified concentration in the cylinder is the dilution factor. The expected pollutant concentration (dilution factor times the certified pollutant concentration in the cylinder) is compared to the monitored pollutant concentration.

High Level Spike Recovery/Bias Factor Determination

The high level spike recovery/bias factor determination is used when it is technologically not possible to certify the CEMS per the standard RECLAIM requirements. The spiking facility/interface shall be a permanently installed part of the CEMS sample acquisition system and accessible to District staff as well as the Facility Permit holder.

1. Performance Specifications

   The CEMS shall demonstrate a RA </= 20 percent, where the spike value is used in place of the reference method in the normal RA calculation, as described below. The bias

factor, if applicable, shall also be determined according to Attachment B.

2. Testing Procedures

a. Spike the sample to the CEMS with a calibration standard containing the pollutant of interest and CO or other non-soluble, non-reacting alternative tracer gas (alternative tracer gas) at a flow rate not to exceed 10 percent of the CEMS sampling flow rate and of such concentrations as to produce an expected 40-80 percent of full scale span for the pollutant of interest and a quantifiable concentration of CO (or alternative tracer gas) that is at least a factor of 10 higher than expected in the unspiked stack gas. The calibration standards for both pollutant of interest and CO (or alternative tracer gas) must meet RECLAIM requirements specified in Attachment A.

b. Monitor the CO (or alternative tracer gas) using an appropriate continuous (or semi-continuous if necessary) monitor meeting the requirements of Method 100.1 and all data falling within the 10-95 percent full scale span, and preferably within 30-70 percent full scale span.

c. Alternate spiked sample gas and unspiked sample gas for a total of nine runs of spiked sample gas and ten runs of unspiked sample gas. Sampling times should be sufficiently long to mitigate response time and averaging effects.

D. For each run, the average CEMS reading must be between 40 percent full scale span and 80 percent full scale span. If not, adjust spiking as necessary and continue runs; but expected spike must represent at least 50 percent of the total pollutant value read by the CEMS.

e. Calculate the spike recovery for both the pollutant and the CO (or alternative tracer gas) for each run by first averaging the pre- and post-spike values for each run and subtracting that value from the spiked value to yield nine values for recovered spikes.

f. Using the CO (or alternative tracer gas) spike recovery values for each run and the certified CO (or alternative tracer gas) concentration, calculate the dilution ratio for each run. Multiply the certified pollutant concentration by the dilution factor for each run to determine the expected diluted pollutant concentrations. Using the expected

diluted concentrations as the "reference method" value calculate the Relative Accuracy as specified in Appendix A. The RA shall be </= 20 percent. Determine the bias factor, if applicable, according to Attachment B.

Low Level Spike Recovery/Bias Factor Determination

The low level spike recovery/bias factor determination is used to determine if a significant bias exists at concentrations near the 10 percent full scale span level. The spiking facility/interface shall be a permanently installed part of the CEMS sample acquisition system and accessible to District staff as well as the Facility Permit holder.

1. Performance Specifications

   There are no pass/fail criteria with respect to the magnitude of the percent relative accuracy. There are performance criteria for the range of concentration on the CEMS and the extent to which the spike must be greater than the background pollutant level.

2. Testing Procedures

   a. Spike the sample to the CEMS with a calibration standard containing the pollutant of interest and CO or other non-soluble, non-reacting alternative tracer gas (alternative tracer gas) at a flow rate not to exceed 10 percent of the CEMS sampling flow rate and of such concentrations as to produce an expected 10-25 percent of full scale span for the pollutant of interest and a quantifiable concentration of CO (or alternative tracer gas) that is at least a factor of 10 higher than expected in the unspiked stack gas. The calibration standards for both pollutant of interest and CO (or alternative tracer gas) must meet RECLAIM requirements specified in Appendix A.

   b. Monitor the CO (or alternative tracer gas) using an appropriate continuous (or semi-continuous if necessary) monitor meeting the requirements of Method 100.1 and all data falling within the 10-95 percent full scale span, and preferably within 30-70 percent full scale span.

   c. Alternate spiked sample gas and unspiked sample gas for a total of nine runs of spiked sample gas and ten runs of unspiked sample gas. Sampling times should be sufficiently long to mitigate response time and averaging effects.

d. For each run, the average CEMS reading must be below 25 percent full scale span and > 10 percent full scale span. If not, adjust spiking as necessary and continue runs; but expected spike must represent at least 50 percent of the total pollutant value read by the CEMS.

e. Calculate the spike recovery for both the pollutant and the CO (or alternative tracer gas) for each run by first averaging the pre- and post-spike values for each run and subtracting that value from the spiked value to yield nine values for recovered spikes.

f. Using the CO (or alternative tracer gas) spike recovery values for each run and the certified CO (or alternative tracer gas) concentration, ~~.~~calculate the dilution ratio for each run. Multiply the certified pollutant concentration by the dilution factor for each run to determine the expected diluted pollutant concentrations. Using the expected diluted concentrations as the "reference method" value calculate the Relative Accuracy as specified in Appendix A. If the average difference is less than the confidence coefficient then no low level bias factor is applied. If the average difference is greater than the confidence coefficient and the average expected spike is less than the average CEMS measured spike, then no low level bias factor is applied. If the average difference is greater than the confidence coefficient and the average expected spike is greater than the average CEMS measured spike, then a low level bias factor equal to the absolute value of the average difference is added to data reported at or below the 10 percent of full scale span.

Low Level RATA/Bias Factor Determination using Enhanced Reference Method 6.1

A low level RATA/bias factor determination is designed to determine if there exists a statistically significant bias at low level concentrations. It consists of nine test runs that measure the stack concentration and the CEMS concentration concurrently.

1. Performance Specifications

   There are no pass/fail criteria with respect to the magnitude of the percent relative accuracy. There are performance criteria for the special RATA with respect to the reference method and range of concentration on the CEMS.

2. Testing Procedures

The reference method for the low level RATA/bias factor determination is Method 100.1

a. Perform a minimum of nine runs of low level RATA for CEMS versus the reference method at actual levels (unspiked).

b. The full scale span range for the reference method shall be such that all data falls with 10 ~~–~~ 95 percent of full scale span range.

c. The reference method shall meet all Method 100.1 performance criteria.

d. Calculate the average difference (d = CEMS - reference method, ppm) and confidence coefficient (cc = statistical calculated, ppm).

e. If d > 0 then the bias = 0 ppm; if d < 0 and |d| > cc then bias = d; if d < 0 and |d| < cc then bias = 0 ppm.

Linearity Error

The linearity error is defined as the percentage error in linearity, calculated pursuant to the equation in Table G-3, expressed in terms of the ratio of the absolute value of the difference between the reference value and the mean CEMS response value, to the reference value.

1. Performance Specifications
   Introduce calibration gas concentrations in accordance with Table G-2. The linearity error shall not exceed 5.0 percent.

2. Testing Procedures
   a. A linearity error test shall be comprised of three data points for each of three calibration gases listed in Table G-2 for each span range.

   b. Each low level linearity test shall be performed by introducing calibration gas into the CEMS at the span range values specified in Table G-2.

   c. The test sequence (low, middle, and high) shall be repeated until three data points have been acquired for each calibration gas. The same calibration gas shall not be used twice in succession during the linearity error tests.

d. Linearity error shall not exceed 5.0 percent of the calibration gas concentration, as calculated pursuant to the equation in Table G-3:

TABLE G-3
Linearity Error Test Equation

Test	Equation	Where
Linearity Error	$LE = \frac{\left\|R - \overline{C}\right\|}{R} \times 100$	$\overline{C}$ = Mean of the CEMS response values R = Certified gas concentration as reference value

C. Testing Frequency

For each CEMS, perform the aforementioned performance requirements once semiannually thereafter, as specified below for the type of test. These semiannual assessments shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested for certification purposes (initial and recertification) or within three months of the end of the calendar quarter in which the District sent notice of a provisional approval for a CEMS, whichever is later. Thereafter, the semiannual tests shall be completed within six months of the end of the calendar quarter in which the CEMS was last tested. For CEMS on bypass stacks/ducts, the assessments shall be performed once every two successive operating quarters in which the bypass stacks/ducts were operated. These tests shall be performed after the calendar quarter in which the CEMS was last tested as part of the CEMS certification, as specified below for the type of test.

Relative accuracy tests may be performed on an annual basis rather than on a semiannual basis if the relative accuracies during the previous audit for the NO_X CEMS are 7.5 percent or less.

For CEMS on any stack or duct through which no emissions have passed in two or more successive quarters, the semiannual assessments must be performed within 14 operating days after emissions pass through the stack/duct.

ATTACHMENT L

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report

Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions

Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions

November 2023

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WAYNE NASTRI

BACKGROUND

A continuous emission monitoring system (CEMS) is the combination of equipment necessary for the determination of pollutant concentrations or emission rates on a continuous basis using analyzer measurements and a conversion equation, graph, or computer program to produce results in units of the applicable emission limitation or standard. A CEMS consists of three major subsystems: the sampling interface, analyzers, and a data recorder. The South Coast Air Quality Management District (South Coast AQMD) has various rules, regulations, and permit conditions that require the installation and operation of CEMS to determine compliance with an emission limitation or standard. The South Coast AQMD has established CEMS monitoring rules to provide guidance and specifications for CEMS installation and operation, and to ensure accuracy and precision of the CEMS.

Regulation XX – REgional CLean Air Incentives Market (RECLAIM) contains two such rules: Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for SOx Emissions (Rule 2011) and Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for NOx Emissions (Rule 2012), both of which establish guidance and specifications for the installation and operation of CEMS to ensure accuracy and precision of monitoring mass emissions for SOx and NOx, respectively, at RECLAIM facilities.

In March 2021 the Governing Board adopted Rule 218.2 – Continuous Emission Monitoring System: General Provisions (Rule 218.2) and Rule 218.3 – Continuous Emission Monitoring: Performance Specifications (Rule 218.3) to update CEMS requirements and to prepare for the transition of facilities in RECLAIM to a command-and-control regulatory program. Rules 218.2 and 218.3 apply to a Facility Permit holder of CEMS, alternative continuous emission monitoring systems, or semi-continuous emission monitoring systems at former RECLAIM facilities as well as non-RECLAIM facilities after the implementation dates specified in Rules 218.2 and 218.3. Rule 218.2 contains paragraphs (e)(3) and (e)(4) to address requirements for CEMS under extended basic equipment shutdowns (minimum of 168 consecutive hours) provided specific conditions are met. Rule 218.3, Attachment A contains a three-point linearity error test to measure concentrations that fall below ten percent of the higher full scale span value of any range, with the exception of the lowest vendor guaranteed span range.

The proposed amendments to Rules 2011 and 2012 incorporate existing provisions in Rule 218.2 paragraphs (e)(3) and (e)(4), and the three-point linearity error test in Rule 218.3. Proposed Amended Rule 2011 (PAR 2011) and Proposed Amended Rule 2012 (PAR 2012) are necessary to provide monitoring relief for RECLAIM facilities as they replace and/or modify equipment to comply with landing rules and will provide consistency across South Coast AQMD CEMS rules.

REGULATORY HISTORY FOR RULES 2011 AND 2012

The adoption of the RECLAIM program in October 1993, included Rule 2011 and Rule 2012 which established the monitoring, reporting, and recordkeeping requirements for SOx and NOx emissions, respectively. For the largest sources, Rule 2011 and Rule 2012 require CEMS, which are state-of-the-art monitoring systems that are critical for the RECLAIM program where

compliance has been based on overall mass emissions as compared to concentration limits under a command-and-control regulatory structure.

The most recent amendments to Rules 2011 and 2012 were made in May 2005. The previous amendments to Rule 2011 included requirements for Best Available Retrofit Control Technology (BARCT) for RECLAIM facilities as well as a clarification on monitoring and recordkeeping requirements for new RECLAIM sources subject to Rule 2005 – New Source Review for RECLAIM. The amendments to Rule 2012 included allowing a delay in the due date for the Relative Accuracy Test Audit (RATA) for a NOx source that is operated intermittently and specifying mass emissions reporting through the South Coast AQMD's website. Rules 2011 and 2012 were last approved by the U.S. EPA on September 14, 2017, into the California State Implementation Plan (SIP).

PUBLIC PROCESS

The development of PAR 2011 and PAR 2012 was conducted through a public process. A Public Workshop for PAR 2011 and PAR 2012 was held on August 29, 2023. The objective of the Public Workshop is to gain consensus and resolve key issues with the stakeholders. In response to a comment during the Public Workshop, staff included new provisions for a three-point linearity error test to measure concentrations that fall below ten percent of the higher full scale span value of any range, with the exception of the lowest vendor guaranteed span range.

PROPOSED AMENDMENTS TO RULES 2011 AND 2012

PAR 2011 and 2012 will provide consistency between South Coast AQMD CEMS rules and reduce potential compliance issues by providing monitoring relief. As RECLAIM facilities are replacing or modifying equipment to comply with RECLAIM landing rules, there is a need for additional compliance pathways for CEMS under extended ~~CEMS~~ basic equipment ~~shutdown scenarios~~shutdowns. Without an additional compliance pathway, it is anticipated that the South Coast AQMD Hearing Board would experience an increased demand on resources in the form of additional variance petitions. Without the proposed amendments, RECLAIM facilities would need variance relief to allow for CEMS to be offline while equipment is shutdown for extended periods.

Furthermore, South Coast AQMD rules are becoming more stringent as emission limits are revised to reflect BARCT. As facilities replace or modify equipment that comply with BARCT emission limits, staff is seeing increased measurements in the lower span range of a CEMS. However, CEMS can only accurately monitor emissions between 10 percent and 95 percent of the span range. Currently, Rules 2011 and 2012 only provide an alternative performance test for SOx and NOx concentrations that fall below ten percent of the lowest vendor guaranteed span range. In response to a comment during the Public Workshop, staff included new provisions for a three-point linearity error test to measure concentrations for SOx and NOx that fall below ten percent of the higher full scale span value of any range, with the exception of the lowest vendor guaranteed span range.

The rule language proposed for inclusion into PAR 2011 and PAR 2012 is based on similar existing provisions in Rules 218.2 and 218.3. The proposed rule language will not delay the transition of NOx RECLAIM to a command-and-control regulatory structure, nor will it result in an increase

in emissions. It is strictly a procedural amendment meant to provide RECLAIM facilities with compliance options already adopted in Rules 218.2 and 218.3, which former RECLAIM facilities will be subject to. As the RECLAIM program is still active, current RECLAIM facilities are subject to Rule 2011 and Rule 2012. Both PAR 2011 and PAR 2012 include changes to update references and provide clarity.

Staff is continuing to work on other amendments to Regulation XX related to the sunset of the NOx RECLAIM program, which include an exit date for NOx RECLAIM facilities. It should be noted that at this time, SOx RECLAIM is not transitioning to a command-and-control regulatory structure. Consequently, CEMS in SOx RECLAIM will continue to be subject to the requirements in Rule 2011.

Proposed Amended Rule 2011

Subparagraph (c)(2)(D) explains the conditions under which Facility Permit holders are not subject to the operating and reporting conditions for CEMS in subparagraphs (c)(2)(A) and (c)(2)(B). For any SOx source with a shutdown period shorter than 168 consecutive hours, the Facility Permit holder of the CEMS would not be permitted to use this provision for monitoring relief. Subparagraph (c)(2)(D) also validates emission hours under extended shutdowns and classifies those hours as zero value data points to make the Missing Data Procedure in Appendix A, Chapter 2, Section E not applicable. A CEMS must record zero emissions for four hours after the shutdown of the emission generating equipment for emission hours to be valid. Zero emissions are measured as zero value data points pursuant to Appendix A, Chapter 2, Section B, Part 5.

Subparagraph (c)(2)(E) outlines the requirements for a CEMS to be considered non-operational for the purposes of demonstrating eligibility for monitoring relief pursuant to subparagraph (c)(2)(D).

Subparagraph (c)(3)(E) was added to provide an extension of the electronic reporting requirements specified in subparagraphs (c)(3)(A)~~,~~ and (c)(3)(B), and Appendix A, Chapter 7 for a SOx source that is shutdown pursuant to subparagraph (c)(2)(D). The extension provides a Facility Permit holder 48 hours after the CEMS passes a calibration error test to submit all applicable electronic emission reports for the duration of the shutdown. The data is considered valid and consisting of zero value data points pursuant to subparagraph (c)(2)(D), provided that the Facility Permit holder complies with all requirements specified in clauses (c)(2)(D)(i) to (c)(2)(D)(iv).

The proposed amended rule language is contained in subdivision (c) – Major SOx Source, as all RECLAIM SOx sources equipped with a CEMS are major SOx sources. A SOx source that installs a CEMS can utilize the new provisions for monitoring relief during long term shutdowns, but must be re-permitted as a major SOx source pursuant to subparagraph (c)(1)(F) before using the new compliance pathway specified in subparagraph (c)(2)(D).

Attachment F to Appendix A was revised to allow facilities to run a three-point linearity error test to address a data gap. The valid operating range of CEMS analyzers is 10-95 percent of the analyzer full scale span range. For a SOx analyzer with dual span ranges, e.g., 0-10 ppm and 0-200 ppm, the valid ranges are 1-9.5 ppm and 20-190 ppm, respectively. If SOx emissions in the

lower range exceed 9.5 ppm, the emissions need to be reported at 20 ppm on the higher range. As a result, there is a data gap between 9.5 ppm and 20 ppm in this example, and this leads to over-reporting of emissions.

Currently, Rule 2011, Attachment F to Appendix A allows the use of less than ten percent of the lowest vendor guaranteed full scale span range (0-10 ppm in the above example) by successfully conducting performance requirements listed in Table F-1. The proposed amendment to Rule 2011, Attachment F to Appendix A allows the use of less than ten percent of the higher full scale span range (0-200 ppm in the above example) by successfully conducting a three-point linearity test. This proposed amendment can reduce the above-mentioned data gap. Appendix A, Chapter 2, Section B, Part 8 (b) was updated to provide the option to conduct a three-point linearity test specified in Appendix A, Attachment F, Section B.

Proposed Amended Rule 2012

Requirements for PAR 2012 are structured in a similar fashion to PAR 2011 and have the same purpose and intent. The proposed amendments to Rule 2012 are also contained in subparagraphs (c)(2)(D), (c)(2)(E), and (c)(3)(E). Subparagraph (c)(1)(I) specifies that NOx sources equipped with CEMS can become major NOx sources, provided that the NOx source is re-permitted as a major NOx source.

The new three-point linearity alternative performance test is contained within Attachment G to Appendix A, which mirrors the proposed language in in PAR 2011 Attachment F to Appendix A. Appendix A, Chapter 2, Section B, Part 8 (b) was updated to provide the option to conduct a three-point linearity test, specified in Appendix A, Attachment G, Section B to mirror PAR 2011.

AFFECTED FACILITIES

Based on the RECLAIM compliance year 2021 audit data, there are 68 RECLAIM facilities that operate NOx and/or SOx sources monitored by CEMS. There are a total of 405 NOx-emitting sources that are monitored by CEMS and of those sources, 280 are NOx and SOx emitting sources. It should be noted that one CEMS may monitor emissions for several NOx and/or SOx sources. The proposed amendments are administrative in nature and therefore no modifications or new equipment are expected at affected facilities.

EMISSION REDUCTIONS

PAR 2011 and PAR 2012 are administrative rules that provide technical guidelines for the installation and operation of CEMS required by South Coast AQMD rules or permit conditions. PAR 2011 and PAR 2012 do not directly regulate sources for emissions control and do not contain emission limits; therefore, there are no emission reductions that will result from this rule development.

COSTS AND COST−EFFECTIVENESS

While a source-specific rule determines when a CEMS would be required for emission monitoring, PAR 2011 and PAR 2012 provide administrative and technical guidelines on how to properly operate the CEMS. The cost-effectiveness of operating any CEMS is included in the related source-specific rule for which the CEMS is required as such there are no costs associated with the proposed amendments.

INCREMENTAL COST EFFECTIVENESS

Health and Safety Code Section 40920.6 requires an incremental cost-effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option that would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SOx, NOx, and their precursors. PAR 2011 and PAR 2012 are not BARCT rules or emission reduction strategies; therefore, this provision is not applicable.

SOCIOECONOMIC ~~ANALYSIS~~IMPACT ASSESSMENT

The proposed amendments to Rule 2011 and Rule 2012 are administrative in nature and do not affect air quality or emission~~s~~ limitations.~~-~~ Therefore, ~~no~~a socioeconomic ~~analysis~~impact assessment is not required under Health and Safety Code Sections 40440.8 and 40728.5.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project (PAR 2011 and PAR 2012) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption ~~will be~~ has been prepared pursuant to CEQA Guidelines Section 15062, and if the proposed project is approved, the Notice of Exemption will be filed for posting with the State Clearinghouse of the Governor's Office of Planning and Research, and with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties.

DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION 40727

Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. The following provides the draft findings.

Necessity: A need exists for PAR 2011 and PAR 2012 to provide consistency across CEMS rules and a compliance pathway for CEMS under extended ~~CEMS~~basic equipment ~~shutdown scenarios~~shutdowns, as RECLAIM facilities are replacing or modifying equipment to comply with RECLAIM landing rules.

Authority: The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations from Health and Safety Code Sections 39002, 39616, 40000, 40001, 40440, 40440.1, 40441, 40702, 40725 through 40728, and 41511.

Clarity: PAR 2011 and PAR 2012 have been written or displayed so that their meaning can be easily understood by the persons affected by the rules.

Consistency: PAR 2011 and PAR 2012 are in harmony with, and not in conflict with or contradictory to, existing federal or state statutes, court decisions, or federal regulations.

Non-Duplication: PAR 2011 and PAR 2012 do not impose the same requirement as any existing state or federal regulation and is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference: In amending these rules, the South Coast AQMD hereby implements, interprets, or makes specific reference to the following statutes: Assembly Bill 617, Health and Safety Code ~~s~~Sections 39002, 39616, 40000, 40001, 40702, 40440(a), ~~41511, and~~ 40725 through 40728.5, and 41511.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2(g) for comparative analysis is applicable when proposed amended rules or regulations impose, or have the potential to impose, a new emissions limit or standard, or increased monitoring, recordkeeping, or reporting requirements. In this case, a comparative analysis is not required because the proposed amendments do not impose such requirements.

LIST OF AFFECTED FACILITIES

Fac ID	Name	Cycle	Market
3417	AIR PROD & CHEM INC	1	NOx
3704	ALL AMERICAN ASPHALT, UNIT NO.01	2	NOx
4242	SAN DIEGO GAS & ELECTRIC	2	NOx
4477	SO CAL EDISON CO	1	NOx
5973	SOCAL GAS CO	1	NOx
7416	LINDE INC.	1	NOx
7427	OWENS-BROCKWAY GLASS CONTAINER INC	1	NOx/SOx
8547	QUEMETCO INC	1	NOx/SOx
11435	PQ LLC	2	NOx/SOx
12428	NEW NGC, INC.	2	NOx
16642	ANHEUSER-BUSCH LLC., (LA BREWERY)	1	NOx/SOx
19167	R J. NOBLE COMPANY	2	NOx
20604	RALPHS GROCERY CO	2	NOx
25638	BURBANK CITY, BURBANK WATER & POWER	2	NOx
42630	LINDE INC.	1	NOx
46268	CALIFORNIA STEEL INDUSTRIES INC	1	NOx
47781	OLS ENERGY-CHINO	1	NOx
63180	DARLING INGREDIENTS INC.	1	NOx
68118	TIDELANDS OIL PRODUCTION COMPANY ETAL	2	NOx
101656	AIR PRODUCTS AND CHEMICALS, INC.	2	NOx
101977	SIGNAL HILL PETROLEUM INC	1	NOx
115314	LONG BEACH GENERATION, LLC	2	NOx
115389	AES HUNTINGTON BEACH, LLC	2	NOx/SOx
115394	AES ALAMITOS, LLC	1	NOx
115536	AES REDONDO BEACH, LLC	1	NOx
115663	EL SEGUNDO ENERGY CENTER LLC	1	NOx
117290	B BRAUN MEDICAL, INC	2	NOx
127299	WILDFLOWER ENERGY LP/INDIGO GEN., LLC	2	NOx
128243	BURBANK CITY, BURBANK WATER & POWER, SCPPA	1	NOx
129497	THUMS LONG BEACH CO	1	NOx
129810	CITY OF RIVERSIDE PUBLIC UTILITIES DEPT	1	NOx
139796	CITY OF RIVERSIDE PUBLIC UTILITIES DEPT	1	NOx
146536	WALNUT CREEK ENERGY, LLC	1	NOx/SOx
148236	AIR LIQUIDE LARGE INDUSTRIES U.S., LP	2	NOx/SOx
151798	TESORO REFINING AND MARKETING CO, LLC	1	NOx/SOx
152707	SENTINEL ENERGY CENTER LLC	1	NOx
153992	CANYON POWER PLANT	1	NOx

Fac ID	Name	Cycle	Market
155474	BICENT (CALIFORNIA) MALBURG LLC	2	NOx
155877	MOLSON COORS USA LLC	1	NOx
156741	HARBOR COGENERATION CO, LLC	2	NOx
160437	SOUTHERN CALIFORNIA EDISON	1	NOx
164204	CITY OF RIVERSIDE, PUBLIC UTILITIES DEPT	2	NOx
171107	PHILLIPS 66 CO/LA REFINERY WILMINGTON PL	2	NOx/SOx
171109	PHILLIPS 66 COMPANY/LOS ANGELES REFINERY	1	NOx/SOx
172005	NEW- INDY ONTARIO, LLC	2	NOx
172077	CITY OF COLTON	1	NOx
174655	TESORO REFINING & MARKETING CO, LLC	2	NOx/SOx
180908	ECO SERVICES OPERATIONS CORP.	1	NOx/SOx
181667	TORRANCE REFINING COMPANY LLC	1	NOx/SOx
182561	COLTON POWER, LP	1	NOx
182563	COLTON POWER, LP	1	NOx
185600	BRIDGE ENERGY, LLC	2	NOx
185801	BERRY PETROLEUM COMPANY, LLC	1	NOx
186899	ENERY HOLDINGS LLC/LGHTHP_6_ICEGEN	1	NOx
187165	ALTAIR PARAMOUNT, LLC	1	NOx/SOx
191386	THE NEWARK GROUP, INC. DBA GREIF, INC	2	NOx
800026	ULTRAMAR INC	1	NOx/SOx
800030	CHEVRON PRODUCTS CO.	2	NOx/SOx
800074	LA CITY, DWP HAYNES GENERATING STATION	1	NOx
800075	LA CITY, DWP SCATTERGOOD GENERATING STN	1	NOx
800080	LUNDAY-THAGARD CO DBA WORLD OIL REFINING	2	NOx/SOx
800128	SO CAL GAS CO	1	NOx
800129	SFPP, L.P.	1	NOx
800168	PASADENA CITY, DWP	1	NOx
800170	LA CITY, DWP HARBOR GENERATING STATION	1	NOx
800193	LA CITY, DWP VALLEY GENERATING STATION	2	NOx
800335	LA CITY, DEPT OF AIRPORTS	2	NOx
800436	TESORO REFINING AND MARKETING CO, LLC	1	NOx/SOx

RESPONSE TO PUBLIC COMMENTS

Public Workshop Comments

Public Workshop Commenter #1: Bill Quinn – California Council for Environmental and Economic Balance

The commenter expressed appreciation to staff and highlighted the importance of the rulemaking for compliance at RECLAIM facilities while landing rules are implemented.

Staff Response to Public Workshop Commenter #1:
Staff appreciates support of PAR 2011 and PAR 2012.

Public Workshop Commenter #2: Curtis Coleman – Southern California Air Quality Alliance

The commenter expressed appreciation to staff for the expeditious work on PAR 2011 and PAR 2012.

Staff Response to Public Workshop Commenter #2:
See response to Commenter #1.

Public Workshop Commenter #2: Dan McGivney – SoCalGas

The commenter expressed appreciation to staff on their quick work on PAR 2011 and PAR 2012.

Staff Response to Public Workshop Commenter #3:
See response to Commenter #1.

Public Workshop Commenter #2: Charlene He – AES

The commenter expressed interest in adding a three-point linearity error test provision similar to options in Rule 218.3 Attachment A that would expand the quality assurance options to include a test to fill an existing data gap below the 10 percent − 95 percent span range.

Staff Response to Public Workshop Commenter #4:
Staff acknowledges the benefits of consistency between CEMS rules as RECLAIM facilities transition to a command-and control regulatory structure. Attachment F to Appendix A for PAR 2011 and Attachment G to Appendix A for PAR 2012, respectively, were updated to include a three-point linearity error test procedure.

Comment Letters

Comment Letter #1

California Council for Environmental and Economic Balance
101 Mission Street, Suite 1440, San Francisco, California 94105
415-512-7890 phone, 415-512-7897 fax, www.cceeb.org

September 12, 2023

Joshua Ewell
Planning, Rule Development, and Implementation
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions; and Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions

Dear Mr. Ewell,

On behalf of the members of the California Council for Environmental and Economic Balance (CCEEB), we submit these comments in support of the South Coast Air Quality Management District's Proposed Amended Rule 2011 and Proposed Amended Rule 2012. CCEEB has been a longstanding stakeholder engaged in the District's RECLAIM program to which these proposed amendments would apply.

PAR 2011 and PAR 2012 will address a potential conflict that could occur when facilities are implementing the so-called landing rules under the RECLAIM program. For example, if compliance with a landing rule requires a facility to remove or modify a stack that contains a Continuous Emission Monitoring Systems (CEMS) unit, that facility would need to shut down the CEMS unit. However, currently, Rules 2011 and 2012 require the installation and operation of CEMS units at RECLAIM facilities without exception, leading to an inability to comply with both the landing rules as well as Rules 2011 and 2012. For non-RECLAIM facilities, existing District regulations have provisions to address this concern; however, these provisions do not apply to RECLAIM facilities. 1-1

We believe PAR 2011 and PAR 2012 provide technical changes to existing rule language that will address this situation while including safeguards to ensure that there will be no adverse impact on air quality.

Joshua Ewell
September 12, 2023
Page 2

We thank the staff for quickly moving to develop a proposed solution. CCEEB supports PAR 2011 and PAR 2012 and will urge the Governing Board to approve these proposals.

1-2

Sincerely,

Bill Quinn
CCEEB Consultant

cc: Michael Krause, SCAQMD
Tim Carmichael, CCEEB
Christine White, CCEEB
Members, South Coast Air Project

Staff Response to Comment Letter #1

Response to Comment 1-1:

PAR 2011 and PAR 2012 will create consistency between CEMS rules and address potential CEMS compliance issues during long term shutdowns.

Response to Comment 1-2:

Staff appreciates support of PAR 2011 and PAR 2012.

ATTACHMENT M

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PROJECT TITLE: **PROPOSED AMENDED RULE 2011 – REQUIREMENTS FOR MONITORING, REPORTING, AND RECORDKEEPING FOR OXIDES OF SULFUR (SOx) EMISSIONS, AND PROPOSED AMENDED RULE 2012 – REQUIREMENTS FOR MONITORING, REPORTING, AND RECORDKEEPING FOR OXIDES OF NITROGEN (NOx) EMISSIONS**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research for posting on their CEQAnet Web Portal which may be accessed via the following weblink: https://ceqanet.opr.ca.gov/search/recent. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2023.

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

To:	County Clerks for the Counties of Los Angeles, Orange, Riverside, and San Bernardino; and Governor's Office of Planning and Research – State Clearinghouse	**From:**	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Project Title: Proposed Amended Rule 2011 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions, and Proposed Amended Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions

Project Location: The proposed project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

Description of Nature, Purpose, and Beneficiaries of Project: Rule 2011 and Rule 2012 contain specifications for the installation and operation of continuous emission monitoring systems (CEMS) to ensure accuracy and precision of monitoring mass emissions for oxides of sulfur (SOx) and oxides of nitrogen (NOx) at Regional Clean Air Incentives Market (RECLAIM) facilities. To provide consistency between South Coast AQMD CEMS rules, reduce potential compliance issues by providing monitoring relief for RECLAIM facilities as they replace and/or modify equipment to comply with landing rules, and to improve clarity, Proposed Amended Rule 2011 (PAR 2011) and Proposed Amended Rule 2011 (PAR 2012) include the following new provisions that will: 1) allow the owner or operator to shutdown the SOx and/or NOx CEMS when the emission source for which the CEMS is monitoring is not scheduled to be operating and is not generating emissions for an extended period of time, provided specific conditions are met; and 2) expand the alternative performance test options to allow a three-point linearity error test to measure concentrations for SOx and NOx. Implementation of PAR 2011 and PAR 2012 will neither delay the transition of NOx RECLAIM to a command-and-control regulatory structure, nor result in a change in emissions. The proposed project will benefit RECLAIM facilities when conducting monitoring activities without undermining the overall goal of CEMS which is to collect accurate data for the purpose of determining compliance with RECLAIM requirements.

Public Agency Approving Project:	**Agency Carrying Out Project:**
South Coast Air Quality Management District	South Coast Air Quality Management District

Exempt Status: CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption

Reasons why project is exempt: South Coast AQMD, as Lead Agency, has reviewed the proposed project (PAR 2011 and PAR 2012) pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. The proposed project provides updates to technical guidelines for operating CEMS as required by South Coast AQMD rules or permit conditions without requiring physical modifications to occur. Thus, it can be seen with certainty that implementing the proposed project would not cause a significant adverse effect on the environment. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption.

Date When Project Will Be Considered for Approval (subject to change):
South Coast AQMD Governing Board Public Hearing: November 3, 2023

CEQA Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Sina Taghvaee, Ph.D.	(909) 396-2192	staghvaee@aqmd.gov	(909) 396-3982
PAR 2011 and PAR 2012 Contact Person: Joshua Ewell	**Phone Number:** (909) 396-2212	**Email:** jewell@aqmd.gov	**Fax:** (909) 396-3982

Date Received for Filing: _____ **Signature:** *(Signed and Dated Upon Board Approval)*

Kevin Ni
Acting Program Supervisor, CEQA
Planning, Rule Development, and Implementation

Proposed Amended Rule 2011 − Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx) Emissions
And
Proposed Amended Rule 2012 − Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions

South Coast AQMD

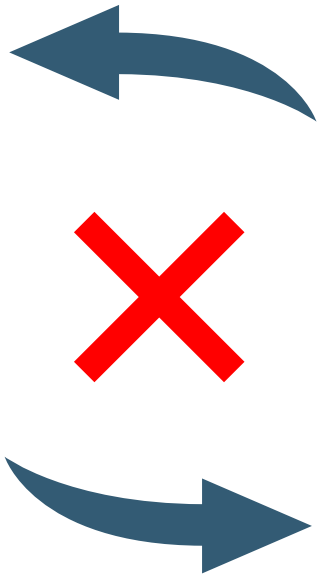
Board Meeting
November 3, 2023

Rule 2011* and Rule 2012** Background

- Continuous emissions monitoring systems (CEMS) are used to continuously measure pollutant concentrations within a stack
- Rules 2011 and 2012 establish CEMS requirements for RECLAIM facilities
  - Rules 2011 and 2012 require that CEMS be in operation at all times, even when the equipment is not in operation
  - RECLAIM operators have sought variances from the Hearing Board when the basic unit is not operational for prolonged periods
- To meet lower NOx limits in source-specific rules, extended equipment shutdowns are needed as pollution controls are being installed

* Rule 2011 − Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SOx)
**Rule 2012 − Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx)

Extended Shutdown Scenario



Monitored equipment is non-operational and disconnected for an extended period (at least 168 consecutive hours)

The CEMS has no emission source to monitor (emissions are verified as zero) so it may be offline while the monitored equipment is shutdown

Proposed Amendments to Rules 2011 and 2012 based on Rule 218.2* and Rule 218.3**

- Contains requirements to be applicable for extended CEMS shutdowns and validates the emission hours as zero value data points
- Describes acceptable methods to demonstrate non-operation of equipment for the duration the CEMS is offline
- Includes a three-point linearity test to address a data gap which can result in overreporting of emissions
- Other minor changes for clarification and consistency

*Rule 218.2 − Continuous Emission Monitoring System: General Provisions
**Rule 218.3 − Continuous Emission Monitoring System: Performance Specifications

Impacts and Key Issues

Costs	• No costs are associated with PAR 2011 and PAR 2012 • No adverse socioeconomic impacts are expected
Environmental Impacts	• The project will not require physical modifications • No significant adverse environmental impacts are expected • A Notice of Exemption from CEQA has been prepared
Key Issues	• Staff is not aware of any remaining key issues

Staff Recommendation

- Adopt Resolution:
  - Determining that Proposed Amended Rule 2011 and Proposed Amended Rule 2012 are exempt from the requirements of the California Environmental Quality Act
  - Amending Rule 2011 and Rule 2012