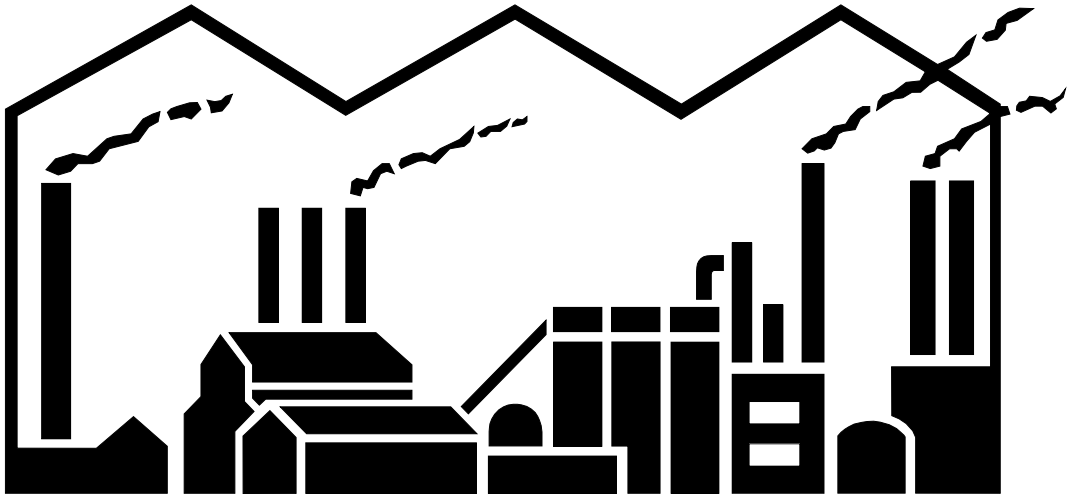
State of Vermont

Agency of Natural Resources
Department of Environmental Conservation

Air Quality & Climate Division

Continuous Emission Monitoring Requirements



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Revision 5

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REVISION HISTORY

Revision Number	Date	Changes
0	01 Jan, 1985	Original document.
1	08 Apr, 1985	1.Contact personnel; 2. Addition of Performance Specification 4; 3.Requirement for all CEMS related stack test data.
2	01 Jul, 1986	Reformatted.
3	16 Jan, 1989	Complete revision.
4	8 Aug, 1989	Inclusion of process monitors into CEMS
5	February, 2002	Complete revision

Acronyms/abbreviations used in this Document:

AO	Adminsitrative Order
AQCD	Vermont Air Quality & Climate Division for State of Vermont
APCR	Vermont Air Pollution Control Regulations
mmBtu	Million British Thermal Units
CAAA	Clean Air Act Amendments
CD	Calibration Drift
CEMS	Continuous Emission Monitoring System
CERMS	Continuous Emission Rate Monitoring System
CFR	Code of Federal Regulations
CGA	Cylinder Gas Audit
CO	Carbon monoxide
CO_2	Carbon dioxide
COMS	Continuous Opacity Monitoring System
CTMS	Continuous Temperature Monitoring System
DAS	Data acquisition system
DEC	Vermont Department of Environmental Conservation
dscf	dry standard cubic feet
EER	Excess Emission Report
EPA	U. S. Environmental Protection Agency
lb/hr	pound per hour
lb/mmBtu	pound per million BTU
mmHg	millimeters of mercury
MEC	Maximum expected concentration
MW	megawatt
NIST	National Institute of Standards and Technology
NSPS	Federal New Source Performance Standards
NO_x	Nitrogen oxides
O_2	oxygen
OTP	operational test period
PLC	programmable logic controller
ppb	parts per billion (by volume)
ppm	parts per million (by volume)
PS	performance specification
PST	performance specification test
QA	quality assurance
QC	quality control
QER	quarterly emission report
scfh	Cubic feet per hour corrected for standard conditions
RA	relative accuracy
RACT	Reasonably available control technology
RATA	Relative Accuracy Test Audit
RM	Reference Method
SOP	standard operating procedure
SO_2	sulfur dioxide
SRM	standard reference material
VE	Visible Emission(opacity)

1.0 Introduction

The State of Vermont has been delegated the responsibility for enforcing Federal continuous emission monitoring requirements for air contaminant sources subject to Federal emission standards and is exercising its authority under state law to set appropriate additional requirements. Both Federal and State requirements are identified in this guidance document. Source specific requirements may also be necessary, and if so will be identified in the Vermont Air Quality & Climate Division (AQCD) Permit or other enforceable State Order or document. This document is based on Federal requirements contained in *40 CFR Part 60* and *Part 75.*

This document provides instructions and guidance to all sources required to install, operate and maintain CEMS/CERMS/COMS. Once a CEMS/CERMS/COMS requirement is established, a regulated source should use this document to assist in the implementation of the Source's monitoring program. This manual is not intended to provide step-by-step SOP's or instructions on CEMS/CERMS/COMS design, installation or performance testing. Nevertheless, it does contain design specifications, operating requirements, performance specifications, data handling and QA criteria that must be met in order for a source to obtain AQCD approval of the CEMS pursuant to APCR.

The AQCD's Technical Services Section (TSS) coordinates the continuous emission monitoring system program and insures the requirements in this document are properly met and implemented by applicable facilities.

In 2001, the AQCD comprehensively amended the CEM Requirements based on its experience and policy developed from implementation of the original document as well as changes in CEMS equipment, additional Federal Regulations and updated Federal, Regional and State CEMS Guidance.

1.1 Applicability

This guideline is applicable to any facility in Vermont that is required by a Federal or State regulation, permit, agreement or order to install, operate and maintain a CEMS, CERMS, and/or COMS for the purpose of continuously determining and reporting compliance (or non compliance) with applicable emission or operating limits.

For monitoring systems required pursuant only to *40 CFR Part 64*, the criteria established for that regulation will apply. For monitoring systems required pursuant to only *40 CFR Part 70*, Paragraph 70.6 (a)(3)(i)(B), the criteria established by EPA for that purpose will apply. For applicable CEMS/CERMS/COMS used to meet the Federal Compliance Assurance Monitoring requirements, compliance with this guideline will also constitute compliance with *40 CFR Part 64* and *40 CFR Part 70*, Paragraph 70.6 (a)(3)(i)(B).

Sources required to install and operate CEMS pursuant to Federal Acid Rain Regulations (*40 CFR Part 75*) do not have to follow this CEMS Guideline for those pollutant and parameter monitors which are installed solely for the purposes of satisfying the requirements of *40 CFR Part 75.* For these dedicated acid rain monitors, approval for compliance with *40 CFR Part 75* must be obtained from EPA.

Notwithstanding, CEMS/CERMS/COMS subject to *40 CFR Part 75* which are being used by the source to also demonstrate compliance with other Federal and State requirements (NO_x RACT, NSPS, Title V, State Permit) shall meet the requirements in this document. Some additional testing, reporting and recordkeeping requirements may apply. For these "dual purpose" CEMS/CERMS/COMS, any conflicts between the requirements of *40 CFR Part 75* and the requirements in this document will be resolved at AQCD's discretion on a case-by-case basis.

Existing CEMS/CERMS/COMS that are subject to these requirements, installed prior to the current revision date of this document and operating the system under an AQCD-approved QA Plan, may not be fully compliant with all of the requirements in this document. When these existing CEMS/CERMS/COMS are redesigned and/or replaced, the AQCD will expect full compliance with this document and determine the applicability of these CEMS requirements on a case-by-case.

1.2 Definitions

As-found: With regard to CEMS/CERMS/COMS response during an audit, calibration or performance check. An "as-found" check is the current instrument/monitor output, prior to any unscheduled calibration adjustment or maintenance.

Audit: An as-found accuracy assessment of CEMS/CERMS/COMS components using an authoritative, certified standard. No unscheduled maintenance or adjustments are allowed prior to an audit.

Calibration: A performance assessment of CEMS/CERMS/COMS components using a certified working standard and subsequent adjustment to the known value of the standard, if necessary.

Calibration Error: The difference between the response of the pollutant, diluent, flow or opacity monitor to the known value of the appropriate reference gas, pressure, filter or signal.

Calibration Gas: (1) A NIST SRM or equivalent; (2) an EPA Protocol gas; (3) NIST -traceable Vendor-Certified gas with a +/- 2% accuracy tolerance or better; (4)zero air material that meets the definition in this Guideline

Channel: A monitoring/recording/reporting system specific to one parameter (i.e., pollutant concentration, mass emission or process emission rate, such as ppmv, lbs/hour or lbs/MMBtu) which must be monitored and reported to the AQCD to determine continuous compliance with a specific permitted limit. A Channel for a derived pollutant emission rates such as lbs/hour or lbs/MMBtu would include at least 2 "sub channels" (see definition) that are necessary for determining the calculated channel value.

Commencing Operation: Pertaining to Source operation:[Requires notification from an appropriate facility representative] The point when the monitored emission source is in service for the first time and has begun routine operation for which it was permitted for (follows source installation and testing phase). This may be defined in the permit.

Continuous Emission Monitoring System (CEMS): The total equipment required to sample, condition, analyze and provide a permanent computer record of pollutant concentrations and/or

emission rates in units of the standard. This includes the equipment necessary to perform the required routine calibrations and audits.

Continuous Emission Rate Monitoring System (CERMS): The total equipment required to sample, condition, analyze and provide a permanent computer record of pollutant mass emission rates in units of the standard (mass per unit time). This includes the equipment necessary to perform the required routine calibrations and audits.

Continuous Opacity Monitoring System (COMS): The total equipment required to measure, properly reduce the data relative to the standard and provide a permanent computer record of opacity values in the source emission outlet. This includes the equipment necessary to perform the required routine calibrations and audits.

Data Acquistion System (DAS): the electronic component of the CEMS, COMS or other monitoring system designed to interpret and convert individual output signals from pollutant concentration monitors, flow monitors, diluent gas monitors, opacity monitors and other components of the monitoring system to produce a permanent continuous record of the measured and derived parameters in the units required by the AQCD.

Data Capture: the ratio of the amount of valid CEMS/COMS data collected relative to the amount of source operation during a particular reporting period.

Dry Extractive: A CEMS/CERMS that is designed to remove a sample from the exhaust gas, transport it through heated lines to a SCU where it is conditioned to remove moisture and particulate prior to delivery to a sample manifold for the pollutant and diluent monitors.

Equivalent Diameter: For non-circular emission outlets (stack or duct), the equivalent diameter D_e is equal to (2LW)/(L+W), where L is the length and W is the width of the non-circular outlet.

Excess Emission: For CEMS; it is an exceedance of the applicable emission limit as indicated by valid measurement of the CEMS channel and reported using the appropriate significant digits, units and averaging period that directly corresponds to the applicable emission limit.

Facility: Any applicable stationary air contaminant emission source (institutional, commercial, industrial structure, installation, plant, source or building) required by the AQCD to operate a CEMS/CERMS/COMS.

Facility Source Operating Hour: A minimum of 45 minutes of the facility's pollutant source operation during a calendar hour. This may be modified by the AQCD on a case-by-case basis for facilities with non-continuous (or batch mode) operations.

Facility (source) Operation: Steam Generating Units/Combustion Turbines- any time period during which fuel is combusted in the source. Process manufacturers- any time period during which any material is being processed through the manufacturing unit which contributes to emissions monitored by the CEMS. Incinerators- any time period during which fuel and/or waste is combusted in the permitted source.

Flow Monitor: a component of the CEMS/CERMS that senses the volumetric flow rate of the source's exhaust gas and generates an output proportional to flow rate.

Flow-to-Load Ratio: the Ratio of the measured volumetric flow rate divided by the corresponding measured operating load of the facility's source or process. For purposes of this Guideline, it is used as a quarterly QA assessment to qualify the volumetric flow data.

Full-Scale Range: The absolute calibrated maximum value (or range setting) of a pollutant monitor's measurement ability that may equal or exceed the span value. In certain applications a full-scale range value may be greater than the span value to allow the facility to properly account for all emissions including occasional spike values that may exceed the span value. This is especially true for CO monitors in most applications.

Hands-off: With regard to CEMS/CERMS/COMS response during an audit, calibration or performance check. An "hands-off" check is similar in meaning to "as-found" and refers to the prohibition of any physical or electronic instrument/monitor adjustment prior to or during an audit, calibration or performance assessment.

Insitu: CEMS/COMS design that measures source-level gas emissions directly inside a stack or duct at actual conditions. For pollutant or combustion gas measurements, the source emission gas is not conditioned, so it is considered a "Wet" measurement and recorded pollutant concentrations by volume include the volume contributed by the amount of water vapor present.

Malfunction: any sudden ,infrequent, and not reasonably preventable failure of any part of the CEMS/CERMS/COMS that causes the equipment to function outside established design and/or performance specifications, control limits or to otherwise operate in an abnormal or unusual manner. Failures that are caused in part by poor maintenance or careless operations are not considered malfunctions.

Monitor Downtime: Time periods of source operation in which invalid CEMS/CERMS/COMS data or no data is collected due to any appropriate reason. This includes periods of documented QA activities, calibration, preventive maintenance, unexpected malfunction, audits which result in periods of invalid data and "out of control" periods.

One-hour period: any 60 minute period commencing and ending on the clock hour.

Operational Test Period: a minimum specified period of time over which a measurement system is expected to operate within performance specifications without unscheduled maintenance, repair, or adjustment.

Opacity Excess Emission: for COMS; it is an exceedance of any of the following APCRs as indicated by valid measurement of the COMs reduced following EPA's Proposed Federal Reference Method F-1 (*51 Federal Register, page 31076, August 29, 1986*) and reported to the whole %:

- An aggregate of more than six minutes (based on 1-minute averages made up of at least five 10 second readings) greater than **20%** Opacity in any clock hour is an excess emission (facilities built after 4/30/70).

- An aggregate of more than six minutes (based on 10-second readings or 1-minute averages) greater than **40%** Opacity in any clock hour is an excess emission (facilities built before 4/30/70).
- Any rolling 2-minute average (based on twelve consecutive 10-second readings or two consecutive 1-minute averages) greater than **60%** Opacity. As indicated in Proposed Method F-1, no two excess emission incidents (of the instantaneous standard) may overlap. Consequently, consecutive 1 minute (back-to-back) exceedances of the instantaneous standard are not considered separate violations and should not be reported due to overlap of 2-minute rolling average. Each 2-minute rolling average exceedance should be seperated by one minute.
- Exceptions for **wood fuel burning** facilities: During normal startup and sootblowing operations the 20%, 40%, and 60% standards identified above are modified as follows:
    - During normal startup operations , an aggregate of more than one hour (using 1-minute averages) of visible emissions greater than **20%** or **40%** Opacity (as applicable) is an excess emission.
    - During normal soot blowing operations an aggregate of more than 30 minutes (using 1-minute averages) during any 24 hour period of visible emissions greater than **20%** or **40%** Opacity (as applicable) is an excess emission.
    - The **60%** limit does not apply. During periods of either normal startup or sootblowing operations, any rolling 2-minute average (using 1-minute averages) of visible emissions greater than **80%** opacity is an excess emission.

Out-of-Control Period: Any period when the CEMS/CERMS channel or subchannel or COMS is operating outside specifications and criteria for daily calibration and quarterly QA procedures identified in this Guideline and/or specified in the source's approved QA Plan. Any CEMS or COMS channel or sub-channel identified as "out-of-control" will not be considered "in-control" until test data demonstrates system performance meets the criteria for which the system was originally considered out-of-control. For example: if the out-of-control designation is due to a failed RATA test, a RATA test will have to be repeated and passed before the CEMS channel would be considered to be collecting valid data.

Protocol gas (EPA): A calibration gas that has been prepared and certified by the vendor according to the EPA Protocol "*EPA Traceability Protocol of Assay and Certification of Gaseous Calibration Standards", September 1997, EPA-600/R-97/12* or such revised procedures as approved by the AQCD. The calibration gas must have a vendor-documented certification accuracy tolerance of +/- 2 % or better. The Vendor must supply a certification which must be retained by the Source and provided with the Quarterly Report for each quarter it is utilized.

Reference Method: any emission test method identified in this Requirement and specified in *40 CFR Part 60 Appendix A.*

Sample Interface: That portion of the CEMS used for one or more of the following: sample acquisition, sample transport, sample conditioning, or protection of the monitor from effects of the stack gas.

SCU (sample conditioning unit)*:* That portion of dry extractive CEMS/CERMS sample interface design that is used to condition the emission gas by removing moisture and particulate.

Source Shutdown: The cessation of operation of an emission source for any purpose.

Span Value: a design value that represents an estimate of the highest expected value for a parameter, based on the applicable emission limit. This value is used to establish appropriate daily quality control limits, CD and Audit gas input levels. If not defined in the applicable Federal NSPS or Permit, it is less than or equal to 2 times the pollutant concentration equivalent to the emission standard.

Source Startup: The setting in operation of an emission source for any purpose. The particular length of startup period may be source specific and may be specified in the source's AQCD permit or Order.

Standard Conditions (EPA): A temperature of 20^{o}C (68^{o}F) and a atmospheric pressure of 760 mmHg (29.92 inHg)

Sub Channel: A monitoring/recording/reporting system specific to one parameter that is necessary to determine a pollutant concentration, emission limit or mass emission rate, such as ppmv, lb/hour or lb/MMBtu. The Channel system includes the path for the data record, starting at the monitor and finishing at the DAS. A Channel for derived pollutant emission rates such as lb/hour or lb/MMBtu would include at least 2 "sub channels" (see definition) that are required for the final calculated value.

Valid Data: any representative data average that meets the validation criteria established in this document and/or identified in the facility's Quality Assurance Plan.

Zero Air Material: a "zero-grade" or equivalent calibration gas or ambient air purifying system certified by the vendor to contain not more than 0.1 ppm of pollutant gases being monitored by the CEMS; and 400 ppm of CO_2; and does not contain concentrations of other gases that interfere with instrument readings.

1.3 General Program Requirements

1.3.1 Federal and State monitoring requirements may be applicable whether or not Performance Specification (PS) (*40 CFR Part 60 Appendix B*) exists for a particular monitoring system or pollutant. Where a *40 CFR Part 60* Performance Specification has <u>not</u> been promulgated, performance specifications in this Requirement will apply.

1.3.2 Once a permit or order is issued by the AQCD or other authority requiring CEMS/CERMS/COMS, the source must submit a CEMS/CERMS/COMS Monitoring Plan for review and approval. At a minimum, the CEMS/CERMS/COMS Monitoring Plan must meet the requirements identified in Section 2 of this Guideline. The CEMS/CERMS/COMS Monitoring Plan must be submitted prior to equipment installation, preferably before purchase. For new sources, the CEMS/CERMS/COMS Monitoring Plan must be submitted no later than source

startup. For existing sources the CEMS/CERMS/COMS Monitoring Plan must be submitted no later than 90 days after the issuance of the permit requiring the CEMS/CERMS/COMS.

1.3.3 The AQCD's approval of the CEMS/CERMS/COMS Monitoring Plan in itself does not guarantee acceptability of the system. System acceptability is ultimately determined by successfully meeting all the performance testing requirements identified in this Guideline. **The AQCD highly recommends that equipment purchases be conditional on acceptable performance test results and that factors other than initial price be considered in purchasing equipment.** Equipment price differences may be insignificant relative to operating, qualifying, modification or even replacement costs.

1.3.4 The source must insure that the CEMS/CERMS/COMS is installed, operational and certified by the date of the initial source compliance test. For facilities that do not require a Source Compliance Test, the CEMS/CERMS/COMS must be installed, operational and certified no later than 180 days after the date that the permit was issued that requires the monitoring system.

1.3.5 Pollutant and diluent gas monitors used in CEMS/CERMS must comply with Appendix F of *40 CFR Part 60*.

1.3.6 COMS must comply with EPA's proposed amendments to *40 CFR Part 60 Appendix F, Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003).* A copy of this document is contained in Appendix D of this document.

1.3.7 The AQCD may inspect, system and/or accuracy audit the CEMS and CEMS data at any time, with or without prior notice.

1.3.8 It is the facility's responsibility to ensure their applicable staff are properly trained to meet their respective CEMS/CERMS/COMS-related duties.

1.3.9 The AQCD must be notified within 30 days of all personnel changes pertinent to the CEMS/CERMS/COMS program.

1.3.10 Volumetric flow rate monitoring (scfh) is the preferred method for facilities that are required to report pollutant mass emission rate (lb/hr) averages. Sources that choose alternative methods must demonstrate to the AQCD's satisfaction that the alternative method is equivalent to the specifications for volumetric flow rate monitoring.

1.3.11 If a conflict exists between a Federal CEMS/CERMS/COMS requirement and this document, the specification in this document shall prevail, unless determined otherwise by the AQCD.

1.3.12 A source may submit a written request for a temporary or permanent waiver (with justification) from any specification or requirement contained in this document.

2.0 CEMS/CERMS/COMS Monitoring Plan

Applicable sources shall submit one copy of the CEMS/CERMS/COMS Monitoring Plan to the AQCD. The CEMS/CERMS/COMS Monitoring Plan shall include the necessary information to identify how the facility proposes to meet their CEMS/CERMS/COMS regulatory requirements.

The CEMS/CERMS/COMS Monitoring Plan shall be submitted for approval **prior to CEMS/CERMS/COMS equipment installation** preferably before purchase or as otherwise required by these Requirements, Permit, order or regulation. The AQCD review and approval process may include an inspection of the proposed monitoring location(s). The Monitoring Plan shall contain the following information at a minimum:

2.1 General Information

In this section provide the following:
-a general description of the source or process including fuel, capacities, operating mode
-description of the air pollution control equipment
-facility CEMS contacts and their responsibilities
-all factors which may affect the operation or maintenance of the CEMS/CERMS/COMS
-specific monitoring requirements in the AQCD Air Permit, order or regulation.
-proposed milestone dates and time line for facility construction, CEMS/CERMS/COMS procurement, installation, testing, certification and source testing.
-Provide a detailed description of all parameters to be monitored and their expected normal and maximum values to be measured. This includes pollutant, diluent, volumetric flow, opacity and any other process parameters necessary to determine emission averages and comply with the permit reporting requirements.

2.2 CEMS/CERMS/COMS Equipment Design and Installation Description

This section of the CEMS/COMS Monitoring Plan shall describe the *proposed* sampling, analytical and data handling equipment. The following details should be included in the equipment description.

2.2.1 Provide a technical drawing showing the proposed measurement location of the CEMS/CERMS/COMS. The scaled drawing should identify the exhaust gas flow paths, process components, pollution control equipment and the location of the CEMS/CERMS/COMS components including the instrument location and sample extraction/conditioning points. Detailed drawings of the CEMS/CERMS/COMS sample probe location relative to duct work, flue wall, distances to pertinant upstream and downstream flow disturbances, bends and emission point. For COMS , provide the actual measured path lengths for the monitor measurement location and stack exit point. Include any test data and an explanation as to the basis for the location selection. Provide an explanation for any deviations from location criteria in this Guideline or the applicable Performance Specifications in *40 CFR Part 60 Appendix B.*

2.2.2 Provide CEMS/CERMS/COMS design information including the proposed equipment

manufacturer(s), model number, measurement design principle, total number of devices to be used. Devices must be identified as primary (device normally used) or backup (if applicable; additional device that is operated, certified and maintained identical to the primary and used when primary data not available).

2.2.3 Provide information on the proposed manufacturer's stated performance specifications of each proposed instrument/measurement device in relation to the requirements in this document and *40 CFR 60 Appendix B, Performance Specification 1-6*, as applicable. This includes:
-Path length correction or stack taper ratio (COMS only)
-Dirty window compensation strategy (COMS only)
-Relative Accuracy (% of RM)
-Linearity (%)
-Calibration error (%)
-24-hour Zero and Span calibration drift specification and procedures(% of span value)
-Sample frequency/system response time (seconds)
-Minimum detectable limit (ppm or %)
-Full scale range (ppm or %)
-Span Value (ppm or %)

2.2.4 It is recommended that the facility submit one copy of the manufacturer's operation and maintenance manuals to the AQCD, as soon as they become available.

2.3 CEMS/CERMS/COMS Calibration, Performance and Certification Testing

This section of the CEMS/COMS Monitoring Plan should address all proposed calibration techniques and certification requirements necessary to meet this Requirement and any additional certification required by a permit, order or regulation. Provide details in the following areas.

-certification procedures and their proposed completion schedule
-performance specification verification procedure (COMS).
-calibration techniques/frequency for all channels (include calibration standard input levels).
-certification of calibration and audit standards.
-operational test period (CEMS/CERMS/COMS).
-back purge, leak check procedures and frequency (volumetric flow only).

2.4 Data Acquisition and Handling

Provide information on the proposed DAS. This should include:
-methods and equipment to be used (software, hardware, peripheral)
-frequency of data acquisition
-resolution and accuracy
-data storage and backup procedures (frequency)
-data reduction techniques (include formulas)
-reporting (if available, proposed example reports or report format)

3.0 Quality Assurance and QA Plan Requirements

The purpose of this section is to assist sources with ongoing quality assurance requirements.
A written CEMS/CERMS/COMS Quality Assurance (QA) Plan is imperative for long term acceptable operation of an emission monitoring program and ensuring acceptable compliance data quality. Quality Assurance consists of two distinct and equally important functions: 1.) The assessment of the quality of the monitoring data; and 2.) The control and improvement of the CEMS data quality through implementation of quality control policies, procedures and corrective actions. These two functions form a control-feedback loop. **When the assessment function indicates that the data quality is below acceptable limits, the control effort must be increased until the data quality is acceptable once again.**

All sources must develop, implement and maintain a site-specific QA Plan which consists of SOPs, specifications, QA/QC, maintenance and documentation necessary to provide emissions data of acceptable quality to meet applicable requirements and minimize data loss due to malfunctions and out-of-control conditions. The QA Plan must be submitted for review and approval and must satisfactorily document operations pursuant to State and Federal Requirements and the specifications in this document. Recommended guidance on preparing the QA Plan is contained in Appendix A of this Requirement. The format and content of the QA Plan should follow what is identified in Section 3.2 and Appendix A of this Document.

3.1 Interim CEMS/CERMS/COMS QA Plan

For new facilities, an **Interim QA Plan** must be submitted to the AQCD describing the QA procedures to be used during the initial operational and certification testing of the CEMS/CERMS/COMS. The **Interim QA Plan** should include at a minimum, a *draft* of each of the following sections for all the CEMS/CERMS/COMS measured components:
-Calibration
-Daily Calibration Drift
-Quarterly Audits
-Data Handling
-Preventative Maintenance
-Corrective Action
-Reporting (example Quarterly report content and format)

3.1.1 The **Interim QA Plan** should be submitted as soon as possible after CEMS/COMS Monitoring Plan (see Section 2) is approved **but must be submitted no later than the time the source commences operation or the initial compliance test, which ever comes first.** The facility should submit the Interim QA Plan with adequate time to allow the AQCD to review and approve the draft sections prior to collection of valid emissions data for compliance purposes.

It is understood that QA issues are a function of operating experience with a new CEMS/CERMS/COMS. Therefore, it is expected that the Interim QA Plan will be quickly updated and modified as both the facility CEMS/CERMS/COMS staff and the AQCD develop a greater understanding of the system.

3.2 QA Plan

The QA Plan must be acceptable to and approved by the AQCD. A complete version of the QA Plan must be submitted to the AQCD for review **within 180 days from the time the source commences operations or successfully completes the compliance testing (which ever comes first)**. It is expected that a majority (if not all) of the approved CEMS/COMS Monitoring Plan and the Interim QA Plan will be incorporated into the proposed final QA Plan. At a minimum the following sections shall be included in the QA Plan:

A.) Document Control:

1.)Indicate how the QA Plan document will be identified with respect to section number, revision number, date, page (i.e header) etc..,

2.)who is responsible for maintaining the QA Plan,

3.)how changes will be proposed, identified and documented.

B.) Facility Description: Include a detailed description of:

1.)the facility

2.) process/source emissions and emissions limits

3.)emission control equipment,

4.)emission monitoring requirements.

C.) CEMS/CERMS/COMS Description: Include a description of:

1.) all CEMS/CERMS/COMS equipment with respective make, model and serial #. This should include the sample extraction and measurement methods, sample conditioning, parametric and peripheral measurements for the determination of relevant emissions values (e.g. fuel meters used for heat input determination).

2.)Provide the exact sampling and monitor location(s) with distances to pertinent upstream and downstream flow elements.

3.) Include drawings from the CEMS/COMS Monitoring Plan.

D.)Data Acquisition/Handling:

1.) Describe all the equipment used to acquire, record and store CEMS/CERMS/COMS data.

2.) Indicate how raw data is handled from the point of collection through summary and reporting .

E.)Project Organization/Responsibility:

1.) indicate all CEMS/CERMS/COMS-related staff and their respective responsibilities

F.)Training:

1.) Indicate how CEMS/CERMS/COMS staff will be adequately trained to perform their responsibilities

2.) Indicate who will be responsible for assessing and managing the training needs.

G.) Data Validation:

1.) Identify the validation criteria for all monitoring channels

2.) indicate how CEMS/CERMS/COMS data will be validated based on the criteria established in this Requirement.

H.) Quality Control checks:

1.) describe in detail all daily and other routine periodic checks performed to ensure system integrity. 2.) Include checklists and other related documentation.

I.) Documentation:

1.) Indicate the documentation requirements for the monitoring program

2.) Provide examples of all field data sheets used to document QC checks, calibrations, audits, preventive maintenance activities etc....

3.) Indicate how performance data will be verified for reporting purposes.

J.) Calibration:

1.) Describe calibration procedures for all measurement channels of the CEMS/CERMS/COMS, including method and frequency; levels of standard, record keeping, calibration equipment.

K.)Calibration Drift Determination (Daily) :

1.) Describe methods used to perform routine calibration drift determination for all channels of the monitoring system.

2.)Identify adjustment and out-of-control limits and how they were determined to comply with this Guideline.

3.) Identify if the CEMS/CERMS/COMS performs automatic calibration adjustments based on the results and relate to data validation procedures.

L.) Performance Audits:

1.) Describe audit frequency, method and equipment used for all audits.

M.) System Audits:

1.) Describe the audit frequency, methods (who will perform audit) and associated corrective actions.

N.) Calibration Standards and Traceability:

1.) Describe the certification procedures for all standards involved with auditing or calibrating any component of the CEMS/COMS

2.) Indicate how new standards are acceptance tested.

O.) CEMS/COMS Certification Procedures:

1.) Describe the procedures used to certify the CEMS/CERMS/COMS

P.) Preventive Maintenance:

1.) Describe procedures and tracking systems used to ensure proper maintenance of the CEMS/CERMS/COMS is performed routinely.

2.) Indicate procedures for ensuring the COMS is always optically aligned.

3.)Include any forms or computer program descriptions used to track maintenance items.

4.) Provide a list of spare parts, their location and how they are inventoried and maintained.

Q.)Corrective Action/ Instrument Repair and Replacement:

1.) Describe the procedures (and their action limits) taken to establish when a corrective action is necessary and the responsible individual performing them.

2.) Indicate the steps associated with a situation when an instrument must be repaired or removed and/or replaced.

3.)Include information on interim monitoring, source operation, notification, equipment re-certification, data handling/reporting.

R.) Reporting:

1.) Describe the format and content of all CEMS/CERMS/COMS reports, including the QER.

2.) Provide an example QER in an appendix to the QA Plan. Provide example DAS reports.

3.2.1 The AQCD may require QA Plan modifications at any time, upon written notification to the facility/source.

3.2.2 The source is responsible for and required to revise the QA Plan as necessary to document actual operations, maximize data quality and minimize data loss. At a minimum, the source shall review and update (if necessary) the QA Plan at least annually to comply with this Guideline.

3.2.2.1 The source shall submit a written report to the AQCD documenting the results of the annual review and any proposed changes to the QA Plan (if applicable) resulting from the review.

3.2.3 All QA Plan modifications/revisions are subject to AQCD review and approval and should be approved prior to their implementation (except in AQCD-approved emergency situations).

3.2.3.1 The source shall submit appropriate proposed QA Plan changes to the AQCD within 30 days prior to the modification of CEMS/CERMS/COMS design (i.e. probe location, analysis or sample method) or replacement of any main CEMS/CERMS/COMS components (i.e. analyzer, DAS, SCU, probe) existing components (refer to Section 3.9).

3.2.3.2 The AQCD will provide written comments to the Source on its review of any proposed QA Plan modifications/revisions. Sources that must implement the proposed changes prior to receiving written approval may contact the AQCD to request verbal pre-approval.

3.3 Data Validation

The following are the minimum criteria used to provide valid CEMS/CERMS/COMS data of known quality and minimize missing data and system downtime. Sources are encouraged to develop more stringent guidelines to ensure the highest data quality possible. **Data that does not meet the validation criteria in this Guideline is considered invalid for the purposes of determining compliance and can not be counted toward meeting the minimum data capture requirements. The CEMS/CERMS/COMS DAS must be able to record both valid and invalid data.** Invalid data collected during source operation must be flagged appropriately with a cause and comment and reported as required (see Section 6)

3.3.1 General CEMS/CERMS/COMS Data Validation Criteria

In addition to the out-of-control conditions identified in the following sections, CEMS/CERMS/COMS data collected *during source operation* must be considered **invalid** if any of the following conditions occur:
-The monitoring system is not operated in accordance with the manufacturer's specifications
-The monitoring system is not operated in accordance with the approved QA Plan
-The CEMS/CERMS is not operated in accordance with the applicable performance

specifications identified in this document or in accordance with *40 CFR Part 60.13, 40 CFR Part 60 Appendix B, PS 2-6, 40 CFR Part 60* Appendix F or *40 CFR Part 52.*
-The COMS is not operated in accordance with the applicable performance specifications identified in this manual or in accordance with *40 CFR Part 60.13, 40 CFR Part 60 Appendix B, PS 1* (Applicable revision, depending on installation date) or proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003* (see Appendix D of this document).
-The COMS cross-stack alignment is misaligned as defined in *40 CFR Part 60 Appendix B, PS 1*.
-Any portion of the monitoring system is inoperative
-critical monitor fault lamps are illuminated
-The emission sample being collected is not representative of actual emissions due to leak, probe maintenance, CGA, calibration drift check, malfunction, etc...
-The minimum amount of valid data for a representative data average is not obtained for a given averaging period (see Section 3.5.3 and 3.6.2.1 for averaging criteria)
-For CEMS/CERMs channels calculated from multiple sub channels, if any sub channel value is invalid for the corresponding data averaging period.

3.3.2 Calibration Drift Check

Calibration drift of all CEMS/CERMS/COMS components shall be determined daily. The daily calibration drift check results are compared to **adjustment** and **out-of-control** limits established according to Section 3.3.2.4 and Table 1 of this Requirement and used to verify acceptable system performance and data validity.

Important Note: Failure to meet the applicable drift limits will result in the system being considered **out-of-control** until corrective action is taken and a successful drift test is completed. Data recorded during an **out-of-control** period is considered **invalid** data and can not be used for calculating data averages for compliance purposes or counted toward quarterly data capture requirements.

3.3.2.1 CEMS/CERMS calibration drift checks are required to be performed automatically daily (every 24 hours) at two separate levels: a low-level (zero to 20 % of span value) and at a high-level value (between 50% and 100% of span value). [See section 4 for Span values.]

3.3.2.1.1 Zero (or low-level) and high-level calibration standards used for the daily Calibration Drift must meet the definition and specifications identified in this Guideline.

3.3.2.1.2 Prior to their use, newly-procured daily calibration gas standards shall be acceptance-tested by direct comparison to on-hand gas standards of equivalent concentration and known reliability. Results of this test shall be properly documented and retained by the source in a form suitable for

inspection and summarized in the quarterly report if requested.

3.3.2.2 COMS calibration drift checks must be performed automatically each day in accordance with *40 CFR Part 60.13* and proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003).* A copy of this document is contained in Appendix D of this document.

3.3.2.3 For CEMS/CERMS/COMS that perform an automatic DAS or instrument-level calibration adjustment (in conjunction with the daily calibration drift check), the amount of calibration drift must be determined and documented prior to any automatic adjustment.

3.3.2.4 Conditions which meet any of the following criteria for excessive calibration drift shall be considered to be **out-of-control** periods **(out-of-control=invalid data)**:

A. For CEMS/CERMS channels: When either the low-level or high-level daily calibration drift check result for any channel is greater than **two times (2X)** the calibration drift specification (see section 4 for calibration drift specifications) for 5 consecutive days. The out-of-control period begins at the time of the fifth consecutive daily calibration check is conducted and ends when that channel next successfully passes a calibration drift check.

B. For CEMS/CERMS channels: When either the low-level or high-level daily calibration drift check result for any channel is greater than **four times (4X)** the calibration drift specification (see section 4 for calibration drift specifications) for any one day check. The out-of-control period begins at the time corresponding to the previous successful daily check and ends at the time corresponding to the completion of a subsequent successful calibration drift check.

Note: Facilities are responsible to ensure that the CEMS/CERMS data accuracy is within applicable Relative Accuracy (RA) specifications at all times. To meet this requirement, facilities with expected normal source emission levels that are significantly less than 50% of the permit emission limit may have to evaluate their design control limits and establish separate low-level calibration drift specification/control limits (i.e. based on the alternative RA standard: 10% of the emission standard). For facilities with expected normal source emission levels greater than 50% of the permit emission, control limits established following this guideline should provide for CEMS data accuracy within RA specifications at all times.

C. For COMS: In accordance with proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003).* (see Appendix D); when either the low-level or high-level daily calibration drift error is **greater than 4%** (2X the calibration drift specification; see Section 4) for any one day check. The out-of-control period begins at the time corresponding to the previous successful daily check and ends at the time corresponding to the completion of a subsequent successful calibration drift check.

D. For CEMS/COMS: Failure to conduct a low-level or high-level calibration check for any calendar day. The out-of-control period begins at the end of successful daily calibration check for the day previous to the day that the audit was supposed to be conducted and ends when that channel next successfully passes a calibration drift check. The AQCD at its discretion, may waive this criteria on a case-by-case basis considering the following: a.) the reason for failing to conduct the daily audit; b.) the amount time the source operated without a daily calibration check; c.) source status; d.)the status of the CEMS/CERMS/COMS; e.) Modifications to the CEMS/CERMS/COMS during the period without a calibration check; f.) The calibration drift check results for the day before and the day after the period without a calibration drift check(s).

3.3.2.5 To bracket data quality, low and high-level calibration drift checks should be conducted immediately prior to significant maintenance that has the potential to affect the calibration and/or data quality. The routine daily calibration check is acceptable.

3.3.2.6 Low and high-level Calibration Drift checks must be conducted immediately following any significant maintenance that has the potential to affect the calibration and/or data quality.

3.3.3 Quarterly Performance Audits

3.3.3.1 Performance audits shall be performed on all CEMS/CERMS/COMS **each calendar quarter** according to Section 5.2 of this Guideline.

3.3.3.2 Conditions which meet any of the following criteria for excessive quarterly performance audit inaccuracy shall be considered to be **out-of-control** periods **(out-of-control=invalid data)**:

3.3.3.2.1 For CEMS/CERMS: any failure to meet the applicable CGA limits identified in *40 CFR Part 60, Appendix F* and Table 1 of this Requirement. The out-of-control period begins at the time of the failed audit and ends at the conclusion of a successful audit of the same type.

3.3.3.2.2 For COMS: any failure to meet the Performance Audit error limits (Quarterly Audit) identified in *40 CFR Part 60, Appendix B, PS-1* and Table 1 of this Requirement. The out-of-control period begins at the time of the failed audit and ends at the conclusion of a successful audit of the same type.

3.3.3.2.3 Failure to conduct the required quarterly audit in any calendar quarter. The out-of-control period begins at the end of the calendar quarter that the audit was supposed to be conducted in and ends at the conclusion of a successful audit of the same type. During the next calendar quarter, the regularly scheduled audit may have to be performed in addition to the makeup audit to ensure that the requirements in Section 5.3.2 are satisfied.

3.3.4 The AQCD, at its discretion, shall make the final data validity determination based on information available to the AQCD including, but not limited to, reported information, system and performance audits, performance records, published instrument performance evaluations, manufacturer's literature, QA Plan.

3.4 Calibration Adjustment

3.4.1 CEMS/CERMS

3.4.1.1 The calibration of any CEMS\CERMS channel may only be adjusted relative to the certified value of a calibration standard input which meets the requirements in this Document. The calibration may not be adjusted in any way to RM test results unless specifically required by and/or approved by the AQCD.

3.4.1.2 Corrective action, in response to observed calibration drift, can include DAS-level and/or instrument-level calibration adjustments following manufacturer's recommended procedures.

3.4.1.3 The calibration of any CEMS/CERMS channel must be adjusted as soon as practicable following any daily calibration drift check result that is greater than **two times (2X)** the calibration drift specification. Any variances from this specification must be clearly identified and approved in QA Plan.

3.4.1.4 Any manual or automatic adjustment (and its magnitude) shall be properly documented.

3.4.2 COMS

3.4.2.1 The COMS calibration (DAS and/or monitor) must be adjusted following manufacturer's procedures and relative to the calibration standard(s) provided by the manufacturer.

3.4.2.2 In accordance with *40 CFR Part 60.13* and proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003)*the COMS calibration shall be adjusted or corrective action taken (such as window cleaning etc…) as soon as practicable whenever the low or high-level daily calibration drift check result exceeds the *40 CFR Part 60, Appendix B, PS-1* calibration drift limit of +/- **2% opacity**.

3.4.2.3 Any manual or automatic COMS adjustment (and its magnitude) shall be properly documented.

3.5 CEMS/CERMS Data Reduction and Averaging

3.5.1 CEMS/CERMS data must be reduced, recorded and reported relative to the significant digits, units and the time period identified in the applicable condition in the AQCD Air Permit. CEMS/CERMS channels that require F-factors will use applicable values published in *40 CFR Part 60, Appendix A, Method 19* or other appropriately derived values approved by the Agency.

3.5.2 All CEMS/CERMS data averages must be calculated using valid data only. Data collected during periods of calibration, maintenance, audits, out-of-control operation and malfunctions must be excluded from valid data averages.

3.5.3 For calculating required CEMS/CERMS average and rolling average periods greater than one hour, intermediate hourly averages which meet the criteria in this section must be determined, recorded and used to calculate the required averages.

3.5.4 For CEMS/CERMS, the minimum reportable averaging period is one hour. The recommended sub average period for determining one hour averages is one minute averages.

3.5.4.1 Alternatively, the AQCD may accept the determination of four 15-minute sub-average periods (using 1-minute averages) for determining 1-hour averages if the facility verifies that the DAS was pre-programmed by the vendor to reduce hourly data in this fashion.

3.5.3 Valid CEMS/CERMS average and sub-averages must contain valid data for at least 75% of the applicable time period ("75% rule"). The following are the minimum specifications for valid averages for different averaging time periods:

3.5.3.1 A valid 1-minute average must contain valid data readings representing any 45 seconds over the previous 1-minute period.

3.5.3.2 A valid 15-minute average must contain valid 1-minute averages for any 12 minutes over the previous 15-minute period.

3.5.3.3 A valid 1-hour average must contain either valid 1-minute averages for any 45 minutes over the previous 1-hour period or any three (3) valid 15-minute averages over the previous 1-hour period.

3.5.3.4 A valid 8-hour average (including rolling averages) must contain valid 1-hour averages for any 6 hours over the previous 8-hour period.

3.5.3.5 A valid 24-hour average (including rolling averages) must contain valid 1-hour averages for any 18 hours over the previous 24-hour period.

NOTE: See **Appendix C** for CEMS/CERMS data handling examples for 8-hour and 24-hour rolling averages.

3.6 COMS Data Reduction and Averaging

3.6.1 Vermont opacity limits are of the time exception and instantaneous type described in proposed Method F-1, (*51 Federal Register 31075; August 29, 1986*). Opacity data must be recorded with a resolution of at least 0.5% at least every 10 seconds and be reduced per Method F-1 referenced above.

NOTE: Normal use of Method F-1 utilizes a 15 second sampling frequency for human observers. The F-1 procedure must be modified to use the required minimum 10-second sampling frequency for the COMS. See the definition of "opacity excess emission" in section 1.2 of this Requirement for clarification of opacity data reduction and excess emission determination.

3.6.2 The COMS DAS shall be configured to automatically determine whether each opacity measurement (minimum10-second frequency) is above the applicable standard and maintain a count and the average of these readings during each 1-hour clock period. Nevertheless, calculation of 1-minute average opacity values from the six (6) 10-second readings during each minute is allowed for determining compliance with Vermont Visible Air Contaminant Standard (APCR §5-211).

3.6.2.1 A COMS 1-minute data average shall be considered valid if at least five of six valid 10-second readings (or 50 of 60 1-second readings) are obtained (83% data capture) for the specific clock minute.

3.6.3 Calculation of 2-minute rolling averages using the 1-minute average opacity values determined in 3.6.2 above is required when determining compliance with the **Instantaneous** Vermont VE standard only.

3.7 Data Capture

3.7.1 CEMS/CERMS

3.7.2.1 CEMS/CERMS downtime must be minimized whenever possible. Nevertheless, Sources are required to collect and record valid CEMS/CERMS data for **a minimum of 90%** of the source operating time during each calendar quarter [reporting period].

3.7.2.1.1 Valid data capture is determined on a calendar-quarter basis, with the results reported in the QER.

3.7.2.2 CEMS/CERMS valid data capture shall be calculated for each pollutant concentration, emission rate, process rate channel used for continuous compliance reporting purposes.

3.7.2.2.1. At the AQCD's discretion, the source may be required to calculate and report data capture for any CEMS sub channels used to determine and report values

for channels identified in 3.7.2.2.

3.7.2.3 CEMS/CERMS data capture must be determined relative to 1-hour time blocks. This also applies to sources with rolling average reporting requirements. Each clock hour of source operation the source is required to provide a separate valid 1hour, 8-hour or 24-hour rolling average value. Consequently the total amount of valid data that the source is responsible to obtain is equal to the total # of hours the source operated in the calendar quarter.* (Adjusted for source startup; see note below)

* **Note On Rolling Averages:** Source operating time must be **adjusted** to determine the "total number of possible rolling average periods to be collected". This adjustment involves reducing the total source operating hours by the first "x"-number of hours after **each** startup, *where x equals the number of inherent"unavailable" hours leading up to the first rolling average period (i.e. **7 inherent "unavailable " hours for the first 8-hour rolling average**).* It is important to note that during this inherent "unavailable" period, valid 1-hour averages are actually being recorded by the DAS for subsequent determination of the 1st 8-hour rolling average.
ADJUSTED SOURCE OPERATING TIME=Source Operating Time - [the number of inherent "unavailable" hours in Rolling average requirement per startup event (X) the number source startup events that occurred during the calendar quarter].

Example: Source "A" is required to report 8-hour rolling averages and operated 2200 hours in a certain calendar quarter and reported 25 startup events. The "total number of possible 8-hour rolling average periods to be collected" (represents 100% possible data capture) would be equal to: 2200 total operating hrs - (25 Startup events x 7 rolling avg hrs"unavailable"per startup event)= 2025 hours (total# of possible 8-hour avgs. to be collected during the Calendar Quarter).

Valid data capture is determined using the following formula:

$$\textbf{Data Capture (\%)} = \frac{\text{Source Operating Time - Total CEMS Downtime}}{\text{Source Operating Time}} \times 100$$

Where: Source Operating Time= Total number of clock hours of source was combusting fuel or process was operating for any reason at any level (includes source startup, shutdown, maintenance and uncontrolled malfunction). **NOTE**: **For rolling averages, this value requires adjustment for any startup events during the calendar quarter as explained in text box on the previous page.**

Total CEMS Downtime= Total number of clock hours *during periods of source operation* in which **invalid** CEMS data or **no** CEMS data is collected due to any reason. This includes periods of out-of-control operation, periods of QA activities, such as calibration, audits, preventive

maintenance and periods of uncontrollable malfunction.

3.7.3 COMS

COMS downtime must be minimized whenever possible. Nevertheless, Sources are required to collect valid COMS data for a minimum of 90% of the source operating time during each calendar quarter. Valid data capture shall be maintained in accordance with the following specifications

3.7.3.1 COMS data capture shall be calculated on a quarterly basis and the results of the calculation included with the Quarterly Report.

3.7.3.2 COMS data capture must be determined relative to 1-minute averages. Each clock minute of source operation the source is required to provide a separate valid 1 minute average value. Consequently the total amount of valid data that the source is responsible to obtain is equal to the total # of minutes the source operated in the calendar quarter. Actual data capture is determined using the following formula:

$$\textbf{Data Capture (\%)} = \frac{\text{Source Operating Time - Total COMS Downtime}}{\text{Source Operating Time}} \times 100$$

Where: Source Operating Time= Total number of minutes the source was combusting fuel or process was operating at any level.

Total CEMS Downtime= Total number of minutes *during periods of source operation* (as defined in this Guideline) in which **invalid** COMS data or **no** COMS data is collected due to any reason. This includes periods of out-of-control operation, periods of QA activities, such as calibration, audits, preventive maintenance and periods of uncontrolled malfunction.

3.7.4 If the minimum data capture requirements can not be met for one calendar quarter the source shall submit a written proposal within 30 days of the end of the quarter which identifies appropriate and immediate corrective actions to remedy the situation. Should a source not meet the data capture requirements for two consecutive calendar quarters, the source may be required, at the AQCD's discretion, to consider procedural and/or equipment modifications (design change or replacement) to remedy the situation.

3.7.4.1 The AQCD acknowledges that in some instances, data capture requirements may not be met if a facility's corrective action includes system component replacement and re-certification (due to the inherent time period associated with these activities: see Section 3.9). In such situations, on a case-by-case basis, the AQCD will use its discretion in applying the data capture requirements based on the specific circumstances and the facility's level of effort in completing the corrective action.

3.7.4.1.1 Facilities may be required to propose and perform appropriate interim monitoring (parametric or reference method or equivalent) to qualify emissions quality during the period of system downtime associated with the replacement/re-certification.

3.8 System Audit

3.8.1 CEMS/CERMS/COMS may be inspected and system audited periodically by the AQCD. The source shall be responsible for providing access to all components of the system for inspection and access to the QA Plan and other stored CEMS/CERMS/COMS-related information. This includes information and documentation the Source is responsible to retain such as historical valid data averages, calibration results, daily drift results, performance audit results, maintenance logs, standards certifications, spare parts inventory, QERs.

3.8.2 System Audits conducted by the AQCD will consist of at least the following components:
-A review of the QA Plan
-A review of any historical records as indicated in 3.8.1
-An inspection of the CEMS/CERMS/COMS and peripheral equipment such as probe, SCU and Calibration cylinders
-Observe a dynamic low and high-level manual calibration drift check.

3.8.3 The AQCD will provide at least two weeks notice prior to conducting the systems audit.

3.8.4 The AQCD will provide a written summary report to the Source with observations and recommended corrective actions within 30 days after the completion of the audit. At the AQCD's discretion, the source will be provided a reasonable time to complete the corrective actions based on their effect on data capture and the level of difficulty in their completion.

3.8.5 Sources are encouraged to include an independent, internal system audit component in their CEMS QA Program. It is recommended that the system audit be conducted as part of the required annual QA Plan review which is identified in Section 2 of this Document. It should be conducted by an individual that is independent of the routine operation of the CEMS/CERMS/COMS

3.9 CEMS/CERMS/COMS Equipment Modification, Repair and Replacement

The AQCD should be contacted regarding any proposed major modification to the CEMS/CERMS/COMS design (i.e. probe location, analysis or sample method) or repair/replacement of any main CEMS/CERMS/COMS components (i.e. analyzer, DAS, SCU, probe). If modification or replacement is a pre-planned event, a conceptual proposal (or appropriate QA Plan modification) shall be submitted to the AQCD. If the repair, modification and/or replacement to existing equipment is part of a necessary corrective action, the AQCD should be contacted as soon as possible. The AQCD will determine on a case-by-case basis, the acceptability of any modification, repair and/or replacement of existing CEMS/CERMS/COMS equipment and any necessary re-certification requirements.

3.9.1 The QA Plan should specify as clearly and thoroughly as possible when re-certification of a CEMS/CERMS/COMS would be necessary following a modification, repair or replacement of the monitor system components (or the monitor itself). It is understood that it is difficult to identify every expected situation.

3.9.1.1 The QA Plan must be modified (according to Section 3.2.2) to document any replacement or modification of existing CEMS/CERMS/COMS components.

3.9.2 The manufacturer's written instructions (or comparable reference) and the QA Plan should be used as guidance when taking corrective actions that require any repairs or replacement of existing certified monitoring system components.

3.9.3 Re-certification is necessary whenever the source makes a replacement, modification, or change in a certified CEMS/CERMS/COMS that has the potential to significantly affect the ability of the system to accurately measure or record the pollutant, diluent, volumetric flow rate, emission rate, opacity or meet the requirements of this document, including the ability to pass all certification tests. Some examples of changes that would trigger some type of re-certification are as follows: monitor replacement; relocation of sample probe; system redesign/replacement; COMS measurement relocation or change in monitor path length (this list is not all inclusive).

3.9.3.2 It is the source's responsibility to demonstrate that the repair, modification or replacement does not affect the ability of the CEMS/CERMS/COMS to pass certification tests.

3.9.3.1 If equipment changes resulting from repair and/or replacement are made to the existing CEMS/CERMS/COMS, which invalidate previous performance/certification test results, corresponding emission monitoring data could also be considered invalid and data capture could be affected. AQCD will make the final determination on data validity and data capture.

3.9.4 The source must ensure that any replacement components that contain specific constants or factors affecting the value of the output signal of the particular channel must use the identical values contained in the existing certified unit that was replaced (i.e. Volumetric Flow monitor signal output module).

3.9.5 Any time the COMS transceiver unit is removed from the stack or duct for any reason including bench testing, annual maintenance, repair, diagnostic work or component replacement, the source must follow the applicable audit procedures contained in *40 CFR Part 60, Appendix B, PS-1* and the EPA Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003)* (or equivalent procedure approved by the AQCD) after the unit is reinstalled on the stack or duct.

3.9.6 If the DAS hardware and/or software is replaced or modified (modification that has

potential to significantly affect data quality), the facility must demonstrate, to the AQCD's satisfaction, that the new/modified components are documented to be equivalent to the replaced components. This will involve at a minimum, verification that the modified DAS meets the requirements in 3.5, 3.6, 4.6 and 5.1.1.2.

4.0 Equipment Specifications

4.1 General System Requirements:

4.1.1 All CEMS/COMS/CERMS shall be installed according to the Manufacturer's recommendations and the applicable performance specifications in *40 CFR Part 60, Appendix B.*

4.1.2 The measurement location for the CEMS/CERMS/COMS must be safely accessible and provide opacity, pollutant concentration or emission rate measurements which are directly representative of the total emissions from the affected facility.

4.1.2.1 It is recommended that the CEMS/CERMS measurement location be at least 2 stack or duct diameters (or equivalent diameter for non-circular stack or duct) downstream from the nearest control device, the point of pollutant generation, or other point at which a pollutant or emission rate change may occur and at least one half of a stack or duct diameter (or equivalent diameter) upstream from the effluent exhaust.

4.1.2.2 It is recommended that the measurement point be no less than 1.0 meter from the stack or duct wall or within (or centrally located) over the centroidal area of the stack or duct cross section.

4.1.3 The CEMS shall complete a minimum of 1 cycle of operation, which shall include sampling, analysis and data recording, for each successive 1-minute period. Longer time periods shall be reviewed by the AQCD on a case-by-case basis considering written documentation from the source indicating why an alternative (longer) time is necessary and how it's equivalent to the requirements in this document.

4.1.4 Time shared CEMS systems do not meet the minimum data capture requirements of the CEM Requirements and are not acceptable for use.

4.1.4.1 Some insitu CEMS designs are not acceptable because they have the inability to:

-perform dynamic system level calibration drift checks using calibration gas (see Section 4.1.5 below)

-be properly calibrated within the first hour of source operation during source startup

-provide stable, calibrated response during all periods of source operation, especially startup, due to unstable operating temperatures inside the stack or duct environment (which are an integral part of insitu CEMS temperature control design for stable operation).

4.1.5 The CEMS/CERMS/COMS must be designed to be able to perform a system calibration check automatically every 24 hours on all components separately, while the source is operating. The system calibration drift determination must pass through all filters, scrubbers, conditioners and other monitoring components used during normal sampling and as much of the sample probe as is practical. For pollutant and diluent monitors, calibration gas must be used.

4.1.5.1 The System Calibration check must be performed daily at two levels: a low-level (zero to 20 % of span value) and at a high-level value (between 50% and 100% of span value).

4.1.5.2 It is recommended that daily high-level calibration concentration input be close to the equivalent level of the permit emission limit to qualify the data error at this level.

4.1.6 To the extent practicable or unless otherwise noted in this Guideline, the Full scale range value should be established such that a majority of the emission measurements obtained during normal operation are between 20% and 80% of the full-scale range of the instrument (refer to 4.2.3).

4.1.7 Measurement of pollutant, diluent and volumetric flow rate values must be on a consistent basis (wet or dry).

4.1.8 The CEMS/CERMS/COMS must be continuously operated at all times, collecting and recording valid data for all required parameters during all periods of source operation including periods of source startup, shutdown, malfunction or emergency conditions, except for periods of CEMS/CERMS/COMS QA activities, calibration, maintenance or uncontrolled malfunctions.

4.1.9 The CEMS/CERMS/COMS must be continuously operated and maintained following manufacturer's recommendations, this document and the facility QA Plan regardless of whether the source is operating or not. The CEMS must be operational, calibrated and "in control" prior to the start of the combustion source or process being monitored.

4.1.10 An adequate spare parts inventory based on the manufacturer's recommendations shall be maintained by the facility.

4.2 Pollutant Monitors

4.2.1 All CEMS with oxides of nitrogen (NO_x) and sulfur dioxide (SO_2) instruments must meet the specifications identified in *40 CFR Part 60, Appendix B, PS 2* and Table 1 of this Document.

4.2.2 All CEMS with carbon monoxide (CO) instruments must meet the specifications identified in *40 CFR Part 60, Appendix B, PS 4A* and Table 1 of this Document. Depending on the full scale range necessary, this may require the installation of either: A.) Two separate CO instruments, high and low range; B.) One dual range CO instrument or; C.) One CO instrument with an expanded dynamic range (and adequate linearity) to accurately measure the majority of expected CO concentrations during normal operations as well as maximum expected CO concentration spikes during upset conditions. This option will result in a full-scale value that may be significantly greater than the "design" span value and may not meet the recommendation in 4.1.6.

4.2.3 The "design" **span value** for all pollutant monitors subject to this document shall be equal to

two times(2X) the pollutant concentration value equivalent to the permit emission standard (to the nearest 10 ppm) for that pollutant. The **Fullscale range** shall be established in accordance with 4.1.6 and must be **equal to or greater than** the span value.

4.2.4 Pollutant CEMS that do not have established Federal performance specifications in *40 CFR Part 60, Appendix B* shall meet the following general specifications:

Calibration error (throughout range):	10% difference from the reference value at 3 different levels.
24 hour calibration drift (low and high-level):	2.5% of span value
Response Time:	1 minute
Relative Accuracy:	20% of Reference Method value or 10% of the applicable emission standard or 5 ppm absolute difference.
Span value:	2 (x) pollutant concentration value equivalent to emission standard.
Full scale value:	equal or greater than span value

4.3 Carbon dioxide (CO_2) and Oxygen (O_2) Diluent Monitors

4.3.1 All diluent instruments for CO_2 and O_2 monitoring must meet specifications identified in *40 CFR Part 60, Appendix B, PS 3* and Table 1 of this Document.

4.3.2 The **span value** and **full scale** value for any O_2 instrument is **25%O_2.** The **span value** and **full-scale** value for any CO_2 instrument is **20% CO_2.** The AQCD may consider alternative values than those specified here if they are representative of expected emission levels and the alternative is supported by an acceptable technical justification.

4.4 Volumetric Flow Rate Monitoring Devices

4.4.1 Volumetric Flow Rate Monitoring devices used for determining mass emission rates (i.e. lbs/hr) shall be installed following manufacturer's recommendations and in a location that is free from cyclonic flow and provides representative volumetric flow over all operating conditions and loads. The measurement location shall be one that provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative pollutant emission rate and is representative of the pollutant concentration monitoring location.

4.4.1.1 A flow profile study is recommended following *40 CFR Part 60, Appendix A, RM 1* for determining an appropriate flow measurement location.

4.4.2 Volumetric Flow Rate Monitoring devices shall meet the specifications in *40 CFR Part 60, Appendix B, Performance Specification 6, 40 CFR Part 52, Appendix E,* (Except for Section 5.1.2; see Appendix B of this Document), and Table 1 of this Document.

4.4.3 Differential pressure flow monitoring devices shall have an automatic blow-back purge

system and the ability (based on manufacturer's recommendations) to determine and indicate interference with the representative readings from obstructed or disconnected sensor lines. Differential pressure flow monitoring devices shall also have the ability to drain sensing lines in stacks with saturated effluents.

4.4.4 All volumetric flow rate monitoring devices shall have the ability to perform some type of daily on-line zero and high-level calibration check of all components that provide measurements to determine the final volumetric flow rate value.

4.4.4.1 For the differential pressure devices, the recommended method should include high-level pressure sensor check shall be a dynamic audit using a known, regulated pressure input at a level equivalent to >50% of the full scale value. The temperature monitoring components the recommended method shall include a check using simulated inputs per the manufacturer's recommended procedures.

4.4.5 All volumetric flow rate monitoring devices must be able to display instantaneous values of measurement sub-channels such as stack pressure and temperature and relevant constants used in the calculation including the assumed static pressure, stack gas molecular weight and moisture as well as the pitot tube coefficient.

4.5 COMS

4.5.1 The COMS must meet all the specifications identified in the applicable version of *40 CFR Part 60, Appendix B, PS 1* (PS1 version is based on the original installation date), EPA's proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003)*and Table 1 of this Document. NOTE: Table 1 criteria and the requirements identified in this document takes precedent where a conflict exists with EPA proposed Appendix F amendments identified above. A copy of proposed Appendix F Procedure 3 is contained in Appendix D of this document.

4.5.2 The COMS shall be installed: A.) according to applicable version (based on installation date) of *40 CFR Part 60, Appendix B, PS 1*; B.) at a location of well-mixed stack gas where condensed water vapor is not present.

4.5.2.1 It is recommended that the COMS measurement installation location shall be at least 4 stack or duct diameters (or equivalent diameter for non-circular stack or duct) downstream from all particulate control equipment, the point of pollutant generation, any flow disturbance or other point at which a particulate or emission rate change may occur and at least two stack or duct diameters (or equivalent diameter) upstream from any flow disturbance or effluent exhaust.

4.5.3 The COMS shall be equipped with an external, zeroing device for simulating or checking the cross-stack zero alignment, referred to as a "zero-jig".

4.5.4 The Span value and Full scale range for all COMS shall be **100% Opacity**.

4.5.5 Path length correction (stack exit correlation) in accordance with *40 CFR Part 60, Appendix B, PS1* will be required for COMS data at Sources where the COMS measurement pathlength is not identical to the stack exit pathlength. The value must be documented and be able to be verified within the DAS or COMS device.

4.6 Data Acquisition System

4.6.1 A computerized electronic data acquisition system is required for all CEMS/CERMS/COMS.

4.6.2 The DAS shall be designed to have the ability to:

-record, reduce and report CEMS/CERMS/COMS data relative to the significant digits, units and the time period identified in the applicable condition in the Air Permit.
-automatically determine an "excess emission" consistent with the previous sentence and other applicable criteria in this document.
-create a permanent electronic record of valid and invalid CEMS/CERMS/COMS average values, calibration, low and high-level calibration drift (including negative drift) and audit results.
-provide a continuous and instantaneous readout of CEMS/CERMS/COMS values (in appropriate units)
-determine and print user-selectable "time-specified" averages for all individual channels for certification and performance testing purposes.
-record values from the system monitors at a frequency that complies with this document
-automatically flag invalid data.
-automatically flag off-scale data and control daily zero/span calibration drift checks.

4.6.3 CEMS/CERMS data error must be minimized and should not be biased. Automatic DAS calibration adjustment, based on the daily Calibration Drift test results is allowed. The AQCD, at its discretion may require the use of bias adjustment factors in accordance with *40 CFR Part 75* to reduce significant negative bias in the Data.

4.6.4 CEMS/CERMS data should be recorded using the EPA convention of "00-23 hour" format based on Eastern Standard Time, throughout the year. In this format "hour 00" represents the clock time period midnight- 1 AM (0100 hours military time) and "hour 23" represents the clock time period 11 PM-12 midnight (2400 hours military time). In this format, hourly averages are identified by the *"hour beginning"* the period (i.e. CEMS data recorded for the clock period 8 AM- 9 AM would be identified as 0800 hours; for a rolling average reported for each clock hour, such as an 8-hour rolling average for the clock period 8AM-4PM, it would be identified as 1500 hours).

4.6.5 The COMS DAS should be configured to automatically meet Section 3.6 of this document.

4.6.6 COMS data average periods must start on the clock minute and should be identified by the minute beginning the period (i.e. COMS data for the clock period 8:00 AM- 8:01 AM would be identified for minute 0800; a rolling 2-minute average for assessing compliance with the instantaneous standard for the clock period 8:00AM- 8:02AM would be identified as 0801)

4.7 Fuel Monitoring System (for use in CERMS)

4.7.1 For CEMS/CERMS using fuel monitoring system to determine heat input and/or pollutant mass emission rates (lb/hr), the source's must demonstrate that the use of fuel monitoring for mass emission rate determination is equivalent to the AQCD recommended method of using stack gas volumetric flow rate.

4.7.2 The CEMS/CERMS fuel meter design must be compatible with the fuel type used and must be installed according to the manufacturers recommendations at an accessible location where the measurements are continuous and representative of the total fuel used by the source.

4.7.3 All fuel monitoring systems that are part of any CEMS/CERMS shall meet the specifications in Table 1. At a minimum, each fuel meter shall have a manufacturer's stated accuracy of +/- 5% difference (from reference value) or 3% of Span value (whichever is greater) and a measurement frequency and data output resolution compatible with the permit or other condition requiring it and/or at a minimum, equivalent to the other CEMS/CERMS. sub-channel monitors used in conjunction with the fuel monitoring system.

4.7.3.1 Fuel flow monitoring system data will be recorded electronically by the CEMS/CERMS DAS at EPA STP conditions.

4.7.4 Fuel monitoring system components (meter, signal transmitter/controller) shall be calibrated by the manufacturer for the applicable operating conditions and fuel used and said systems must be operated and maintained according to manufacturer's recommendations.

4.7.5 Fuel monitoring systems whose output accuracy is subject to pressure and/or temperature sensitivity, must be designed and operated in such a way as to provide accurate data during all periods of source operation including those during fuel feed line pressure and temperature fluctuations.

4.7.6 The source must provide an independent verification of the functional status and performance of the fuel monitoring system on a daily basis. The procedure will be reviewed by the AQCD on a case-by-case basis. This specification may require the source to conduct a dynamic performance test and/or install and use a collocated fuel metering device whose calibration is regularly verifiable and traceable to NIST.

Table 1. CEMS/CERMS/COMS/Fuel Flow Monitoring System Specifications

	NO_x, SO_2	**CO**	**Diluent; CO_2,O_2**	**Volumetric Flow**	**Opacity**	**Fuel Flow**
***EPA 40 CFR* performance specification/ Requirement**	*Part 60, PS2*	*Part 60, PS4A*	*Part 60, PS3*	*Part 60, PS 6* and *Part 52 App.E*, (except as noted in 4.4.2, 5.1.1.1)	*Part 60, PS1* (install date) *Proposed 40CFRPart60 Appendix F Procedure 3*	N/A
span value	2 x emissions standard equivalent	2 x emissions standard equivalent	O_2=25% CO_2=20%	1.25 x MPF	100%	1.25 x *MPF*
full scale value	≥ span value	≥ span value	Same as above	1.5 x MPF	100%	1.25-2.0 x *MPF*
Daily calibration drift limit (CD)	2.5% of span value*	2.5% of span value*	0.5% Abs.	For non-Temp. device=3% of Span value. For Temp. device=1.5% of Span Value	2 % Opac.	3% of Span value or 5% difference of reference value
Calibration adjustment control limit	2 x CD	2 x CD	2 x CD	2 x CD	2 %Opac.	3 % of span value
out-of-control limit (invalid data)	4 x CD	4 x CD	4 x CD	4 x CD	4 %Opac.	5% of span value
Cycle response time (minimum)	1 minute	1 minute	1 minute	1 minute	10 seconds	continuous measurement ≤ frequency of other CERMS subchannel
Calibration Error/ Linearity	10% diff at each level or 5 ppm	10% diff at each level or 5 ppm	10% diff at each level or 0.5% absolute diff.	Factory-est. Linearization Constants	3 pt. ND filter audit: 3% each filter level	5% difference of reference value through range
Operation Test Period (OTP) (7 days or 168 hours w/ source operated >50% normal full load)**	7 consecutive source days**	7 consecutive source days**	7 consecutive source days**	7 consecutive source days**	7 consecutive source days**	7 consecutive source days**
Orientational Sensitivity	N/A	N/A	N/A	See *40 CFR Part 52, Appendix E,*	N/A	N/A
RATA (relative accuracy)	20% of RM or 10% of emission standard	20% of RM or 10% of emission standard or 5 ppm diff.	20% of RM or 1.0% abs. diff.	Flow rate subchannel: 10% of RM/ CERMS: 20% of RM or 10% of std.	N/A	Not directly assessed. This sub channel included in lb/hr RATA
Performance Audit (see Section 5 for audit type/Frequency)	CGA: 10% diff. or 5 ppm abs. diff. from ref. value at each level	CGA: 10% diff. or 5 ppm abs. diff. from ref. value at each level	CGA: 10% diff or 0.5% abs. diff. from ref. value each level	Flow-to-load mean < 15% of reference value; pass leak check	Performance Audit: 3% diff. at each of three ND filter levels.	transmitter/ transducer audit; element inspection; temp./press. audit if applic.

*: Sources with emissions below 50% of the permit standard equivalent may require tighter limits to insure CEMS data accuracy (see Section 4.)
**: Consecutive does not necessarily mean consecutive calendar hours. Documented interuptions in source operation after the start of OTP are allowed.
MPF= average maximum potential volumetric flow rate (scfh), fuel flow or stack gas temperature expected during normal operating conditions at the normal full load of the source or process.

5.0 Certification and Performance Testing

This section is applicable to the initial certification of *new* CEMS/CERMS/COMS or the re-certification of an *existing* system after CEMS/CERMS/COMS components have been replaced or undergone major repairs (refer to Section 3.9). The burden of proof regarding the certification status of any CEMS/CERMS/COMS component is always on the source. The Certification and Performance Testing specifications identified in this section are also contained in **Table 1** of this Document.

This section also identifies ongoing quarterly and annual performance audit testing requirements. This testing is conducted to verify system performance and demonstrate the accuracy of each component of the CEMS/CERMS/COMS.

Please note that if modifications are made to the CEMS/CERMS/COMS which invalidate previous performance test results, corresponding emissions data could also be considered invalid and data capture would be affected.

5.1 Certification Testing Requirements

5.1.1 CEMS/CERMS/Volumetric Flow Monitoring

5.1.1.1 All performance specification testing (PST) conducted on CEMS/CERMS/Volumetric Flow Monitors to *initially* certify performance must be in accordance with *40 CFR Part 60, Appendix B, PS 2-6* and *40 CFR Part 52, Appendix E* (except Section 5.1.2). PST's must include all DAS devices and the entire CEMS/CERMS must be fully operational prior to testing.

5.1.1.2 The DAS function, and computation/reporting accuracy shall be verified during the OPT (see 5.1.1.4.2). The facility will confirm that specifications in 3.5, 3.6 and 4.6 have been met and that automatic control functions and data assessment functions are acceptable. The automatic control functions include for example, the initiation of daily calibrations, audits and probe blowbacks. Data assessment functions include automatic flagging for daily calibration control limit exceedances, source status, automatic assessment of excess emissions or measuring off-scale values (for verification of COMS excess emissions flagging using ND filters, refer to 5.1.2.9). The computation accuracy is verified by the manual recalculation of at least 9 applicable averaging periods for each channel recorded. The recalculation should use the raw values and the same equations, constants and variables used by the DAS.

5.1.1.3 New sources must successfully complete all the initial PST requirements in accordance with this section <u>before</u> the initial source compliance test is conducted. Existing sources must successfully complete all the PST requirements within 180 days after the issue date of the permit requiring the CEMS/CERMS/Volumetric Flow Monitoring.

5.1.1.4 The following initial PST's must be conducted in accordance with this section on all components of the CEMS/CERMS /Volumetric Flow Monitor <u>prior</u> to the Relative Accuracy Test Audit (RATA) (For RATA; refer to Section 5.1.5 below).

5.1.1.4.1 Response time: Make five determinations of both upscale and downscale response time by measuring the time to 95% response from the normal on-line reading of the CEMS/CERMS/Volumetric Flow system to the low-level or high-level calibration inputs, as appropriate.

5.1.1.4.2 Operational Test Period (OPT): Document that for at least 7 consecutive Source operating days (168 hours) when the source was operated under normal and representative conditions at > 50% of normal full load, the system required no corrective maintenance or unscheduled adjustments. (NOTE: In the event of source downtime, the 7 consecutive days need not be 7 consecutive calendar days.)

5.1.1.4.3 Low-level and high-level Calibration Drift: At 24-hour intervals during 7 consecutive source operating days (on the primary fuel) during the OTP, conduct a low and high-level calibration drift test according to Section 5.1.1. Calibration gases used for this test must meet the definition in this Guideline.

5.1.1.4.4 Calibration Error/Linearity Test (Pollutant and Diluent Monitors Only): During the OTP a four-point linearity test shall be performed for each pollutant and diluent monitor using the CGA procedures described in *40 CFR Part 60, Appendix F* and an additional calibration/audit gas between 80-90% of the full-scale measurement range of the monitor. Challenge each monitor 3 non-consecutive times with calibration gas at each of the 4 different levels (zero:0-20%, low:20-30%, mid:50-60%, high:80-90%). The daily low and high-scale calibration drift inputs can be used for 2 of the 4 points if the concentrations are in accordance with this requirement. All calibration gases used must meet the definition in this Guideline.

5.1.1.4.5 Orientation Sensitivity (Volumetric Flow Only): In accordance with 40 CFR Part 52, Appendix E, (see Appendix B of this document) rotate the flow measurement probe 10^{o} on each side of the direction of flow in increments of 5^{o}. Record the continuous flow monitoring system output at 0^{o}, 5^{o} and 10^{o} increments. Conduct the test at normal full load and one additional load if the sources normal full load does not represent at least 75% of the source operating time.

5.1.1.5 A RATA must be conducted on all components of the CEMS/CERMS/Volumetric Flow Monitor* after successful completion of the other initial PST's identified in 5.1.4 above and annually there after. All RATA's must be performed in accordance with the following criteria (at a minimum):

-All CEMS/CERMS components must be operating normally and "in control" based on current daily zero/span calibration drift results.

-The source must be operating on the primary fuel under normal and representative conditions at a rate greater than 50% of normal full-load.

-For lb/hr pollutant channels RATA, volumetric flow rate and pollutant EPA Reference Methods must be conducted simultaneously for each Run.(See note below* : volumetric flow rate RATA may be required at +/- 10% of normal full load. This may require a separate RATA for just the volumetric flow rate or conduct the pollutant RATA at +/- 10% of normal full load.

-The following EPA Reference Methods (RM) identified in *40 CFR Part 60,*

Appendix A are required for each applicable CEMS component:

CO_2/O_2: RM 3A
NO_x: RM 7E
SO_2: RM 6C
CO: RM 10/6C
Other gas monitor: 6C or approved on case-by-case basis
Volumetric flow rate*/Moisture: RM 1, 2, 3A, 4

NOTE:*Facilities with volumetric flow rate channels that operate their source or process at only one "normal" load >75% of their operating time (for previous 4 calendar quarters or projected load for the coming 12 month period, if a new source) must perform the Volumetric Flow RATA at +/-10% of the mean normal load level. " One load" is defined as mean of the average applicable load values (hour/daily etc...)that occurred > 75% of the annual operating time which has a Standard Deviation (SD) where (3 x SD) ≤ 10% of the mean load value. Facilities that do not meet this criteria must perform a Volumetric Flow RATA at the two most frequently used mean load rates. A load frequency distribution must be generated each year (for previous 4 calendar quarters) prior to the RATA to determine the percentage of time the source has operated at loads *below* the normal full load level.

-Interference checks, when required by the RM are to be conducted using gas concentrations near (or above, not less than) concentrations expected in the stack gases.
-Each RATA run for both manual and continuous RM must be at least 30 minutes in length.
-Each RATA determination must be comprised of at least 9 RM runs. The source has the option of conducting up to 12 RM runs during each RATA and can reject the results of up to 3 RM runs, if desired.
-EPA Protocol gas and digital data acquisition are required for all RM testing. Strip charts are recommended.
-All RM lb/MMBtu RATA calculations will use the same diluent gas and F-factor as used in the CEMS.
-Results from the RM and CEMS/CERMS must reported in 1-minute averages in the same engineering units and on the same basis (wet or dry).

5.1.1.5.1 For any CEMS/CERMS channel where two or more measurements comprise a final reported value (such as ppm and diluent used to determine lb/MMBtu), both channels must pass their respective RA limits individually, as well as collectively.

5.1.1.5.2 All official RATA's shall be observed by the AQCD.

5.1.1.5.3 CEMS/CERMS routine daily calibration drift results for the day(s) of the actual RATA must be provided with the RATA report.

5.1.1.5.4 All CEMS/CERMS must reliably pass the applicable RATA limits. Any CEMS/CERMS or monitor which fails to meet the applicable RATA limits shall undergo no more than 2 additional RATA's in an attempt to meet the criteria. All corrective actions/modifications performed between attempts must be fully documented and submitted with the report. At the AQCD's discretion, failure on of the third successive RATA attempt shall be adequate

grounds for the AQCD to request CEMS/CERMS equipment component replacement or system re-design.

5.1.2 COMS

5.1.2.1 COMS performance must be initially verified through completion of the following Performance Specification Testing (PST) requirements in accordance with *40 CFR Part 60, Appendix B, PS1* and EPA's Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003);* see Appendix D. New sources must complete the initial PST before the initial source compliance test is conducted. Existing sources must complete the PST requirements within 180 days after the issue date of the permit requiring the COMS. PST's must include all DAS devices and the COMS must be operational prior to testing.

5.1.2.2 Optical Alignment Assessment: With the emission source operational (>50% of normal full-load) and the stack or breeching where the COMS is installed is at normal operating temperature, verify and record that the optical cross-stack alignment indicator device shows proper alignment.

5.1.2.2.1 During the first "cold" stack or breeching situation (extended source downtime) after the initial COMS installation, verify and document the extent of the mis-alignment observed using the indicator device. Record the average opacity reading associated with the particular misalignment that's observed. During the following "cold" start-up of the source, determine by what ever means necessary, the representative amount of time it takes for the COMS to once again indicate proper alignment once the stack reaches normal operating temperature. *Note: It is recommended that this test be completed during different seasons, if possible.*

5.1.2.3 Response time: Make five determinations of both upscale and downscale response time by measuring the time to 95% response from the normal on-line reading of the COMS to the low-level or high-level calibration inputs, as appropriate.

5.1.2.4 Operational Test Period (OTP): Document that for at least 168 consecutive Source operating hours (7 days) when the source was operated under normal and representative conditions at > 50% of normal full load, the system required no corrective maintenance or unscheduled adjustments. (NOTE: In the event of source downtime, the 168 consecutive hours need not be 168 consecutive clock hours.).

5.1.2.5 Low-level and high-level Calibration Drift: At 24-hour intervals during 7 consecutive source operating days during the OTP, conduct a low and high-level calibration drift test.

5.1.2.6 Calibration Error Test/Performance Audit: An on-stack, 3-point calibration error test shall be performed on the COMS during the OTP (when the source is operating > 50% of normal full-load). Perform the test in accordance with the procedures described in *40 CFR Part 60, Appendix B, PS1*; EPA's Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary*

Sources (*68 Federal Register, page 24696, May 8, 2003);* (see Appendix D).

5.1.2.6.1 Neutral density filters certified in accordance with *40 CFR Part 60, Appendix B, PS-1* are required for conducting COMS calibration error test/performance audits. The required nominal values for the 3 upscale filters are **20%, 60%** and **80%** Opacity.

5.1.2.6.2 Neutral density filters should be handled carefully and stored in a protective case in a dust-free environment.

5.1.2.6.1.1 Neutral density filters must be re-certified at least annually in accordance to *40 CFR Part 60, Appendix B, PS 1*. The vendor will provide a certificate identifying the certified value of each filter (path-length adjusted if applicable). The certified neutral density filter values from the annual re-certification should not deviate from the previous year's value by more than +/- 2%. If this limit is exceeded the filter must be re-tested to verify this change.

5.1.2.6.1.2 Neutral Density filters may be used for other calibration and/or diagnostic purposes as the source chooses.

5.1.2.7 Zero Alignment Assessment: After installation, verify the zero alignment the first time a clear stack condition is obtained after the OPT is completed, according to Section 7.2 of *40 CFR Part 60, Appendix B, PS1* (pre-2001 version) and Section 10.3 of EPA's Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003);* see Appendix D.

5.1.2.8 The zero jig setting shall be permanently set at the time of the initial COMS zero alignment to the off-stack clear path zero value and protected when not in use to ensure the setting equivalent to zero opacity does not change. This *may* require facilities to use separate jigs for zero alignment checks and quarterly performance audits.

5.1.2.8.1 The zero jig setting used for the on-stack zero alignment check can <u>only</u> be adjusted as part of an off-stack clear path system check following the procedure in *40 CFR Part 60, Appendix B, PS1*. No on-stack adjustments of the zero jig are allowed without prior approval of the AQCD.

5.1.2.9 New COMS/DAS must be initially verified for the accuracy and appropriateness of the DAS COMS data reduction procedures by simulating an opacity exceedance (using upscale ND filters) and providing DAS documentation that compliance with the instantaneous and 6-minute aggregate standards are properly assessed and reported.

5.2 Quarterly Performance Audit

5.2.1 CEMS

5.2.1.1 After successful completion of initial certification testing identified in Section 5.1, all

CEMS channels must be performance audited at least once each calendar quarter. The audits shall meet the following criteria:
-CGA or RATA conducted in accordance with *40 CFR Part 60, Appendix F or 40 CFR Par t75*
-results reported using all DAS devices
-the entire CEMS/CERMS must be operational prior to testing.
-be conducted "as-found" and "hands-off" (see section 1.2 for definitions)
-occur within 60 -100 days of the previous quarterly audit or RATA, as applicable.
-For pollutant and diluent gas monitors a CGA may be conducted for 3 of the 4 quarters, but no more than 3 quarters in succession. (Note: A RATA must be performed every 4th calendar quarter in accordance with Section 5.1.5 of this Guideline.)
-SRM, (or equivalent) or EPA Protocol gas shall be used for the CGA (Refer to Section 1.2 of this Document for Definition (1) and (2) for Calibration gas). Prior to their use, newly-procured gas standards should be acceptance-tested as indicated in section 3.3.2.1.2
-Appropriate and reasonable corrective actions and/or adjustments are allowed after the CEMS/CERMS has demonstrated compliance with audit limits "as-found".
-Details of all corrective actions and/or adjustments after quarterly audits shall be documented.
-At the AQCD's discretion, additional performance tests may be required after post audit adjustments.

5.2.2 Volumetric Flow Monitoring

5.2.2.1 The following procedures based on *40 CFR Part 75*, shall be conducted on each Volumetric Flow Monitoring system each calendar quarter:
-sensing lines for differential pressure type devices must be leak checked.
-a "Flow to Load" test conducted according to the following criteria: Use **Equation #1** below to determine the flow-to-load ratio of a minimum of 168 hours* during the quarter that the unit operated within +/-10% of the average load from the previous RATA and a valid hourly average flow rate was obtained from a certified flow rate monitor for those hours. ** Note: A flow-to-load ratio should be calculated for all hours in the calendar quarter that meet this criteria and then the best 168 hours selected to complete the calculation of E_f below.*

Equation #1 $R_h = Q_h/L_h \times 10^{-5}$ [Equation B-1 from *40 CFR Part 75, Appendix B*]

Where: R_h= hourly flow-to-load ratio (scfh/MW or scfh/1000 lb/hr steam).
Q_h= hourly average stack gas volumetric flow rate measured by CEMS Flow Rate Monitoring System (scfh).
L_h=hourly average unit load (MW or 1000/lb/hr steam or site specific load measure); **Must be within +/-10% of L_{avg} during most recent RATA.**

The Reference Flow-to -load Ratio is determined annually from RATA results as follows:

$$R_{ref} = Q_{ref}/L_{avg} \times 10^{-5}$$

Where: R_{ref}= reference value of flow-to-load ratio from most recent RATA(scfh/MW or scfh/1000 lb/hr steam or scfh/ site specific load measure)
Q_{ref}= average value of stack gas volumetric flow rate measured by RM during most recent normal full-load RATA (scfh).
L_{avg}=Average unit load during the normal full-load RATA, (MW or 1000/lb/hr steam).

For each flow monitor, use equation below to calculate the E_h, the absolute percentage difference between each R_h value and R_{ref} (the reference value as determined above) for each hourly value. Note that the R_{ref} is always based on most recent RATA even if its peformed in the calendar quarter being evaluated.)

$$E_{h=} \quad \frac{\left| R_{ref} - R_h \right|}{R_{ref}} \quad x\ 100$$

Calculate the overall mean E_f of all 168 hourly E_h values. The limits in Table1 apply. The results of this check shall be reported in the quarterly report along with other quarterly audit results.

5.2.3 COMS

5.2.3.1 A performance audit on COMS shall be conducted each calendar quarter according to Section 5.1.2.6 of this Guideline and procedures in *40 CFR Part 60, Appendix B, PS1*, Section 7 and Section 10.2 of EPA's Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003);* see Appendix D.

5.2.3.1.1 The performance audits should be as evenly spaced as possible throughout the calendar year. Schedule allowances for weather-related interferences will be provided on a case-by-case basis.

5.2.3.2 The COMS shall be challenged with certified neutral density filters at 3 separate levels (nominal value = 20%, 60%, 80%) non-consecutively **3 separate times**. Determine the COMS accuracy at each filter level as the % difference of the arithmetic mean of the 3 COMS responses compared to the certified filter value (path length adjusted).

5.2.3.3 Complete an optical alignment assessment following the procedures in 5.1.2.2. Adjust the alignment as necessary.

5.3 Annual Performance Testing

5.3.1 CEMS/CERMS

5.3.1.1 A RATA shall be performed annually in accordance with Section 5.1.5 of this Document.

5.3.1.2 Where practicable, the temperature monitoring system used in Volumetric Flow Monitoring Systems shall undergo at least a 2 point independent audit of the temperature transmitter/readout annually. The known temperature input levels should represent 30-60% of full scale and 80-100% of Full scale.

5.3.2 COMS

5.3.2.1 In addition to the requirements in Section 5.2.3 , a zero alignment procedure shall be performed annually in accordance with Section 5.1.2.7 of this Document and Section 10.3 of the Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3- Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003).*

5.3.2.2 In addition to the requirements in Section 5.2.3, a response time test procedure shall be performed annually in accordance with Section 5.1.2.3 of this Document.

5.3.3 Fuel Monitoring System

5.3.3.1 Fuel Monitoring Systems used to report lb/hr values must undergo a performance audit/calibration following manufacturer's recommended procedures, every 4th calendar quarter. This will include:

- a complete inspection of the fuel monitoring system (This shall include a visual inspection of the sensing element in venturi-, orifice plate- and nozzle-type designs, for example)

-the performance of the transmitter, transducer or controller, depending on design and applicability, will be audited following the manufacturer's recommendations.

-For fuel monitoring systems that measure and correct for fuel temperature and pressure fluctuations, the temperature and pressure measurement system components performance must be audited following the manufacturer's recommendations.

5.4 Notification/Reporting

5.4.1 Notification/Reporting for Initial Certification/PST

5.4.1.1 For any RATA, the source must submit a written test protocol which describe all testing equipment, procedures and methodology(s) as well as documentation methods for test results, continuous RM data recording, RM data reduction methods/forms, gas standards/certifications and current equipment calibrations and must be submitted no later than **30 days** prior to the proposed test date(s).

5.4.1.1.1 The written RATA protocol must be acceptable to, and approved by, the AQCD observer prior to the start of testing.

5.4.1.1.2 Documentation of all RM equipment calibrations, gas certification, interference checks and converter efficiency checks must be presented to the AQCD observer prior the start of the RATA.

5.4.1.1.3 The AQCD may require a brief pre-test meeting with representatives from the source, its testing team at a mutually convenient time prior to the start of RATA testing (It is recommended that it be held on the morning of testing).

5.4.1.2 Results of all initial certification PST (including RATA) for CEMS/CERMS/COMS required in Section 5.1 must be reported in accordance with the applicable *40 CFR, Part 60, Appendix B, PS 1-6* requirements, the approved protocol and submitted within 30 days after the end of the final PST (this should be the RATA).

5.4.1.2.1 All initial certification PST results must include:

-Copies of actual DAS responses to verify results.
-Certificates for all standards used.
-Documentation on any and all corrective actions, maintenance, repair or adjustments performed during or after the PST.
-Documentation of Source operations and level during PST.

5.4.1.2.2 All RATA results must include:

-all raw DAS and manual 1-minute averages for all RM and CEMS/CERMS/Volumetric Flow test runs (including sub-channels), including any RM runs that: 1.) indicated an RA failure; or 2.) were aborted for any reason; or 3.) Valid runs that were rejected for the final RA determination.
-Copies of intermediate calculation procedures for all CEMS and RM values and RA determinations.
-copies of all RM equipment calibrations (continuous and manual methods), interference test results, NO_x converter efficiency test results, documentation of all calculations leading to final reported results and calibration gas certificates.
-copies of clearly labeled strip charts, if used.
-copies of the routine daily calibration drift check results for all CEMS/CERMS for the day of the RATA (to verify "in control" operation).
-Documentation of emission source operating level during the RATA.
-load frequency distribution for determining loads to test for volumetric flow rate RATA (see Section 5.1.5).

5.4.1.2.3 COMS initial certification PST results must include the Manufacturer's Certificate of Conformance in accordance with *40 CFR, Part 60, Appendix B, PS 1*.

5.4.2 Notification/Reporting for Quarterly Audits and Annual Performance Testing

5.4.2.1 The source must make every effort provide the AQCD **14** days prior notification of the proposed test date of any quarterly pollutant or diluent CGA or COMS performance audit. Quarterly audits may be observed by the AQCD at its discretion.

5.4.2.2 For calendar quarters where a RATA is scheduled, the source must submit a written pretest protocol and notification of the scheduled test date at least 30 days prior to testing and otherwise must comply with Section 5.1.1.5 and 5.4.1.1 of this document.

5.4.2.3 Results of all Quarterly audits and Annual Testing required in Sections 5.2 and 5.3 (including RATA) shall be reported with the QER for the Quarter during which the testing occurred (See Section 6 for Quarterly Report Requirements). Quarterly performance audit results shall be reported in accordance with applicable reporting requirements in *40 CFR Part 60, Appendix B, PS-1* and *Appendix F*. Provide copies of all actual DAS response values, applicable field sheets, summary calculation sheets and copies of certificates for all standards used. RATA results shall be reported in accordance with Section 5.4.1.2.2 of this document

6.0 Record Keeping and Reporting Requirements

6.1 Record Keeping Requirements

6.1.1 CEMS/CERMS/COMS data must be recorded and reduced in accordance with Section 3.5, 3.6 and 4.6 of this document.

6.1.2 The facility shall maintain a permanent chronological file which includes at a minimum:

-all measurements from the monitoring system on at least the minimum averaging time frequency
-all valid and invalid averages as specified above
-the cause, time period for any invalid data averages
-the cause, specific time periods (beginning and ending time) and magnitude of all excess emissions
-data and results for all tests, audits and recalibrations
-certificates for all audit and calibration standards
-a record of any repairs, adjustments, or maintenance to the monitoring system
-a record of all corrective actions taken in response to excess emissions, invalid data, out-of-control periods, operational criteria or data capture deficiencies.
NOTE: The last 2 items above shall be documented in a dedicated CEMS maintenance logbook which should be suitable for inspection.

6.1.3 All records kept as required in 6.1.1 and 6.1.2 above, must be provided to the AQCD upon request at any time and must be maintained by the source in a permanent form that is easily retrieved and suitable for inspection, for the period identified in the permit or 5 years, which ever is greater.

6.2 Reporting Requirements.

Sources are required to submit <u>one</u> copy of the reports described below, of which they retain a copy. Each report must include the following statement and be **<u>signed</u>** by the person exercising managerial responsibility over the source and the CEMS/CERMS/COMS:

"I am authorized to make this submission on behalf of the owners and operators of _____(the permitted facility for which this submission is made). I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all of its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalities for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment."

6.2.1 Test protocols and final reports for the initial PST and annual RATA's must meet the requirements in Section 5.4.1.

6.2.2 Results of quarterly performance audits, annual performance testing and other performance

assessments must be reported in accordance with Section 5.4.2 and Section 6.2.3.8.

6.2.3 Quarterly Emission Report (QER)

A CEMS/CERMS/COMS summary report for each calendar quarter's operation must be submitted to the AQCD no later than 30 days after the end of each quarter. Each QER must include the information required by *40 CFR Part 60.7 (c)* and *(d)* and shall include at a minimum the following information:

6.2.3.1 A summary of valid data collected over the calendar quarter for all channels with applicable emission standards (except Opacity). Data shall be reported relative to the emission standard using the appropriate units, averaging period and significant figures. The summary shall be in the form of a frequency distribution using 16 intervals corresponding to 0->150% of the applicable standard (where the standard = 100%) at increments of 10% (0-10%, 11-20%, 21-30%, 31-40%, 41-50%, 51-60%, 61-70%, 71-80%, 81-90%, 91-100%, 101-110%, 111-120%, 121-130%, 131-140%, 141-150%, >150%). At the AQCD's discretion, sources may be required to report summarized distributions for sub channels used for reporting emission limit data (i.e O_2 or volumetric flow).

6.2.3.2 Provide a tabular and/or graphical summary of all daily low-level and high-level calibration drift test results recorded during the calendar quarter for each monitor. The summary shall include the date and time of each daily calibration drift test, the input reference value and the actual monitor response, the negative or positive drift error (% of span value or absolute difference as applicable) and indicate the adjustment and out-of-control limits. Optional graphical summaries may be included. Submitted graphs must provide for adequate resolution of both the date on the x-axis and the instrument response or error on the Y-axis, must show both negative and positive calibration drift and indicate the adjustment and out-of-control limits.

6.2.3.3 A listing of all daily calibration drift test results that exceeded the adjustment control limit. Identify the cause and corrective action and whether calibration adjustments were performed. Indicate "none" if no exceedances occurred.

6.2.3.4 Identify all periods of invalid data (includes periods of out-of-control operation, missing periods due to malfunctions, maintenance, QA procedures, daily calibration drift tests, etc...;see Section 3.3 for validation criteria). For each invalid data period, provide the total # of hours (or minutes) affected, the beginning and ending time and a thorough explanation of the cause and corrective action taken. For sources with rolling average requirements, invalid data periods for one hour sub-average and rolling average periods should be distinguished and reported separately. Indicate "none" if there is no invalid data to report.

6.2.3.5 Provide a summary of the valid data capture for all applicable CEMS/CERMS/COMS channels in accordance with Section 3.7 of this Guideline. Sources with rolling average requirements shall determine compliance with the data capture limits using valid rolling averages for each clock hour. The AQCD, at its

discretion, may require sources to assess and report data capture of sub-channel monitors used in determining the final reported averages (i.e., NO_x ppm and O_2 for NO_x lb/mmBtu).

6.2.3.6 For each period of source operation **longer than one hour** without valid CEMS/CERMS/COMS data, the source shall evaluate operations and provide a written statement characterizing to the best of their ability the emission quality during the invalid periods. The evaluation should incorporate other parametric monitoring data routinely collected, the status of the source combustion controls and/or pollution control equipment etc.... The statement must indicate whether it was likely or unlikely that emission limits were exceeded during the period in question.

6.2.3.7 Identify <u>all</u> periods of <u>valid</u> emission averages that exceed the applicable emission standards, including periods of source startup, shutdown and malfunction. Indicate "none" if there are no exceedances to report.

6.2.3.7.1 Excess emissions shall be reported using the proper units, averaging period and significant figures of the applicable standard.

6.2.3.7.2 Exceedances of the 6-minute aggregate Vermont VE standard shall be reported in accordance with Section 1.2 and 3.6. The report format must provide the AQCD the ability to assess the number of one minute average values recorded during an hour that were over the applicable 6-minute standard value, their individual value as well as their cumulative average value.

6.2.3.7.3 Exceedances of the instantaneous Vermont VE standard shall be reported in accordance with Section 1.2 and 3.6. The report must provide the AQCD the ability to assess the number of non-consecutive, two-minute rolling average values that were over the applicable standard value and their individual values.

6.2.3.7.4 Identify the probable cause of the excess emissions and corrective actions taken during all excess emissions periods.

6.2.3.8 Results in accordance with Section 5.4 of all CEMS/CERMS/COMS quarterly performance audits and results of all other performance audits/assessments (including the annual RATA, certification results, DAS verification, QA procedures or other COMS performance testing) conducted during the calendar quarter.

6.2.3.9 Provide some type of summary documenting the "acceptance tests" of new gas cylinders. Copies of the daily calibration gas certificates may be provided at the facilities discretion.

6.2.3.10 Provide a summary of source operating hours (any time combustion is occurring or process is operating) for the calendar quarter that clearly indicates startup and shutdown times.

6.2.4 Submit a report of the results of the annual QA Plan review conducted in accordance with Section 3.2.2.1.within 30 days of the completion of the review. Include any proposed changes to the QA Plan that resulted from the review.

6.2.5 Amendments or attachments to any submitted CEMS report(s) required by the AQCD must be submitted by the source within **14** days of the request.

6.2.6 Malfunctions which may not be corrected within 72 hours or may jeopardize the source's ability to meet the quarterly data capture requirements, must be reported verbally as soon as the source makes this determination, and in writing within 5 days of the verbal notification.

6.2.7 At the AQCD's discretion, electronic reporting methods designed to meet the requirements of this section will be considered and may be allowed on a case-by-case basis.

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Appendix A

EPA Guidelines
for
Preparing
Quality Assurance Project Plans

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APPENDIX M

INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS

M.1 INTRODUCTION

Environmental Protection Agency (EPA) policy requires participation by all EPA regional offices, program offices, EPA laboratories and States in a centrally-managed QA program as stated in the Administrator's Memorandum of May 30, 1979. This requirement applies to all environmental monitoring and measurement efforts mandated or supported by EPA through regulations, grants, contracts, or other formalized means not currently covered by regulation. The responsibility for developing, coordinating and directing the implementation of this program has been delegated to the Office of Research and Development (ORD), which has established the Quality Assurance Management Staff (QAMS) for this purpose.

Each office or laboratory generating data has the responsibility to implement minimum procedures which assure that precision, accuracy, completeness, and representativeness of its data are known and documented. In addition, an organization should specify the quality levels which data must meet in order to be acceptable. To ensure that this responsibility is met uniformly across the Agency, each EPA Office or Laboratory must have a written QA Project Plan covering each monitoring or measurement activity within its purview.

M.2 DEFINITION, PURPOSE, AND SCOPE

M.2.1 Definition

QA Project Plans are written documents, one for each specific project or continuing operation (or group of similar

projects or continuing operations), to be prepared by the responsible Program Office, Regional Office, Laboratory, Contractor, Grantee, or other organization. The QA Project Plan presents, in specific terms, the policies, organization, objectives, functional activities, and specific QA and QC activities designed to achieve the data quality goals of the specific project(s) or continuing operation(s). Other terms useful in understanding this guideline are defined in Appendix A of this volume.

M.2.2 Purpose

This document (1) presents guidelines and specifications that describe the 16 essential elements of a QA Project Plan, (2) recommends the format to be followed, and (3) specifies how plans will be reviewed and approved.

M.2.3 Scope

The mandatory QA program covers all environmentally-related measurements. Environmentally-related measurements are defined as all field and laboratory investigations that generate data. These include (1) the measurement of chemical, physical, or biological parameters in the environment, (2) the determination of the presence or absence of pollutants in waste streams, (3) assessment of health and ecological effect studies, (4) conduct of clinical and epidemiological investigations, (5) performance of engineering and process evaluations, (6) study of laboratory simulation of environmental events, and (7) study or measurement on pollutant transport and fate, including diffusion models. Each project within these activities must have a written and approved QA Project Plan.

M.3 PLAN PREPARATION AND RESPONSIBILITIES

M.3.1 Document Control

All Quality Assurance Project Plans must be prepared using a document control format consisting of information placed in

the upper right-hand corner of each document page (Section 1.4.1 of this Volume):

1. Section number
2. Revision number
3. Date (of revision)
4. Page.

M.3.2 Elements of QA Project Plan

Each of the sixteen items listed below must be considered for inclusion in each QA Project Plan:

1. Title page with provision for approval signatures
2. Table of contents
3. Project description
4. Project organization and responsibility
5. QA objectives for measurement data in terms of precision, accuracy, completeness, representativeness and comparability
6. Sampling procedures
7. Sample custody
8. Calibration procedures and frequency
9. Analytical procedures
10. Data reduction, validation, and reporting
11. Internal quality control checks and frequency
12. Performance and system audits and frequency
13. Preventive maintenance procedures and schedules
14. Specific routine procedures to be used to assess data precision, accuracy and completeness of specific measurement parameters involved
15. Corrective action
16. Quality assurance reports to management.

It is Agency policy that precision and accuracy of data shall be assessed on all monitoring and measurement projects. Therefore, Item 14 must be described in all Quality Assurance Project Plans.

M.3.3 Responsibilities

M.3.3.1 Intramural Projects - Each Project Officer working in close coordination with the QA Officer is responsible for the preparation of a written QA Project Plan for each intramural project that involves environmental measurements. This written plan must be separate from any general plan normally prepared for the project (see caveat presented in Section M.6). The Project Officer and the QA Officer must ensure that each intramural project plan contains procedures to document and report precision, accuracy and completeness of all data generated.

M.3.3.2 Extramural Projects - Each Project Officer working in close coordination with the QA Officer has the responsibility to see that a written QA Project Plan is prepared by the extramural organization for each project involving environmental measurements. The elements of the QA Project Plan must be separately identified from any general plan normally prepared for the project (see caveat presented in Section M.6). The Project Officer and the QA Officer must ensure that each extramural project plan contains procedures to document and report precision, accuracy and completeness of all data generated.

M.4 PLAN REVIEW, APPROVAL, AND DISTRIBUTION

M.4.1 Intramural Projects

Each QA Project Plan must be approved by the Project Officer's immediate supervisor and the QA Officer. Completion of reviews and approvals is shown by signatures on the title page of the plan. Environmental measurements may not be initiated until the QA Project Plan has received the necessary approvals. A copy of the approved QA Project Plan will be distributed by the Project Officer to each person who has a major responsibility for the quality of measurement data.

M.4.2 Extramural Projects

Each QA Project Plan must be approved by the funding organization's Project Officer and the QA Officer. In addition, the

extramural organization's Project Manager and responsible QA official must review and approve the QA Project Plan. Completion of reviews and approvals is shown by signatures on the title page of the plan. Environmental measurements may not be initiated until the QA Project Plan has received the necessary approvals. A copy of the approved QA Project Plan will be distributed by the extramural organization's Project Director to each person who has a major responsibility for the quality of the measurement data.

M.5 PLAN CONTENT REQUIREMENTS

The sixteen (16) essential elements described in this section must be considered and addressed in each QA Project Plan. If a particular element is not relevant to the project under consideration, a brief explanation of why the element is not relevant must be included. EPA-approved reference, equivalent or alternative methods must be used and their corresponding Agency-approved guidelines must be applied wherever they are available and applicable.

It is Agency policy that precision and accuracy of data shall be assessed routinely and reported on all environmental monitoring and measurement data. Therefore, specific procedures to assess precision and accuracy on a routine basis during the project must be described in each QA Project Plan. Procedures to assess data quality are being developed by QAMS and the Environmental Monitoring Systems/Support Laboratories. Additional guidance can be obtained from QA handbooks for air, water biological, and radiation measurements (References 1, 2, 3, 12, 17, and 18).

The following subsections provide specific guidance pertinent to each of the 16 components which must be considered for inclusion in every QA Project Plan.

M.5.1 Title Page

At the bottom of the title page, provisions must be made for the signatures of approving personnel. As a minimum, the QA Project Plan must be approved by the following:

1. For intramural projects

   a. Project Officer's immediate supervisor
   b. QA Officer (QAO)

2. For extramural projects

   a. Organization's Project Manager
   b. Organization's responsible QA Official
   c. Funding organization's Project Officer
   d. Funding organization's QA Officer.

M.5.2 Table of Contents

The QA Project Plan Table of Contents will address each of the following items:

1. Introduction
2. A serial listing of each of the 16 quality assurance project plan components
3. A listing of any appendices which are required to augment the Quality Assurance Project Plan as presented (i.e., standard operating procedures, etc.).

At the end of the Table of Contents, list the QA official and all other individuals receiving official copies of the QA Project Plan and any subsequent revisions.

M.5.3 Project Description

Provide a general description of the project. This description may be brief but must have sufficient detail to allow those individuals responsible for review and approval of the QA Project Plan to perform their task. Where appropriate, include the following:

1. Flow diagrams, tables, and charts
2. Dates anticipated for start and completion
3. Intended end use of acquired data.

M.5.4 Project Organization and Responsibility

Include a table or chart showing the project organization and line authority. List the key individuals, including the QAO, who are responsible for ensuring the collection of valid measurement data and the routine assessment of measurement systems for precision and accuracy.

M.5.5 QA Objectives for Measurement Data in Terms of Precision, Accuracy, Completeness, Representativeness, and Comparability

For each major measurement parameter, including all pollutant measurement systems, list the QA objectives for precision, accuracy and completeness. These QA objectives will be summarized in a Table M.1.

TABLE M.1. EXAMPLE OF FORMAT TO SUMMARIZE PRECISION, ACCURACY AND COMPLETENESS OBJECTIVES

Measurement parameter (Method)	Reference	Experimental conditions	Precision, std. dev.	Accuracy	Completeness
NO_2 (Chemiluminescent)	EPA 650/4-75-011 February 1975	Atmospheric samples spiked with NO_2 as needed	<±10%	± 5%	90%
SO_2 (24 h) (Pararosaniline)	EPA 650/4-74-027 December 1973	Synthetic atmosphere	<±20%	±15%	90%

All measurements must be made so that results are representative of the media (air, water, biota, etc.) and conditions being measured. Unless otherwise specified, all data must be calculated and reported in units consistent with other organizations reporting similar data to allow comparability of data bases among organizations. Definitions for precision, accuracy and completeness are provided in Subsection M.10 and Appendix A.

Data quality objectives for accuracy and precision established for each measurement parameter will be based on prior knowledge of the measurement system employed, method validation studies using, for example, replicates, spikes, standards, calibrations, and recovery studies and on the requirements of the specific project.

M.5.6 Sampling Procedures

For each major measurement parameter(s), including all pollutant measurement systems, provide a description of the sampling procedures to be used. Where applicable, include the following:

1. Description of techniques or guidelines used to select sampling sites
2. Inclusion of specific sampling procedures to be used (by reference in the case of standard procedures and by actual description of the entire procedure in the case of nonstandard procedures)
3. Charts, flow diagrams or tables delineating sampling program operations
4. A description of containers, procedures, reagents, et-cetera, used for sample collection, preservation, transport, and storage
5. Special conditions for the preparation of sampling equipment and containers to avoid sample contamination (e.g., containers for organics should be solvent-rinsed; containers for trace metals should be acid-rinsed)
6. Sample preservation methods and holding times
7. Time considerations for shipping samples promptly to the laboratory
8. Sample custody or chain-of-custory procedures
9. Forms, notebooks and procedures to be used to record sample history, sampling conditions and analyses to be performed.

M.5.7 Sample Custody

Sample custody is a part of any good laboratory or field operation. Where samples may be needed for legal purposes, "chain-of custody" procedures, as defined by the Office of Enforcement, will be used. However, as a minimum, the following sample custody procedures will be addressed in the QA Project Plans:

1. Field Sampling Operations:

a. Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and absorbing reagents)

b. Procedures and forms for recording the exact location and specific considerations associated with sample acquisition

c. Documentation of specific sample preservation method

d. Prepared sample labels containing all information necessary for effective sample tracking. Figure M.1 illustrates a typical sample label applicable to this purpose

e. Standardized field tracking reporting forms to establish sample custody in the field prior to shipment. Figure M.2 presents a typical sample of a field tracking report form.

2. Laboratory Operations:

a. Identification of responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment (e.g., bill of lading number or mail receipt), and verify the data entered onto the sample custody records

b. Provision for laboratory sample custody log consisting of serially numbered standard lab-tracking report forms. A typical sample of a standardized lab-tracking report form is shown in Figure M.3

(NAME OF SAMPLING ORGANIZATION)

Sample description _____

_____

Plant _____ Location _____
Date _____ _____
Time _____
Media _____ Station _____
Sample type _____ Preservative _____

Sampled by _____

Sample ID number _____

Lab number _____

Remarks _____

_____

_____

Figure M.1. Example of General Sample Label.

W/O number _____ Page ____

Field Tracking Report _____
(LOC-SN)

Field sample code (FSC)	Brief description	Date	Time(s)	Sampler

Figure M.2. Sample of Field Tracking Report form.

W/O number _____ Page ____

Lab-tracking report _____ (LOC-SN-FSC)

Fraction code	X	Prep/anal required	Responsible individual	Date delivered	Date completed

Figure M.3. Sample of lab-tracking report form.

c. Specification of laboratory sample custody procedures for sample handling, storage and dispersement for analysis.

Additional guidelines useful in establishing a sample custody procedure are given in Section 2.0.6 of Reference 2, and Section 3.0.3 of Reference 3, and References 13 and 14.

M.5.8 Calibration Procedures and Frequency

Include calibration procedures and information:

1. For each major measurement parameter, including all pollutant measurement systems, reference the applicable standard operating procedure (SOP) or provide a written description of the calibration procedure(s) to be used

2. List the frequency planned for recalibration

3. List the calibration standards to be used and their source(s), including traceability procedures.

M.5.9 Analytical Procedures

For each measurement parameter, including all pollutant measurement systems, reference the applicable standard operating procedure (SOP) or provide a written description of the analytical procedure(s) to be used. Officially approved EPA procedures will be used when available. For convenience in preparing the QA Project Plan, Elements 6, 8, and 9 may be combined (e.g., Subsections M.5.6, M.5.8, and M.5.9).

M.5.10 Data Reduction, Validation, and Reporting

For each major measurement parameter, including all pollutant measurement systems, briefly describe the following:

1. The data reduction scheme planned on collected data, including all equations used to calculate the concentration or value of the measured parameter and reporting units
2. The principal criteria that will be used to validate data integrity during collection and reporting of data
3. The methods used to identify and treat outliers
4. The data flow or reporting scheme from collection of raw data through storage of validated concentrations. A flowchart will usually be needed
5. Key individuals who will handle the data in this reporting scheme (if this has already been described under project organization and responsibilities, it need not be repeated here).

M.5.11 Internal Quality Control Checks

Describe and/or reference all specific internal quality control ("internal" refers to both laboratory and field activities) methods to be followed. Examples of items to be considered include:

1. Replicates
2. Spiked samples

3. Split samples
4. Control charts
5. Blanks
6. Internal standards
7. Zero and span gases
8. Quality control samples
9. Surrogate samples
10. Calibration standards and devices
11. Reagent checks.

Additional information and specific guidance can be found in References 17 and 18.

M.5.12 Performance and System Audits

Each project plan must describe the internal and external performance and system audits which will be required to monitor the capability and performance of the total measurement system(s).

The system audit consists of evaluation of all components of the measurement systems to determine their proper selection and use. This audit includes a careful evaluation of both field and laboratory quality control procedures. System audits are normally performed prior to or shortly after systems are operational; however, such audits should be performed on a regularly scheduled basis during the lifetime of the project or continuing operation. The on-site system audit may be a requirement for formal laboratory certification programs such as laboratories analyzing public drinking water systems. Specific references pertinent to system audits for formal laboratory certification programs can be found in References 19 and 20.

After systems are operational and generating data, performance audits are conducted periodically to determine the accuracy of the total measurement system(s) or component parts thereof. The plan should include a schedule for conducting performance audits for each measurement parameter, including a performance audit for all measurement systems. As part of the performance

audit process, laboratories may be required to participate in analysis of performance evaluation samples related to specific projects. Project plans should also indicate, where applicable, scheduled participation in all other interlaboratory performance evaluation studies.

In support of performance audits, the Environmental Monitoring Systems/Support Laboratories provide necessary audit materials and devices and technical assistance. Also, these laboratories conduct regularly scheduled interlaboratory performance tests and provide guidance and assistance in the conduct of system audits. To make arrangements for assistance in the above areas, these laboratories should be contacted directly:

Environmental Monitoring Systems Laboratory
Research Triangle Park, NC 27711
Attention: Director

Environmental Monitoring and Support Laboratory
26 W. St. Clair Street
Cincinnati, Ohio 45268
Attention: Director

Environmental Monitoring Systems Laboratory
P. O. Box 15027
Las Vegas, NV 89114
Attention: Director

M.5.13 Preventive Maintenance

The following types of preventive maintenance items should be considered and addressed in the QA Project Plan:

1. A schedule of important preventive maintenance tasks that must be carried out to minimize downtime of the measurement systems

2. A list of any critical spare parts that should be on hand to minimize downtime.

M.5.14 Specific Routine Procedures Used to Assess Data Precision, Accuracy and Completeness

It is Agency policy that precision and accuracy of data must be routinely assessed for all environmental monitoring and measurement data. Therefore, specific procedures to assess precision and accuracy on a routine basis on the project must be described in each QA Project Plan.

For each major measurement parameter, including all pollutant measurement systems, the QA Project Plan must describe the routine procedures used to assess the precision, accuracy and completeness of the measurement data. These procedures should include the equations to calculate precision, accuracy and completeness, and the methods used to gather data for the precision and accuracy calculations.

Statistical procedures applicable to environmental projects are found in Appendices A through L of this Volume and in References 2, 3, 12, 17, and 18. Examples of these procedures include:

1. Central tendency and dispersion (e.g., arithmetic mean, range, standard deviation, relative standard deviation, pooled standard deviation, and geoemtric mean)
2. Measures of variability (e.g., accuracy, bias, precision; within laboratory and between laboratories)
3. Significance test (e.g., u-test, t-test, F-test, and Chi-square test
4. Confidence limits
5. Testing for outliers.

Recommended guidelines and procedures to assess data precision, accuracy and completeness are being developed.

M.5.15 Corrective Action

Corrective action procedures must be described for each project which include the following elements:

1. The predetermined limits for data acceptability beyond which corrective action is required
2. Procedures for corrective action
3. For each measurement system, identify the responsible individual for initiating the corrective action and also the individual responsible for approving the corrective action, if necessary.

Corrective actions may also be initiated as a result of other QA activities, including:

1. Performance audits
2. System audits
3. Laboratory/field comparison studies
4. QA Program audits conducted by QAMS.

A formal corrective action program is more difficult to define for these QA activities in advance and may be defined as the need arises.

M.5.16 Quality Assurance Reports to Management

QA Project Plans should provide a mechanism for periodic reporting to management on the performance of measurement systems and data quality. As a minimum, these reports should include:

1. Periodic assessment of measurement data accuracy, precision and completeness
2. Results of performance audits
3. Results of system audits
4. Significant QA problems and recommended solutions.

The individual(s) responsible for preparing the periodic reports should be identified. The final report for each project must include a separate QA section which summarizes data quality information contained in the periodic reports.

M.6 QUALITY ASSURANCE PROJECT PLANS VERSUS PROJECT WORK PLANS

This document provides guidance for the preparation of QA Project Plans and describes 16 components which must be included. Historically, most project managers have routinely included the majority of these 16 elements in their project work plans. In practice, it is frequently difficult to separate important quality assurance and quality control functions and to isolate these functions from technical performance activities. For those projects where this is the case, it is not deemed necessary to replicate the narrative in the Quality Assurance Project Plan section.

In instances where specific QA/QC protocols are addressed as an integral part of the technical work plan, it is only necessary to cite the page number and location in the work plan in the specific subsection designated for this purpose.

It must be stressed, however, that whenever this approach is used a "QA Project Plan locator page" must be inserted into the project work plan immediately following the table of contents. This locator page must list each of the items required for the QA Project Plan and state the section and pages in the project plan where the item is described. If a QA Project Plan item is not applicable to the work plan in question, the words "not applicable" should be inserted next to the appropriate component on the locator page and the reason why this component is not applicable should be briefly stated in the appropriate subsection in the QA Project Plan.

M.7 STANDARD OPERATING PROCEDURES

A large number of laboratory and field operations can be standardized and written as SOP. When such procedures are applicable and available, they may be incorporated into the QA Project Plan by reference.

QA Project Plans should provide for the review of all activities which could directly or indirectly influence data quality and the determination of those operations which must be covered by SOP's. Examples are:

1. General network design
2. Specific sampling site selection
3. Sampling and analytical methodology
4. Probes, collection devices, storage containers, and sample additives or preservatives
5. Special precautions, such as heat, light, reactivity, combustibility, and holding times
6. Federal reference, equivalent or alternative test procedures
7. Instrumentation selection and use
8. Calibration and standardization
9. Preventive and remedial maintenance
10. Replicate sampling
11. Blind and spiked samples
12. Collocated samplers
13. QC procedures such as intralaboratory and intrafield activities, and interlaboratory and interfield activities
14. Documentation
15. Sample custody
16. Transportation
17. Safety
18. Data handling procedures
19. Service contracts
20. Measurement of precision, accuracy, completeness, representativeness, and comparability
21. Document control.

M.8 SUMMARY

Each intramural and extramural project that involves environmental measurements must have a written and approved QA Project Plan. All 16 items described previously must be considered and addressed. Where an item is not relevant, a brief explanation of why it is not relevant must be included. It is Agency policy that precision and accuracy of data must be routinely assessed and reported on all environmental monitoring and

measurement data. Therefore, specific procedures to assess precision and accuracy on a routine basis during the project must be described in each QA Project Plan.

M.9 EXAMPLE OF PROJECT PLAN

For the convenience of the reader the following pages of this section contains an example of a QA project plan for ambient air monitoring. The format is retained as one would prepare a plan and hence not necessarily consistent with the Handbook format. The only exception is that the documentation is given on each page consistent with the Handbook.

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Appendix B

40 CFR Part 52, Appendix E

Performance Specifications and Specification Test Procedures for Monitoring Systems for Effluent Stream Gas Volumetric Flow Rate

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Percent deviation from slowest time=average upscale−average downscale×100%/slower time

[40 FR 5517, Feb. 6, 1975]

APPENDIX E TO PART 52—PERFORMANCE SPECIFICATIONS AND, SPECIFICATION TEST PROCEDURES FOR MONITORING SYSTEMS FOR EFFLUENT STREAM GAS VOLUMETRIC FLOW RATE

1. *Principle and applicability.*

1.1 *Principle.* Effluent stream gas volumetric flow rates are sampled and analyzed by a continuous measurement system. To verify the measurement system performance, values obtained from the measurement system are compared against simultaneous values obtained using the reference method. These comparison tests will be performed to determine the relative accuracy, and drift of the measurement system over the range of operating conditions expected to occur during normal operation of the source. If the measurement system is such that the specified tests in section 5.1 for drift do not apply, those test procedures shall be disregarded.

1.2 *Applicability.* This method is applicable to subparts which require continuous gas volumetric flow rate measurement. Specifications are given in terms of performance. Test procedures are given for determining compliance with performance specifications.

2. *Apparatus.*

2.1 Continuous measurement system for determining stack gas volumetric flow rate.

2.2 Equipment for measurement of stack gas volumetric flow rate as specified in the reference method.

3. *Definitions.*

3.1 *Measurement system.* The total equipment required for the determination of the gas volumetric flow rate in a duct or stack. The system consists of three major subsystems:

3.1.1 *Sampling interface.* That portion of the measurement system that performs one or more of the following operations: Delineation, acquisition, transportation, and conditioning of a signal from the stack gas and protection of the analyzer from any hostile aspects of the source environment.

3.1.2 *Analyzer.* That portion of the measurement system which senses the stack gas flow rate or velocity pressure and generates a signal output that is a function of the flow rate or velocity of the gases.

3.1.3 *Data presentation.* That portion of the measurement system that provides a display of the output signal in terms of volumetric flow rate units, or other units which are convertible to volumetric flow rate units.

3.2 *Span.* The value of gas volumetric flow rate at which the measurement system is set to produce the maximum data display output. For the purposes of this method, the span shall be set at 1.5 times the maximum volumetric flow rate expected under varying operating conditions of the source.

3.3 *Zero drift.* The change in measurement system output over a stated period of time of normal continuous operation when gas volumetric flow rate at the time of the measurements is zero.

3.4 *Calibration drift.* The change in measurement system output over a stated time period of normal continuous operation when the gas volumetric flow rate at the time of the measurement is 67 percent of the span value.

3.5 *Operation period.* A minimum period of time over which a measurement system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.6 *Orientation sensitivity.* The angular tolerance to which the sensor can be misaligned from its correct orientation to measure the flow rate vector before a specified error occurs in the indicated flow rate compared to the reference flow rate.

3.7 *Reference method.* Method 2 as delineated in 40 CFR Part 60.

4. *Measurement system performance specifications.* A measurement system must meet the performance specifications in Table E–1 to be considered acceptable under this method.

TABLE E–1

Parameter	Specifications
Accuracy (relative)	<10 percent of mean reference value (paragraph 6.3.1).
Zero drift (24 hours)	<3 percent of span (paragraph 6.3.2).
Calibration drift (24 hours)	<3 percent of span (paragraph 6.3.3).
Operational period	<168 hours minimum.

5. *Test procedures.*

5.1 Field test for accuracy, zero drift, calibration drift, and operation period.

5.1.1 *System conditioning.* Set up and operate the measurement system in accordance with the manufacturer's written instructions and drawings. Offset the zero point of the chart recorder so that negative values up to 5 percent of the span value may be registered. Operate the system for an initial 168-hour conditioning period. During this initial period, the system should measure the gas stream volumetric flow rate in a normal operational manner. After completion of this conditioning period, the formal 168-hour performance and operational test period shall begin.

5.1.2 *Field test for accuracy and operational period.* During the 168-hour test period, the system should be continuously measuring gas volumetric flow rate at all times. During this period make a series of 14 volumetric flow rate determinations simultaneously using the reference method and the measurement system. The 14 determinations can be made at any time interval at least one hour apart during the 168-hour period except that at least one determination on five different days must be made with one determination on the last day of such period. The determinations shall be conducted over the range of volumetric flow rates expected to occur during normal operation of the source. The measurement system volumetric flow rate reading corresponding to the period of time during which each reference method run was made may be obtained by continuous integration of the measurement system signal over the test interval. Integration may be by use of mechanical integration of electrical units on the chart recorder or use of a planimeter on the strip chart recorder. The location and orientation of the reference method measurement device and the measurement system should be as close as practical without interference, but no closer than 1.3 cm (0.5 inch) to each other and shall be such that dilution air or other interferences cannot be interjected into the stack or duct between the pitot tube and the measurement system. Be careful not to locate the reference method pitot tube directly up or down stream of the measurement system sensor.

5.1.3 *Field test for calibration drift and zero drift.* At 24-hour intervals, but more frequently if recommended by the manufacturer, subject the measurement system to the manufacturer's specified zero and calibration procedures, if appropriate. Record the measurement system output readings before and after adjustment. Automatic corrections made by the system without operator intervention are allowable at anytime.

5.1.4 *Field test for orientation sensitivity.* If a velocity measurement system is either a single point measurement device or a pressure sensor or any other device such as pitot tube which uses the flow direction of the test gas, then the following test shall be followed and a performance specification of ±10 degrees device orientation sensitivity for ±4 percent flow rate determination accuracy must be met in order for the measurement system to be considered acceptable under this method. This is in addition to the performance specifications given in paragraph 4 of this appendix. During a period of relatively steady state gas flow, perform the following orientation test using the measurement system. The system should be continuously measuring gas velocity at all times. Rotate the measurement 10° on each side of the direction of flow in increments of 5°. Perform this test three times each at:

(1) Maximum operating velocity (±15 percent);

(2) 67 percent ±7.5 percent of the maximum operating velocity; and

(3) 33 percent ±7.5 percent of the maximum operating velocity if (2) and (3) are normal operating practices.

6. *Calculations data analysis and reporting.*

6.1 *Procedure for determination of stack gas volumetric flow rate.* Calculate the reference stack gas velocity and corresponding stack gas volumetric flow rate with the calibrated type S pitot tube measurements by the reference method. Calculate the measurement system stack gas volumetric flow rate as specified by the manufacturer's written instructions. Record the volumetric flow rates for each in the appropriate tables.

6.2 *Procedure for determination of mean values and 95 percent confidence intervals.*

6.2.1 *Mean value.* The mean value of a data set is calculated according to Equation E–1.

EQUATION E–1

$$\bar{x} = \frac{1}{n}\sum_{i=1} x_i$$

where:

x_i=individual values.
Σ=sum of the individual values.
$\bar{x}$=mean value.
n=data points.

6.2.2 *95 percent confidence level.* The 95 percent confidence level (two sided) is calculated according to Equation E–2.

EQUATION E–2

$$C.I._{95} = \frac{t_{.975}}{n\sqrt{n-1}}\sqrt{n\left(\sum x_i 2\right) - \left(\sum x_i\right)^2}$$

where:

Σx_i=sum of all data points.
(Σx_i)=sum of squares of all data points.
$C.I._{95}$=95 percent confidence interval estimate of the average mean value.

VALUES FOR $t_{.975}$

n	$t_{.975}$	n	$t_{.975}$	n	$t_{.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

The values in this table are already corrected for n–1 degrees of freedom. Use n

equal to the number of samples as data points.

6.3 *Data analysis and reporting.*

6.3.1 *Accuracy (relative).* First, calculate the mean reference value (Equation E–1) of the 14 average volumetric flow rates calculated by the reference method. Second, from the 14 pairs of average volumetric flow rates calculated by the reference method and measurement system volumetric flow rate readings, calculate the mean value (Equation E–1) of the differences of the 14 paired readings. Calculate the 95 percent confidence interval (Equation E–2) using the differences of fourteen paired readings. To calculate the values in the second part of this section substitute d_i for x_i and $\bar{d}$ for $\bar{x}$ in Equations E–1 and E–2 where d_i equals the difference of each paired reading and $\bar{d}$ equals the mean value of the fourteen paired differences. Third, report the sum of the absolute mean value of the differences of the fourteen paired readings and the 95 percent confidence interval of the differences of value calculated in the first part of the section. Divide this total by the mean reference value and report the result as a percentage. This percentage is the relative accuracy.

6.3.2 *Zero drift (24 hour).* From the zero values measured each 24 hours during the field test, calculate the differences between successive readings expressed in volumetric flow rate units. Calculate the mean value of these differences and the confidence interval of these differences using Equations E–1 and E–2. Report the sum of the absolute value of the mean difference and the confidence interval as a percentage of the measurement system span. This percentage is the zero drift.

6.3.3 *Calibration drift (24 hour).* From the calibration values measured every 24 hours during the field test calculate the differences between: (1) The calibration reading after zero and calibration adjustment, and (2) the calibration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using Equations E–1 and E–2. Report the sum of the absolute value of the mean difference and confidence interval as a percentage of the measurement system span. This percentage is the calibration drift.

6.3.4 *Operation period.* Other than that clearly specified as required in the operation and maintenance manual, the measurement system shall not require any corrective maintenance, repair, replacement or adjustment during the 168-hour performance and operational test period. If the measurement system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168-hour test period, the operational period will be successfully concluded. Failure of the measurement to meet this requirement shall call for a repetition of the 168-hour test period. Portions of the test, except for the 168-hour field test period, which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one-week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

6.3.5 *Orientation sensitivity.* In the event the conditions of paragraph 5.1.4 of this appendix are required, the following calculations shall be performed. Calculate the ratio of each measurement system reading divided by the reference pitot tube readings. Graph the ratio vs. angle of deflection on each side of center. Report the points at which the ratio differs by more than ±4 percent from unity (1.00).

[40 FR 5521, Feb. 6, 1975]

FINDING AIDS

A list of CFR titles, subtitles, chapters, subchapters and parts and an alphabetical list of agencies publishing in the CFR are included in the CFR Index and Finding Aids volume to the Code of Federal Regulations which is published separately and revised annually.

Appendix C

Data Handling Examples for Rolling Averages

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Example 1.) Data Validation of 8-hour Rolling Averages with Various Missing 1-hour sub-averages:

Date	Hour	1-hour avg.valid?		# of valid 1-hr Sub-avg in previous 8-hr period?	8-hr rolling avg. valid? (75% rule)
10/1/2000	7	Yes		8	valid
	8	NO	(calibration)	7	valid
	9	NO	(calibration)	6	valid
	10	Yes		6	valid
	11	Yes		6	valid
	12	Yes		6	valid
	13	Yes		6	valid
	14	Yes		6	valid
	15	Yes		6	valid
	16	Yes		7	valid
	17	Yes		8	valid
	18	Yes		8	valid
	19	Yes		8	valid
	20	Yes		8	valid
	21	NO	(audit)	7	valid
	22	NO	(audit)	6	valid
	23	NO	(audit)	5	invalid
	24	Yes		5	invalid
10/2/2000	1	NO	(maintenance)	4	invalid
	2	NO	(maintenance)	3	invalid
	3	Yes		3	invalid
	4	Yes		3	invalid
	5	Yes		4	invalid
	6	Yes		5	invalid
	7	Yes		6	valid
	8	Yes		6	valid
	9	Yes		7	valid
	10	Yes		8	valid
	11	Yes		8	valid

Example 2.) Valid 8-hour Rolling Averages after (cold) Source Startup:

SEE SECTION 3.7.2.2 for Adjustment of Source time for Data Capture calc. For hrs 7-13

Date	Hour	1-hour avg. valid?	Reported valid 8-hr rolling averages (NR=Not reported)
***Source startup at 6**			
10/1/2000			
	7	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	8	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	9	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	10	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	11	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	12	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	13	Yes	NR (valid 1-hour data included in first 8-hour rolling avg.)
	14	Yes	YES (source on 8-hrs; 8-hrs of valid 1-hr CEMS data for previous 8-hr)
	15	Yes	YES
	16	Yes	YES
	17	Yes	YES
	18	Yes	YES
	19	Yes	YES
	20	Yes	YES
	21	Yes	YES
	22	Yes	YES
	23	Yes	YES
	24	Yes	YES
10/2/2000			
	1	Yes	YES
	2	Yes	YES
	3	Yes	YES
	4	Yes	YES
	5	Yes	YES
	6	Yes	YES
	7	Yes	YES
	8	Yes	YES
	9	Yes	YES
	10	Yes	YES
	11	Yes	YES

Example 3.) Valid 24-hour Rolling Averages after (cold) Source Startup:

SEE SECTION 3.7.2.2 for Adjustment of Source time for Data Capture calc. For hour 7(10/01)-hour 6(10/02)

Date	Hour	1-hr Avg valid?	Reported valid 8-hr rolling averages (NR=Not Reported)
***Source startup at 6**			
10/1/2000			
	7	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	8	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	9	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	10	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	11	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	12	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	13	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	14	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	15	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	16	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	17	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	18	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	19	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	20	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	21	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	22	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	23	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	24	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
10/2/2000			
	1	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	2	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	3	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	4	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	5	Yes	NR (valid 1-hour data included in first 24-hour rolling avg.)
	6	Yes	YES (source on 24-hrs; 24-hrs of valid 1-hr CEMS data for previous 24-hr)
	7	Yes	YES
	8	Yes	YES
	9	Yes	YES
	10	Yes	YES
	11	Yes	YES

Example 4.) Valid 24-hour Rolling Averages with Various Missing 1-hour sub-averages:

Date	Hour	1-hr avg. valid?		#of valid 1-hr sub-avg. in previous 24-hr period?	24-hr avg. validity (75%Rule)
10/1/2000					
	7	Yes		24	valid
	8	NO	(calibration)	23	valid
	9	NO	(calibration)	22	valid
	10	NO	(calibration)	21	valid
	11	NO	(calibration)	20	valid
	12	NO	(calibration)	19	valid
	13	Yes		18	valid
	14	Yes		18	valid
	15	Yes		18	valid
	16	Yes		18	valid
	17	Yes		18	valid
	18	Yes		19	valid
	19	Yes		20	valid
	20	Yes		21	valid
	21	Yes		22	valid
	22	Yes		23	valid
	23	Yes		24	valid
	24	NO	(maintenance)	23	valid
10/2/2000					
	1	NO	(maintenance)	22	valid
	2	NO	(maintenance)	21	valid
	3	NO	(maintenance)	20	valid
	4	NO	(maintenance)	19	valid
	5	NO	(maintenance)	18	valid
	6	NO	(maintenance)	17	invalid
	7	NO	(maintenance)	16	invalid
	8	Yes		16	invalid
	9	Yes		16	invalid
	10	Yes		16	invalid
	11	Yes		16	invalid
	12	Yes		16	invalid
	13	Yes		16	invalid
	14	Yes		16	invalid
	15	Yes		16	invalid
	16	Yes		16	invalid
	17	Yes		16	invalid
	18	Yes		16	invalid
	19	Yes		16	invalid
	20	Yes		16	invalid
	21	Yes		16	invalid
	22	Yes		16	invalid
	23	Yes		16	invalid
	24	Yes		17	invalid
10/3/2000					
	1	Yes		18	valid
	2	Yes		19	valid

Appendix D

Proposed Amendments to *40 CFR Part 60 Appendix F Procedure 3-Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources* (*68 Federal Register, page 24696, May 8, 2003)*

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Federal departments' or agencies' stocks, Federal departments or agencies may wish to submit requests as far in advance of the 15 calendar days as possible. The written notification of the proposed sale must include:

(1) The name and amount of the chemical to be sold;

(2) The name and address of the prospective bidder;

(3) The name and address of the prospective end-user, in cases where a sale is being brokered;

(4) Point(s) of contact for the prospective bidder and, where appropriate, prospective end-user; and

(5) The end use of the chemical.

(c) Within 15 calendar days of receipt of a request for certification, the Administrator will certify in writing to the head of the Federal department or agency that there is, or is not, reasonable cause to believe that the sale of the specific chemical to the specific bidder and end-user would result in the illegal manufacture of a controlled substance. In making this determination, the following factors must be considered:

(1) Past experience of the prospective bidder or end-user in the maintenance of effective controls against diversion of listed chemicals into other than legitimate medical, scientific, and industrial channels;

(2) Compliance of the prospective bidder or end-user with applicable state and local law;

(3) Prior conviction record of the prospective bidder or end-user relating to listed chemicals or controlled substances under Federal or state laws; and

(4) Such other factors as may be relevant to and consistent with the public health and safety.

(d) If the Administrator certifies to the head of a Federal department or agency that there is no reasonable cause to believe that the sale of a specific chemical to a prospective bidder and end-user will result in the illegal manufacture of a controlled substance, that certification will be effective for one year from the date of issuance with respect to further sales of the same chemical to the same prospective bidder and end-user, unless the Administrator notifies the head of the Federal department or agency in writing that the certification is withdrawn. If the certification is withdrawn, DEA will also provide written notice to the bidder and end-user, which will contain a statement of the legal and factual basis for this determination.

(e) If the Administrator determines there is reasonable cause to believe the sale of the specific chemical to a specific bidder and end-user would result in the illegal manufacture of a controlled substance, DEA will provide written notice to the head of a Federal department or agency refusing to certify the proposed sale under the authority of 21 U.S.C. 890. DEA also will provide, within fifteen calendar days of receiving a request for certification from a Federal department or agency, the same written notice to the prospective bidder and end-user, and this notice also will contain a statement of the legal and factual basis for the refusal of certification. The prospective bidder and end-user may, within thirty calendar days of receipt of notification of the refusal, submit written comments or written objections to the Administrator's refusal. At the same time, the prospective bidder and end-user also may provide supporting documentation to contest the Administrator's refusal. If such written comments or written objections raise issues regarding any finding of fact or conclusion of law upon which the refusal is based, the Administrator will reconsider the refusal of the proposed sale in light of the written comments or written objections filed. Thereafter, within a reasonable time, the Administrator will withdraw or affirm the original refusal of certification as he determines appropriate. The Administrator will provide written reasons for any affirmation of the original refusal. Such affirmation of the original refusal will constitute a final decision for purposes of judicial review under 21 U.S.C. 877.

(f) If the Administrator determines there is reasonable cause to believe that an existing certification should be withdrawn, DEA will provide written notice to the head of a Federal department or agency of such withdrawal under the authority of 21 U.S.C. 890. DEA also will provide, within fifteen calendar days of withdrawal of an existing certification, the same written notice to the bidder and end-user, and this notice also will contain a statement of the legal and factual basis for the withdrawal. The bidder and end-user may, within thirty calendar days of receipt of notification of the withdrawal of the existing certification, submit written comments or written objections to the Administrator's withdrawal. At the same time, the bidder and end-user also may provide supporting documentation to contest the Administrator's withdrawal. If such written comments or written objections raise issues regarding any finding of fact or conclusion of law upon which the withdrawal of the existing certification is based, the Administrator will reconsider the withdrawal of the existing certification in light of the written comments or written objections filed. Thereafter, within a reasonable time, the Administrator will withdraw or affirm the original withdrawal of the existing certification as he determines appropriate. The Administrator will provide written reasons for any affirmation of the original withdrawal of the existing certification. Such affirmation of the original withdrawal of the existing certification will constitute a final decision for purposes of judicial review under 21 U.S.C. 877.

Dated: April 25, 2003.

John B. Brown III,

Acting Administrator.

[FR Doc. 03–11393 Filed 5–7–03; 8:45 am]

BILLING CODE 4410–09–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[AD–FRL–7496–1]

RIN 2060–AH23

Amendments to Standards of Performance for New Stationary Sources; Monitoring Requirements

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule and request for public comments.

SUMMARY: In this proposal we, the Environmental Protection Agency (EPA), propose to add Procedure 3, Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources, to the regulations. This action provides quality assurance/quality control procedures for a continuous opacity monitoring system (COMS) used for compliance purposes. We are seeking public comments on this proposal.

DATES: *Comments.* You must submit comments so that they are received on or before July 7, 2003.

Public Hearing. If a public hearing has been requested, and anyone contacts us requesting to speak at a public hearing by May 22, 2003, a public hearing will be held on August 6, 2003 beginning at 9 a.m. EST. If you are interested in attending the hearing, you must call the contact person listed below (see **FOR FURTHER INFORMATION CONTACT**). If a hearing is held, rebuttal and supplementary information may be submitted to the docket for 30 days following the hearing.

Request to Speak at Hearing. If you wish to present oral testimony at the public hearing, you must call the contact person listed below (see FOR FURTHER INFORMATION CONTACT) by July 7, 2003.

ADDRESSES: *Comments.* Comments may be submitted electronically, by mail, by facsimile, or through hand delivery/courier. Follow the detailed instructions as provided in Section I of the SUPPLEMENTARY INFORMATION section. The EPA requests a separate copy also be sent to the contact person listed in FOR FURTHER INFORMATION CONTACT.

Public Hearing. If a public hearing is held, it will be held at the EPA campus in Research Triangle Park, North Carolina. You should contact Mr. Solomon Ricks, Source Measurement Analysis Group, Emissions, Monitoring, and Analysis Division (D243–02), U. S. EPA, Research Triangle Park, North Carolina 27711, telephone number (919) 541–5242, to request to speak at a public hearing or to find out if a hearing will be held.

FOR FURTHER INFORMATION CONTACT: Mr. Solomon Ricks, Source Measurement Analysis Group, Emissions, Monitoring, and Analysis Division (D243–02), U. S. EPA, Research Triangle Park, North Carolina 27711; telephone number (919) 541–5242; facsimile number (919) 541–1039; electronic mail (e-mail) address: *ricks.solomon@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. General Information

A. How Can I Get Copies of Related Information?

1. *Docket.* EPA has established an official public docket for this action under Docket ID No. A–91–08. The official public docket is the collection of materials that is available for public viewing at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566–1744, and the telephone number for the Air and Radiation Docket is (202) 566–1742.

2. *Electronic Access.* An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may use EPA Dockets at *http://www.epa.gov/edocket/* to submit or view public comments, access the index listing of the contents of the official public docket, and to access those documents in the public docket that are available electronically. Once in the system, select "search," then key in the appropriate docket identification number.

Certain types of information will not be placed in the EPA Dockets. Information claimed as confidential business information ("CBI") and other information whose disclosure is restricted by statute, which is not included in the official public docket, will not be available for public viewing in EPA's electronic public docket. EPA's policy is that copyrighted material will not be placed in EPA's electronic public docket but will be available only in printed, paper form in the official public docket. Although not all docket materials may be available electronically, you may still access any of the publicly available docket materials through the docket facility identified in Section I.B.

For public commenters, it is important to note that EPA's policy is that public comments, whether submitted electronically or in paper, will be made available for public viewing in EPA's electronic public docket as EPA receives them and without change, unless the comment contains copyrighted material, CBI, or other information whose disclosure is restricted by statute. When EPA identifies a comment containing copyrighted material, EPA will provide a reference to that material in the version of the comment that is placed in EPA's electronic public docket. The entire printed comment, including the copyrighted material, will be available in the public docket.

Public comments submitted on computer disks that are mailed or delivered to the docket will be transferred to EPA's electronic public docket. Public comments that are mailed or delivered to the Docket will be scanned and placed in EPA's electronic public docket. Where practical, physical objects will be photographed, and the photograph will be placed in EPA's electronic public docket along with a brief description written by the docket staff.

For additional information about EPA's electronic public docket visit EPA Dockets online or see 67 FR 38102, May 31, 2002.

B. How and to Whom Do I Submit Comments?

You may submit comments electronically, by mail, by facsimile, or through hand delivery/courier. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your comment. Please ensure that your comments are submitted within the specified comment period. Comments received after the close of the comment period will be marked "late." EPA is not required to consider these late comments.

1. *Electronically.* If you submit an electronic comment as prescribed below, EPA recommends that you include your name, mailing address, and an e-mail address or other contact information in the body of your comment. Also include this contact information on the outside of any disk or CD ROM you submit, and in any cover letter accompanying the disk or CD ROM. This ensures that you can be identified as the submitter of the comment and allows EPA to contact you in case EPA cannot read your comment due to technical difficulties or needs further information on the substance of your comment. EPA's policy is that EPA will not edit your comment, and any identifying or contact information provided in the body of a comment will be included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment.

i. *EPA Dockets.* Your use of EPA's electronic public docket to submit comments to EPA electronically is EPA's preferred method for receiving comments. Go directly to EPA Dockets at *http://www.epa.gov/edocket,* and follow the online instructions for submitting comments. Once in the system, select "search," and then key in Docket ID No. A–91–08. The system is an "anonymous access" system, which means EPA will not know your identity, e-mail address, or other contact information unless you provide it in the body of your comment.

ii. *E-mail.* Comments may be sent by electronic mail (e-mail) to *A-and-R-Docket@epa.gov,* Attention Docket ID No. A–91–08. In contrast to EPA's electronic public docket, EPA's e-mail system is not an "anonymous access" system. If you send an e-mail comment directly to the Docket without going through EPA's electronic public docket, EPA's e-mail system automatically captures your e-mail address. E-mail addresses that are automatically captured by EPA's e-mail system are included as part of the comment that is placed in the official public docket, and made available in EPA's electronic public docket.

iii. *Disk or CD ROM.* You may submit comments on a disk or CD ROM that

you mail to the mailing address identified in Section I.B.2. These electronic submissions will be accepted in WordPerfect or ASCII file format. Avoid the use of special characters and any form of encryption.

2. *By Mail.* Send your comments to: Air and Radiation Docket, U.S. Environmental Protection Agency, Mailcode: 6102T, 1200 Pennsylvania Ave., NW., Washington, DC, 20460, Attention Docket ID No. A–91–08.

3. *By Hand Delivery or Courier.* Deliver your comments to: Air and Radiation Docket, U.S. Environmental Protection Agency (West), 1301 Constitution Ave., NW., Room B–102, Washington, DC, 20004, Attention Docket ID No. A–91–08. Such deliveries are only accepted during the Docket's normal hours of operation as identified in Section I.A.1.

II. Outline

We provided the following outline to aid in reading the preamble to this proposal.

I. Introduction

A. Regulatory History of the Proposed Rule

Procedure 3, Quality Assurance (QA) Requirements for Continuous Opacity Monitoring Systems at Stationary Sources, was originally published in the **Federal Register** on October 7, 1992 (57 FR 46114) as Method 203. At that time, it was proposed as an addition to appendix M, Example Test Methods for State implementation plans (SIP's), in 40 CFR part 51. Concurrently, work was underway to update and revise Performance Specification 1 (PS–1), Performance Specifications for a Continuous Opacity Monitoring System (COMS). It was decided to postpone further work on Method 203 until the revisions to PS–1 were promulgated. Revisions to PS–1 were published in the **Federal Register** on November 25, 1994 (59 FR 60585). Comments on the November 1994 proposal revealed some concern and confusion with the design specifications and with the test procedures to verify compliance with the design specifications. To ensure adequate understanding of the technical issues uncovered in the comments, a public stakeholders' meeting was held on June 12, 1996. As a result of that meeting, representatives from the American Society for Testing and Materials (ASTM) D22.03, a Subcommittee on Ambient Atmospheres and Source Emissions, volunteered to undertake development of a standard practice for opacity monitor manufacturers.

On September 23, 1998, we published a supplemental proposal in the **Federal Register** (63 FR 50824) to incorporate ASTM D 6216–98 by reference into the proposed revisions to PS–1. After addressing the comments from the supplemental proposal, we published PS–1 as a final rule in the **Federal Register** on August 10, 2000 (65 FR 48914).

Following the promulgation of PS–1, we formed a stakeholders' group to address technical concerns, similar to the concerns revealed in PS–1, with Method 203 as it was originally proposed. The stakeholders' group was open to the public and consisted of opacity monitor manufacturers, representatives from the ASTM D22.03 subcommittee, State/local, and regional office personnel. After holding a series of phone conferences, we decided to re-write and re-propose Method 203. The re-write takes into account technological advances in the design and manufacture of opacity monitors, as well as the revisions to PS–1. We decided to re-propose the method as an additional procedure, Procedure 3, to be added to 40 CFR part 60, appendix F, Quality Assurance Procedures for Continuous Emission Monitoring Systems. Today's proposal provides you the opportunity to comment on the changes made to Method 203 (Procedure 3) since its original proposal in October 1992, including the codification of Procedure 3 in the aforementioned appendix. Comments are not limited to the changes contained in this proposal; you may comment on Procedure 3 in its entirety. It is for this reason we are allowing a 60-day comment period.

II. Differences Between Proposed Method 203 and the Proposed Rule (Procedure 3)

A. Quarterly Performance Audit

In re-writing Method 203 we determined that, because of technological advancements in opacity monitors, requirements proposed in October 1992 were no longer necessary. Specifically, regarding the quarterly performance audits, we decided to delete the optical surface dust accumulation check, the stack exit correlation error (pathlength correction factor) check, as well as the zero and upscale response checks.

The design specifications outlined in ASTM D 6216–98, incorporated by reference into PS–1, requires manufacturers to build opacity monitors capable of adjusting the reading due to the accumulation of dust on exposed optical surfaces. Opacity monitors are also required to display the level of dust accumulation. We also determined it to be in the source's best interest to be aware of dust accumulation on a regular basis, since the result of dust accumulation would lead to higher opacity readings.

The stack exit correlation error (pathlength correction factor [PLCF]) was deleted because opacity monitor manufacturers are required to certify the system has been built so that the PLCF either cannot be changed, is recorded during each calibration cycle, or an alarm sounds when the value is changed from the certified value.

The quarterly zero and upscale response checks were deleted because the calibration drift checks (zero and upscale) are required on a daily basis. We determined that requiring zero and upscale response checks in addition to the calibration drift checks offered no additional benefits in verifying the performance of the COMS.

B. Corrective Action Section

Procedure 3 includes a new section describing the corrective action required to return an opacity monitor to normal operation after a specified maintenance or repair procedure has been executed in response to a monitor failure or pending failure. After successful completion of the applicable corrective action, the monitor can be returned to an on-line status which provides valid emission monitoring data as long as the on-going QA requirements are met.

The corrective action section establishes four classes of maintenance and repair procedures: (1) Routine/preventative maintenance, (2) Measurement non-critical repairs, (3) Measurement critical repairs, and (4)

Rebuilt or refurbished analyzers. A table is included detailing the diagnostic tests required to maintain PS–1 certification following the appropriate corrective action.

C. Replacement Opacity Monitors

Procedure 3 also allows the use of a temporary replacement monitor in the event a certified opacity monitor is removed for extended service and the repair of the monitor requires more downtime than the user wishes to incur. The use of a replacement monitor will be allowed provided the monitor meets requirements specified in Procedure 3.

III. Statutory and Executive Order Reviews

A. Executive Order 12866, Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), we are required to judge whether a regulatory action is ''significant'' and therefore subject to Office of Management and Budget (OMB) review and the requirements of this Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligation of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, we have determined that this rule is not ''significant'' because none of the listed criteria apply to this action. That is, this proposed rule, if promulgated, would not establish independent requirements for regulated entities. It would only apply where PS–1 is specified as the applicable method to demonstrate compliance with national emission standards or other control requirements. Consequently, this action was not submitted to OMB for review under Executive Order 12866.

B. Paperwork Reduction Act

This proposed rule does not contain any information collection requirements subject to the Office of Management and Budget review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

C. Regulatory Flexibility Act

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act (APA) or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business whose parent company has fewer than 750 employees; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities because no significant additional cost will be incurred by such entities because of the proposed rule. The requirements of the proposal details quality assurance (QA)/quality control (QC) procedures for COMS to demonstrate continued conformance with PS–1. Facilities required by other rules to use COMS for compliance purposes have some form of QA/QC in place already; this proposal adds only minor additional requirements.

Although this proposed rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. We formed a stakeholders' group to address technical concerns, similar to the concerns revealed in PS–1, with the proposed rule. The stakeholders' group was open to the public and consisted of opacity monitor manufacturers, representatives from the ASTM D22.03 subcommittee, representatives from electric utilities, State/local, and regional office personnel. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under Section 202 of the UMRA, we must prepare a budgetary impact statement to accompany any proposed rule, or any final rule for which a notice of proposed rulemaking was published, that includes a Federal mandate that may result in estimated costs to State, local, or tribal governments in the aggregate, or to the private sector, of $100 million or more in any one year. Under Section 205, if a budgetary impact statement is required under Section 202, we must select the least costly, most cost-effective, or least burdensome alternative that achieves the objective of the rule, unless we explain why this alternative is not selected or the selection of this alternative is inconsistent with law. Section 203 requires us to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the rule. Section 204 requires us to develop a process to allow elected State, local, and tribal government officials to provide input in the development of any proposal containing a significant Federal intergovernmental mandate.

We have determined that this proposed rule does not include a Federal mandate that may result in estimated costs of $100 million or more to either State, local, or tribal governments in the aggregate, or to the private sector in any one year. Rules establishing test methods and/or quality assurance requirements impose no costs independent from national emission standards which require their use, and such costs are fully reflected in the regulatory impact assessment for those emission standards. We have also determined that this proposed rule does not significantly or uniquely impact small governments. Therefore, today's rule is not subject to the requirements of Section 203 of the UMRA.

E. Executive Order 13132, Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires that we develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.''

''Policies that have federalism implications'' is defined in the

Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Section 6 of Executive Order 13132, we may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the State and local governments, or we consult with State and local officials early in the process of developing the proposed regulation. We also may not issue a regulation that has federalism implications and that preempts State law unless we consult with State and local officials early in the process of developing the proposed regulation.

This proposed rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, the requirements of Section 6 of the Executive Order do not apply to this proposed rule.

F. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." "Policies that have tribal implications" is defined in the Executive Order to include regulations that have "substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes."

This proposed rule does not have tribal implications, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this rule.

G. Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, EPA must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives that EPA considered. This proposed rule is not subject to Executive Order 13045 because it is not economically significant under Executive Order 12866 and because it does not concern environmental health and safety risks.

H. Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This rule is not subject to Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001) because it is not expected to have a significant adverse affect on the supply, distribution, or use of energy.

I. National Technology Transfer and Advancement Act of 1995

The National Technology Transfer and Advancement Act of 1995 (NTTAA), Section 12(d), Public Law 104–113, requires Federal agencies and departments to use voluntary consensus standards instead of government-unique standards in their regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, material specifications, test method, sampling and analytical procedures, business practices, etc.) that are developed or adopted by one or more voluntary consensus standards bodies. Examples of organizations generally regarded as voluntary consensus standards bodies include the American Society for Testing and Materials (ASTM), the National Fire Protection Association (NFPA), and the Society of Automotive Engineers (SAE). The NTTAA requires federal agencies like us to provide Congress, through OMB, with explanations when an agency decides not to use available and applicable voluntary consensus standards.

During this rulemaking, we identified no voluntary consensus standards that might be applicable. Specifically, there were none which specified quality assurance/quality control procedures for continuous opacity monitoring systems.

List of Subjects in 40 CFR Part 60

Environmental protection, Air pollution control, Continuous opacity monitoring.

Dated: May 2, 2003.

Christine Todd Whitman,

Administrator.

We propose that 40 CFR part 60 be amended as follows:

1. The authority citation for part 60 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

2. Appendix F of part 60 is amended by adding Procedure 3 to read as follows:

Appendix F to Part 60—Quality Assurance Procedures

* * * * *

Procedure 3—Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources

1. What Are the Purpose and Applicability of Procedure 3? The purpose of Procedure 3 is to help implement procedures established by Performance Specification 1 (PS–1) for testing and verification of continuous opacity monitoring systems (COMS) applicable to new stationary sources by establishing the minimum quality control (QC) and quality assurance (QA) requirements to assess and assure the quality of a continuous opacity monitoring system (COMS). Procedure 3 applies to a COMS used for continuously determining compliance with emission standards as specified in an applicable federally enforceable regulation.

1.1 Who must comply with Procedure 3? You must comply with Procedure 3 if you are required by a federally enforceable regulation to install and operate a COMS on a continuous basis.

1.2 What are the data quality objectives of Procedure 3? The overall data quality objective (DQO) of Procedure 3 is the generation of valid, representative opacity data. Procedure 3 specifies the minimum requirements for controlling and assessing the quality of COMS data submitted to us or the delegated regulatory agency. Procedure 3 requires you to perform periodic evaluations of a COMS performance and to develop and implement QA/QC programs to ensure that a COMS data quality is maintained. You must meet these minimum requirements if you are responsible for one or more COMS used for compliance monitoring.

1.3 What is the intent of the QA/QC procedures found in Procedure 3? Procedure 3 is intended to establish the minimum requirements to verify and maintain an acceptable level of quality of the data produced by COMS. Its general terms are intended to allow you to develop a program that is most effective for your circumstances. You may adopt QA/QC procedures which go beyond these minimum requirements to ensure compliance with applicable regulations.

1.4 When must I comply with Procedure 3? You must comply with Procedure 3

following successful completion of the field audit performance tests outlined in PS–1.

2. What are the basic functions of Procedure 3? The basic functions of Procedure 3 are assessment of the quality of your COMS data, and control and improvement of the quality of the data by implementing QC requirements and corrective actions. Procedure 3 provides requirements for:

(1) Daily instrument zero and upscale drift checks, as well as daily status indicators check,

(2) Quarterly performance audits, which includes the following assessments:

(i) Optical alignment,

(ii) Calibration error,

(iii) Zero compensation, and

(3) Zero alignment.

3. What Special Definitions Apply to Procedure 3? The definitions of Procedure 3 include those provided in PS–1 and ASTM D 6216–98 (incorporated by reference into PS–1), with the following additions:

3.1 *Out-of-Control Periods.* "Out of control" means that one or more COMS parameters falls outside of the acceptable limits established by this rule.

(1) *Daily Assessments.* Whenever the calibration drift (CD) exceeds twice the specification of PS–1, the COMS is out-of-control. The beginning of the out-of-control period is the time corresponding to the completion of the daily calibration drift check. The end of the out-of-control period is the time corresponding to the completion of appropriate adjustment and subsequent successful CD assessment.

(2) *Quarterly and Annual Assessment.* Whenever a quarterly performance audit or annual zero alignment indicates unacceptable results, the COMS is out-of-control. The beginning of the out-of-control period is the time corresponding to the completion of the performance audit indicating an unacceptable performance. The end of the out-of-control is the time corresponding to the completion of appropriate corrective actions and subsequent successful audit (or, if applicable, partial audit).

4. What interferences must I avoid? Opacity cannot be measured accurately in the presence of water droplets. Thus, COMS opacity compliance determinations cannot be made when water droplets are present such as downstream of a wet scrubber without reheat or other saturated flue gas locations. Therefore, COMS must be located to avoid interferences with moisture or water droplets.

5. What Do I Need to Know to Ensure the Safety of Persons Using Procedure 3? People using Procedure 3 may be exposed to hazardous materials, operations, and equipment. Procedure 3 does not purport to address all of the safety issues associated with its use. It is your responsibility to establish appropriate safety and health practices, and determine the applicable regulatory limitations before performing this procedure. You should consult the COMS user's manual for specific precautions to take.

6. What Equipment and Supplies Do I Need? The equipment and supplies you need are those specified in PS–1.

7. What Reagents and Standards Do I Need? The reagents and standards you need are those specified in PS–1.

8. What Sample Collection, Preservation, Storage, and Transport Are Relevant to This Procedure? [Reserved]

9. What Quality Control Measures Are Required by This Procedure for My COMS? You must develop and implement a QC program for your COMS. Your QC program must, at a minimum, include written procedures which describe in detail complete step-by-step procedures and operations for the activities in paragraphs (1) through (4):

(1) Procedures for performing drift checks, including both zero and upscale drift, and the status indicators check,

(2) Procedures for performing the quarterly performance audits,

(3) A means of checking the zero alignment of the COMS, and

(4) A program of corrective action for a malfunctioning COMS. The corrective action must include, at a minimum, the requirements specified in Section 10.5.

9.1 What QA/QC documentation must I have? You are required to keep the QA/QC written procedures on record and available for inspection by us, the State and/or local enforcement agency for the life of your COMS or until you are no longer subject to the requirements of this procedure.

9.2 What are the consequences of failing QC audits? Your QC procedures are deemed to be inadequate or your COMS incapable of providing quality data if you fail two consecutive QC audits (*i.e.*, out-of-control conditions revealed by the annual audits or quarterly audits). Therefore, if you fail the same two consecutive quarterly audits or five consecutive daily checks, you must either revise your QC procedures or repair (or replace) your COMS to correct the deficiencies causing the excessive inaccuracies. If you determine your COMS requires extensive repair, you may use a substitute COMS provided the substitute meets the requirements specified in Section 10.6.

10. What Calibration and Standardization Procedures Must I Perform for My COMS? You must perform routine system checks to assure proper operation of system electronics and optics, light and radiation sources and detectors, electric or electro-mechanical systems, and general stability of the system calibration. You must subject your COMS to a performance audit, to include checks of the individual COMS components and factor affecting the accuracy of the monitoring data, at least once per calendar quarter. At least annually, you must compare the COMS simulated zero to the actual clear path zero.

10.1 What routine system checks must I perform on my COMS? Necessary components of the routine system checks will depend upon design details of your COMS. At a minimum, you must verify the system operating parameters listed in paragraphs (1) through (3) on a daily basis. Some COMSs may perform one or more of these functions automatically, or as an integral portion of unit operations; other COMS may perform one or more of these functions manually.

(1) You must check the zero drift to assure stability of your COMS response to the zero check value. The simulated zero device, an automated mechanism within the transmissometer that produces a simulated clear path condition or low-level opacity condition, is used to check zero drift. You must, at a minimum, take corrective action on your COMS whenever the daily zero drift exceeds twice the applicable drift specification given in appendix B.

(2) You must check the upscale drift to assure stability of your COMS response to the upscale drift value. The upscale calibration device, an automated mechanism (employing a filter or reduced reflectance device) within the transmissometer that produces an upscale opacity value, is used to check the upscale drift. You must, at a minimum, take corrective action on your COMS whenever the daily upscale drift check exceeds twice the applicable drift specification given in appendix B.

(3) You must, at a minimum, check the status indicators, data acquisition system error messages, and other system self-diagnostic indicators. You must take appropriate corrective actions based on manufacturer's recommendations when the COMS is operating outside preset limits. All COMS data recorded during periods in which the fault status indicators are illuminated are to be considered invalid.

10.2 What are quarterly auditing requirements for my COMS? At a minimum, the parameters listed in paragraphs (1) through (3) are to be included in the quarterly performance audit.

(1) For units with automatic zero compensation, you must determine the zero compensation for the COMS. The value of the zero compensation applied at the time of the audit must be calculated as equivalent opacity, corrected to stack exit conditions, according to the procedures specified by the manufacturer. The compensation applied to the effluent recorded by the monitor system must be recorded.

(2) You must conduct a three-point calibration error test of the COMS. For either calibration error test methods identified below, three neutral density filters, meeting the requirements of PS–1, must be placed in the COMS light beam path for three nonconsecutive readings. The monitor responses must then be independently recorded from the COMS permanent data recorder. Additional guidance for conducting this test is included in section 8.1(3)(ii) of PS–1. The low-, mid-, and high-range calibration error results must be computed as the mean difference and 95 percent confidence interval for the difference between the expected and actual responses of the monitor as corrected to stack exit conditions. The equations necessary to perform the calculations are found in section 12.0 of PS–1. For the calibration error method, you must use the external audit device. You must confirm that the external audit device produces the proper zero value on the COMS data recorder.

(3) You must check the optical alignment of the COMS. The optical alignment must be checked when the stack temperature is ± 20 percent of the typical operating temperature as measured in degrees Farenheit.

10.3 What are the annual auditing requirements for my COMS?

(1) You must perform the primary zero alignment method under clear path conditions. The COMS may be removed from its installation and setup under clear path conditions or, if the process is not operating and the monitor path is free of particulate matter, the zero alignment may be conducted at the installed site. Determining if the monitor path is free of particulate matter can be accomplished by, but is not limited to, the following procedure: (1) Observe the instantaneous or one minute average opacity for at least two hours prior to the clear path adjustment; (2) open the reflector or detector housing and observe the projected light beam and look for the presence of forward scattered light (halo-effect); (3) if the beam observation reveals no perceptible particulate and the 2-hour readings do not vary more than ± 3 percent opacity, adjust the clear path zero based on the lowest opacity reading recorded during the 2-hour period. There must be no adjustments to the monitor other than the establishment of the proper monitor path length and correct optical alignment of the COMS components. You must record the COMS response to a clear condition and to the COMS's simulated zero condition as percent opacity corrected to stack exit conditions. For a COMS with automatic zero compensation, you must disconnect or disable the zero compensation mechanism or record the amount of correction applied to the COMS's simulated zero condition. The response difference in percent opacity to the clear path and simulated zero conditions must be recorded as the zero alignment error. You must adjust the COMS's simulated zero device to provide the same response as the clear path condition. You must perform the zero alignment audits with the COMS off the stack at least every three (3) years.

(2) As an alternative, monitors capable of allowing the installation of an external zero device (commonly referred to as a zero-jig) may use the device for the zero alignment, provided: (1) the zero-jig setting has been established for the monitor path length and recorded for the specific COMS by comparison of the COMS responses to the installed zero-jig and to the clear path condition; and (2) the zero-jig is demonstrated to be capable of producing a consistent zero response when it is repeatedly (*i.e.*, three consecutive installations and removals prior to conducting the final zero alignment check) installed on the COMS. The zero-jig setting must be permanently set at the time of initial zeroing to the clear path zero value and protected when not in use to ensure that the setting equivalent to zero opacity does not change. The zero-jig setting must be checked and recorded prior to initiating the zero alignment. If the zero-jig setting has changed, you must remove the COMS from the stack in order to reset the zero-jig. If you employ a zero-jig, you must perform the zero alignment audits with the COMS off the stack every three (3) years. If the zero-jig is adjusted within the three-year period, you must perform the zero alignment with the COMS off the stack three years from the date of adjustment.

10.4 What are my limits for excessive audit inaccuracy? Unless specified otherwise in the applicable subpart, the criteria for excessive inaccuracy are listed in paragraphs (1) through (4).

(1) What is the criterion for excessive zero or upscale drift? Your COMS is out-of-control if either the zero drift check or upscale drift check exceeds twice the applicable drift specification in appendix B for any one day.

(2) What is the criterion for excessive zero alignment? Your COMS is out-of-control if the zero alignment exceeds 2 percent opacity.

(3) What is the criterion to pass the quarterly performance audit? Your COMS is out-of-control if the results of a quarterly performance audit indicate noncompliance with the following criteria:

(i) The optical alignment misalignment error exceeds 3 percent opacity,

(ii) The zero compensation exceeds 4 percent opacity, or

(iii)The calibration error exceeds 3 percent opacity.

(4) What is the criterion for data capture? The data capture will be considered insufficient if your COMS fails to obtain valid opacity data for at least 95 percent of your operating hours per calendar quarter, considering COMS downtime for all causes (*e.g.*, monitor malfunctions, data system failures, preventative maintenance, unknown causes, etc.) except for downtime associated with routine zero and upscale checks and QA/QC activities required by this procedure. Whenever less than 95 percent of the valid data averages are obtained, you must either:

(i) Perform additional QA/QC activities as deemed necessary to assure acceptable data capture, or

(ii) Determine if the COMS is functioning properly. If your COMS is malfunctioning, you may use a substitute COMS until repairs are made, provided the substitute meets the requirements specified in Section 10.6.

10.5 What corrective action must I take if my COMS is malfunctioning? You must have a corrective action program in place to address the repair and/or maintenance of your COMS. There are four classes of maintenance and repair procedures to be considered; the classes are described in paragraphs (1) through (4). They may be performed either at the manufacturer's facility, a service provider's facility, the user's instrument laboratory, or at the stack/duct at the discretion of the owner/operator and within the recommendations of the manufacturer. They must be performed by persons either skilled and/or trained in the operation and maintenance of the analyzer. After the repair/maintenance of your COMS, you must ensure the COMS is still in compliance with PS–1. Table 17–1 outlines the tests required to maintain PS–1 certification.

(1) *Routine/preventative maintenance.* Includes the routine replacement of consumables, cleaning of optical surfaces, and adjustment of monitor operating parameters as needed to maintain normal operation. Replacement of consumables which have the possibility of adversely affecting the performance of an analyzer may cause the nature of the maintenance procedure to fall within one of the classifications described below.

(2) *Measurement Non-Critical Repairs.* Includes repair and/or replacement of standard non-critical components, the unique characteristics of which do not materially affect the performance of the monitor. These components include, but are not limited to, resistors, capacitors, inductors, transformers, semiconductors such as discrete components and integrated circuits, brackets and machined parts (not associated with internal optical components), cabling and connectors, electro mechanical components such as relays, solenoids, motors, switches, blowers, air filters, pressure/flow indicators, tubing, indicator lights, fuses, software with the same version and/or revision level, glass windows (uncoated or anti-reflection coated, but with no curvature), lenses with mounts where such mounts are not adjustable as installed, circuit boards where such boards are interchangeable and without unique adjustments (except offset and gain adjustments) for the specific analyzer of the same model, with such repairs to include the maintenance procedures required to ensure that the analyzer is appropriately setup.

(3) Replace or repair the primary measurement light source.

(4) *Measurement Critical Repairs.* Includes repair and/or replacement of measurement sensitive components, the unique characteristics of which may materially affect the performance of the monitor. These components include, but are not limited to, optical detectors associated with the opacity measurement/reference beam(s), spectrally selective optical filters, beam splitters, internal zero and/or upscale reference reflective or transmissive materials, electro-optical light switches, retro reflectors, adjustable apertures used on external zero devices or reflectors, lenses which have an adjustable mount, circuit boards which are not completely interchangeable and/or require unique adjustments for the specific analyzer, with such repairs to include the maintenance procedures required to ensure that the analyzer is appropriately setup.

(5) *Rebuilt or Refurbished analyzers.* Includes analyzers for which a major sub-assembly(ies) has/have been replaced or multiple lesser sub-assemblies with different revision levels from the original have been replaced and/or modified. Also, to be defined as a major change in the analyzer measurement detection and processing hardware or software.

(6) For other repairs or replacements not specifically described above, you must consult the manufacturer for the appropriate classification of that procedure. Manufacturers must use the above guidelines in determining the appropriate classification and provide a written recommendation. The final determination as to which category a given repair falls within will be made by the Administrator.

10.6 What requirements must I meet if I use a substitute opacity monitor? In the event your certified opacity monitor has to be removed for extended service, you may install a temporary replacement monitor to obtain required opacity emissions data, provided that:

(1) The temporary monitor is a like-kind replacement, where like-kind is defined as made by the same manufacturer; carries the same model number; uses the same reflector

configuration as the original (and may use the actual original reflector unit) for double pass monitors, or uses the *same* source or detector configuration as the original for single pass monitors (and may use the actual original source or detector unit—whichever one that did not fail); uses the same of later revision of software/firmware; setup with the same selection of configuration parameters; provides the same input/output signals; and uses the *same* peripheral equipment. *Same* in this context means the *same* as the original certified monitor which is being temporarily replaced,

(2) The temporary monitor has been certified according to ASTM D 6216–98 for which a manufacturer's certificate of conformance (MCOC) has been provided,

(3) The temporary monitor has not been used for more than 720 hours (30 days) of operation per year as a replacement for a fully certified opacity monitor on one location. After that time, the analyzer must complete a full certification according to PS–1 prior to further use as a temporary replacement monitor. Once a temporary replacement monitor has been installed and required testing and adjustments have been successfully completed, it can not be replaced by another temporary replacement monitor to avoid the full PS–1 certification testing required after 720 hours (30 days) of use,

(4) The temporary monitor has been installed and successfully completed an optical alignment assessment and status indicator assessment,

(5) The temporary monitor has successfully completed an off-stack clear path zero assessment and zero calibration value adjustment procedure,

(6) The temporary monitor has successfully completed an abbreviated zero and upscale drift check consisting of seven zero and upscale calibration value drift checks which may be conducted within a 24-hour period with not more than one calibration drift check every three hours, and not less than one calibration drift check every 25 hours. Calculated zero and upscale drift requirements are the same as specified for the normal PS–1 certification,

(7) The temporary monitor has successfully completed a three point calibration error test,

(8) The upscale reference calibration check value of the new monitor has been updated in the associated data recording equipment,

(9) The overall calibration of the monitor and data recording equipment has been verified, and

(10) The user has documented all of the above in the maintenance log, or in other appropriate permanent maintained records.

10.7 When do the out-of-control periods begin and end? The out-of-control periods are as specified in Section 3.1.

10.8 What are the limitations on use of my COMS data collected during out-of-control periods? During the period your COMS is out-of-control, you may not use your COMS data to calculate emission compliance or to meet minimum data availability requirements in this procedure or the applicable regulation.

10.9 What are the QA/QC reporting requirements for my COMS? You must report the accuracy results from Section 10 for your COMS at the interval specified in this procedure or the applicable regulation. Report the drift and accuracy information as a Data Assessment Report (DAR), and include one copy of this DAR for each quarterly audit with the report of emissions required under the applicable regulation. An example DAR is provided in Procedure 1, appendix F of this part.

10.10 What minimum information must I include in my DAR? As a minimum, you must include the information listed in paragraphs (1) through (5) in the DAR.

(1) Your name and address,

(2) Identification and location of your COMS(s),

(3) Manufacturer, model and serial number of your COMS(s),

(4) Assessment of COMS data accuracy/acceptability, and date of assessment, as determined by a performance audit described in section 10. If the accuracy audit results show your COMS to be out-of-control, you must report both the audit results showing your COMS to be out-of-control and the results of the audit following corrective action showing your COMS to be operating within specifications, and

(5) Summary of all corrective actions you took when you determined your COMS to be out-of-control.

10.11 Where and how long must I retain the QA data that this procedure requires me to record for my COMS? You must keep the records required by this procedure for your COMS onsite and available for inspection by us, the State and/or local enforcement agency for a period of 5 years.

11. What Analytical Procedures Apply to This Procedure? [Reserved]

12. What Calculations and Data Analysis Must I Perform for My COMS? The calcalations required for the performance audit are contained in Section 12 of PS–1.

13. Method Performance. [Reserved]

14. Pollution Prevention. [Reserved]

15. Waste Management. [Reserved]

16. Which References Are Relevant to This Procedure?

16.1 Performance Specification 1—Specifications and Test Procedures for Continuous Opacity Monitor Systems in Stationary Sources, 40 CFR part 60, appendix B, August 10, 2000.

16.2 ASTM D 6216–98: Standard Practice for Opacity Monitor Manufacturers to Certify Conformance with Design and Performance Specifications. American Society for Testing and Materials (ASTM), April 1998.

17. What Tables, Diagrams, Flowcharts, and Validation Data Are Relevant to This Procedure?

17.1 Table 17.1—Diagnostic Tests Required to Maintain PS–1 Certification Status for COMS.

Description of event	Optical alignment	Optical alignment Indicator assessment (Note 1)	Zero calibration check	Clear path (off-stack) zero assessment (Note 3)	Upscale calibration check	Calibration error check	Fault status Indicator check	Averaging period calculation and recording	7-day zero and upscale drift check (Note 2)	Recertify per PS–1	New MCOC per ASTM D 6216–98	Comments
(1) Replace or repair components described as routine and/or preventative maintenance.	X	.....	X	.....	X	.....	X	.....	.....	.....	.....	Includes replacement of blowers, cleaning optical surfaces, resetting adjustable parameters to maintain normal performance, etc.
(2) Replace or repair primary measurement light.	X	X	X	X	X	.....	X	.....	.....	.....	.....	Light source uniformity and position are key source to many performance parameters
(3) Replace or repair components which are Measurement Non-Critical.	X	.....	X	.....	X	X	X	.....	.....	.....	.....	See text description, sec. 10.5(2)
(4) Replace or repair components which are Measurement Critical.	X	X	X	X	X	X	X	.....	X	.....	.....	See text description, sec. 10.5(3)

Description of event	Optical alignment	Optical alignment indicator assessment (Note 1)	Zero calibration check	Clear path (off-stack) zero assessment (Note 3)	Upscale calibration check	Calibration error check	Fault status indicator check	Averaging period calculation and recording	7-day zero and upscale drift check (Note 2)	Recertify per PS–1	New MCOC per ASTM D 6216–98	Comments
(5) Replace or repair components which are Measurement Critical, but not involving optical or electro-optical components.	.....	.....	X	.....	X	X	X	X	.....	.....	.....	Includes change of components involving data acquisition and recording
(6) Rebuild or Substantially Refurbish the analyzer.	.....	.....	.....	.....	.....	.....	.....	.....	.....	XX	.....	See text description, sec. 10.5(4)
(7) Change to, or addition of, analyzer components which may affect MCOC-specified performance parameters.	.....	.....	.....	.....	.....	.....	.....	.....	.....	X	X	Significant changes which are not part of the MCOC-designated configuration

Notes: (1) Optical alignment indicator assessment requires the operator to verify during an off the stack clear path zero assessment that the beam is centered on the reflector/retro reflector when the alignment indicator indicates on-axis centered alignment. If not, the analyzer optical train must be adjusted until this condition is met.

(2) 7-day zero and upscale drift assessment. Opacity measurement data recorded prior to completion of the 7-day drift test will be considered as valid provided that the first 7-day drift test is successful, that it is completed within 14 days of completion of the repair, and that other QA requirements are met during this time period.

(3) Requires verification of the external zero jig response, or re-calibration of the same, after the off-stack clear path zero has been re-established.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 18

RIN 1018–AH86

Marine Mammals; Incidental Take During Specified Activities

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; withdrawal. Availability of Record of Decision.

SUMMARY: We, the Fish and Wildlife Service (Service) have determined that we are unable to authorize the incidental, unintentional take of small numbers of Florida manatees (*Trichechus manatus latirostris*) resulting from governmental activities related to the authorization, regulation, or funding of watercraft and watercraft access facilities within certain regions of the species' range in Florida. Comments and new information received during the public comment period for our proposed rule to authorize such incidental take raised significant questions about the standards, information, and analytic methodologies appropriate for making the necessary findings. These significant questions preclude us from finding that incidental takings of Florida manatee resulting from these governmental activities will have a negligible impact on any of the four stocks in Florida. The Marine Mammal Protection Act (MMPA) does not allow us to authorize incidental take unless we are able to find that the total authorized incidental take will have no more than a negligible impact on the species or stock. Therefore, pursuant to 50 CFR 18.27(d)(4), we are making negative findings for all four stocks. Consistent with this determination we are withdrawing our November 2002 MMPA proposed rule to authorize the incidental take of Florida manatees.

We published a proposed regulation and announced the availability of a Draft Environmental Impact Statement (DEIS) in the **Federal Register** on November 14, 2002. We announced the availability of a Final Environmental Impact Statement (FEIS) for this decision on April 4, 2003. Responses to comments received during the public comment period for the proposed rule and DEIS are available in Appendix N of the FEIS. Through this notice, we are also announcing the availability of the Record of Decision related to the FEIS.

ADDRESSES: If you wish to review the FEIS and Record of Decision, obtain copies by any one of the following methods:

1. You may visit our Web site at *http://northflorida.fws.gov*.

2. You may request a copy by electronic mail (e-mail) to *manatee@fws.gov*.

3. You may write the Field Supervisor, Jacksonville Field Office, U.S. Fish and Wildlife Service, 6620 Southpoint Drive, South, Suite 310, Jacksonville, Florida 32216.

4. You may call the Jacksonville Field Office, 904/232–2580, during normal business hours from 8 a.m. to 4:30 p.m.

FOR FURTHER INFORMATION CONTACT: Pete Benjamin, at the above address (telephone 904/232–2580; or visit our Web site at *http://northflorida.fws.gov*).

SUPPLEMENTARY INFORMATION:

Background

On November 14, 2002, the Service published a proposed rule to authorize the incidental, unintentional take of small numbers of Florida manatees (*Trichechus manatus latirostris*) resulting from government activities that authorize and regulate watercraft and watercraft access facilities in Florida. Under the provisions of the MMPA of 1972 (16 U.S.C. 1361–1407), all take, including incidental take, is prohibited unless otherwise authorized. To date, there is no authorization for the incidental, unintentional death, injury, or harassment of Florida manatees caused by these otherwise legal activities. In the proposed rule, we examined the issue of take of Florida manatees to determine whether the incidental, unintentional take of manatees could be authorized.

The Secretary of the Interior may authorize the incidental taking of small numbers of marine mammals resulting from specified activities in a specified geographic area pursuant to 16 U.S.C.