



6560-50-P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 51, 60, 61, and 63**

**[EPA-HQ-OAR-2014-0292; FRL-9931-50-OAR]**

**RIN 2060-AS34**

**Revisions to Test Methods, Performance Specifications, and Testing Regulations for Air Emission Sources**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** This action proposes technical and editorial corrections and revisions to regulations related to source testing of emissions. This proposed rule will make corrections and updates to testing provisions that contain inaccuracies and outdated procedures, and provide alternatives to existing testing regulations. These revisions will improve the quality of data and provide testers flexibility to use recently-approved alternative procedures. Many of these changes were suggested by testers and other end-users, and they will not impose new substantive requirements on source owners or operators.

**DATES:** Comments must be received on or before [**insert date 60 days after date of publication in the Federal Register**].

Public Hearing. If anyone contacts the Environmental Protection Agency (EPA) by [**insert date 10 days after date of publication in the Federal Register**] requesting to speak at a public hearing, a hearing will be held on [**insert date 30 days after date of publication in the Federal Register**].

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2014-0292, by one of the following methods:

- Federal eRulemaking Portal: [www.regulations.gov](http://www.regulations.gov). Follow the on-line instructions for submitting comments.
- Email: [a-and-r-docket@epa.gov](mailto:a-and-r-docket@epa.gov). Include docket ID No. EPA-HQ-OAR-2014-0292 in the subject line of the message.
- Fax: (202) 566-9744.
- Mail: Attention Docket No. EPA-HQ-OAR-2014-0292, Environmental Protection Agency, Mailcode: 28221T, 1200 Pennsylvania Ave., NW, Washington, DC 20460.
- Hand Delivery: Docket No. EPA-HQ-OAR-2014-0292, EPA Docket Center, Public Reading Room, EPA WJC West Building, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20460. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA-HQ-OAR-2014-0292. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at <http://www.regulations.gov>, including any

personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through [www.regulations.gov](http://www.regulations.gov) or email. The [www.regulations.gov](http://www.regulations.gov) website is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through [www.regulations.gov](http://www.regulations.gov), your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either

electronically in [www.regulations.gov](http://www.regulations.gov) or in hard copy at the Revisions to Test Methods and Testing Regulations Docket, EPA/DC, EPA WJC West Building, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The 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 Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742.

**FOR FURTHER INFORMATION CONTACT:** Ms. Lula H. Melton, Office of Air Quality Planning and Standards, Air Quality Assessment Division (E143-02), Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number: (919) 541-2910; fax number: (919) 541-0516; email address: melton.lula@epa.gov.

**SUPPLEMENTARY INFORMATION:**

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**I. General Information**

A. Does this action apply to me?

The proposed amendments apply to industries that are already subject to the current provisions of parts 51, 60, 61, and 63. For example, Performance Specification 4A applies to municipal waste combustors and hazardous waste incinerators. We did not list all of the specific affected industries or their North American Industry Classification System (NAICS) codes herein since there are many affected sources. If you have any questions regarding the applicability of this action to a particular entity, consult either the air permitting authority for the entity or your EPA regional representative as listed in 40 CFR 63.13.

B. What should I consider as I prepare my comments for the EPA?

1. Submitting CBI. Do not submit this information to the EPA through <http://www.regulations.gov> or email. Clearly mark any of the information that you claim to be CBI. For CBI information in a disk or CD-ROM that you mail to the EPA, mark the outside of the disk or CD-ROM as CBI and then identify electronically within the disk or CD-ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket.

Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. Tips for Preparing Your Comments. When submitting comments, remember to:

- Follow directions - The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns, and suggest alternatives.
- Explain your views as clearly as possible, avoiding the use of profanity or personal threats.
- Make sure to submit your comments by the comment period deadline identified.

C. Where can I get a copy of this document?

In addition to being available in the docket, an electronic copy of this proposed rule will also be available on the Worldwide Web (WWW) through the Technology Transfer Network (TTN). Following

signature, a copy of this proposed rule will be posted at the following address: <http://www.epa.gov/ttn/emc/>. The TTN provides information and technology exchange in various areas of air pollution control.

## **II. Background**

The EPA has been cataloging errors and corrections, as well as revisions that are needed to test methods, performance specifications, and associated regulations in 40 CFR parts 51, 60, 61, and 63. The most recent final rule that updated and revised methods was published on February 27, 2014 (79 FR 11228). Many of the corrections and revisions herein have been brought to our attention by affected parties and end-users. The corrections and revisions consist primarily of typographical errors, technical errors in equations and diagrams, updates to procedures, and the addition of alternative equipment and methods the Agency has found acceptable to use.

## **III. Summary of Proposed Amendments**

### A. Appendix M to Part 51

In paragraph (4) (a) of appendix M to part 51, we propose to add Methods 30A and 30B to the list of methods not requiring the use of audit samples. Consistent with the criteria used in establishing the original list of methods for which no audit samples are required (75 FR 55636), Method 30A is an instrumental test method that already has sufficient calibration and quality assurance requirements. Method 30B has sufficient performance-based quality assurance measures including analysis of an independent calibration standard with each set of field samples.

B. Method 201A of Appendix M to Part 51

In Method 201A, the constant in equation 9, which is shown as 0.07657, will be corrected to 0.007657.

C. Method 202 of Appendix M to Part 51

In Method 202, we propose to add section 3.8 to incorporate ASTM E617-13 by reference. The first sentence in paragraph 8.5.4.3 will be revised by adding "back half of the filterable PM filter holder." Section 9.10 erroneously states "You must purge the assembled train as described in sections 8.5.3.2 and 8.5.3.3." The statement will be corrected to reference section 8.5.3. Sections 10.3 and 10.4 will be added to require calibration of the balance used to weigh impingers and to require a multipoint calibration of the analytical balance. During the most recent revision of Method 202, sections 11.2.2.1, 11.2.2.2, 11.2.2.3, 11.2.2.4 and figure 7 were inadvertently deleted and will be re-inserted into the method.

D. Appendix P to Part 51

In appendix P to part 51, section 3.3 erroneously refers to section 2.1 of Performance Specification 2 of appendix B of part 60. The citation will be corrected to section 6.1. Section 5.1.3 erroneously refers to paragraph 4.1.4, which does not exist; the text will be changed to reflect the correct references to paragraphs 3.1.4 and 3.1.5.

E. General Provisions (Subpart A) Part 60

In the General Provisions of part 60, §60.8(f) will be revised to require the reporting of specific emissions test data in test reports. These data elements will be required regardless of whether the report is submitted electronically or in paper format. We are proposing these modifications to ensure that emissions test reporting includes all data necessary to assess and assure the quality of the reported emissions data and appropriately describes and identifies the specific unit covered by the emissions test report. Section 60.17(g) will be revised to add ASTM D6911-15 to the list of incorporations by reference and to re-number the remaining consensus standards that are incorporated by reference in alpha-numeric order.

F. Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (Subpart JJJJ) Part 60

In Table 2 of subpart JJJJ, Methods 18 and 320 and ASTM D 6348-03 will be deleted as test method options for measuring VOC, and only Method 25A will be allowed.

G. Method 1 of Appendix A-1 to Part 60

In Method 1, section 11.2.1.2, the word "instances" will be changed to "distances" in the second sentence. In addition, there are two figures labeled Figure 1-2. The second figure will be deleted.

H. Method 2 of Appendix A-1 to Part 60

In Method 2, instructions are given for conducting S-type pitot calibrations. Currently, the same equipment is commonly used for both Methods 2 and 2G (same S-type pitot), but the calibration procedure is slightly different in each method. Other key pieces that enhance the quality assurance/quality control (QA/QC) of the calibrations will be added to Method 2, and the amount of blockage allowed will be reduced to tighten up calibration accuracy. To address these issues, changes will be made to sections 6.7, 10.1.2.3, 10.1.3.4, 10.1.3.7, and 10.1.4.1.3 of Method 2. Section 10.1.4.3 inadvertently references section 10.1.4.4. The reference will be corrected to section 12.4.4. The side of Figure 2-10 labeled (b) will be deleted, and the label (a) will be removed from the figure.

I. Method 2G of Appendix A-2 to Part 60

In Method 2G, instructions are given for conducting S-type pitot calibrations. Currently the same equipment is commonly used for both Methods 2 and 2G (same S-type pitot), but the calibration procedure is slightly different in each method. Other key pieces that enhance the QA/QC of the calibrations will be added to the method, and the amount of blockage allowed will be reduced to tighten up calibration

accuracy. Changes will be made to sections 6.11.1, 6.11.2, 10.6.6, and 10.6.8 of Method 2G to address these issues.

J. Method 3C of Appendix A-2 to Part 60

In Method 3C, section 6.3 will be revised to add subsections (6.3.1, 6.3.2, 6.3.3, 6.3.4, and 6.3.5) that clarify the requirements necessary to check analyzer linearity.

K. Method 4 of Appendix A-3 to Part 60

In Method 4, section 10.3 (Field Balance) will be added to require calibration of the balance used to weigh impingers. Section 12.2.5 will be added, which provides another option for calculating the approximate moisture content. Section 16.4 will be revised to clarify that a fuel sample must be taken and analyzed to develop F-factors required by the alternative. Also, in section 16.4, percent relative humidity is inadvertently defined as "calibrated hydrometer acceptable"; the word "hydrometer" will be replaced with "hygrometer."

L. Method 5 of Appendix A-3 to Part 60

In Method 5, we erroneously finalized the reference to the Isostack metering system in 79 FR 11228. Therefore, we will remove this reference from section 6.1.1.9 and continue to issue broadly applicable test method determinations or letters of assessments regarding whether specific alternative metering equipment meets the specifications of the method as was our intent in the "Summary of Comments and Responses on Revisions to Test Methods and Testing Regulations" (EPA-HQ-OAR-2010-0114-0045). The phrase "after ensuring

that all joints have been wiped clean of silicone grease" will be removed from section 8.7.6.2.5. Sections 10.7 and 10.8 will be added to require calibration of the balance used to weigh impingers and to require a multipoint calibration of the analytical balance.

M. Method 5H of Appendix A-3 to Part 60

In Method 5H, sections 10.4 and 10.5 will be added to require calibration of the balance used to weigh impingers and to require a multipoint calibration of the analytical balance.

N. Method 5I of Appendix A-3 to Part 60

In Method 5I, sections 10.1 and 10.2 will be added to require calibration of the balance used to weigh impingers and to require a multipoint calibration of the analytical balance.

O. Method 6C of Appendix A-4 to Part 60

In Method 6C, due to numerous comments and questions, the language detailing the methodology for performing interference checks in section 8.3 will be revised to clarify and streamline the procedure. We continue to believe that the interference test need only be repeated if major components are replaced with different model parts.

P. Method 7E of Appendix A-4 to Part 60

In Method 7E, section 8.1.2 will be revised to be consistent with the requirements in Performance Specification 2. In cases where the 3-point sampling is used, the three points along the measurement line exhibiting the highest average concentration during the stratification test will be 0.4, 1.2, and 2.0 meters instead of 0.4, 1.0, and 2.0 meters.

Also, in Method 7E, due to numerous comments and questions, the language in section 8.2.7 detailing the methodology for performing interference checks will be revised to clarify and streamline the procedure. We continue to believe that the interference test need only be repeated if major components are replaced with different model parts. Also, the word "equations" will be replaced with "equation" in the sentence in section 12.8 that reads "If desired, calculate the total NO<sub>x</sub> concentration with a correction for converter efficiency using equation 7E-8."

Q. Method 10 of Appendix A-4 to Part 60

In Method 10, sections 6.2.5 and 8.4.2 will be revised, and section 6.2.6 will be added to clarify the types of sample tanks allowed for integrated sampling.

R. Methods 10A and 10B of Appendix A-4 to Part 60

Methods 10A and 10B will be revised to allow the use of sample tanks as an alternative to flexible bags for sample collection.

S. Method 15 of Appendix A-5 to Part 60

In Method 15, section 8.3.2 will be revised to clarify the calibrations that represent partial calibration.

T. Method 16C of Appendix A-6 to Part 60

In Method 16C, equation 16-1C will be revised to replace C<sub>v</sub> (manufacturer certified concentration of a calibration gas in ppmv SO<sub>2</sub>) in the denominator with CS (calibration span in ppmv). Therefore, the definition of CS will be added to the nomenclature in section

12.1, and the definition of  $C_v$  will be deleted from the nomenclature in section 12.1.

U. Method 18 of Appendix A-6 to Part 60

In Method 18, section 8.2.1.5.2.3 will be removed because the requirement to analyze two field audit samples as described in section 9.2 has been moved to the General Provisions.

V. Method 25C of Appendix A-7 to Part 60

In Method 25C, section 9.1 incorrectly references section 8.4.1; this reference will be corrected to section 8.4.2. Section 11.2 will be deleted because the audit sample analysis is now covered under the General Provisions. The nomenclature will be revised in section 12.1, and equation 25C-2 will be revised in section 12.3. Sections 12.4, 12.5, 12.5.1, and 12.5.2 will be added to incorporate equations to correct sample concentrations for ambient air dilution.

W. Method 26 of Appendix A-8 to Part 60

In Method 26, section 13.3 will be revised to indicate the correct method detection limit.

X. Method 26A of Appendix A-8 to Part 60

In Method 26A, language will be added to section 4.3 indicating that dissociating chloride salts at elevated temperatures interfere with halogen acid measurement in this method, but maintaining particulate probe/filter temperatures at  $120 \pm 14^\circ\text{C}$  ( $248 \pm 25^\circ\text{F}$ ) minimizes this interference. Sections 6.1.7 and 8.1.5 will be revised to delete reference to other temperatures around the probe and filter holder during sampling as specified by the applicable subpart or

approved by the Administrator for a particular application. Also, the error in "... between 120 and 134 °C (248 and 275 °F ...)" will be corrected to "... between 120 and 134 °C (248 and 273 °F ...)" in section 8.1.6.

Y. Method 29 of Appendix A-8 to Part 60

In Method 29, section 8.2.9.3 will be revised to require rinsing impingers containing permanganate with hydrogen chloride (HCl) to ensure consistency with the application of Method 29 across various stationary source categories and since there is evidence that HCl is needed to release the mercury (Hg) bound in the precipitate from the permanganate. Sections 10.4 and 10.5 will be added to require calibration of the balance used to weigh impingers and to require a multipoint calibration of the analytical balance.

Z. Method 30A of Appendix A-8 to Part 60

In Method 30A, the heading of section 8.1 will be changed from "Sample Point Selection." to "Selection of Sampling Sites and Sampling Points."

AA. Method 30B of Appendix A-8 to Part 60

In Method 30B, the heading of section 8.1 will be changed from "Sample Point Selection." to "Selection of Sampling Sites and Sampling Points." In section 8.3.3.8, the reference to ASTM WK223 will be changed to ASTM D6911-15. ASTM WK223 was the draft standard that was available at the time that Method 30B was first promulgated; it has since been finalized to ASTM D6911-15.

BB. Appendix B to Part 60-Performance Specifications

In the index to appendix B to part 60, Performance Specification 16-Specifications and Test Procedures for Predictive Emission Monitoring Systems in Stationary Sources will be added.

CC. Performance Specification 1 of Appendix B to Part 60

In Performance Specification 1, paragraph 8.1(2)(i) will be revised to not limit the location of a continuous opacity monitoring system (COMS) to a point at least four duct diameters downstream and two duct diameters upstream from a control device or flow disturbance, but it will refer to paragraphs 8.1(2)(ii) and 8.1(2)(iii) for additional options.

DD. Performance Specification 2 of Appendix B to Part 60

In Performance Specification 2, the definition of span value will be revised in section 3.11. Also, in section 6.1.1, the data recorder language will be revised. In section 16.3.2, the characters "&verbar;dverbar" will be replaced with  $\bar{d}$ , which is the average difference between responses and the concentration/responses. In section 18, Table 2-2 and Figure 2-1 are attached to each other. Table 2-2 will be detached from Figure 2-1, and the figure will be labeled "Calibration Drift Determination."

EE. Performance Specification 3 of Appendix B to Part 60

In Performance Specification 3, we will revise section 13.2 to clarify how to calculate relative accuracy.

FF. Performance Specification 4A of Appendix B to Part 60

In Performance Specification 4A, we will revise the response time test procedure in sections 8.3 and 8.3.1. The language specifying

that the response time is a check of the entire system was previously deleted. However, we have had several inquiries about this, and we believe that the entire system should be checked with the response time test procedure; therefore, we will put this requirement back into the performance specification. We will also revise section 13.3 because we have received information indicating that the response time of 1.5 minutes is too stringent; we will relax the response time requirement to 2.0 minutes.

GG. Performance Specification 11 of Appendix B to Part 60

In Performance Specification 11, equations 11-1 and 11-2 will be revised in section 12.1, and the response range will be used in lieu of the upscale value in section 13.1.

HH. Performance Specification 15 of Appendix B to Part 60

In Performance Specification 15, the statement "An audit sample is obtained from the Administrator" will be deleted from paragraph 9.1.2. Also, in Performance Specification 15, reserved sections 14.0 and 15.0 will be added.

II. Performance Specification 16 of Appendix B to Part 60

In Performance Specification 16, we will change Table 16-1 to make be consistent with conventional statistical applications; the two columns currently labeled "n-1" will be re-labeled "n." We will also revise section 12.2.3 for selection of n-1 degrees of freedom.

JJ. Procedure 2 of Appendix F to Part 60

In Procedure 2, equations 2-2 and 2-3 in section 12.0 will be revised to correctly define the denominator when calculating

calibration drift. Also, equation 2-4 in section 12.0 will be revised to correctly define the denominator when calculating accuracy.

KK. General Provisions (Subpart A) Part 61

Section 61.13(e) (1) (i) of the General Provisions of Part 61 will be revised to add Methods 30A and 30B to the list of methods not requiring the use of audit samples. Consistent with the criteria used in establishing the original list of methods for which no audit samples are required (75 FR 55636), Method 30A is an instrumental test method that already has sufficient calibration and QA requirements. Method 30B has sufficient performance-based QA measures including analysis of an independent calibration standard with each set of field samples.

LL. Method 107 of Appendix B to Part 61

In Method 107, the term "Geon" will be deleted from the heading in section 11.7.3.

MM. General Provisions (Subpart A) Part 63

The General Provisions of part 63, §63.7(c)(2)(iii)(A) will be revised to add Methods 30A and 30B to the list of methods not requiring the use of audit samples. Consistent with the criteria used in establishing the original list of methods for which no audit samples are required (75 FR 55636), Method 30A will be added because it is an instrumental test method that already has sufficient calibration and QA requirements, and Method 30B will be added because it has sufficient performance-based QA measures including analysis of an independent calibration standard with each set of field samples.

Also in the General Provisions of part 63, §63.7(g)(2) will be revised to require the reporting of specific emissions test data in test reports. These data elements will be required regardless of whether the report is submitted electronically or in paper format. We will make these revisions to ensure that emissions test reporting includes all data necessary to assess and assure the quality of the reported emissions data and appropriately describes and identifies the specific unit covered by the emissions test report.

NN. Method 320 of Appendix A to Part 63

In Method 320, sections 13.1, 13.4, and 13.4.1 will be revised to indicate the correct Method 301 reference.

**IV. Request for Comments**

The Agency is reviewing the adequacy of its current test methods in regard to sampling site selection and sampling point requirements. Emission gas flow patterns affect representative testing, and this is

not addressed in many EPA test methods. Method 1 contains provisions for sampling point locations, traversing, and determination of cyclonic flow, and Method 7E was revised to contain procedures for determining gaseous stratification in 2006. However, there are currently no requirements in most methods for gaseous compounds to follow the Method 1 or 7E procedures.

Method 7E allows stratification to be assessed through either a 3- or 12-point traverse while measuring variations in either a pollutant or diluent concentration. The degree of stratification determines whether a single-point, 3-point, or 12-point traverse is used for the emissions test. There are no requirements to check for cyclonic flow in Method 7E.

We have some information that suggests deficiencies exist in the 3-point test in a number of cases and that at least a 5-point, dual axis test should be required. A summary of this information has been included in the docket for this action. We are also reconsidering the appropriateness of measuring variations in a diluent gas for the test instead of the regulated pollutant.

In this rule, we propose to update the General Provisions of parts 60, 61, and 63 to include evaluations of gas stratification and cyclonic flow with all compliance tests. The Agency solicits comments and data to aid in establishing effective and equitable procedures.

The Agency also requests comments on the proposed changes to the response time test in Performance Specification 4A. The Agency has received some information to suggest that a system response time test

criteria of less than two minutes may be difficult to accomplish. Therefore, the Agency solicits comments and data to assist in establishing appropriate criteria.

**V. Statutory and Executive Order Reviews**

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a "significant regulatory action" under the terms of Executive Order (EO) 12866 (58 FR 51735, October 4, 1993) and is, therefore, not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011).

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA. The amendments being proposed in this action to the test methods, performance specifications, and testing regulations do not add information collection requirements but make corrections and updates to existing testing methodology. In addition, the proposed amendments clarify performance testing requirements.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the

small entities subject to the rule. This proposed rule will not impose emission measurement requirements beyond those specified in the current regulations, nor does it change any emission standard. We have, therefore, concluded that this action will have no net regulatory burden for all directly regulated small entities.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It 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.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action does not have tribal implications, as specified in Executive Order 13175. This action simply corrects and updates existing testing regulations. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

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

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act and 1 CFR Part 51

This action involves technical standards. The EPA proposes to use ASTM D6911-15 for packaging and shipping samples in Method 30B. The ASTM D6911-15 standard provides guidance on the selection of procedures for proper packaging and shipment of environmental samples to the laboratory for analysis to ensure compliance with appropriate regulatory programs and protection of sample integrity during shipment.

The EPA proposes to use ASTM E617-13 for laboratory weights and precision mass standards in Methods 4, 5, 5H, 5I, 29, and 202. The ASTM E617-13 standard covers weights and mass standards used in laboratories for specific classes.

The ASTM D6911-15 and ASTM E617-13 standards were developed and adopted by the American Society for Testing and Materials (ASTM). These standards may be obtained from <http://www.astm.org> or from the ASTM at 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations because it does not affect the level of protection provided to human health or the environment.

**List of Subjects**

*40 CFR Part 51*

Environmental protection, Air pollution control, Performance specifications, Test methods and procedures.

*40 CFR Part 60*

Environmental protection, Air pollution control, Incorporation by reference, Performance specifications, Test methods and procedures.

*40 CFR Parts 61 and 63*

Environmental protection, Air pollution control, Performance specifications, Test methods and procedures.

Dated: August 14, 2015.

Gina McCarthy,  
Administrator.

For the reasons stated in the preamble, the Environmental Protection Agency proposes to amend title 40, chapter I of the Code of Federal Regulations as follows:

**PART 51-REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS**

1. The authority citation for part 51 continues to read as follows:

**Authority:** 23 U.S.C. 101; 42 U.S.C. 7401-7671q.

2. Revise section 4.0 a. of appendix M to part 51 to read as follows:

**Appendix M to Part 51-Recommended Test Methods for State Implementation Plans**

\* \* \* \* \*

4.0 \* \* \*

a. The source owner, operator, or representative of the tested facility shall obtain an audit sample, if commercially available, from an AASP for each test method used for regulatory compliance purposes. No audit samples are required for the following test methods: Methods 3A and 3C of appendix A-3 of part 60 of this chapter, Methods 6C, 7E, 9, and 10 of appendix A-4 of part 60, Methods 18 and 19 of appendix A-6 of part 60, Methods 20, 22, and 25A of appendix A-7 of part 60, Methods 30A and 30B of appendix A-8 of part 60, and Methods 303, 318, 320, and 321 of appendix A of part 63

of this chapter. If multiple sources at a single facility are tested during a compliance test event, only one audit sample is required for each method used during a compliance test. The compliance authority responsible for the compliance test may waive the requirement to include an audit sample if they believe that an audit sample is not necessary. "Commercially available" means that two or more independent AASPs have blind audit samples available for purchase. If the source owner, operator, or representative cannot find an audit sample for a specific method, the owner, operator, or representative shall consult the EPA website at the following URL, <http://www.epa.gov/ttn/emc>, to confirm whether there is a source that can supply an audit sample for that method. If the EPA website does not list an available audit sample at least 60 days prior to the beginning of the compliance test, the source owner, operator, or representative shall not be required to include an audit sample as part of the quality assurance program for the compliance test. When ordering an audit sample, the source owner, operator, or representative shall give the sample provider an estimate for the concentration of each pollutant that is emitted by the source or the estimated concentration of each pollutant based on the permitted level and the name, address, and phone number of the compliance authority. The source owner, operator, or representative shall report the results for the audit sample along with a summary of the emission test results for the audited pollutant to the compliance authority and shall report the results of the audit sample to the AASP. The

source owner, operator, or representative shall make both reports at the same time and in the same manner or shall report to the compliance authority first and then report to the AASP. If the method being audited is a method that allows the samples to be analyzed in the field, and the tester plans to analyze the samples in the field, the tester may analyze the audit samples prior to collecting the emission samples provided a representative of the compliance authority is present at the testing site. The tester may request and the compliance authority may grant a waiver to the requirement that a representative of the compliance authority must be present at the testing site during the field analysis of an audit sample. The source owner, operator, or representative may report the results of the audit sample to the compliance authority and then report the results of the audit sample to the AASP prior to collecting any emission samples. The test protocol and final test report shall document whether an audit sample was ordered and utilized and the pass/fail results as applicable.

\* \* \* \* \*

3. Revise section 12.5 equations 8 and 9 in Method 201A of appendix M to part 51 to read as follows:

**Appendix M to Part 51-Recommended Test Methods for State**

**Implementation Plans**

\* \* \* \* \*

**Method 201A-Determination of PM<sub>10</sub> and PM<sub>2.5</sub> Emissions From Stationary Sources (Constant Sampling Rate Procedure)**

\* \* \* \* \*

*12.0 Calculations and Data Analysis*

\* \* \* \* \*

12.5 \* \* \*

For N<sub>re</sub> less than 3,162:

$$Q_{IV} = 0.0060639 \left[ \frac{\mu}{C^{0.4242}} \right] \left[ \frac{P_s M_w}{T_s} \right]^{-0.5759} \left[ \frac{1}{D_{50}} \right]^{0.8481} \quad (\text{Eq. 8})$$

For N<sub>re</sub> greater than 3,162:

$$Q_{IV} = 0.007657 \left[ \frac{\mu}{C^{0.6205}} \right] \left[ \frac{P_s M_w}{T_s} \right]^{-0.3795} \left[ \frac{1}{D_{50}} \right]^{0.1241} \quad (\text{Eq. 9})$$

\* \* \* \* \*

4. In Method 202 of appendix M to part 51:

- a. Add sections 3.8, 10.3, 10.4, 11.2.2.1, 11.2.2.2, 11.2.2.3, 11.2.2.4, and Figure 7 to section 18.0.

b. Revise sections 8.5.4.3 and 9.10.

The additions and revisions read as follows:

**Appendix M to Part 51-Recommended Test Methods for State  
Implementation Plans**

\* \* \* \* \*

Method 202-Dry Impinger Method for Determining Condensable  
Particulate Emissions From Stationary Sources

\* \* \* \* \*

*3.0 Definitions*

\* \* \* \* \*

3.8 *ASTM E617-13*. ASTM E617-13 "Standard Specification for Laboratory Weights and Precisions Mass Standards" was developed and adopted by the American Society for Testing and Materials (ASTM). The standards cover weights and mass standards used in laboratories for specific classes. The ASTM E617-13 standard has been approved for incorporation by reference by the Director of the Office of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The standard may be obtained from <http://www.astm.org> or from the ASTM at 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

\* \* \* \* \*

8.0 *Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.5.4.3 *CPM Container #2, Organic rinses.* Follow the water rinses of the back half of the filterable PM filter holder, probe extension, condenser, each impinger and all of the connecting glassware and front half of the CPM filter with an acetone rinse.

\* \* \* \* \*

9.0 *Quality Control*

\* \* \* \* \*

9.10 Field Train Recovery Blank. You must recover a minimum of one field train blank for each source category tested at the facility. You must recover the field train blank after the first or second run of the test. You must assemble the sampling train as it will be used for testing. Prior to the purge, you must add 100 ml of water to the first impinger and record this data on Figure 4. You must purge the assembled train as described in Section 8.5.3. You must recover field train blank samples as described in Section 8.5.4. From the field sample weight, you will subtract the condensable particulate mass you determine with this blank train or 0.002 g (2.0 mg), whichever is less.

\* \* \* \* \*

*10.0 Calibration and Standardization*

\* \* \* \* \*

10.3 Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers with ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" Class 3 tolerance (or better) weight of at least 500g or within 50g of a loaded impinger weight. Daily before use, the field balance must measure the weight within +/- 0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat check before use of balance.

10.4 Analytical Balance Calibration. Perform a multipoint calibration (at least five points spanning the operational range) of the analytical balance before the first use and semiannually, thereafter. The calibration of the analytical balance must be conducted using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" Class 2 (or better) tolerance weights. Audit the balance each day it is used for gravimetric measurements by weighing at least one ASTM E617-13 Class 2 tolerance (or better) calibration weight that corresponds to 50 to 150 percent of the weight of one filter or 5 g. If the scale cannot reproduce the value of the calibration weight to within 0.5 mg of the certified

mass, perform corrective measures, and conduct the multipoint calibration before use.

*11.0 Analytical Procedures*

\* \* \* \* \*

11.2.2 \* \* \*

11.2.2.1 Determine the inorganic fraction weight. Transfer the aqueous fraction from the extraction to a clean 500-ml or smaller beaker. Evaporate to no less than 10 ml liquid on a hot plate or in the oven at 105 °C and allow to dry at room temperature (not to exceed 30 °C (85 °F)). You must ensure that water and volatile acids have completely evaporated before neutralizing nonvolatile acids in the sample. Following evaporation, desiccate the residue for 24 hours in a desiccator containing anhydrous calcium sulfate. Weigh at intervals of at least 6 hours to a constant weight. (See Section 3.0 for a definition of Constant weight.) Report results to the nearest 0.1 mg on the CPM Work Table (see Figure 6 of Section 18) and proceed directly to Section 11.2.3. If the residue cannot be weighed to constant weight, re-dissolve the residue in 100 ml of deionized distilled ultra-filtered water that contains 1 ppmw (1 mg/L) residual mass or less and continue to Section 11.2.2.2.

11.2.2.2 Use titration to neutralize acid in the sample and remove water of hydration. If used, calibrate the pH meter with the neutral and acid buffer solutions. Then titrate the sample with 0.1N NH<sub>4</sub>OH to

a pH of 7.0, as indicated by the pH meter or colorimetric indicator. Record the volume of titrant used on the CPM Work Table (see Figure 6 of Section 18).

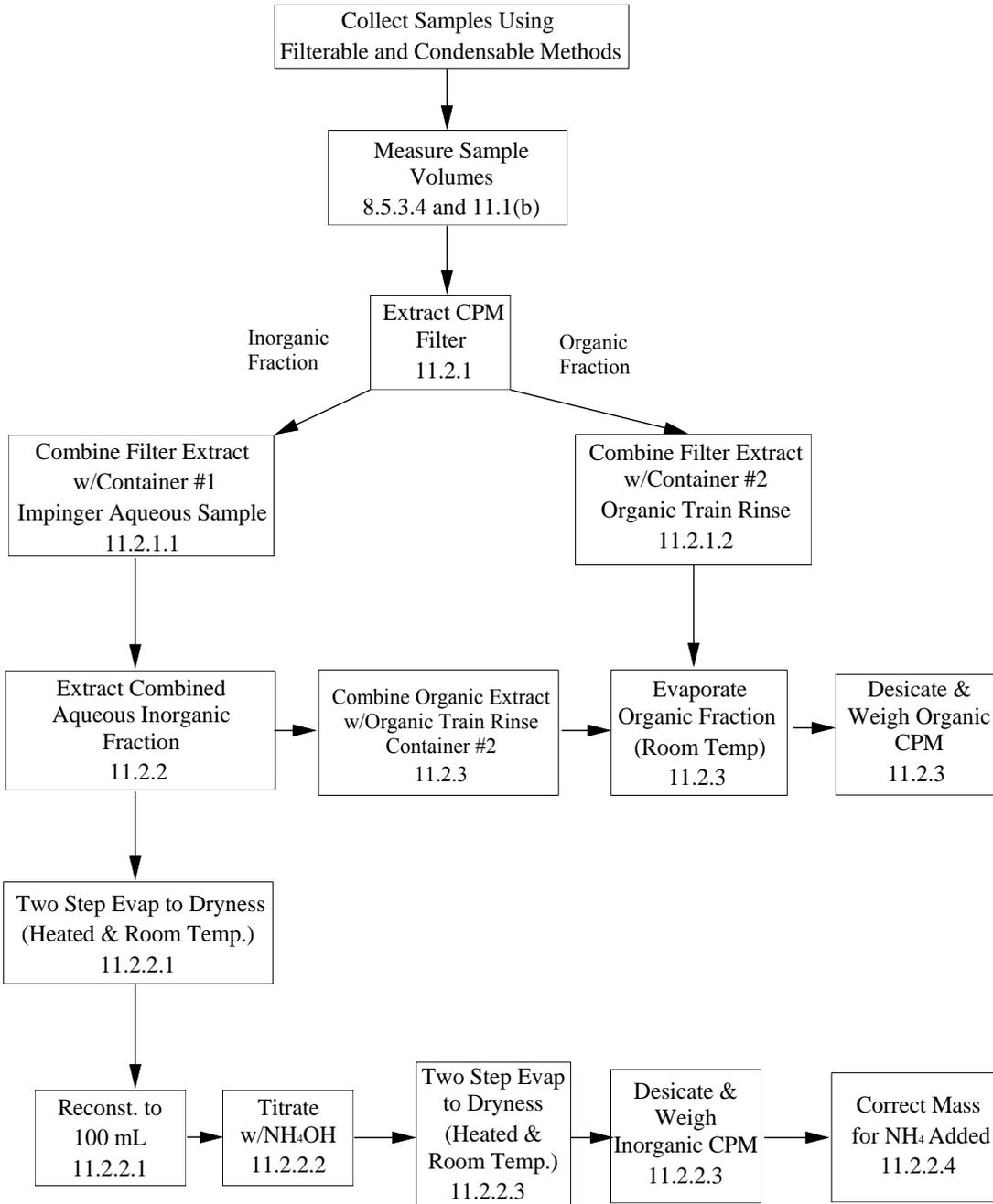
11.2.2.3 Using a hot plate or an oven at 105 °C, evaporate the aqueous phase to approximately 10 ml. Quantitatively transfer the beaker contents to a clean, 50-ml pre-tared weighing tin and evaporate to dryness at room temperature (not to exceed 30 °C (85 °F)) and pressure in a laboratory hood. Following evaporation, desiccate the residue for 24 hours in a desiccator containing anhydrous calcium sulfate. Weigh at intervals of at least 6 hours to a constant weight. (See Section 3.0 for a definition of Constant weight.) Report results to the nearest 0.1 mg on the CPM Work Table (see Figure 6 of Section 18).

11.2.2.4 Calculate the correction factor to subtract the  $\text{NH}_4^+$  retained in the sample using Equation 1 in Section 12.

\* \* \* \* \*

*18.0 Tables, Diagrams, Flowcharts, and Validation Data*

\* \* \* \* \*



**Figure 7. CPM Sample Processing Flow Chart**

\* \* \* \* \*

5. Revise sections 3.3 and 5.1.3 of appendix P to part 51 to read as follows:

**Appendix P to Part 51—Minimum Emission Monitoring Requirements**

\* \* \* \* \*

3.3 *Calibration Gases.* For nitrogen oxides monitoring systems installed on fossil fuel-fired steam generators, the pollutant gas used to prepare calibration gas mixtures (Section 6.1, Performance Specification 2, appendix B, part 60 of this chapter) shall be nitric oxide (NO). For nitrogen oxides monitoring systems, installed on nitric acid plants the pollutant gas used to prepare calibration gas mixtures (Section 6.1, Performance Specification 2, appendix B, part 60) shall be nitrogen dioxide (NO<sub>2</sub>). These gases shall also be used for daily checks under paragraph 3.7 of this appendix as applicable. For sulfur dioxide monitoring systems installed on fossil fuel-fired steam generators or sulfuric acid plants, the pollutant gas used to prepare calibration gas mixtures (Section 6.1, Performance Specification 2, appendix B, part 60) shall be sulfur dioxide (SO<sub>2</sub>). Span and zero gases should be traceable to National Bureau of Standards reference gases whenever these reference gases are available. Every 6 months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate analyses using the reference methods in appendix A, part 60, as follows: for SO<sub>2</sub>, use Reference Method 6; for nitrogen oxides, use Reference Method 7; and for carbon dioxide or oxygen, use Reference Method 3. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

\* \* \* \* \*

5.1.3 The values used in the equations under paragraph 5.1 are derived as follows:

E = pollutant emission, g/million cal (lb/million BTU),

C = pollutant concentration, g/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each hourly period by  $4.16 \times 10^{-5}$  M g/dscm per ppm ( $2.64 \times 10^{-9}$  M lb/dscf per ppm) where M = pollutant molecular weight, g/g-mole (lb/lb-mole). M = 64 for sulfur dioxide and 46 for oxides of nitrogen.

%O<sub>2</sub>, %CO<sub>2</sub> = Oxygen or carbon dioxide volume (expressed as percent) determined with equipment specified under paragraphs 3.1.4 and 3.1.5 of this appendix.

\* \* \* \* \*

**Part 60-STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES**

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

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

7. In §60.8, revise paragraph (f) to read as follows:

**§60.8 Performance tests.**

\* \* \* \* \*

(f) Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method.

(1) Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs.

(2) Contents of report (electronic or paper submitted copy). Unless otherwise specified in a relevant standard or test method, or as otherwise approved by the Administrator in writing, results of a performance test shall include general identification information for the facility including a mailing address, the actual address, the owner or operator or responsible official (where they are applicable) or an appropriate representative and an email address for this person, and the appropriate Federal Registry System (FRS) number for the facility; the purpose of the test including the regulation requiring the test, the pollutant being measured, the units of the standard or the pollutant emissions units, and any process parameter

component; a brief process description; a complete unit description, including a description of feed streams and control devices, the appropriate source classification code (SCC), and the latitude and longitude of the emission point being tested, and the permitted maximum process rate (where applicable); sampling site description; description of sampling and analysis procedures and any modifications to standard procedures; quality assurance procedures; record of operating conditions, including operating parameters for which limits are being set, during the test; record of preparation of standards; record of calibrations; raw data sheets for field sampling; raw data sheets for field and laboratory analyses; chain-of-custody documentation; explanation of laboratory data qualifiers; example calculations of all applicable stack gas parameters, emission rates, percent reduction rates, and analytical results, as applicable; identification information for the company conducting the performance test including a contact person and his/her email address; and any other information required by the test method, a relevant standard, or the Administrator.

\* \* \* \* \*

8. In §60.17:

- a. Redesignate paragraphs (g) (202) through (206) as (g) (204) through (208).
- b. Redesignate paragraphs (g) (200) and (201) as (g) (202) and (203).
- c. Redesignate paragraph (g) (199) as (g) (200).
- d. Redesignate paragraph (g) (198) as (g) (199).

- e. Redesignate paragraph (g) (197) as (g) (198).
- f. Redesignate paragraph (g) (196) as (g) (197).
- g. Redesignate paragraph (g) (195) as (g) (196).
- h. Redesignate paragraph (g) (194) as (g) (195).
- i. Redesignate paragraph (g) (193) as (g) (194).
- j. Redesignate paragraph (g) (192) as (g) (193).
- k. Redesignate paragraph (g) (191) as (g) (192).
- l. Redesignate paragraph (g) (190) as (g) (191).
- m. Add paragraphs (g) (190) and (g) (201).

The additions read as follows:

**§60.17 Incorporations by reference.**

\* \* \* \* \*

(g) \* \* \*

\* \* \* \* \*

(190) ASTM D6911-15, Standard Guide for Packaging and Shipping Environmental Samples for Laboratory Analysis, IBR approved for appendix A-8 to this part: Method 30B, section 8.3.3.8.

\* \* \* \* \*

(201) ASTM E617-13, Standard Specification for Laboratory Weights and Precision Mass Standards, IBR approved for appendix M to part 51 of this chapter: Method 202, sections 10.3 and 10.4; appendix A-3 to this part: Method 4, section 10.3; Method 5, sections 10.7 and 10.8, Method 5H, sections 10.4 and 10.5, Method 5I, sections 10.7 and 10.8; and appendix A-8 to this part: Method 29, section 10.4.

\* \* \* \* \*

**Subpart JJJJ—STANDARDS OF PERFORMANCE FOR STATIONARY SPARK IGNITION  
INTERNAL COMBUSTION ENGINES**

9. Revise table 2 to subpart JJJJ of part 60 to read as follows:

**TABLE 2 TO SUBPART JJJJ OF PART 60—REQUIREMENTS FOR PERFORMANCE TESTS**

As stated in §60.4244, you must comply with the following requirements for performance tests within 10 percent of 100 percent peak (or the highest achievable) load:

<b>For each</b>	<b>Complying with the requirement to</b>	<b>You must</b>	<b>Using</b>	<b>According to the following requirements</b>
1. Stationary SI internal combustion engine demonstrating compliance according to §60.4244.	a. limit the concentration of NO <sub>x</sub> in the stationary SI internal combustion engine exhaust	i. Select the sampling port location and the number/location of traverse points at the exhaust of the stationary internal combustion	(1) Method 1 or 1A of 40 CFR part 60, appendix A-1, if measuring flow rate.	(a) Alternatively, for NO <sub>x</sub> , O <sub>2</sub> , and moisture measurement, ducts ≤6 inches in diameter may be sampled at a single point located at the duct centroid and ducts >6 and ≤12 inches in diameter may be sampled at 3 traverse points

		engine;	<p>located at 16.7, 50.0, and 83.3% of the measurement line ('3-point long line'). If the duct is &gt;12 inches in diameter <u>and</u> the sampling port location meets the two and half-diameter criterion of section 11.1.1 of Method 1 of 40 CFR part 60, appendix A, the duct may be sampled at '3-point long line'; otherwise, conduct the stratification testing and</p>
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				<p>select sampling points according to section 8.1.2 of Method 7E of 40 CFR part 60, appendix A.</p>
		<p>ii. Determine the O<sub>2</sub> concentration of the stationary internal combustion engine exhaust at the sampling port location;</p>	<p>(2) Method 3, 3A, or 3B<sup>b</sup> of 40 CFR part 60, appendix A-2 or ASTM Method D6522-00 (Reapproved 2005)<sup>a,c</sup>.</p>	<p>(b) Measurements to determine O<sub>2</sub> concentration must be made at the same time as the measurements for NO<sub>x</sub> concentration.</p>

		iii. If necessary, determine the exhaust flowrate of the stationary internal combustion engine exhaust;	(3) Method 2 or 2C of 40 CFR part 60, appendix A-1 or Method 19 of 40 CFR part 60, appendix A-7.	
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		<p>iv. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and</p>	<p>(4) Method 4 of 40 CFR part 60, appendix A-3, Method 320 of 40 CFR part 63, appendix A, or ASTM Method D 6348-03<sup>c</sup>.</p>	<p>(c) Measurements to determine moisture must be made at the same time as the measurement for NO<sub>x</sub> concentration.</p>
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		<p>v. Measure NO<sub>x</sub> at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the control device.</p>	<p>(5) Method 7E of 40 CFR part 60, appendix A-4, ASTM Method D6522-00 (Reapproved 2005)<sup>a</sup>, Method 320 of 40 CFR part 63, appendix A, or ASTM Method D 6348-03<sup>c</sup>.</p>	<p>(d) Results of this test consist of the average of the three 1-hour or longer runs.</p>
	<p>b. limit the concentration of CO in the stationary SI internal combustion engine exhaust</p>	<p>i. Select the sampling port location and the number/loc</p>	<p>(1) Method 1 or 1A of 40 CFR part 60, appendix A-1, if measuring flow rate.</p>	<p>(a) Alternatively, for CO, O<sub>2</sub>, and moisture measurement, ducts ≤6 inches in diameter may</p>

		<p>ation of  traverse  points at  the  exhaust of  the  stationary  internal  combustion  engine;</p>	<p>be sampled at a  single point  located at the  duct centroid  and ducts &gt;6  and <u>≤</u>12 inches  in diameter may  be sampled at 3  traverse points  located at  16.7, 50.0, and  83.3% of the  measurement  line ('3-point  long line'). If  the duct is &gt;12  inches in  diameter <u>and</u>  the sampling  port location  meets the two  and half-  diameter  criterion of  section 11.1.1  of Method 1 of  40 CFR part 60,</p>
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				<p>appendix A, the duct may be sampled at '3-point long line'; otherwise, conduct the stratification testing and select sampling points according to section 8.1.2 of Method 7E of 40 CFR part 60, appendix A.</p>
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		<p>ii. Determine the O<sub>2</sub> concentration of the stationary internal combustion engine exhaust at the sampling port location;</p>	<p>(2) Method 3, 3A, or 3B<sup>b</sup> of 40 CFR part 60, appendix A-2 or ASTM Method D6522-00 (Reapproved 2005)<sup>a,c</sup>.</p>	<p>(b) Measurements to determine O<sub>2</sub> concentration must be made at the same time as the measurements for CO concentration.</p>
		<p>iii. If necessary, determine the exhaust flowrate of the stationary internal combustion engine exhaust;</p>	<p>(3) Method 2 or 2C of 40 CFR 60, appendix A-1 or Method 19 of 40 CFR part 60, appendix A-7.</p>	

		<p>iv. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and</p>	<p>(4) Method 4 of 40 CFR part 60, appendix A-3, Method 320 of 40 CFR part 63, appendix A, or ASTM Method D 6348-03<sup>c</sup>.</p>	<p>(c) Measurements to determine moisture must be made at the same time as the measurement for CO concentration.</p>
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		<p>v. Measure CO at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the control device.</p>	<p>(5) Method 10 of 40 CFR part 60, appendix A4, ASTM Method D6522-00 (Reapproved 2005)<sup>a</sup>, Method 320 of 40 CFR part 63, appendix A, or ASTM Method D 6348-03<sup>c</sup>.</p>	<p>(d) Results of this test consist of the average of the three 1-hour or longer runs.</p>
	<p>c. limit the concentration of VOC in the stationary SI internal combustion engine exhaust</p>	<p>i. Select the sampling port location and the number/loc</p>	<p>(1) Method 1 or 1A of 40 CFR part 60, appendix A-1, if measuring flow rate.</p>	<p>(a) Alternatively, for VOC, O<sub>2</sub>, and moisture measurement, ducts ≤6 inches in diameter may</p>

		<p>ation of          traverse          points at          the          exhaust of          the          stationary          internal          combustion          engine;</p>	<p>be sampled at a          single point          located at the          duct centroid          and ducts &gt;6          and <u>≤</u>12 inches          in diameter may          be sampled at 3          traverse points          located at          16.7, 50.0, and          83.3% of the          measurement          line ('3-point          long line'). If          the duct is &gt;12          inches in          diameter <u>and</u>          the sampling          port location          meets the two          and half-          diameter          criterion of          section 11.1.1          of Method 1 of          40 CFR part 60,</p>
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				<p>appendix A, the duct may be sampled at '3-point long line'; otherwise, conduct the stratification testing and select sampling points according to section 8.1.2 of Method 7E of 40 CFR part 60, appendix A.</p>
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		<p>ii. Determine the O<sub>2</sub> concentration of the stationary internal combustion engine exhaust at the sampling port location;</p>	<p>(2) Method 3, 3A, or 3B<sup>b</sup> of 40 CFR part 60, appendix A-2 or ASTM Method D6522-00 (Reapproved 2005) <sup>a,c</sup>.</p>	<p>(b) Measurements to determine O<sub>2</sub> concentration must be made at the same time as the measurements for VOC concentration.</p>
		<p>iii. If necessary, determine the exhaust flowrate of the stationary internal combustion engine exhaust;</p>	<p>(3) Method 2 or 2C of 40 CFR 60, appendix A-1 or Method 19 of 40 CFR part 60, appendix A-7.</p>	

		<p>iv. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and</p>	<p>(4) Method 4 of 40 CFR part 60, appendix A-3, Method 320 of 40 CFR part 63, appendix A, or ASTM Method D 6348-03<sup>c</sup>.</p>	<p>(c) Measurements to determine moisture must be made at the same time as the measurement for VOC concentration.</p>
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		<p>v. Measure VOC at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the control device.</p>	<p>(5) Method 25A of 40 CFR part 60, appendix A-7 or Method 25A with the use of a methane cutter as described in 40 CFR 1065.265.</p>	<p>(d) Results of this test consist of the average of the three 1-hour or longer runs.</p>
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		<p>vi. If necessary, measure methane and/or ethane at the exhaust of the stationary internal combustion engine; if using a control device, the sampling site must be located at the outlet of the control device.</p>	<p>(6) Method 18 of 40 CFR part 60, appendix A-6, Method 320 of 40 CFR part 63, appendix A, or ASTM Method D 6348-03<sup>c</sup>.</p>	<p>(e) Measurements to determine methane and/or ethane must be made at the same time as the measurement for VOC concentration.</p>
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<sup>a</sup> Also, you may petition the Administrator for approval to use alternative methods for portable analyzer.

<sup>b</sup> You may use ASME PTC 19.10-1981, *Flue and Exhaust Gas Analyses*, for measuring the O<sub>2</sub> content of the exhaust gas as an alternative to EPA Method 3B. AMSE PTC 19.10-1981 incorporated by reference, see 40 CFR 60.17.

<sup>c</sup> Incorporated by reference; see 40 CFR 60.17.

10. In appendix A-1 to part 60:

a. Revise section 11.2.1.2 in Method 1.

b. Remove Figure 1-2 in section 17.0 after the table entitled "Table 1-1 Cross-Section Layout for Rectangular Stacks" in Method 1.

c. Revise sections 6.7, 10.1.2.3, 10.1.3.4, 10.1.3.7, 10.1.4.1.3, 10.1.4.3, and Figure 2-10 in section 17.0 in Method 2.

The revisions read as follows:

**Appendix A-1 to Part 60-Test Methods 1 through 2F**

\* \* \* \* \*

**Method 1-Sample and Velocity Traverses for Stationary Sources**

\* \* \* \* \*

*11.0 Procedure*

\* \* \* \* \*

11.2.1.2 When the eight- and two-diameter criterion cannot be met, the minimum number of traverse points is determined from Figure 1-1. Before referring to the figure, however, determine the distances from the measurement site to the nearest upstream and downstream disturbances, and divide each distance by the stack diameter or equivalent diameter, to determine the distance in terms of the number of duct diameters.

\* \* \* \* \*

**Method 2-Determination of Stack Gas Velocity and Volumetric Flow Rate  
(Type S Pitot Tube)**

\* \* \* \* \*

*6.0 Equipment and Supplies*

\* \* \* \* \*

6.7 Calibration Pitot Tube. Calibration of the Type S pitot tube requires a standard Pitot tube for a reference.

\* \* \* \* \*

*10.0 Calibration and Standardization*

\* \* \* \* \*

10.1.2.3 The flow system shall have the capacity to generate a test-section velocity around 910 m/min (3,000 ft/min). This velocity must be constant with time to guarantee constant and steady flow during the entire period of calibration. A centrifugal fan is recommended for this purpose, as no flow rate adjustment for back pressure of the fan is allowed during the calibration process. Note that Type S pitot tube coefficients obtained by single-velocity calibration at 910 m/min (3,000 ft/min) will generally be valid to  $\pm 3$  percent for the measurement of velocities above 300 m/min (1,000 ft/min) and to  $\pm 6$  percent for the measurement of velocities between 180 and 300 m/min (600 and 1,000 ft/min). If a more precise correlation between the pitot tube coefficient, ( $C_p$ ), and velocity is desired, the flow system should have the capacity to generate at least four distinct, time-invariant test-section velocities covering

the velocity range from 180 to 1,500 m/min (600 to 5,000 ft/min), and calibration data shall be taken at regular velocity intervals over this range (see References 9 and 14 in section 17.0 for details).

\* \* \* \* \*

10.1.3.4 Read  $\Delta p_{\text{std}}$ , and record its value in a data table similar to the one shown in Figure 2-9. Remove the standard pitot tube from the duct, and disconnect it from the manometer. Seal the standard entry port. Make no adjustment to the fan speed or other wind tunnel volumetric flow control device between this reading and the corresponding Type S pitot reading.

\* \* \* \* \*

10.1.3.7 Repeat Steps 10.1.3.3 through 10.1.3.6 until three pairs of  $\Delta p$  readings have been obtained for the A side of the Type S pitot tube, with all the paired observations conducted at a constant fan speed (no changes to fan velocity between observed readings).

\* \* \* \* \*

10.1.4.1.3 For Type S pitot tube combinations with complete probe assemblies, the calibration point should be located at or near the center of the duct; however, insertion of a probe sheath into a small duct may cause significant cross-sectional area interference and blockage and yield incorrect coefficient values (Reference 9 in section 17.0). Therefore, to minimize the blockage effect, the calibration point may be a few inches off-center if necessary, but no closer to the outer wall of the wind tunnel than 4 inches. The maximum allowable blockage, as determined by a projected-area model

of the probe sheath, is 2 percent or less of the duct cross-sectional area (Figure 2-10a). If the pitot and/or probe assembly blocks more than 2 percent of the cross-sectional area at an insertion point only 4 inches inside the wind tunnel, the diameter of the wind tunnel must be increased.

\* \* \* \* \*

10.1.4.3 For a probe assembly constructed such that its pitot tube is always used in the same orientation, only one side of the pitot tube need be calibrated (the side which will face the flow). The pitot tube must still meet the alignment specifications of Figure 2-2 or 2-3, however, and must have an average deviation ( $\sigma$ ) value of 0.01 or less (see section 12.4.4).

\* \* \* \* \*

*17.0 Tables, Diagrams, Flowcharts, and Validation Data*

\* \* \* \* \*

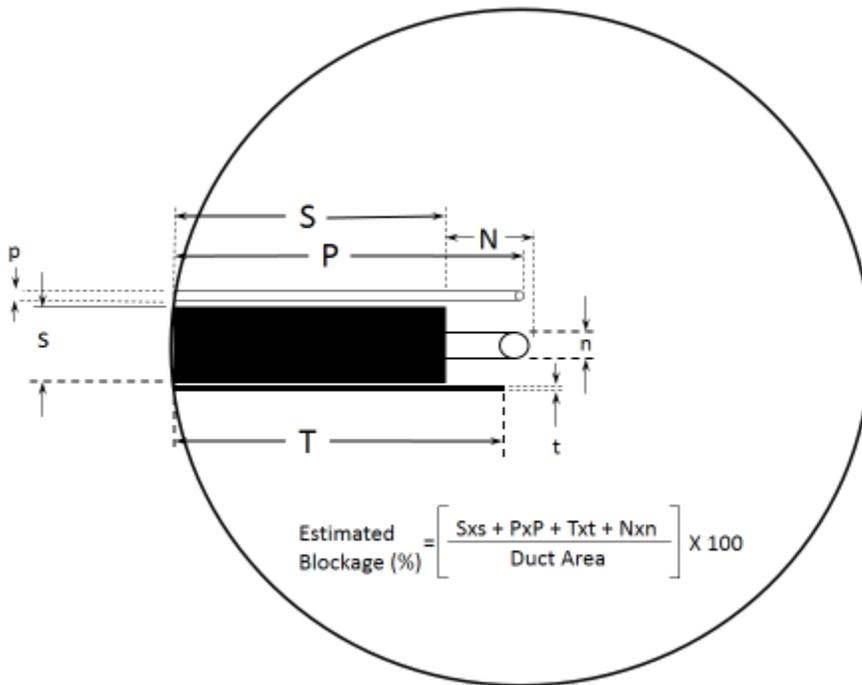


Figure 2-10. Projected-area models for typical pitot tube assemblies.

\* \* \* \* \*

11. In appendix A-2 to part 60:

- a. Revise sections 6.11.1, 6.11.2, 10.6.6, and 10.6.8 in Method 2G.
- b. Revise section 6.3 in Method 3C.
- c. Add sections 6.3.1, 6.3.2, 6.3.3, 6.3.4, and 6.3.5 in Method 3C.

The revisions and additions read as follows:

**Appendix A-2 to Part 60-Test Methods 2G through 3C**

\* \* \* \* \*

**Method 2G-Determination of Stack Gas Velocity and Volumetric Flow Rate With Two-Dimensional Probes**

\* \* \* \* \*

*6.0 Equipment and Supplies*

\* \* \* \* \*

6.11.1 Test section cross-sectional area. The flowing gas stream shall be confined within a circular, rectangular, or elliptical duct. The cross-sectional area of the tunnel must be large enough to ensure fully developed flow in the presence of both the calibration pitot tube and the tested probe. The calibration site, or "test section," of the wind tunnel shall have a minimum diameter of 30.5 cm (12 in.) for circular or elliptical duct cross-sections or a minimum width of 30.5 cm (12 in.) on the shorter side for rectangular cross-sections. Wind tunnels shall meet the probe blockage provisions of this section and the qualification requirements prescribed in section 10.1. The projected area of the portion of the probe head, shaft, and attached devices inside the wind tunnel during calibration shall represent no more than 2 percent of the cross-sectional area of the tunnel. If the pitot and/or probe assembly blocks more than 2 percent of the cross-sectional area at an insertion point only 4 inches inside the wind tunnel, the diameter of the wind tunnel must be increased.

6.11.2 Velocity range and stability. The wind tunnel should be capable of achieving and maintaining a constant and steady velocity between 6.1 m/sec and 30.5 m/sec (20 ft/sec and 100 ft/sec) for the entire calibration period for each selected calibration velocity. The wind tunnel shall produce fully developed flow patterns that are stable and parallel to the axis of the duct in the test section.

\* \* \* \* \*

*10.0 Calibration*

\* \* \* \* \*

10.6.6 Read the differential pressure from the calibration pitot tube ( $\Delta P_{std}$ ), and record its value. Read the barometric pressure to within  $\pm 2.5$  mm Hg ( $\pm 0.1$  in. Hg) and the temperature in the wind tunnel to within  $0.6^{\circ}\text{C}$  ( $1^{\circ}\text{F}$ ). Record these values on a data form similar to Table 2G-8. Record the rotational speed of the fan or indicator of wind tunnel volumetric flow and make no adjustment to fan speed or wind tunnel flow control between this observation and the Type S probe reading.

\* \* \* \* \*

10.6.8 Take paired differential pressure measurements with the calibration pitot tube and tested probe (according to sections 10.6.6 and 10.6.7). The paired measurements in each replicate can be made either simultaneously (i.e., with both probes in the wind tunnel) or by alternating the measurements of the two probes (i.e., with only one probe at a time in the wind tunnel). Adjustments made to the fan speed or other changes to the system designed to change the air flow velocity of the wind tunnel between observation of the calibration pitot tube ( $\Delta P_{std}$ ) and the Type S pitot tube invalidates the reading and the observation must be repeated.

\* \* \* \* \*

**Method 3C-Determination of Carbon Dioxide, Methane, Nitrogen, and Oxygen from Stationary Sources**

\* \* \* \* \*

*6. Analysis*

\* \* \* \* \*

6.3 Analyzer Linearity Check and Calibration. Perform this test before sample analysis.

6.3.1 Using the gas mixtures in section 5.1, verify the detector linearity over the range of suspected sample concentrations with at least three concentrations per compound of interest. This initial check may also serve as the initial instrument calibration.

6.3.2 You may extend the use of the analyzer calibration by performing a single point calibration verification. Calibration verifications shall be performed by triplicate injections of a single-point standard gas. The concentration of the single-point calibration must either be at the midpoint of the calibration curve or at approximately the source emission concentration measured during operation of the analyzer.

6.3.3 Triplicate injections must agree within 5 percent of their mean, and the average calibration verification point must agree within 10 percent of the initial calibration response factor. If these calibration verification criteria are not met, the initial calibration described in section 6.3.1, using at least three concentrations, must be repeated before analysis of samples can continue.

6.3.4 For each instrument calibration, record the carrier and detector flow rates, detector filament and block temperatures, attenuation factor, injection time, chart speed, sample loop volume, and component concentrations.

6.3.5 Plot a linear regression of the standard concentrations versus area values to obtain the response factor of each compound. Alternatively, response factors of uncorrected component concentrations (wet basis) may be generated using instrumental integration.

NOTE: Peak height may be used instead of peak area throughout this method.

\* \* \* \* \*

12. In appendix A-3 to part 60:

- a. Add sections 10.3 and 12.2.5 in Method 4.
- b. Revise section 16.4 in Method 4.
- c. Revise sections 6.1.1.9 and 8.7.6.2.5 in Method 5.
- d. Add sections 10.7 and 10.8 in Method 5.
- e. Add sections 10.4 and 10.5 in Method 5H.
- f. Add sections 10.1 and 10.2 in Method 5I.

The revisions and additions read as follows:

**Appendix A-3 to Part 60-Test Methods 4 through 5I**

\* \* \* \* \*

**Method 4-Determination of Moisture Content in Stack Gases**

\* \* \* \* \*

*10.0 Calibration and Standardization*

\* \* \* \* \*

10.3 Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 3 tolerance (or better) weight of at least 500g or within 50g of a loaded impinger weight. Daily before use, the field balance must measure the weight within +/- 0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat check before use of balance.

\* \* \* \* \*

*12.0 Data Analysis and Calculations*

\* \* \* \* \*

12.2.5 Using F-factors to determine approximate moisture for estimating moisture content where no wet scrubber is being used, for the purpose of determining isokinetic sampling rate settings with no fuel sample is acceptable using the average  $F_c$  or  $F_d$  factor from Method 19 (see Method 19, section 12.3.1). If this option is selected, calculate the approximate moisture as follows:

$$B_{WS} = B_H + B_A + B_F$$

Where:

$B_A$  = Mole Fraction of moisture in the ambient air.

$$B_A = \frac{\%RH}{100 * P_{Br}} * 10^{[6.6912 - (\frac{3144}{t+390.86})]}$$

$B_F$  = Mole fraction of moisture from free water in the fuel.

$$B_F = \left[ \frac{0.0036W^2 + 0.075W}{100} \right] \left[ \frac{20.9 - O_2}{20.9} \right]$$

$B_H$  = Mole fraction of moisture from the hydrogen in the fuel.

$$B_H = \left[ 1 - \frac{F_d}{F_w} \right] \frac{(20.9 - O_2)}{20.9}$$

$B_{ws}$  = Mole fraction of moisture in the stack gas.

$F_d$  = Volume of dry combustion components per unit of heat content at 0 percent oxygen, dscf/106

Btu (scm/J). See Table 19-2 in Method 19.

$F_w$  = Volume of wet combustion components per unit of heat content at 0 percent oxygen, wet

scf/10<sup>6</sup> Btu (scm/J). See Table 19-2 in Method 19.

%RH = Percent relative humidity (calibrated hydrometer acceptable), percent.

$P_{Bar}$  = Barometric pressure, in. Hg.

T = Ambient temperature, °F.

W = Percent free water by weight, percent.

$O_2$  = Percent oxygen in stack gas, dry basis, percent.

\* \* \* \* \*

#### 16.0 Alternative Procedures

\* \* \* \* \*

16.4 Using F-factors to determine moisture is an acceptable alternative to Method 4 for a combustion stack not using a scrubber and where a fuel sample is taken during the test run and analyzed for

development of an  $F_d$  factor (see Method 19, section 12.3.2) and where stack  $O_2$  content is measured by Method 3A or 3B during each test run. If this option is selected, calculate the moisture content as follows:

$$B_{ws} = B_H + B_A + B_F$$

Where:

$B_A$  = Mole fraction of moisture in the ambient air.

$$B_A = \frac{\%RH}{100 P_{bar}} \left[ 10^{6.6912 - \left( \frac{3144}{T+390.86} \right)} \right]$$

Note: Values of  $B_A$  should be between 0.00 and 0.06 with common values being about 0.015.

$B_F$  = Mole fraction of moisture from free water in the fuel.

$$B_F = \left[ \frac{0.0036 W^2 + 0.075 W}{100} \right] \left[ \frac{20.9 - O_2}{20.9} \right]$$

Note: Free water in fuel is minimal for distillate oil and gases, such as propane and natural gas, so this step may be omitted for those fuels.

$B_H$  = Mole fraction of moisture from the hydrogen in the fuel.

$$B_H = \left( 1 - \frac{F_d}{F_w} \right) \frac{(20.9 - O_2)}{20.9}$$

$B_{ws}$  = Mole fraction of moisture in the stack gas.

$F_d$  = Volume of dry combustion components per unit of heat content at 0 percent oxygen, dscf/ $10^6$  Btu (scm/J). Develop a test specific  $F_d$  value using an integrated fuel sample from each test run and Equation 19-3 in section 12.3.2 of Method 19.

$F_w$  = Volume of wet combustion components per unit of heat content at 0 percent oxygen, wet scf/ $10^6$  Btu (scm/J). Develop a test specific  $F_w$  value using an integrated fuel sample from each test run and Equation 19-4 in section 12.3.2 of Method 19.

%RH = Percent relative humidity (calibrated hygrometer acceptable), percent.

$P_{Bar}$  = Barometric pressure, in. Hg.

T = Ambient temperature, °F.

W = Percent free water by weight, percent.

$O_2$  = Percent oxygen in stack gas, dry basis, percent.

\* \* \* \* \*

**Method 5-Determination of Particulate Matter Emissions From Stationary Sources**

\* \* \* \* \*

*6.0 Equipment and Supplies*

\* \* \* \* \*

6.1.1.9 Metering System. Vacuum gauge, leak-free pump, calibrated temperature sensors (rechecked at at least one point after each test), dry gas meter (DGM) capable of measuring volume to within 2 percent, and related equipment, as shown in Figure 5-1. Other

metering systems capable of maintaining sampling rates within 10 percent of isokinetic and of determining sample volumes to within 2 percent may be used, subject to the approval of the Administrator. When the metering system is used in conjunction with a pitot tube, the system shall allow periodic checks of isokinetic rates.

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.7.6.2.5 Clean the inside of the front half of the filter holder by rubbing the surfaces with a Nylon bristle brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. Carefully rinse out the glass cyclone, also (if applicable). After all acetone washings and particulate matter have been collected in the sample container, tighten the lid on the sample container so that acetone will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to allow determination of whether leakage occurred during transport. Label the container to identify clearly its contents.

\* \* \* \* \*

*10.0 Calibration and Standardization*

\* \* \* \* \*

10.7 Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards"

(incorporated by reference—see 40 CFR 60.17) Class 3 tolerance (or better) weight of at least 500g or within 50g of a loaded impinger weight. Daily before use, the field balance must measure the weight within +/- 0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat check before use of balance.

10.8 Analytical Balance Calibration. Perform a multipoint calibration (at least five points spanning the operational range) of the analytical balance before the first use and semiannually, thereafter. The calibration of the analytical balance must be conducted using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 2 (or better) tolerance weights. Audit the balance each day it is used for gravimetric measurements by weighing at least one ASTM E617-13 Class 2 tolerance (or better) calibration weight) that corresponds to 50 to 150 percent of the weight of one filter or 5 g. If the scale cannot reproduce the value of the calibration weight to within 0.5 mg of the certified mass, perform corrective measures, and conduct the multipoint calibration before use.

\* \* \* \* \*

**Method 5H-Determination of Particulate Matter Emissions From Wood Heaters From a Stack Location**

\* \* \* \* \*

10.0 Calibration and Standardization

\* \* \* \* \*

10.4 Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 3 tolerance (or better) weight of at least 500g or within 50g of a loaded impinger weight. Daily before use, the field balance must measure the weight within +/- 0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat check before use of balance.

10.5 Analytical Balance Calibration. Perform a multipoint calibration (at least five points spanning the operational range) of the analytical balance before the first use and semiannually, thereafter. The calibration of the analytical balance must be conducted using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 2 (or better) tolerance weights. Audit the balance each day it is used for gravimetric measurements by weighing at least one ASTM E617-13 Class 2 tolerance (or better) calibration weight that corresponds to 50 to 150 percent of the weight of one filter or 5 g. If the scale cannot reproduce the value of the calibration

weight to within 0.5 mg of the certified mass, perform corrective measures, and conduct the multipoint calibration before use.

\* \* \* \* \*

**Method 5I-Determination of Low Level Particulate Matter Emissions  
From Stationary Sources**

\* \* \* \* \*

*10. Calibration and Standardization Same as Method 5, section 5.*

10.1 Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 3 tolerance (or better) weight of at least 500g or within 50g of a loaded impinger weight. Daily before use, the field balance must measure the weight within +/- 0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat check before use of balance.

10.2 Analytical Balance Calibration. Perform a multipoint calibration (at least five points spanning the operational range) of the analytical balance before the first use and semiannually, thereafter. The calibration of the analytical balance must be conducted using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 2 (or better) tolerance weights. Audit the balance

each day it is used for gravimetric measurements by weighing at least one ASTM E617-13 Class 2 tolerance (or better) calibration weight that corresponds to 50 to 150 percent of the weight of one filter or 5 g. If the scale cannot reproduce the value of the calibration weight to within 0.5 mg of the certified mass, perform corrective measures, and conduct the multipoint calibration before use.

\* \* \* \* \*

13. In appendix A-4 to part 60:

a. Revise section 8.3 in Method 6C.

b. Revise sections 8.1.2, 8.2.7 introductory text, and 12.8 in Method 7E.

c. Revise sections 6.2.5 and 8.4.2 in Method 10.

d. Add section 6.2.6 in Method 10.

e. Revise sections 6.1.6, 6.1.7, 6.1.8, 6.1.9, 6.1.10, 8.1, 8.2.1 and 8.2.3 in Method 10A.

f. Add section 6.1.11 in Method 10A.

g. Revise section 6.1 in Method 10B.

The revisions and additions read as follows:

**Appendix A-4 to Part 60-Test Methods 6 through 10B**

\* \* \* \* \*

**Method 6C-Determination of Sulfur Dioxide Emissions From Stationary Sources (Instrumental Analyzer Procedure)**

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.3 *Interference Check*. You must follow the procedures of section 8.2.7 of Method 7E to conduct an interference check, substituting SO<sub>2</sub> for NO<sub>x</sub> as the method pollutant. For dilution-type measurement systems, you must use the alternative interference check procedure in section 16 and a co-located, unmodified Method 6 sampling train.

\* \* \* \* \*

**Method 7E-Determination of Nitrogen Oxides Emissions From Stationary Sources (Instrumental Analyzer Procedure)**

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.1.2 *Determination of Stratification*. Perform a stratification test at each test site to determine the appropriate number of sample traverse points. If testing for multiple pollutants or diluents at the same site, a stratification test using only one pollutant or diluent satisfies this requirement. A stratification test is not required for small stacks that are less than 4 inches in diameter. To test for stratification, use a probe of appropriate length to measure the NO<sub>x</sub> (or pollutant of interest) concentration at twelve traverse points located according to Table 1-1 or Table 1-2 of Method 1. Alternatively, you may measure at three points on a line passing through the centroidal area. Space the three points at 16.7, 50.0, and 83.3 percent of the measurement line. Sample for a minimum of

twice the system response time (see section 8.2.6) at each traverse point. Calculate the individual point and mean NO<sub>x</sub> concentrations. If the concentration at each traverse point differs from the mean concentration for all traverse points by no more than: (a)  $\pm 5.0$  percent of the mean concentration; or (b)  $\pm 0.5$  ppm (whichever is less restrictive), the gas stream is considered unstratified and you may collect samples from a single point that most closely matches the mean. If the 5.0 percent or 0.5 ppm criterion is not met, but the concentration at each traverse point differs from the mean concentration for all traverse points by not more than: (a)  $\pm 10.0$  percent of the mean; or (b)  $\pm 1.0$  ppm (whichever is less restrictive), the gas stream is considered to be minimally stratified, and you may take samples from three points. Space the three points at 16.7, 50.0, and 83.3 percent of the measurement line. Alternatively, if a twelve-point stratification test was performed and the emissions were shown to be minimally stratified (all points within  $\pm 10.0$  percent of their mean or within  $\pm 1.0$  ppm), and if the stack diameter (or equivalent diameter, for a rectangular stack or duct) is greater than 2.4 meters (7.8 ft), then you may use 3-point sampling and locate the three points along the measurement line exhibiting the highest average concentration during the stratification test, at 0.4, 1.2 and 2.0 meters from the stack or duct wall. If the gas stream is found to be stratified because the 10.0 percent or 1.0 ppm criterion for a 3-point test is not met,

locate twelve traverse points for the test in accordance with Table 1-1 or Table 1-2 of Method 1.

\* \* \* \* \*

8.2.7 *Interference Check*. Conduct an interference response test of the gas analyzer prior to its initial use in the field. If you have multiple analyzers of the same make and model, you need only perform this alternative interference check on one analyzer. You may also meet the interference check requirement if the instrument manufacturer performs this or a similar check on an analyzer of the same make and model of the analyzer that you use and provides you with documented results.

\* \* \* \* \*

## 12.0 *Calculations and Data Analysis*

\* \* \* \* \*

12.8 NO<sub>2</sub> - NO Conversion Efficiency Correction. If desired, calculate the total NO<sub>x</sub> concentration with a correction for converter efficiency using Equation 7E-8.

$$NO_x \text{ Corr} = NO + \left( \frac{(NO_x - NO)}{EffNO_2} \times 100 \right) \quad \text{Eq. 7E-8}$$

\* \* \* \* \*

## **Method 10-Determination of Carbon Monoxide Emissions From Stationary Sources (Instrumental Analyzer Procedure)**

\* \* \* \* \*

## 6.0 *Equipment and Supplies*

\* \* \* \* \*

6.2.5 *Flexible Bag*. Tedlar, or equivalent, with a capacity of 60 to 90 liters (2 to 3 ft<sup>3</sup>). (Verify through the manufacturer that the Tedlar alternative is suitable for CO and make this verified information available for inspection.) Leak-test the bag in the laboratory before using by evacuating with a pump followed by a dry gas meter. When the evacuation is complete, there should be no flow through the meter.

6.2.6 *Sample Tank*. Stainless steel or aluminum tank equipped with a pressure indicator with a minimum volume of 4 liters.

\* \* \* \* \*

## 8.0 *Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.4.2 *Integrated Sampling*. Evacuate the flexible bag or sample tank. Set up the equipment as shown in Figure 10-1 with the bag disconnected. Place the probe in the stack and purge the sampling line. Connect the bag, making sure that all connections are leak-free. Sample at a rate proportional to the stack velocity. If needed, the CO<sub>2</sub> content of the gas may be determined by using the Method 3 integrated sample procedures, or by weighing an ascarite CO<sub>2</sub> removal tube used and computing CO<sub>2</sub> concentration from the gas volume sampled and the weight gain of the tube. Data may be recorded on a form similar to Table 10-1. If a sample tank is used for sample collection, follow procedures similar to those in sections 8.1.2, 8.2.3, 8.3, and 12.4 of Method 25 as appropriate to prepare the tank, conduct the sampling, and correct the measured sample concentration.

\* \* \* \* \*

**Method 10A-Determination of Carbon Monoxide Emissions in Certifying  
Continuous Emission Monitoring Systems at Petroleum Refineries**

\* \* \* \* \*

*6.0 Equipment and Supplies*

\* \* \* \* \*

6.1.6 Flexible Bag. Tedlar, or equivalent, with a capacity of 10 liters (0.35 ft<sup>3</sup>) and equipped with a sealing quick-connect plug. The bag must be leak-free according to section 8.1. For protection, it is recommended that the bag be enclosed within a rigid container.

6.1.7 Sample Tank. Stainless steel or aluminum tank equipped with a pressure indicator with a minimum volume of 10 liters.

6.1.8 Valves. Stainless-steel needle valve to adjust flow rate, and stainless-steel 3-way valve, or equivalent.

6.1.9 CO<sub>2</sub> Analyzer. Fyrite, or equivalent, to measure CO<sub>2</sub> concentration to within 0.5 percent.

6.1.10 Volume Meter. Dry gas meter, capable of measuring the sample volume under calibration conditions of 300 ml/min (0.01 ft<sup>3</sup>/min) for 10 minutes.

6.1.11 Pressure Gauge. A water filled U-tube manometer, or equivalent, of about 30 cm (12 in.) to leak-check the flexible bag.

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.1 Sample Bag or Tank Leak-Checks. While a leak-check is required after bag or sample tank use, it should also be done before the bag or sample tank is used for sample collection. The tank should be leak-checked according to the procedure specified in section 8.1.2 of Method 25. The bag should be leak-checked in the inflated and deflated condition according to the following procedure:

\* \* \* \* \*

8.2.1 Evacuate and leak check the sample bag or tank as specified in section 8.1. Assemble the apparatus as shown in Figure 10A-1. Loosely pack glass wool in the tip of the probe. Place 400 ml of alkaline permanganate solution in the first two impingers and 250 ml in the third. Connect the pump to the third impinger, and follow this with the surge tank, rate meter, and 3-way valve. Do not connect the bag or sample tank to the system at this time.

\* \* \* \* \*

8.2.3 Purge the system with sample gas by inserting the probe into the stack and drawing the sample gas through the system at 300 ml/min  $\pm$ 10 percent for 5 minutes. Connect the evacuated bag or sample tank to the system, record the starting time, and sample at a rate of 300 ml/min for 30 minutes, or until the bag is nearly full, or the sample tank reaches ambient pressure. Record the sampling time, the barometric pressure, and the ambient temperature. Purge the system as described above immediately before each sample.

\* \* \* \* \*

**Method 10B-Determination of Carbon Monoxide Emissions from Stationary Sources**

\* \* \* \* \*

*6.0 Equipment and Supplies*

\* \* \* \* \*

6.1 Sample Collection. Same as in Method 10A, section 6.1 (paragraphs 6.1.1 through 6.1.11).

\* \* \* \* \*

14. Revise section 8.3.2 in Method 15 of appendix A-5 to part 60 to read as follows:

**Appendix A-5 to Part 60-Test Methods 11 through 15A**

\* \* \* \* \*

**Method 15-Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions From Stationary Sources**

\* \* \* \* \*

8.0 Sample Collection, Preservation, Transport, and Storage

\* \* \* \* \*

8.3.2 Determination of Calibration Drift. After each run, or after a series of runs made within a 24-hour period, perform a partial recalibration using the procedures in section 10.0. Only H<sub>2</sub>S (or other permeant) need be used to recalibrate the GC/FPD analysis system and the dilution system. Partial recalibration may be performed at the midlevel calibration gas concentration or at a concentration measured in the samples but not less than the lowest calibration standard used

in the initial calibration. Compare the calibration curves obtained after the runs to the calibration curves obtained under section 10.3. The calibration drift should not exceed the limits set forth in section 13.4. If the drift exceeds this limit, the intervening run or runs should be considered invalid. As an option, the calibration data set which gives the highest sample values may be chosen by the tester.

\* \* \* \* \*

15. In appendix A-6 to part 60:

- a. Revise sections 12.1 and 12.2 in Method 16C.
- b. Remove section 8.2.1.5.2.3 in Method 18.

The revisions read as follows:

**Appendix A-6 to Part 60-Test Methods 16 through 18**

\* \* \* \* \*

**Method 16C-Determination of Total Reduced Sulfur Emissions From Stationary Sources**

\* \* \* \* \*

*12.0 Calculations and Data Analysis*

\* \* \* \* \*

12.1 Nomenclature.

ACE = Analyzer calibration error, percent of calibration span.

CD = Calibration drift, percent.

C<sub>Dir</sub> = Measured concentration of a calibration gas (low, mid, or

high) when introduced in direct calibration mode, ppmv.

$C_{H_2S}$  = Concentration of the system performance check gas, ppmv H<sub>2</sub>S.

$C_S$  = Measured concentration of the system performance gas when introduced in system calibration mode, ppmv H<sub>2</sub>S.

$C_{SO_2}$  = Unadjusted sample SO<sub>2</sub> concentration, ppmv.

$C_{TRS}$  = Total reduced sulfur concentration corrected for system performance, ppmv.

CS = Calibration span, ppmv.

DF = Dilution system (if used) dilution factor, dimensionless.

SP = System performance, percent.

12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 16C-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases.

$$ACE = \frac{C_{Dir} - C_v}{CS} \times 100 \quad Eq. 16C - 1$$

\* \* \* \* \*

16. In appendix A-7 to part 60:

- a. Revise sections 9.1, 12.1, and 12.3 in Method 25C.
- b. Remove section 11.2 in Method 25C.
- c. Add sections 12.4, 12.5, 12.5.1, and 12.5.2 in Method 25C.

The revisions and additions read as follows:

**Appendix A-7 to Part 60-Test Methods 19 through 25E**

\* \* \* \* \*

**Method 25C-Determination of Nonmethane Organic Compounds (NMOC) in Landfill Gases**

\* \* \* \* \*

9.0 Quality Control

\* \* \* \* \*

9.1 Miscellaneous Quality Control Measures.

Section	Quality control measure	Effect
8.4.2	Verify that landfill gas sample contains less than 20 percent N <sub>2</sub> or 5 percent O <sub>2</sub>	Ensures that ambient air was not drawn into the landfill gas sample and gas was sampled from an appropriate location.
10.1, 10.2	NMOC analyzer initial and daily performance checks	Ensures precision of analytical results.

\* \* \* \* \*

12.0 Data Analysis and Calculations

\* \* \* \* \*

12.1 Nomenclature.

$B_w$  = Moisture content in the sample, fraction.

$C_{N_2}$  = N<sub>2</sub> concentration in the diluted sample gas.

$C_{mN_2}$  = Measured N<sub>2</sub> concentration, fraction in landfill gas.

$C_{mO_x}$  = Measured Oxygen concentration, fraction in landfill gas.

$C_{O_x}$  = Oxygen concentration in the diluted sample gas.

$C_t$  = Calculated NMOC concentration, ppmv C equivalent.

$C_{tm}$  = Measured NMOC concentration, ppmv C equivalent.

$P_b$  = Barometric pressure, mm Hg.

$P_t$  = Gas sample tank pressure after sampling, but before pressurizing, mm Hg absolute.

$P_{tf}$  = Final gas sample tank pressure after pressurizing, mm Hg absolute.

$P_{ti}$  = Gas sample tank pressure after evacuation, mm Hg absolute.

$P_w$  = Vapor pressure of  $H_2O$  (from Table 25C-1), mm Hg.

$r$  = Total number of analyzer injections of sample tank during analysis (where  $j$  = injection number, 1 . . .  $r$ ).

$T_t$  = Sample tank temperature at completion of sampling, °K.

$T_{ti}$  = Sample tank temperature before sampling, °K.

$T_{tf}$  = Sample tank temperature after pressuring, °K.

\* \* \* \* \*

12.3 Nitrogen Concentration in the landfill gas. Use equation 25C-2 to calculate the measured concentration of nitrogen in the original landfill gas.

$$C_{N2} = \left[ \frac{\left( \frac{P_{tf}}{T_{tf}} \right)}{\left( \left( \frac{P_t}{T_t} \right) - \left( \frac{P_{ti}}{T_{ti}} \right) \right)} \right] C_{mN2} \quad \text{Eq. 25C-2}$$

12.4 Oxygen Concentration in the landfill gas. Use equation 25C-3 to calculate the measured concentration of oxygen in the original landfill gas.

$$C_{Ox} = \left[ \frac{\left( \frac{P_{tf}}{T_{tf}} \right)}{\left( \left( \frac{P_t}{T_t} \right) - \left( \frac{P_{ti}}{T_{ti}} \right) \right)} \right] C_{mOx} \quad \text{Eq. 25C-3}$$

12.5 You must correct the NMOC Concentration for the concentration of nitrogen or oxygen based on which gas or gases passes the requirements in section 9.1.

12.5.1 NMOC Concentration with nitrogen correction. Use Equation 25C-4 to calculate the concentration of NMOC for each sample tank when the nitrogen concentration is less than 20 percent.

$$C_t = \frac{\frac{P_{tf}}{T_{tf}}}{\left(\frac{P_t - P_{ti}}{T_t - T_{ti}}\right)\left(1 - \frac{99}{78}C_{N_2}\right)^{-B_w}} \frac{1}{r} \sum_{j=1}^r C_{tm(j)} \quad \text{Eq. 25C-4}$$

12.5.2 NMOC Concentration with oxygen correction. Use Equation 25C-4 to calculate the concentration of NMOC for each sample tank if the landfill gas oxygen is less than 5 percent and the landfill gas nitrogen concentration is greater than 20 percent.

$$C_t = \frac{\frac{P_{tf}}{T_{tf}}}{\left(\frac{P_t - P_{ti}}{T_t - T_{ti}}\right)\left(1 - \frac{99}{21}C_{O_x}\right)^{-B_w}} \frac{1}{r} \sum_{j=1}^r C_{tm(j)} \quad \text{Eq. 25C-5}$$

\* \* \* \* \*

17. In appendix A-8 to part 60:

- a. Revise section 13.3 in Method 26.
- b. Revise sections 4.3, 6.1.7, 8.1.5, and 8.1.6 in Method 26A.
- c. Revise section 8.2.9.3 in Method 29.
- d. Add section 10.4 and 10.5 in Method 29.
- e. Revise the section heading for section 8.1 in Method 30A.
- f. Revise the section heading for section 8.1 and section 8.3.3.8 in Method 30B.

The revisions and additions read as follows:

**Appendix A-8 to Part 60-Test Methods 26 through 30B**

\* \* \* \* \*

**Method 26-Determination of Hydrogen Chloride Emissions from  
Stationary Sources**

\* \* \* \* \*

*13.0 Method Performance*

\* \* \* \* \*

13.3 Detection Limit. A typical IC instrumental detection limit for  $\text{Cl}^-$  is 0.2  $\mu\text{g/ml}$ . Detection limits for the other analyses should be similar. Assuming 50 ml liquid recovered from both the acidified impingers, and the basic impingers, and 0.12 dscm of stack gas sampled, then the analytical detection limit in the stack gas will be about 0.05 ppm for HCl and  $\text{Cl}_2$ , respectively.

\* \* \* \* \*

**Method 26A-Determination of Hydrogen Halide and Halogen Emissions  
From Stationary Sources Isokinetic Method**

\* \* \* \* \*

*4.0 Interferences*

\* \* \* \* \*

4.3 Dissociating chloride salts (e.g., ammonium chloride) at elevated temperatures interfere with halogen acid measurement in this method. Maintaining particulate probe/filter temperatures at  $120 \pm 14^\circ\text{C}$  ( $248 \pm 25^\circ\text{F}$ ) minimizes this interference.

\* \* \* \* \*

*6.0. Equipment and Supplies*

\* \* \* \* \*

6.1.7 Heating System. Any heating system capable of monitoring and maintaining temperature around the filter shall be used to ensure a sample gas temperature exiting the filter of  $120 \pm 14^\circ\text{C}$  ( $248 \pm 25^\circ\text{F}$ ) during sampling or such other temperature as specified by an applicable subpart of the standards. The monitoring and regulation of the temperature around the filter may be done with the filter temperature sensor or another temperature sensor.

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.1.5 Sampling Train Operation. Follow the general procedure given in Method 5, section 8.5. Maintain a temperature around the probe, through the filter (and cyclone, if used) of  $120 \pm 14^\circ\text{C}$  ( $248 \pm 25^\circ\text{F}$ ) or such other temperature as specified by an applicable subpart of the standards to avoid dissociating halogen salts and to maintain acid gases in the vapor phase since it is extremely difficult to purge

acid gases off these components. (These components are not quantitatively recovered and hence any collection of acid gases on these components will result in potential under reporting these emissions.) For each run, record the data required on a data sheet such as the one shown in Method 5, Figure 5-3. If the condensate impinger becomes too full, it may be emptied, recharged with 50 ml of 0.1 N H<sub>2</sub>SO<sub>4</sub>, and replaced during the sample run. The condensate emptied must be saved and included in the measurement of the volume of moisture collected and included in the sample for analysis. The additional 50 ml of absorbing reagent must also be considered in calculating the moisture. Before the sampling train integrity is compromised by removing the impinger, conduct a leak-check as described in Method 5, section 8.4.2.

8.1.6 Post-Test Moisture Removal (Optional). When the optional cyclone is included in the sampling train or when liquid is visible on the filter at the end of a sample run even in the absence of a cyclone, perform the following procedure. Upon completion of the test run, connect the ambient air conditioning tube at the probe inlet and operate the train with the filter heating system between 120 and 134°C (248 and 273°F) at a low flow rate (e.g.,  $\Delta H = 1$  in. H<sub>2</sub>O) to vaporize any liquid and hydrogen halides in the cyclone or on the filter and pull them through the train into the impingers. After 30 minutes, turn off the flow, remove the conditioning tube, and examine the cyclone and filter for any visible liquid. If liquid is visible,

repeat this step for 15 minutes and observe again. Keep repeating until the cyclone is dry.

Note: It is critical that this is repeated until the cyclone is completely dry.

\* \* \* \* \*

**Method 29-Determination of Metals Emissions From Stationary Sources**

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Transport, and Storage*

\* \* \* \* \*

8.2.9.3 Wash the two permanganate impingers with 25 ml of 8 N HCl, and place the wash in a separate sample container labeled No. 5C containing 200 ml of water. First, place 200 ml of water in the container. Then wash the impinger walls and stem with the 8 N HCl by turning the impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 ml of 8 N HCl for rinsing *both permanganate impingers combined*. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse. Finally, pour the 25 ml of 8 N HCl rinse carefully into the container with the 200 ml of water. Mark the height of the fluid level on the outside of the container in order to determine if leakage occurs during transport.

\* \* \* \* \*

*10.0 Calibration and Standardization*

\* \* \* \* \*

10.4 Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 3 tolerance (or better) weight of at least 500g or within 50g of a loaded impinger weight. Daily before use, the field balance must measure the weight within +/- 0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat check before use of balance.

10.5 Analytical Balance Calibration. Perform a multipoint calibration (at least five points spanning the operational range) of the analytical balance before the first use and semiannually, thereafter. The calibration of the analytical balance must be conducted using ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" (incorporated by reference—see 40 CFR 60.17) Class 2 (or better) tolerance weights. Audit the balance each day it is used for gravimetric measurements by weighing at least one ASTM E617-13 Class 2 tolerance (or better) calibration weight that corresponds to 50 to 150 percent of the weight of one filter or 5 g. If the scale cannot reproduce the value of the calibration

weight to within 0.5 mg of the certified mass, perform corrective measures, and conduct the multipoint calibration before use.

\* \* \* \* \*

**Method 30A-Determination of Total Vapor Phase Mercury Emissions from Stationary Sources (Instrumental Analyzer Procedure)**

\* \* \* \* \*

*8.0 Sample Collection*

\* \* \* \* \*

8.1 Selection of Sampling Sites and Sampling Points. \* \* \*

\* \* \* \* \*

**Method 30B-Determination of Total Vapor Phase Mercury Emissions from Coal-Fired Combustion Sources Using Carbon Sorbent Traps**

\* \* \* \* \*

*8.0 Sample Collection and Handling*

\* \* \* \* \*

8.1 Selection of Sampling Sites and Sampling Points. \* \* \*

\* \* \* \* \*

8.3.3.8 Sample Handling, Preservation, Storage, and Transport.

While the performance criteria of this approach provides for verification of appropriate sample handling, it is still important that the user consider, determine, and plan for suitable sample preservation, storage, transport, and holding times for these measurements. Therefore, procedures in ASTM D6911-15 "Standard Guide for Packaging and Shipping Environmental Samples for Laboratory

Analysis" (incorporated by reference—see 40 CFR 60.17) shall be followed for all samples, where appropriate.

\* \* \* \* \*

18. In appendix B to part 60:

a. Add the entry "Performance Specification 16—Specifications and Test Procedures for Predictive Emission Monitoring Systems in Stationary Sources" at the end of the table of contents for appendix B to part 60.

b. Add a sentence to the end of section 8.1(2)(i) in Performance Specification 1.

c. Revise sections 3.11, 6.1.1, 16.3.2, and Figure 2-1 in section 18.0 in Performance Specification 2.

d. Revise section 13.2 in Performance Specification 3.

e. Revise sections 8.3, 8.3.1, and 13.3 in Performance Specification 4A.

f. Revise sections 12.1 and 13.1 in Performance Specification 11.

g. Revise section 9.1.2 in Performance Specification 15.

h. Add sections 14.0 and 15.0 in Performance Specification 15.

i. Revise the introductory text of section 12.2.3 in Performance Specification 16.

j. Revise table 16-1 in Performance Specification 16.

The revisions and additions read as follows:

**Appendix B to Part 60—Performance Specifications**

\* \* \* \* \*

**Performance Specification 1-Specifications and Test Procedures for  
Continuous Opacity Monitoring Systems in Stationary Sources**

\* \* \* \* \*

*8.0 What Performance Procedures Are Required To Comply With PS-1?*

\* \* \* \* \*

8.1 \* \* \*

(2) \* \* \*

(i) Measurement Location. \* \* \* Alternatively, you may select a measurement location specified in paragraph 8.1(2)(ii) or 8.1(2)(iii).

\* \* \* \* \*

**Performance Specification 2-Specifications and Test Procedures for SO<sub>2</sub>  
and NO<sub>x</sub> Continuous Emission Monitoring Systems in Stationary Sources**

\* \* \* \* \*

*3.0 Definitions*

\* \* \* \* \*

3.11 *Span Value* means the calibration portion of the measurement range as specified in the applicable regulation or other requirement. If the span is not specified in the applicable regulation or other requirement, then it must be a value approximately equivalent to two times the emission standard.

\* \* \* \* \*

*6.0 Equipment and Supplies*

\* \* \* \* \*

6.1.1 Data Recorder. The portion of the CEMS that provides a record of analyzer output. The data recorder may record other pertinent data

such as effluent flow rates, various instrument temperatures or abnormal CEMS operation. The data recorder output range must include the full range of expected concentration values in the gas stream to be sampled including zero and span values.

\* \* \* \* \*

16.0 Alternative Procedures

\* \* \* \* \*

16.3.2 For diluent CEMS:

$$RA = \bar{d}; \leq 0.7 \text{ percent O}_2 \text{ or CO}_2, \text{ as applicable.}$$

Note: Waiver of the relative accuracy test in favor of the alternative RA procedure does not preclude the requirements to complete the CD tests nor any other requirements specified in an applicable subpart for reporting CEMS data and performing CEMS drift checks or audits.

\* \* \* \* \*

18.0 Tables, Diagrams, Flowcharts, and Validation Data

Figure 2-1. Calibration Drift Determination

Table 2-1—t-Values

N <sup>a</sup>	t <sub>0.975</sub>	n <sup>a</sup>	t <sub>0.975</sub>	n <sup>a</sup>	t <sub>0.975</sub>
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




\* \* \* \* \*

**Performance Specification 3-Specifications and Test Procedures for O<sub>2</sub> and CO<sub>2</sub> Continuous Emission Monitoring Systems in Stationary Sources**

\* \* \* \* \*

*13.0 Method Performance*

\* \* \* \* \*

13.2 CEMS Relative Accuracy Performance Specification. The RA of the CEMS must be no greater than 20.0 percent of the mean value of the reference method (RM) data when calculated using equation 3-1. The results are also acceptable if the result of Equation 3-2 is less than or equal to 1.0 percent O<sub>2</sub> (or CO<sub>2</sub>).

$$RA = \frac{[|\bar{d}| + |CC|]}{\overline{RM}} \times 100 \quad \text{Eq. 3-1}$$

Where:

$|\bar{d}|$  = Absolute value of the mean of the differences (from Equation 2-3 of Performance Specification 2).

$|CC|$  = Absolute value of the confidence coefficient (from Equation 2-5 of Performance Specification 2).

$\overline{RM}$  = Average Reference Method value.

$$|\overline{RM} - \overline{CEMS}| \quad \text{Eq. 3-2}$$

$\overline{RM}$  = Average Reference Method value.

$\overline{CEMS}$  = Average CEMS value.

\* \* \* \* \*

**Performance Specification 4A-Specifications and Test Procedures for Carbon Monoxide Continuous Emission Monitoring Systems in Stationary Sources**

\* \* \* \* \*

*8.0 Sample Collection, Preservation, Storage, and Transport*

\* \* \* \* \*

8.3 Response Time Test Procedure. The response time test applies to all types of CEMS, but will generally have significance only for extractive systems. The entire system is checked with this procedure including applicable sample extraction and transport, sample conditioning, gas analyses, and data recording.

8.3.1 Introduce zero gas into the system. When the system output has stabilized (no change greater than 1 percent of full scale for 30 sec), introduce an upscale calibration gas and wait for a stable value. Record the time (upscale response time) required to reach 95 percent of the final stable value. Next, reintroduce the zero gas and wait for a stable reading before recording the response time (downscale response time). Repeat the entire procedure three times

and determine the mean upscale and downscale response times. The slower or longer of the two means is the system response time.

\* \* \* \* \*

### 13.0 Method Performance

\* \* \* \* \*

13.3 Response Time. The CEMS response time shall not exceed 2.0 min to achieve 95 percent of the final stable value.

\* \* \* \* \*

## **Performance Specification 11-Specifications and Test Procedures for Particulate Matter Continuous Emission Monitoring Systems at Stationary Sources**

\* \* \* \* \*

### 12.0 What Calculations and Data Analyses Are Needed?

\* \* \* \* \*

12.1 How do I calculate upscale drift and zero drift? You must determine the difference in your PM CEMS output readings from the established reference values (zero and upscale check values) after a stated period of operation during which you performed no unscheduled maintenance, repair, or adjustment.

(1) Calculate the upscale drift (UD) using Equation 11-1:

$$UD = \frac{|R_{CEM} - R_U|}{R_r} \times 100 \quad (\text{Eq. 11-1})$$

Where:

UD = The upscale (high-level) drift of your PM CEMS in percent,

$R_{CEM}$  = The measured PM CEMS response to the upscale reference standard, and

$R_U$  = The pre-established numerical value of the upscale reference standard.

$R_r$  = The response range of the analyzer.

(2) Calculate the zero drift (ZD) using Equation 11-2:

$$ZD = \frac{|R_{CEM} - R_L|}{R_r} \times 100 \quad (\text{Eq. 11-2})$$

Where:

ZD = The zero (low-level) drift of your PM CEMS in percent,

$R_{CEM}$  = The measured PM CEMS response to the zero reference standard,

$R_L$  = The pre-established numerical value of the zero reference standard, and

$R_r$  = The response range of the analyzer.

\* \* \* \* \*

### 13.0 What Are the Performance Criteria for My PM CEMS?

\* \* \* \* \*

13.1 What is the 7-day drift check performance specification? Your daily PM CEMS internal drift checks must demonstrate that the average daily drift of your PM CEMS does not deviate from the value of the reference light, optical filter, Beta attenuation signal, or other technology-suitable reference standard by more than 2 percent of the

response range. If your CEMS includes diluent and/or auxiliary monitors (for temperature, pressure, and/or moisture) that are employed as a necessary part of this performance specification, you must determine the calibration drift separately for each ancillary monitor in terms of its respective output (see the appropriate performance specification for the diluent CEMS specification). None of the calibration drifts may exceed their individual specification.

\* \* \* \* \*

**Performance Specification 15-Performance Specification for Extractive FTIR Continuous Emissions Monitor Systems in Stationary Sources**

\* \* \* \* \*

*9.0 Quality Control*

\* \* \* \* \*

9.1.2 Test Procedure. Spike the audit sample using the analyte spike procedure in section 11. The audit sample is measured directly by the FTIR system (undiluted) and then spiked into the effluent at a known dilution ratio. Measure a series of spiked and unspiked samples using the same procedures as those used to analyze the stack gas. Analyze the results using sections 12.1 and 12.2. The measured concentration of each analyte must be within  $\pm 5$  percent of the expected concentration (plus the uncertainty), *i.e.*, the calculated correction factor must be within 0.93 and 1.07 for an audit with an analyte uncertainty of  $\pm 2$  percent.

\* \* \* \* \*

*14.0 Pollution Prevention [Reserved]*

15.0 Waste Management [Reserved]

\* \* \* \* \*

**Performance Specification 16—Specifications and Test Procedures for Predictive Emission Monitoring Systems in Stationary Sources**

\* \* \* \* \*

12.0 Calculations and Data Analysis

\* \* \* \* \*

12.2.3 Confidence Coefficient. Calculate the confidence coefficient using Equation 16-3 and Table 16-1 for n-1 degrees of freedom.

\* \* \* \* \*

17.0 Tables, Diagrams, Flowcharts, and Validation Data

**TABLE 16-1—T-VALUES FOR ONE-SIDED, 97.5 PERCENT CONFIDENCE INTERVALS FOR SELECTED SAMPLE SIZES\***

n-1	t <sub>0.025</sub>	n-1	t <sub>0.025</sub>
1	12.706	15	2.131
2	4.303	16	2.120
3	3.182	17	2.110
4	2.776	18	2.101
5	2.571	19	2.093
6	2.447	20	2.086
7	2.365	21	2.080
8	2.306	22	2.074
9	2.262	23	2.069
10	2.228	24	2.064
11	2.201	25	2.060
12	2.179	26	2.056
13	2.160	27	2.052

14	2.145	>28	t-Table
----	-------	-----	---------

\*n-1 equals the degrees of freedom

\* \* \* \* \*

19. Revise section 12.0 paragraphs (3) and (4) in Procedure 2 of appendix F to part 60 to read as follows:

**APPENDIX F TO PART 60—QUALITY ASSURANCE PROCEDURES**

\* \* \* \* \*

**Procedure 2—QUALITY ASSURANCE REQUIREMENTS FOR PARTICULATE MATTER CONTINUOUS EMISSION MONITORING SYSTEMS AT STATIONARY SOURCES**

\* \* \* \* \*

*12.0 What Calculations and Data Analysis Must I Perform for my PM CEMS?*

\* \* \* \* \*

(3) How do I calculate daily upscale and zero drift? You must calculate the upscale drift using Equation 2-2 and the zero drift using Equation 2-3:

$$UD = \frac{|R_{CEM} - R_U|}{R_r} \times 100 \quad (\text{Eq. 2-2})$$

Where:

UD = The upscale drift of your PM CEMS, in percent,

R<sub>CEM</sub> = Your PM CEMS response to the upscale check value, and

R<sub>U</sub> = The upscale check value.

$R_r$  = The response range of the analyzer.

$$ZD = \frac{|R_{CEM} - R_L|}{R_r} \times 100 \quad (\text{Eq. 2-3})$$

Where:

ZD = The zero (low-level) drift of your PM CEMS, in percent,

$R_{CEM}$  = Your PM CEMS response of the zero check value,

$R_L$  = The zero check value.

$R_r$  = The response range of the analyzer.

(4) How do I calculate SVA accuracy? You must use Equation 2-4 to calculate the accuracy, in percent, for each of the three SVA tests or the daily sample volume check:

$$\text{Accuracy} = \frac{(V_R - V_M)}{V_M} \times 100 \quad (\text{Eq. 2-4})$$

Where:

$V_M$  = Sample gas volume determined/reported by your PM CEMS (e.g., dscm),

$V_R$  = Sample gas volume measured by the independent calibrated reference device (e.g., dscm) for the SVA or the reference value for the daily sample volume check.

NOTE: Before calculating SVA accuracy, you must correct the sample gas volumes measured by your PM CEMS and the independent calibrated

reference device to the same basis of temperature, pressure, and moisture content. You must document all data and calculations.

\* \* \* \* \*

**PART 61-NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS**

20. The authority citation for part 61 continues to read as follows:

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

21. In §61.13, revise paragraph (e)(1)(i) to read as follows:

**§61.13 Emission tests and waiver of emission tests.**

\* \* \* \* \*

(e) \* \* \*

(1) \* \* \*

(i) The source owner, operator, or representative of the tested facility shall obtain an audit sample, if commercially available, from an AASP for each test method used for regulatory compliance purposes. No audit samples are required for the following test methods: Methods 3A and 3C of appendix A-3 of part 60 of this chapter; Methods 6C, 7E, 9, and 10 of appendix A-4 of part 60; Method 18 and 19 of appendix A-6 of part 60; Methods 20, 22, and 25A of appendix A-7 of part 60; Methods 30A and 30B of appendix A-8 of part 60; and Methods 303, 318, 320, and 321 of appendix A of part 63 of this chapter. If multiple sources at a single facility are tested during a compliance test event, only one audit sample is required for each method used during a compliance test. The compliance authority

responsible for the compliance test may waive the requirement to include an audit sample if they believe that an audit sample is not necessary. "Commercially available" means that two or more independent AASPs have blind audit samples available for purchase. If the source owner, operator, or representative cannot find an audit sample for a specific method, the owner, operator, or representative shall consult the EPA website at the following URL, [www.epa.gov/ttn/emc](http://www.epa.gov/ttn/emc), to confirm whether there is a source that can supply an audit sample for that method. If the EPA website does not list an available audit sample at least 60 days prior to the beginning of the compliance test, the source owner, operator, or representative shall not be required to include an audit sample as part of the quality assurance program for the compliance test. When ordering an audit sample, the source owner, operator, or representative shall give the sample provider an estimate for the concentration of each pollutant that is emitted by the source or the estimated concentration of each pollutant based on the permitted level and the name, address, and phone number of the compliance authority. The source owner, operator, or representative shall report the results for the audit sample along with a summary of the emission test results for the audited pollutant to the compliance authority and shall report the results of the audit sample to the AASP. The source owner, operator, or representative shall make both reports at the same time and in the same manner or shall report to the compliance authority first and then report to the AASP. If the method

being audited is a method that allows the samples to be analyzed in the field and the tester plans to analyze the samples in the field, the tester may analyze the audit samples prior to collecting the emission samples provided a representative of the compliance authority is present at the testing site. The tester may request, and the compliance authority may grant, a waiver to the requirement that a representative of the compliance authority must be present at the testing site during the field analysis of an audit sample. The source owner, operator, or representative may report the results of the audit sample to the compliance authority and then report the results of the audit sample to the AASP prior to collecting any emission samples. The test protocol and final test report shall document whether an audit sample was ordered and utilized and the pass/fail results as applicable.

\* \* \* \* \*

22. Revise the section heading for section 11.7.3 in Method 107 of appendix B to part 61 to read as follows:

**APPENDIX B TO PART 61—TEST METHODS**

\* \* \* \* \*

**Method 107—Determination of Vinyl Chloride Content of In-Process Wastewater Samples, and Vinyl Chloride Content of Polyvinyl Chloride Resin Slurry, Wet Cake, and Latex Samples**

\* \* \* \* \*

*11.0 Analytical Procedure*

\* \* \* \* \*

11.7.3 Dispersion Resin Slurry and Latex Samples. \* \* \*

\* \* \* \* \*

**PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES**

23. The authority citation for part 63 continues to read as follows:

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

24. In §63.7:

- a. Revise paragraph (c) (2) (iii) (A).
- b. Add paragraph (g) (2).

The revision and addition read as follows:

**§63.7 Performance testing requirements.**

\* \* \* \* \*

(c) \* \* \*

(2) \* \* \*

(iii) \* \* \*

(A) The source owner, operator, or representative of the tested facility shall obtain an audit sample, if commercially available, from an AASP for each test method used for regulatory compliance purposes. No audit samples are required for the following test methods: Methods 3A and 3C of appendix A-3 of part 60 of this chapter; Methods 6C, 7E, 9, and 10 of appendix A-4 of part 60; Methods 18 and 19 of appendix A-6 of part 60; Methods 20, 22, and 25A of appendix A-7 of part 60; Methods 30A and 30B of appendix A-8 of part 60; and Methods 303, 318, 320, and 321 of appendix A of this

part. If multiple sources at a single facility are tested during a compliance test event, only one audit sample is required for each method used during a compliance test. The compliance authority responsible for the compliance test may waive the requirement to include an audit sample if they believe that an audit sample is not necessary. "Commercially available" means that two or more independent AASPs have blind audit samples available for purchase. If the source owner, operator, or representative cannot find an audit sample for a specific method, the owner, operator, or representative shall consult the EPA website at the following URL, [www.epa.gov/ttn/emc](http://www.epa.gov/ttn/emc), to confirm whether there is a source that can supply an audit sample for that method. If the EPA website does not list an available audit sample at least 60 days prior to the beginning of the compliance test, the source owner, operator, or representative shall not be required to include an audit sample as part of the quality assurance program for the compliance test. When ordering an audit sample, the source owner, operator, or representative shall give the sample provider an estimate for the concentration of each pollutant that is emitted by the source or the estimated concentration of each pollutant based on the permitted level and the name, address, and phone number of the compliance authority. The source owner, operator, or representative shall report the results for the audit sample along with a summary of the emission test results for the audited pollutant to the compliance authority and shall report the results of the audit sample to the AASP. The

source owner, operator, or representative shall make both reports at the same time and in the same manner or shall report to the compliance authority first and then report to the AASP. If the method being audited is a method that allows the samples to be analyzed in the field and the tester plans to analyze the samples in the field, the tester may analyze the audit samples prior to collecting the emission samples provided a representative of the compliance authority is present at the testing site. The tester may request, and the compliance authority may grant, a waiver to the requirement that a representative of the compliance authority must be present at the testing site during the field analysis of an audit sample. The source owner, operator, or representative may report the results of the audit sample to the compliance authority and then report the results of the audit sample to the AASP prior to collecting any emission samples. The test protocol and final test report shall document whether an audit sample was ordered and utilized and the pass/fail results as applicable.

\* \* \* \* \*

(g) \* \* \*

(2) Contents of report (electronic or paper submitted copy). Unless otherwise specified in a relevant standard or test method, or as otherwise approved by the Administrator in writing, results of a performance test shall include general identification information for the facility including a mailing address, the actual address, the owner or operator or responsible official (where they are applicable)

or an appropriate representative and an email address for this person, and the appropriate Federal Registry System (FRS) number for the facility; the purpose of the test including the regulation requiring the test, the pollutant being measured, the units of the standard or the pollutant emissions units, and any process parameter component; a brief process description; a complete unit description, including a description of feed streams and control devices, the appropriate source classification code (SCC), and the latitude and longitude of the emission point being tested, and the permitted maximum process rate (where applicable); sampling site description; description of sampling and analysis procedures and any modifications to standard procedures; quality assurance procedures; record of operating conditions, including operating parameters for which limits are being set, during the test; record of preparation of standards; record of calibrations; raw data sheets for field sampling; raw data sheets for field and laboratory analyses; chain-of-custody documentation; explanation of laboratory data qualifiers; example calculations of all applicable stack gas parameters, emission rates, percent reduction rates, and analytical results, as applicable; identification information for the company conducting the performance test including a contact person and his/her email address; and any other information required by the test method, a relevant standard, or the Administrator.

\* \* \* \* \*

25. Revise sections 13.1, 13.4, and 13.4.1 in Method 320 of appendix A to part 63 to read as follows:

**Appendix A to Part 63-TEST METHODS POLLUTANT MEASUREMENT METHODS FROM VARIOUS**

**WASTE MEDIA**

\* \* \* \* \*

**Test Method 320-Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR)**

**Spectroscopy**

\* \* \* \* \*

*13.0 Method Validation Procedure*

\* \* \* \* \*

13.1 Section 6.0 of Method 301 (40 CFR part 63, appendix A), the Analyte Spike procedure, is used with these modifications. The statistical analysis of the results follows section 12.0 of EPA Method 301. Section 3 of this method defines terms that are not defined in Method 301.

\* \* \* \* \*

13.4 *Statistical Treatment.* The statistical procedure of EPA Method 301 of this appendix, section 12.0 is used to evaluate the bias and precision. For FTIR testing a validation "run" is defined as spectra of 24 independent samples, 12 of which are spiked with the analyte(s) and 12 of which are not spiked.

13.4.1 *Bias*. Determine the bias (defined by EPA Method 301 of this appendix, section 12.1.1) using equation 7:

$$B = S_M - CS \quad (7)$$

Where:

B = Bias at spike level.

$S_m$  = Mean concentration of the analyte spiked samples.

CS = Expected concentration of the spiked samples.

\* \* \* \* \*

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