



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

**APR 27 2009**

OFFICE OF  
ENFORCEMENT AND  
COMPLIANCE ASSURANCE

**MEMORANDUM**

SUBJECT: Issuance of the Clean Air Act National Stack Testing Guidance

FROM: Lisa C. Lund *Lisa Lund*  
Director  
Office of Compliance

TO: Regional Compliance/Enforcement Division Directors

Attached is a copy of the revised Clean Air Act National Stack Testing Guidance. Final guidance was initially issued on September 30, 2005. At the time of issuance, the Agency indicated that notice and comment rulemaking would be conducted regarding the appropriate circumstances in which an extension of performance test deadlines may be allowed by regulation. This document incorporates the ensuing regulatory revisions which allow source owners or operators to petition for an extension to the test deadlines as a result of a force majeure event. It also includes other minor clarifications and revisions based on feedback we have received since issuance of the 2005 guidance. This revised guidance supersedes the 2005 guidance.

We appreciate the feedback that we have received from each of your offices as well as from state/local agencies. If you or your staff has any questions concerning the guidance, please contact Mamie Miller at (202) 431-7011, or Robert Lischinsky at (202) 564-2628.

Attachment

cc: Regional Air Compliance/Enforcement Branch Chiefs  
Pamela Mazakas, Acting Director, Air Enforcement Division,  
Office of Civil Enforcement  
Peter Tsirigotis, Director, Sector Policies and Programs Division,  
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**CLEAN AIR ACT  
NATIONAL STACK TESTING GUIDANCE**

April 27, 2009

Any questions concerning this guidance may be directed to either Mamie Miller at (202) 564-2300 or Rob Lischinsky at (202) 564-2628.

# CLEAN AIR ACT NATIONAL STACK TESTING GUIDANCE

## I INTRODUCTION

- A stack test, also referred to in EPA regulations as a performance or source test, measures the amount of a specific regulated pollutant, pollutants, or surrogates being emitted; demonstrates the capture efficiency of a capture system; or determines the destruction or removal efficiency of a control device used to reduce emissions at facilities subject to the requirements of the Clean Air Act (CAA or Act). Stack testing is an important tool used to determine a facility's compliance with emission limits, or capture or control efficiencies established pursuant to the CAA. This tool has not always been consistently applied or utilized across the country by the U.S. Environmental Protection Agency (EPA or Agency), or delegated state/local agencies. This guidance is intended to address stack tests performed to determine both initial and on-going compliance with the CAA requirements.
- A review by the EPA Office of the Inspector General (IG) ("**Report of EPA's Oversight of Stack Testing Programs**," 2000-P-00019, September 11, 2000) criticized EPA for not issuing comprehensive national guidance in this area, and not providing sufficient oversight of state/local stack testing programs. The IG concluded that this lack of guidance and oversight had an adverse effect on the use of stack testing as a tool in determining compliance. As a result of the findings, the IG recommended that EPA develop national guidance that addresses issues such as:
  - recommended testing frequencies;
  - discrepancies in test procedures; and
  - inconsistent reporting of test results.
- In addition to national guidance, the IG recommended that EPA enhance its oversight program.
- In response to the IG report, the Office of Enforcement and Compliance Assurance (OECA) made a commitment to address the concerns raised in the report and provide clarification, as necessary, on the issues identified. The Office of Compliance (OC) was given the responsibility for satisfying this commitment.
- The concerns associated with testing frequencies, and the reporting of test results were addressed in the *CAA Stationary Source Compliance Monitoring Strategy* (CMS) issued by the Agency in April 2001. *The Timely And Appropriate Enforcement Response To High Priority Violations Policy* (HPV Policy) issued by the Agency in December 1998 provides supplementary guidance by specifying how violations identified through stack testing should be addressed. Each of these documents is summarized below for the reader's convenience; however, for a more thorough understanding of these policies, we suggest that the reader review

the documents in their entirety.

- An electronic version of CMS can be obtained at:  
[www.epa.gov/compliance/resources/policies/monitoring/cmsspolicy.pdf](http://www.epa.gov/compliance/resources/policies/monitoring/cmsspolicy.pdf).
- The HPV Policy can be obtained at:  
[www.epa.gov/compliance/resources/policies/civil/caa/stationary/issue-ta-rpt.pdf](http://www.epa.gov/compliance/resources/policies/civil/caa/stationary/issue-ta-rpt.pdf).
- The website for the associated HPV Workbook is:  
[www.epa.gov/compliance/resources/policies/civil/caa/stationary/hpvmanualrevised.pdf](http://www.epa.gov/compliance/resources/policies/civil/caa/stationary/hpvmanualrevised.pdf).
- This stack testing guidance was developed to address the remaining issues raised by the IG, specifically those associated with the conduct of stack tests. A Workgroup with representatives from OECA, the Office of Air Quality Planning and Standards (OAQPS), and the EPA Regions was formed to develop the guidance. In formulating this guidance, the Workgroup reviewed all relevant Agency guidance and applicability determinations; evaluated all identified state regulations and guidance on stack testing; and solicited state/local input in various forums.
- The discussion in this document is intended solely as guidance. This guidance is not a regulation, nor is it intended to change any underlying regulatory requirements specified in individual New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), NESHAP for Source Categories (MACT), state or local regulations. This guidance merely documents and clarifies existing regulatory requirements and Agency guidance on stack testing.
- It is not our practice to distribute guidance such as this for formal public notice and comment as it does not supersede or alter existing regulatory requirements, nor impose any new legally binding requirements on EPA, state/local agencies, or the regulated community. The general description provided in this document may not apply to a particular situation based on the circumstances. Furthermore, interested parties remain free to raise questions or objections about the substance and application of the guidance as they arise in a particular situation. EPA retains the discretion to adopt approaches on a case-by-case basis that differ from those described in this guidance where appropriate. This document may be revised periodically without public notice.
- On February 2, 2004, EPA issued the stack testing guidance as interim to provide an opportunity to evaluate its usage and monitor any potential problems with its implementation. During the interim period, EPA received feedback from individual state/local agencies, state/local air associations, and industry associations and representatives.
- On September 30, 2005, after reviewing all comments received on the interim guidance and addressing such comments as appropriate, EPA issued final guidance. The final guidance superceded the February 2, 2004 interim guidance. At the time of issuance of the final guidance, EPA noted that the Agency would conduct notice and comment rulemaking regarding the appropriate circumstances in which an extension of performance test deadlines may be allowed by regulation.

- On August 9, 2006, EPA published in the Federal Register (FR) proposed amendments to the General Provisions for the NSPS, NESHAP, and MACT programs to allow source owners or operators, in the event of a force majeure, to petition the Administrator for an extension of the deadline(s) by which they are required to conduct an initial or subsequent performance test required by applicable regulations.
- The proposed revisions to the NSPS, NESHAP, and MACT General Provisions became effective on May 16, 2007. The revisions were extended to the Consolidated Federal Air Rule (CFAR) (40 CFR Part 65) on August 27, 2007.
- This guidance dated April 27, 2009, supersedes the September 30, 2005, guidance. It incorporates the amendments to the General Provisions and the CFAR which allow source owners or operators to petition for an extension to the test deadlines as a result of a force majeure event. It also includes other minor clarifications and revisions based on feedback EPA has received since issuance of the guidance in 2005.

## **II GOALS OF THE NATIONAL STACK TESTING GUIDANCE**

- Expand upon CMS and the HPV Policy to fully address the concerns raised by the IG on this issue.
- Improve uniformity on how stack tests are conducted for determining and demonstrating compliance with the NSPS (40 CFR Part 60), NESHAP (40 CFR Part 61), and MACT (40 CFR Part 63).
- Improve coordination between EPA and state/local agencies.
- Enhance EPA oversight of state/local programs to ensure that the tool of stack testing is being sufficiently and properly utilized.

## **III DEFINITION OF STACK TESTING**

- Stack testing may be conducted for varying purposes, such as relative accuracy test audits (RATAs), linearity checks, and routine calibration of continuous emission monitoring (CEM) equipment. However, for purposes of this guidance, stack testing is being more narrowly defined as:
  - Any performance testing conducted for the purposes of determining and demonstrating compliance with the applicable standards of 40 CFR Parts 60, 61, and 63 using promulgated test methods, other test methods or procedures cited in the applicable subpart(s), or alternative test methods approved by the Administrator under §§ 60.8, 61.13, or 63.7. It does not include visible emission observation testing.

#### **IV SCOPE OF GUIDANCE**

- The guidance applies to tests conducted for the purposes of determining and demonstrating compliance with NSPS, NESHAP, and MACT programs. The guidance does not apply to tests in situations such as the following:
  - tests requested by EPA to assist the Agency in the development of regulations or emissions factors;
  - tests to establish monitoring protocols for parametric monitoring under the Compliance Assurance Monitoring requirements of 40 CFR Part 64;
  - tests to develop and evaluate alternative test methods;
  - tests voluntarily conducted by facilities for their own purposes to optimize operations and improve energy efficiency;
  - tests conducted only to determine and demonstrate compliance with state Implementation Plan (SIP) requirements. (Tests conducted to simultaneously determine and demonstrate compliance with NSPS, NESHAP, and MACT programs are included within the scope of the guidance.)
- The data from tests conducted in situations such as those listed above may be subject to Title V reporting requirements and need to be considered by the source when submitting reports and certifying compliance pursuant to the Title V program.

#### **V CAA STATIONARY SOURCE COMPLIANCE MONITORING STRATEGY**

- The CMS provides guidance on stationary source air compliance monitoring programs with a focus on Title V major sources and synthetic minor sources that emit or have the potential to emit at or above 80 percent of the Title V major threshold. It addresses the IG issues of when a stack test should be conducted and what information should be reported nationally. It recognizes that consistent, complete and accurate stack test information is critical in managing a national air program. Hence, the CMS recommends:
  - States/locals should conduct a stack test where there is no other means for determining compliance with the emission limits. In determining whether a stack test is necessary, states/locals should consider factors such as: size of emission unit; time elapsed since last stack test; results of that test and margin of compliance; condition of control equipment; and availability and results of associated monitoring data.
  - States/locals should conduct a stack test whenever they deem appropriate regardless of

whether there are other means for determining compliance.

- The date and results (Pass/Fail/Pending) of all stack tests should be entered in the national air data system (AIRS/AFS, or its successor), and the High Priority Violations (HPV) status adjusted as appropriate.

## **VI HIGH PRIORITY VIOLATIONS POLICY**

- The HPV Policy provides guidance on how to define significant violations under the CAA at major stationary sources, and the timely and appropriate enforcement response when such violations are identified. It addresses the IG concern with consistent treatment of stack test failures.
- Facilities are to be in compliance with applicable requirements at all times except during periods of startup, shutdown or malfunction, or under circumstances as defined in the underlying NSPS, NESHAP, or MACT standards or General Provisions to 40 CFR Parts 60 and 63.<sup>1</sup> All stack test failures should be reviewed by the delegated agency to determine whether a violation has occurred, and if so, the appropriate enforcement response. The enforcement response should be consistent with the HPV Policy which states:

"The following criteria trigger HPV status. . . Violations that involve testing, monitoring, recordkeeping or reporting that substantially interfere with enforcement or determining the source's compliance with applicable emission limits. . . A violation of an allowable emission limit detected during a reference method stack test." See HPV Policy, pp. 3-4. See also HPV Workbook, p. 3.5.

- Violations of emission limits for pollutants for which a facility is not designated as a "major " source may not rise to the level of HPV. The guidance addresses such circumstances by stating:

"EPA expects that all violations of air pollution regulations, whether meeting the HPV criteria or not, will be addressed by states, local agencies, or EPA." See HPV Policy, p. 2.

- The HPV Policy does not apply in situations where the delegated agency accepts a facility's claim that it was unable to conduct an initial performance test within the regulatory deadline due to a Force Majeure Event. A more detailed discussion of such an event is described below in the Section, "The Time Frame for Conducting Stack Tests."

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<sup>1</sup> The Agency has issued separate guidance for SIPs on how to address excess emissions during start-up, shutdown or malfunctions.

## VII MAJOR ISSUES

- The guidance addresses the following major issues:
  1. The Time Frame for Conducting Stack Tests
  2. Stack Test Waivers
  3. Stack Test Notifications
  4. Observation of Stack Tests
  5. Representative Testing Conditions
  6. Stoppages
  7. Postponements
  8. Test Reports

### 1. THE TIME FRAME FOR CONDUCTING STACK TESTS

- The primary issue is whether facilities can be granted an extension beyond the required time period to complete an initial stack test under the general provisions of the NSPS, NESHAP, and MACT programs. Individual standards may establish different time periods for testing, and some may be shorter than the general provisions. For example, in 40 CFR § 63.152(b), the Notice of Compliance Status must be submitted by sources subject to NSPS Subpart G within 150 calendar days after the specified compliance dates. In addition, individual standards may allow facilities to petition for an extension of an initial (or subsequent) stack test. See, e.g., 40 CFR §§ 63.1207(e)(3), 63.1207(i) (NSPS Subpart EEE).
- The time frame for conducting initial stack tests is established in 40 CFR § 60.8 for NSPS; and 40 CFR §§ 61.13 and 63.7 for NESHAP and MACT. Both the NSPS and MACT regulations regarding performance tests include provisions under which owners or operators of facilities shall notify appropriate authorities in the event that the scheduled test must be delayed, and further discuss rescheduling of the test. 40 CFR §§ 60.8(d), 63.7(b)(2). The MACT provision regarding rescheduling of performance tests further states: "This notification of delay in conducting the performance test shall not relieve the owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, state, or local requirement, nor will it prevent the Administrator from implementing or enforcing this part or taking any other action under the Act." While these programs include provisions regarding notification of a test delay and rescheduling of the test, there are no regulatory provisions providing for extension of the testing deadlines in these programs, except in the event of a force majeure. 40 CFR §§ 60.8(a)(1-4), 61.13(a)(3-6), 63.7(a)(4).
- A force majeure is defined by the applicable regulations as an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents the owner or operator from complying with the regulatory requirement to conduct performance tests within the specified time frame despite the affected facility's best efforts to fulfill the obligation. Examples of such events are acts of

nature, acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility. 40 CFR §§ 60.2, 61.02, 63.2.

- If a claim of force majeure is to be asserted, the facility shall provide written notification to the Administrator in accordance with the applicable regulations. The performance test shall be conducted as soon as practicable after the force majeure occurs. Whether to grant an extension to the performance test deadline is solely within the discretion of the Administrator. Until an extension has been approved by the Administrator, the facility remains strictly subject to the performance test requirements of the applicable regulations. 40 CFR §§ 60.8(a)(1-4), 61.13(a)(3-6), 63.7(a)(4).

- Because the applicable regulations governing initial stack tests do not provide for extensions of the performance test deadline except in the event of a force majeure, a facility that has not completed a stack test within the requisite time frame or has not received approval of an extension due to force majeure would not be in compliance with the regulatory provisions to stack test and demonstrate compliance with the underlying standard within the required time period.

- Except for the circumstance whereby a claim of force majeure has been asserted, the delegated agency is constrained by the fact that the General Provisions do not provide for an extension of the initial performance test deadline. However, the agency may provide, in the exercise of its enforcement discretion, additional time beyond the regulatory deadline within which the facility must perform the test.<sup>2</sup> This ensures that a stack test is conducted as expeditiously as possible in order for the facility to demonstrate that it is capable of complying with the underlying regulatory requirements. In providing for additional time, the delegated agency should review the circumstances that led to the test not being conducted by the regulatory deadline, including any explanation by the facility, before deciding the appropriate course of action for not testing by the deadline. The following are examples of how the delegated agency, using its enforcement discretion, may respond to facilities that do not meet performance test deadlines.

(1) A facility contacts the delegated agency before the test deadline has passed and requests additional time to conduct an initial stack test because it is unable to reach its maximum production rate within the start-up period. Insisting that the facility conduct the test within the required time frame may not be appropriate because the information obtained during the test would not be meaningful in determining compliance with the underlying emissions requirements. Therefore, it may be appropriate for the facility to postpone the test. Such postponement under these circumstances would result in the facility not being in compliance with the regulatory provision to conduct a stack test by the regulatory deadline. Additional time may be added through an enforcement discretion letter or an

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<sup>2</sup> Some EPA-approved SIPs may allow states authority to grant extensions of the deadline to conduct a stack test without the issuance of an enforcement order. Extensions of deadlines may be granted in such states where allowed by the EPA-approved SIP.

administrative order. Such a delay beyond the deadline should not be automatically considered a violation of the underlying emissions requirement. The delegated agency should take into consideration the facility's unique circumstances when choosing an appropriate response, and whether penalties should be assessed consistent with the HPV Policy and the *CAA Civil Penalty Policy* (Penalty Policy). The Penalty Policy can be obtained at:

<http://www.epa.gov/compliance/resources/policies/civil/caa/stationary/penpol.pdf>

- (2) A facility requests, either before or after the test deadline, additional time to conduct an initial stack test because it realizes that it is not meeting or cannot meet the underlying regulatory requirements and would fail the test. Additional time may be granted through an administrative order. However, the failure to test is a violation of the requirement to test within the required time frame, and the facility also is in violation of the underlying regulatory requirements. Penalties should be assessed consistent with the HPV Policy and the Penalty Policy.
  - (3) A facility fails to test within the regulatory deadline, and either fails to notify the agency, or notifies the agency after the regulatory deadline has passed. The full range of enforcement actions should be considered when deciding how to address the failure to test within the required time frame, and to establish a date certain for testing. Penalties should be assessed consistent with the HPV Policy and the Penalty Policy.
- The facility need not wait for the agency response before rescheduling the test provided it is in compliance with the notification and rescheduling provisions of 40 CFR §§ 60.8(d) and 63.7(b)(2) as appropriate. In those instances where the stack test is ultimately conducted before the agency formally responds to the facility's noncompliance with the initial test deadline, the agency response should acknowledge the test, but document the facility's non-compliance with the regulatory provision.

## **2. STACK TEST WAIVERS**

- Stack tests to determine and demonstrate initial compliance may be, in some instances, the only test an emission unit will receive for an extended period of time. Therefore, all units should be tested for initial compliance unless a waiver has been granted by the delegated agency pursuant to 40 CFR §§ 60.8(b)(4), 61.13(h)(1)(iii), or 63.7(h). Waivers are granted only if the owner or operator of a source has demonstrated by other means that the source is in compliance with the applicable standard, or, under the MACT provisions, if the source is operating under an extension of compliance pursuant to § 63.6(i), or has requested such an extension and the request is under consideration by the delegated agency. The waiver regulations make clear that the burden of proof is on the affected facility to justify the need for a waiver. Although the NSPS and NESHAP programs do not specify what information is required as justification, the MACT program in 40 CFR § 63.7(h)(3)(iii) states that the waiver application should include information such as the "technical or economic infeasibility, or the impracticality, of the affected source

performing the required test."

- The primary issue of concern with respect to waiver requests is whether stack tests to determine and demonstrate on-going compliance with emission limits should be waived under the NSPS, NESHAP and MACT programs for units identical to a unit(s) that has been tested.
- Units, although identical in terms of design and control devices, may have process operations that significantly alter their performance and ability to comply with the underlying regulatory requirements on a continuing basis. Therefore, if the identical units have the ability to emit a pollutant in excess of the prescribed emission limit, a stack test should not be waived without adequate justification. However, a waiver may be appropriate on a case-by-case basis when criteria such as the following are met:

- (1) the units are located at the same facility;
- (2) the units are produced by the same manufacturer, have the same model number or other manufacturer's designation in common, and have the same rated capacity and operating specifications;
- (3) the units are operated and maintained in a similar manner; and
- (4) the delegated agency, based on documentation submitted by the facility,
  - (a) determines that the margin of compliance for the identical units tested is significant and can be maintained on an on-going basis; or
  - (b) determines based on a review of sufficient emissions data that, though the margin of compliance is not substantial, other factors allow for the determination that the variability of emissions for identical tested units is low enough for confidence that the untested unit will be in compliance.<sup>3</sup> These factors may include, but are not limited to, the following:
    - (i) historical records at the tested unit showing consistent/invariant load;
    - (ii) fuel characteristics yielding low variability (e.g., oil) and therefore assurance that emissions will be constant and

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<sup>3</sup> As a general matter, the greater the quantity of available emissions data, the smaller the range of uncertainty about emissions and the more readily reviewing agencies can determine precise levels of emissions variability. Under such circumstances, delegated agencies may have greater assurance that compliance will be continuous even where the difference between actual and permitted emission rates is relatively small.

below allowable levels;

(iii) statistical analysis of a robust emissions data set demonstrate sufficiently low variability to convey assurance that the margin of compliance, though small, is reliable.

- If a facility does not have the ability to emit a pollutant in excess of the prescribed emission limit, waivers on a case-by-case basis may be issued for both initial and on-going compliance stack tests. For example, a stack test waiver for identical units at a facility operating multiple natural gas-fired boilers subject to a particulate matter standard generally would be appropriate.
- Waivers can be granted only by the appropriate delegated agency. See 40 CFR § 63.91(g). See also, "*How to Review and Issue Clean Air Act Applicability Determinations and Alternative Monitoring*," EPA 305-B-99-004, Section 4.2, pp.19-22 (February 1999). If the delegated state/local agency has the authority to grant a waiver, it still should consult promptly with EPA to promote national consistency.

### 3. STACK TEST NOTIFICATIONS

- The primary issue is what constitutes sufficient notification of a planned stack test under the regulatory requirements. Sufficiency is defined to include both the timing of the notification, as well as the content of the notification.
- Unless specified otherwise in the subpart, both the NSPS and NESHAP programs require at least thirty (30) calendar days advance notice of a stack test [40 CFR § 60.8(d) and 40 CFR § 61.13(a) and ©], while the MACT program requires at least sixty (60) calendar days [40 CFR § 63.7(b)(1)]. The test date(s) and approximate start/end time of the test should be acceptable to both the delegated agency and the facility to allow the delegated agency an opportunity to observe the test, if desired. If for some reason the stack test must be delayed, facilities also are required to provide notification of the delay. The time frame for such notifications differs under each program. Under 40 CFR § 60.8(d), the facility is required to provide notification "as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Administrator (or delegated state or local agency) by mutual agreement." Under 40 CFR § 63.7(b)(2), if the facility must delay the test due to "unforeseeable circumstances beyond [its] control", the facility must notify the "Administrator as soon as practicable and without delay prior to the scheduled performance test date and specify the date when the performance test is rescheduled." 40 CFR § 61.13 does not address this issue.
- Generally, facilities are required to notify EPA and the delegated agency of the delay. In some instances, however, facilities are only required to notify the delegated agency of the delay. Notification to EPA in addition to the delegated agency is dependent on individual Regional delegations of these requirements. Written notification should be sent to the appropriate

state/local agency and, if required, concurrently to EPA. The rescheduled test date should be acceptable to both the delegated agency and the facility. This affords the delegated agency an opportunity to observe the test, if desired. If timely notification is not provided, the test results may be deemed unacceptable, and the source may be required to test again.

- For stack tests that are being conducted pursuant to requirements in an operating permit or an enforcement order, the time frame for notification may differ and will be governed by the permit or order.
- Notification is not necessary if the stack test is not within the scope of this guidance as discussed in the Section, "Scope of Guidance." However, facilities should notify EPA and the delegated agency if there is a potential for applicable limits to be exceeded. Furthermore, as noted previously, the data from stack tests may be subject to Title V reporting requirements and need to be considered by the source when submitting reports and certifying compliance pursuant to the Title V program.
- 40 CFR Parts 60 and 61 do not require facilities to submit site-specific test plans prior to conducting a stack test. 40 CFR § 63.7(b)(1) requires submission of such plans "upon request." See also 40 CFR § 63.7(c)(2)(i) (owner or operator shall submit site-specific test plan if requested by the Administrator). However, many delegated agencies routinely request that the plans be submitted at the time of notification for review and approval. The submission of a plan prior to the stack test helps to ensure that the testing requirements are interpreted correctly and required test methods are followed; minimizes potential problems encountered during the test; and reduces the possibility of testing errors. Ultimately, having the plan reviewed and approved prior to the test reduces the number of retests.
- The format of site-specific test plans may vary. However, certain basic elements should be addressed in a site-specific test plan to assist in national consistency, and ensure that a complete and representative stack test is conducted. 40 CFR § 63.7(c)(2)(i) states that before conducting a required performance test, the owner or operator shall develop a site-specific test plan and, if required by the Administrator, submit it for approval. The test plan shall include "a test program summary, the test schedule, data quality objectives, and both an internal and external quality assurance (QA) program." Data quality objectives are "the pretest expectations of precision, accuracy, and completeness of data." 40 CFR § 63.7(c)(2)(i). The internal QA program shall include, "at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision; an example of internal QA is the sampling and analysis of replicate samples." § 63.7(c)(2)(ii). The external QA program shall include, "at a minimum, application of plans for a test method performance audit (PA) during the performance test." § 63.7(c)(2)(iii). In addition, a site-specific test plan generally should include chain of custody documentation from sample collection through laboratory analysis including transport, and should recognize special sample transport, handling, and analysis instructions necessary for each set of field samples. For a prototype of a sufficiently detailed site-specific test plan, see *Emission Measurement Center Guideline Document* (GD-042), "**Preparation and Review of Site-Specific Emission Test Plans**," (March 1999) ([www.epa.gov/ttn/emc/guidlnd.html](http://www.epa.gov/ttn/emc/guidlnd.html)).

- To assist in the preparation and transcription of test plans, the ***Electronic Reporting Tool*** (ERT) should be used when possible. ([www.epa.gov/ttn/chief/ert/ert\\_tool.html](http://www.epa.gov/ttn/chief/ert/ert_tool.html)). The ERT was designed to replace the time-intensive manual preparation and transcription of stationary source emissions test plans and reports currently performed by contractors for emissions sources, and the time-intensive manual quality assurance evaluations and documentation performed by the Regions or state/local agencies. The ERT provides a format that:

- Highlights the need to document the key information and procedures required by the existing EPA Federal Test Methods.
- Facilitates coordination among the source, the test contractor, and the regulatory agency in planning and preparing for the emissions test.
- Provides for consistent criteria to quantitatively characterize the quality of the data collected during the emissions test.
- Standardizes the reports.
- Provides for future capabilities to electronically exchange information in the reports with facility, state or Federal data systems.

- Test plans should be maintained by the facility consistent with the statutory and regulatory requirements, and made available to EPA, and state/local agencies upon request.

- If a facility wishes to deviate from a required test method, the facility would need to gain approval from the delegated agency in advance of the test. See 40 CFR § 60.8(b) (NSPS); 40 CFR § 61.13(h)(1) (NESHAP); 40 CFR § 63.7(e)(2) (MACT). For purposes of the NSPS and NESHAP programs, changes are divided into two separate categories: "minor " changes; and "major " changes (described in the regulations as alternative or equivalent methods). Major changes must be approved by OAQPS, while minor changes can be delegated to state/local agencies. See Memoranda from Jack R. Farmer to Allyn M. Davis, "***Delegation of New Source Performance Standards Authority to States*** " (February 24, 1983); and from Jack R. Farmer to David P. Howekamp, "***Delegation of NESHAP Authority to State/Local Agencies*** " (December 17, 1984), both included in Attachment 2 to the guidance document entitled "***How to Review and Issue Clean Air Act Applicability Determinations and Alternative Monitoring,***" EPA 305-B-99-004, (February 1999). For examples of what constitutes major versus minor changes, see the above cited memoranda.

- For purposes of the MACT program, changes to test methods are divided into three categories: "major," "intermediate," and "minor ". Major changes must be approved by OAQPS, while intermediate and minor changes can be delegated to state/local agencies. See 40 CFR § 63.91(g). Definitions of the three categories are provided in 40 CFR § 63.90.

- The facility must receive prior written approval for deviations from a test method from the

appropriate delegated agency. If the deviation is to be approved by a state/local agency, it should be in consultation with EPA, or as otherwise required by the delegation. See also "How to Review and Issue Clean Air Act Applicability Determinations and Alternative Monitoring," EPA 305-B-99-004, Section 4.2, pp.19-22 (February 1999). If a deviation from a test method has not been approved, the test results may be deemed unacceptable, and the source may be required to test again.

- The request for a minor change or deviation from a required test method may be submitted as part of the site-specific test plan, while intermediate and major changes or deviations to test methods should be requested via written correspondence to the delegated agency or EPA as appropriate. Requests for all changes or deviations must document to the satisfaction of the delegated agency the requested change, and the rationale for the change. For a more detailed guideline regarding the content for requests for changes to test methods, see *Emission Measurement Center Guideline Document* (GD-022r3), "*Handling Requests for Approval of Minor/Major Modifications/Alternatives to Testing and Monitoring Methods or Procedures*" at <http://www.epa.gov/ttn/emc/guidlnd.html>.
- In addition to any deviations from the required test methods, the facility should document within the test plan any adjustments that will be made prior to the stack test such as tuning the burner or changing bags in a baghouse. It is not necessary, however, to describe normally scheduled periodic maintenance that may occur in the normal course of operation and maintenance of a unit. If an agency representative is present to observe the test, the facility also should notify the observer of such adjustments before the test begins.

#### **4. OBSERVATION OF STACK TESTS**

- The primary issue with respect to observing stack tests to determine and demonstrate compliance is whether a delegated agency should have an observer present for all stack tests, and if not, how often should the delegated agency be present to observe the tests.
- There is no requirement that delegated agencies be present to observe all stack tests. However, whenever possible, trained staff from delegated agencies should observe the tests to ensure that the regulatory testing requirements are being met; the site-specific test plan is being followed; and the results are being accurately and completely recorded and documented in the test report. The observer should have the access necessary to ensure that the test is being conducted properly and results reported accurately. Furthermore, the observer should be present for the duration of the test, including all test runs. The presence of an observer helps to reduce the likelihood of sample recovery and handling errors, as well as equipment errors, and to ensure that testing is conducted under the proper process conditions. Ultimately, the presence of a state/local observer reduces the number of retests. Therefore, the test date(s) and approximate start/end time of the test should be acceptable to both the delegated agency and the facility to allow the delegated agency an opportunity to observe the test, if desired.

- If the delegated agency chooses not to observe the test, prior review of the site-specific test plan is even more critical to ensure that the test is conducted in such a manner so as to satisfy the regulatory requirements.
- If the delegated agency was not provided timely notification and an opportunity to observe the stack test consistent with applicable regulatory requirements, the resulting test data may be rejected and a new stack test may be required. If this situation prevents the facility from completing a valid stack test within the requisite time frame, the facility is in violation of the requirement to conduct a stack test and demonstrate compliance. However, if the facility provided timely notice and the delegated agency did not respond or declined to observe the test, the test results should not be rejected solely because the test was not observed by agency personnel.

## 5. REPRESENTATIVE TESTING CONDITIONS

- The CAA requires that facilities comply with emissions limitations and emissions standards on a continuous basis. The Act defines the terms "emissions limitation " and "emission standard " in Section 302(k), 42 U.S.C. § 7602(k), as meaning "a requirement established by the state or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis . . . ." (emphasis added). The statute also authorizes penalties for multiple days of violations and establishes a presumption of continuing violations if certain conditions are met. CAA Section 113(e)(1) and (2), 42 U.S.C. §§ 7413(e)(1) and (2). EPA has consistently, in rulemaking and policy statements over many years, taken the position that the CAA requires continuous compliance with emissions limits except where compliance is explicitly excused. See, e.g., Guidance entitled "*Definition of 'Continuous Compliance' and Enforcement of O&M Violations*," (June 24, 1982) ("In the strict legal sense, sources are required to meet, without interruption, all applicable emissions limitations and other control requirements, unless such limitations specifically provide otherwise."); Credible Evidence Rulemaking, 62 FR 8314, 8323, 8324, 8326 8314 (Feb. 24, 1997) (emissions limits require continuous compliance (consistent with any averaging times) except during periods when compliance is specifically excused).
- Since the CAA requires continuous compliance with emissions limits except where explicitly excused, EPA interprets applicable regulations to require that any stack test that is conducted within the scope of this guidance must demonstrate that a facility is capable of complying with the applicable emissions standards at all times.<sup>4</sup> The NSPS and MACT programs require that performance tests be conducted under such conditions as the Administrator specifies based upon the representative performance of the affected facility. See 40 CFR §§ 60.8© and 63.7(e). The MACT program further defines representative performance as normal operating conditions. 43 CFR § 63.7(e). Operations during periods of startup, shutdown and malfunction do not constitute representative conditions for the purposes of a performance test. 40 CFR §§ 60.8(c)

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<sup>4</sup> Complying with the applicable standards "at all times " does not include allowable periods of start-up, shutdown, and malfunction as provided in 40 CFR §§ 60.8 (c) and 63.7(e)(1).

and 63.7(e). The Part 61 NESHAP program requires that emission tests be conducted “under such conditions as the Administrator shall specify "based on design and operational characteristics of the source." 40 CFR § 61.13(e). Individual standards may more specifically define operating conditions under which performance tests should be conducted. In the absence of such specifications, the question often arises as to what operating conditions should be used when conducting a stack test. If operating conditions are not indicated by the applicable requirements in individual standards, they should be developed as part of the site-specific test plan.

- In light of the fact that: (a) the Act requires that facilities continuously comply with emission limits; (b) the NSPS, MACT, and NESHAP programs all require that performance tests be conducted under such conditions as the Administrator specifies; and (c) the NSPS and MACT programs further require that such tests be conducted under representative operating conditions; EPA recommends that performance tests be performed under those representative (normal) conditions that:

- represent the range of combined process and control measure conditions under which the facility expects to operate (regardless of the frequency of the conditions); and
- are likely to most challenge the emissions control measures of the facility with regard to meeting the applicable emission standards, but without creating an unsafe condition.

- The following are factors that should be considered in developing the plan for a performance test that challenges to the fullest extent possible a facility’s ability to meet emissions limits.

- For a facility operating under an emission rate standard (e.g., lb/hr) or concentration standard (e.g.,  $\mu\text{g}/\text{m}^3$ ), normal process operating conditions producing the highest emissions or loading to a control device would generally constitute the most challenging conditions with regard to the emissions standard. If operating at maximum capacity would result in the highest levels of emissions, operating at this level would not create an unsafe condition, and the facility expects to operate at that level at least some of the time, EPA recommends that the facility should conduct a stack test at maximum capacity or the allowable/permitted capacity.
- For a facility operating under a control or removal efficiency standard (e.g., 98 percent control or removal of a specified pollutant), lower emissions loading at the inlet of a control device within the range of expected process operating conditions may often be the most challenging emissions control scenario for purposes of achieving the applicable standard. For facilities required to achieve such control or removal efficiency standards,

EPA recommends that the performance test include operating the facility under such expected lower emissions loading conditions.

- The test plan should generally include use of fuel, raw materials, and other

process/control equipment that the facility expects to use during future operations that would present the greatest challenge in meeting applicable emissions standards. To demonstrate the facility's ability to meet concentration standards and emissions rate standards, for example, the facility generally should use the fuel or raw materials that it expects to use and that have the highest emissions potential for the regulated pollutant(s) being tested. In instances where alternative processing materials are expected to be used by the facility and those materials are known to adversely impact emissions quality or the functioning of control measures, the facility generally should use the material that is likely to cause the greatest challenge in meeting applicable emissions standards. For concentration and emissions rates standards, the facility generally should process the material that it expects to use during future operations that is likely to cause the highest emissions. For control or removal efficiency standards, other factors may apply such as using fuels or raw materials that contain or produce pollutants that are more difficult to combust or otherwise remove.

- A facility is not required automatically to retest if the initial test does not represent the range of combined process and control measure conditions under which the facility expects to operate, or if the test does not challenge to the fullest extent possible the facility's ability to meet applicable emission standards without creating an unsafe condition. Furthermore, the facility is not required automatically to retest if the facility's operating conditions subsequently vary from those in place during the performance test. The delegated agency must determine whether retesting is warranted; however, in both instances, the facility is responsible for demonstrating to the satisfaction of the delegated agency that the facility is able to continuously comply with the emissions limits when operating under expected operating conditions, taking into consideration the factors discussed above in this section.
- This guidance does not affect the ability of delegated agencies to prohibit a facility from operating at levels of capacity different from the level used during the stack test, or to restrict production to reflect conditions equivalent to those present during the stack test.

#### Soot-Blowing:

- Soot-blowing is the cleaning of heat exchanger surfaces by the use of steam or air to dislodge accumulated material such as ash. The Agency guidance on this issue states that soot-blowing is a routine operation constituting representative process conditions. Emissions from soot-blowing cannot be discarded as being the result of an upset condition, and it would be erroneous to stop soot-blowing for the purpose of conducting a stack test. Agency guidance outlines the procedures for including soot-blowing while stack testing. The frequency with which facilities perform soot-blowing can vary significantly and the agency guidance addresses this issue by allowing facilities to weight the soot-blowing data in the performance tests based on the frequency of the soot-blowing.<sup>5</sup> See Memoranda from John S. Seitz to David Kee "*Inclusion of*

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<sup>5</sup> Under EPA-approved SIPs, some states may allow soot-blowing emissions to be excluded as an element of a comprehensive stack test. This approach, however, is not applicable

*Soot-Blowing Emissions in Subpart D Compliance Testing*" (August 31, 1987); from Kathleen M. Bennett to Directors, Air & Waste Management Divisions "*Restatement of Guidance on Emissions Associated with Soot-Blowing*" (May 7, 1982); from Edward E. Reich to Sandra S. Gardebring "*Representative Testing Requirements*" (November 21, 1980); Memoranda from Edward E. Reich to Leslie Carothers "*Integration of Soot-Blowing Emissions with Routine Operating Data for Existing Facilities*" (March 12, 1979); from Edward E. Reich to Enforcement Division Directors, Air and Hazardous Material Division Directors, and Surveillance and Analysis Division Directors "*NSPS Determination - Subpart D*" (March 6, 1979); and Memoranda from Edward E. Reich to Robert L. Markey "*Determination of Applicability to Subpart D*" (June 29, 1977).

## 6. STOPPAGES

- The primary issue is whether it is appropriate to stop a stack test being conducted to determine and demonstrate compliance once it has been started, and if so, under what circumstances.
- There are no regulatory provisions in the NSPS, NESHAP, or MACT programs that address whether a facility is allowed to stop a stack test once it has been started.<sup>6</sup> Depending on the circumstances surrounding the stoppage, the facility may be found in violation of the requirement to conduct a stack test, the underlying regulatory requirement, or both. For example:
  - If a facility stopped the stack test because it was exceeding applicable emission standards and would have failed the test, it would be considered in violation of both the requirement to conduct a stack test (if it does not complete a performance test by the applicable deadline) and to comply with the underlying regulatory requirement or permit condition. Consistent with 40 CFR §§ 60.11 and 61.12, any credible evidence may be used to demonstrate non-compliance. For major sources, the test should be reported in the Title V quarterly or semi-annual deviation reports, and taken into consideration as part of the annual compliance certifications. In addition, the stoppage should be reported as a failure in the national air data system, and an enforcement action should be initiated and penalties assessed consistent with the HPV Policy and CAA Civil Penalty Policy.
  - If a facility is forced to stop a test due to a Force Majeure Event, the facility shall provide written notification to the Administrator in accordance with the applicable

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to stack tests required by 40 CFR Parts 60, 61, and 63.

<sup>6</sup> However, under 40 CFR § 63.7(e), the results of a test run may, upon approval from the Administrator, be replaced with the results of an additional test run in the event that a test run is discontinued because of forced shutdown or other circumstances discussed in the regulation. Under 40 CFR § 60.8(f), if a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued for certain types of circumstances beyond the owner or operator's control, the results of two runs may be used with the Administrator's approval.

regulations. The performance test shall be conducted as soon as practicable after the force majeure occurs. Whether to grant an extension to the performance test deadline is solely within the discretion of the Administrator. Until an extension has been approved by the Administrator, the facility remains strictly subject to the performance test requirements of the applicable regulations. 40 CFR §§ 60.8(a)(1-4), 61.13(a)(3-6), 63.7(a)(4).

## 7. POSTPONEMENTS

- The primary issue is whether it is appropriate to postpone a stack test to determine and demonstrate compliance once it has been scheduled, and if so, under what circumstances. See also the discussion of delays in conducting the performance test in the Section, "Stack Test Notifications."
- Postponements should be treated similar to stoppages. If a postponement results in the facility failing to complete the test within the required time frame, the facility is in violation of the requirement to test.
- Regardless of whether the postponement affects a facility's ability to test in a timely manner, the delegated agency should carefully scrutinize the circumstances surrounding the postponement to determine whether the facility was in violation of the underlying emission limitations, and therefore, postponed the test to avoid a documented violation. Consistent with 40 CFR §§ 60.11 and 61.12, any credible evidence may be used to demonstrate non-compliance or compliance.

## 8. TEST REPORTS

- The primary issue is what information is needed to adequately document the results of a stack test conducted to determine and demonstrate compliance.
- The written test report should be sufficient to assess compliance with the underlying regulatory requirements, permit conditions, or enforcement order, and adherence to the test requirements. When reviewing the site-specific test plan, the delegated agency should identify for the facility any information that should be included in the test report. During the actual test program, there are usually modifications to the procedures specified in the site-specific test plan, and these modifications should be documented in the test report.
- Similar to the site-specific test plan, certain basic elements should be addressed in a test report to document the testing conditions and results, and enable the delegated agency to determine whether a complete and representative stack test was performed. For a prototype of a sufficiently detailed test report, see *Emission Measurement Center Guideline Document* (GD-043), "*Preparation and Review of Emission Test Reports*," (December 1998) ([www.epa.gov/ttn/emc/guidlnd.html](http://www.epa.gov/ttn/emc/guidlnd.html)). If the test report does not contain sufficient information with which to adequately review the testing process and data results, it is within the discretion of

the delegated agency to request additional information, or require another test if appropriate.

- The test report should include chain-of-custody information from sample collection through laboratory analysis including transport. It also should include sufficient raw data and cross correlations in the appendices such that a new set of calculations including statistics could be independently generated from the raw data if necessary (e.g., median versus geometric-mean).
- The test report should be submitted to the delegated agency as soon as possible after completion of the stack test and, at a minimum, in compliance with any underlying regulatory requirements. For stack tests being conducted pursuant to 40 CFR Part 60, the test report is to be submitted within 180 days after the initial startup date or within 60 days after reaching maximum production rate. § 60.8(a). For those tests being conducted pursuant to 40 CFR Part 61, the test report is to be submitted within 31 days after completion of the test. § 61.13(f). If the test is being conducted pursuant to 40 CFR Part 63, the test report must be submitted within 60 days after the test is completed unless another time frame is specified in the applicable subpart. § 63.9(h)(2)(i)(G). In addition, all test reports should be maintained consistent with the requirements of the CAA and its implementing regulations, and made available to EPA upon request. To assist in the preparation and transcription of test plans, the ERT should be used when possible.

#### **Rounding of Significant Figures:**

- For clarification on how the results of a stack test should be calculated and reported, this guidance defers to the current Agency guidance. See Memorandum from William G. Laxton and John S. Seitz to New Source Performance Standards/National Emission Standards for Hazardous Pollutants Compliance Contacts "*Performance Test Calculation Guidelines*" (June 6, 1990). After reiterating the established procedure concerning the use of the metric system in expressing compliance standards, the guidance states that all emission standards should have at least two significant figures and at least five significant digits are to be carried in intermediate calculations.
- When rounding off the calculated emission numbers, the guidance affirms the practices of the American Society for Testing and Materials:
  - If the first digit to be discarded is less than five, the last digit retained should not be changed. When the first digit discarded is greater than five, or if it is a five followed by at least one digit other than 0, the last figure retained should be increased by one unit. When the first digit discarded is exactly five, followed only by zeros, the last digit retained should be rounded upward if it is an odd number, but no adjustment made if it is an even number.
  - For example, if the emission standard is 90, 90.357 would be rounded to 90, 90.639 would be rounded to 91, 90.500 would be rounded to 90, and 91.500 would be rounded to

92. See Laxton and Seitz, pp. 3-4.

### **VIII EPA ROLE**

- As part of EPA's oversight responsibilities, EPA may observe stack tests whenever the Agency deems appropriate. The Agency also will review test reports as needed to verify that the tests are being conducted properly, and that the results are being accurately interpreted and reported by state/local agencies.
- Consistent with CMS and the State Review Framework, EPA will periodically conduct analyses to evaluate whether stack tests are being properly conducted and sufficiently and effectively utilized to determine compliance; and whether the results are being accurately reported in a timely manner.