

225.APPENDIX B Continuous Emission Monitoring Systems for Mercury

Section 1.1 Applicability

The provisions of this Appendix apply to sources subject to 35 Ill Admin. Code Part 225 mercury (Hg) mass emission reduction program.

Section 1.2 General operating requirements

- a) Primary Equipment Performance Requirements. The owner or operator must ensure that each continuous mercury emission monitoring system required by this Appendix meets the equipment, installation, and performance specifications in Exhibit A to this Appendix and is maintained according to the quality assurance and quality control procedures in Exhibit B to this Appendix.
- b) Heat Input Rate Measurement Requirement. The owner or operator must determine and record the heat input rate, in units of mmBtu/hr, to each affected unit for every hour or part of an hour any fuel is combusted following the procedures in Exhibit C to this Appendix.
- c) Primary equipment hourly operating requirements. The owner or operator must ensure that all continuous mercury emission monitoring systems required by this Appendix are in operation and monitoring unit emissions at all times that the affected unit combusts any fuel except during periods of calibration, quality assurance, or preventive maintenance, performed pursuant to Section 1.5 of this Appendix and Exhibit B to this Appendix, periods of repair, periods of backups of data from the data acquisition and handling system, or recertification performed pursuant to Section 1.4 of this Appendix.
 - 1) The owner or operator must ensure that each continuous emission monitoring system is capable of completing a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute interval. The owner or operator must reduce all volumetric flow, CO₂ concentration, O₂ concentration, and mercury concentration data collected by the monitors to hourly averages. Hourly averages must be computed using at least one data point in each fifteen minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly average may be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour) if data are unavailable as a result of the performance of calibration, quality assurance, or preventive

maintenance activities pursuant to Section 1.5 of this Appendix and Exhibit B to this Appendix, or backups of data from the data acquisition and handling system, or recertification, pursuant to Section 1.4 to this Appendix. The owner or operator must use all valid measurements or data points collected during an hour to calculate the hourly averages. All data points collected during an hour must be, to the extent practicable, evenly spaced over the hour.

- 2) Failure of a CO₂ or O₂ emissions concentration monitor, mercury concentration monitor, flow monitor, or a moisture monitor to acquire the minimum number of data points for calculation of an hourly average in paragraph (c)(1) of this Section must result in the failure to obtain a valid hour of data and the loss of such component data for the entire hour. For a moisture monitoring system consisting of one or more oxygen analyzers capable of measuring O₂ on a wet-basis and a dry-basis, an hourly average percent moisture value is valid only if the minimum number of data points is acquired for both the wet-and dry-basis measurements.
- d) Optional backup monitor requirements. If the owner or operator chooses to use two or more continuous mercury emission monitoring systems, each of which is capable of monitoring the same stack or duct at a specific affected unit, or group of units using a common stack, then the owner or operator must designate one monitoring system as the primary monitoring system, and must record this information in the monitoring plan, as provided for in Section 1.10 of this Appendix. The owner or operator must designate the other monitoring system(s) as backup monitoring system(s) in the monitoring plan. The backup monitoring system(s) must be designated as redundant backup monitoring system(s), non-redundant backup monitoring system(s), or reference method backup system(s), as described in Section 1.4(d) of this Appendix. When the certified primary monitoring system is operating and not out-of-control as defined in Section 1.7 of this Appendix, only data from the certified primary monitoring system must be reported as valid, quality-assured data. Thus, data from the backup monitoring system may be reported as valid, quality-assured data only when the backup is operating and not out-of-control as defined in Section 1.7 of this Appendix (or in the applicable reference method in appendix A of 40 CFR 60, incorporated by reference in Section 225.140) and when the certified primary monitoring system is not operating (or is operating but out-of-control). A particular monitor may be designated both as a certified primary monitor for one unit and as a certified redundant backup monitor for another unit.
- e) Minimum measurement capability requirement. The owner or operator must ensure that each continuous emission monitoring system is capable of accurately measuring, recording, and reporting data, and must not incur an exceedance of the full scale range, except as provided in Section 2.1.2.3 of Exhibit A to this Appendix.

- f) Minimum recording and recordkeeping requirements. The owner or operator must record and the designated representative must report the hourly, daily, quarterly, and annual information collected under the requirements as specified in subpart G of 40 CFR 75, incorporated by reference in Section 225.140, and Section 1.11 through 1.13 of this Appendix.

Section 1.3 Special provisions for measuring mercury mass emissions using the excepted sorbent trap monitoring methodology

For an affected coal-fired unit under 35 Ill Admin. Code Part 225 if the owner or operator elects to use sorbent trap monitoring systems (as defined in Section 225.130) to quantify mass emissions, the guidelines in paragraphs (a) through (l) of this Section must be followed for this excepted monitoring methodology:

- a) For each sorbent trap monitoring system (whether primary or redundant backup), the use of paired sorbent traps, as described in Exhibit D to this Appendix, is required;
- b) Each sorbent trap must have a main section, a backup section, and a third section to allow spiking with a calibration gas of known mercury concentration, as described in Exhibit D to this Appendix;
- c) A certified flow monitoring system is required;
- d) Correction for stack gas moisture content is required, and in some cases, a certified O₂ or CO₂ monitoring system is required (see Section 1.15(a)(4));
- e) Each sorbent trap monitoring system must be installed and operated in accordance with Exhibit D to this Appendix. The automated data acquisition and handling system must ensure that the sampling rate is proportional to the stack gas volumetric flow rate.
- f) At the beginning and end of each sample collection period, and at least once in each unit operating hour during the collection period, the gas flow meter reading must be recorded.
- g) After each sample collection period, the mass of mercury adsorbed in each sorbent trap (in all three sections) must be determined according to the applicable procedures in Exhibit D to this Appendix.
- h) The hourly mercury mass emissions for each collection period are determined using the results of the analyses in conjunction with contemporaneous hourly data recorded by a certified stack flow monitor, corrected for the stack gas moisture content. For each pair of sorbent traps analyzed, the average of the two mercury concentrations must be used for reporting purposes under Section 1.18(f) to this Appendix. Notwithstanding this

requirement, if, due to circumstances beyond the control of the owner or operator, one of the paired traps is accidentally lost, damaged, or broken and cannot be analyzed, the results of the analysis of the other trap may be used for reporting purposes, provided that the other trap has met all of the applicable quality-assurance requirements of this part.

- i) All unit operating hours for which valid mercury concentration data are obtained with the primary sorbent trap monitoring system (as verified using the quality assurance procedures in Exhibit D to this Appendix) must be reported in the electronic quarterly report under Section 1.18(f) to this Appendix. For hours in which data from the primary monitoring system are invalid, the owner or operator may, in accordance with Section 1.4(d) to this Appendix, report valid mercury concentration data from: A certified redundant backup CEMS or sorbent trap monitoring system; a certified non-redundant backup CEMS or sorbent trap monitoring system; or an applicable reference method under Section 1.6 to this Appendix.
- j) Initial certification requirements and additional quality-assurance requirements for the sorbent trap monitoring systems are found in Section 1.4(c)(7), in Section 6.5.6 of Exhibit A to this Appendix, in Sections 1.3 and 2.3 of Exhibit B to this Appendix, and in Exhibit D to this Appendix.
- k) During each RATA of a sorbent trap monitoring system, the type of sorbent material used by the traps must be the same as for daily operation of the monitoring system. A new pair of traps must be used for each RATA run. However, the size of the traps used for the RATA may be smaller than the traps used for daily operation of the system.
- l) Whenever the type of sorbent material used by the traps is changed, the owner or operator must conduct a diagnostic RATA of the modified sorbent trap monitoring system within 720 unit or stack operating hours after the date and hour when the new sorbent material is first used. If the diagnostic RATA is passed, data from the modified system may be reported as quality-assured, back to the date and hour when the new sorbent material was first used. If the RATA is failed, all data from the modified system must be invalidated, back to the date and hour when the new sorbent material was first used, and data from the system must remain invalid until a subsequent RATA is passed. If the required RATA is not completed within 720 unit or stack operating hours, but is passed on the first attempt, data from the modified system must be invalidated beginning with the first operating hour after the 720 unit or stack operating hour window expires and data from the system must remain invalid until the date and hour of completion of the successful RATA.

Section 1.4 Initial certification and recertification procedures

- a) Initial certification approval process. The owner or operator must ensure that each continuous mercury emission monitoring system required by this Appendix meets

the initial certification requirements of this Section. In addition, whenever the owner or operator installs a continuous mercury emission monitoring system in order to meet the requirements of Sections 1.3 of this Appendix and 40 CFR Sections 75.11 through 75.14 and 75.16 through 75.18, incorporated by reference in Section 225.140, where no continuous emission monitoring system was previously installed, initial certification is required.

- 1) Notification of initial certification test dates. The owner or operator or designated representative must submit a written notice of the dates of initial certification testing at the unit as specified in 40 CFR 75.61(a)(1), incorporated by reference in Section 225.140.
- 2) Certification application. The owner or operator must apply for certification of each continuous mercury emission monitoring system. The owner or operator must submit the certification application in accordance with 40 CFR 75.60, incorporated by reference in Section 225.140, and each complete certification application must include the information specified in 40 CFR 75.63, incorporated by reference in Section 225.140.
- 3) Provisional approval of certification (or recertification) applications. Upon the successful completion of the required certification (or recertification) procedures of this Section, each continuous mercury emission monitoring system must be deemed provisionally certified (or recertified) for use for a period not to exceed 120 days following receipt by the Agency of the complete certification (or recertification) application under paragraph (a)(4) of this Section. Data measured and recorded by a provisionally certified (or recertified) continuous emission monitoring system, operated in accordance with the requirements of Exhibit B to this Appendix, will be considered valid quality-assured data (retroactive to the date and time of provisional certification or recertification), provided that the Agency does not invalidate the provisional certification (or recertification) by issuing a notice of disapproval within 120 days of receipt by the Agency of the complete certification (or recertification) application. Note that when the conditional data validation procedures of paragraph (b)(3) of this Section are used for the initial certification (or recertification) of a continuous emissions monitoring system, the date and time of provisional certification (or recertification) of the CEMS may be earlier than the date and time of completion of the required certification (or recertification) tests.
- 4) Certification (or recertification) application formal approval process. The Agency will issue a notice of approval or disapproval of the certification (or recertification) application to the owner or operator within 120 days of receipt of the complete certification (or recertification) application. In the event the Agency

does not issue such a notice within 120 days of receipt, each continuous emission monitoring system which meets the performance requirements of this part and is included in the certification (or recertification) application will be deemed certified (or recertified) for use under 35 Ill Admin. Code Part 225.

- A) Approval notice. If the certification (or recertification) application is complete and shows that each continuous emission monitoring system meets the performance requirements of this part, then the Agency will issue a notice of approval of the certification (or recertification) application within 120 days of receipt.
- B) Incomplete application notice. A certification (or recertification) application will be considered complete when all of the applicable information required to be submitted in 40 CFR 75.63, incorporated by reference in Section 225.140, has been received by the Agency. If the certification (or recertification) application is not complete, then the Agency will issue a notice of incompleteness that provides a reasonable timeframe for the designated representative to submit the additional information required to complete the certification (or recertification) application. If the designated representative has not complied with the notice of incompleteness by a specified due date, then the Agency may issue a notice of disapproval specified under paragraph (a)(4)(C) of this Section. The 120-day review period will not begin prior to receipt of a complete application.
- C) Disapproval notice. If the certification (or recertification) application shows that any continuous emission monitoring system does not meet the performance requirements of this part, or if the certification (or recertification) application is incomplete and the requirement for disapproval under paragraph (a)(4)(B) of this Section has been met, the Agency must issue a written notice of disapproval of the certification (or recertification) application within 120 days of receipt. By issuing the notice of disapproval, the provisional certification (or recertification) is invalidated by the Agency, and the data measured and recorded by each uncertified continuous emission or opacity monitoring system must not be considered valid quality-assured data as follows: from the hour of the probationary calibration error test that began the initial certification (or recertification) test period (if the conditional data validation procedures of paragraph (b)(3) of this Section were used to retrospectively validate data); or from the date and time of completion of the invalid certification or recertification tests (if the conditional data validation procedures of paragraph (b)(3) of this Section were not used). The owner or operator

must follow the procedures for loss of initial certification in paragraph (a)(5) of this Section for each continuous emission or opacity monitoring system which is disapproved for initial certification. For each disapproved recertification, the owner or operator must follow the procedures of paragraph (b)(5) of this Section.

- 5) Procedures for loss of certification. When the Agency issues a notice of disapproval of a certification application or a notice of disapproval of certification status (as specified in paragraph (a)(4) of this Section), then:
- A) Until such time, date, and hour as the continuous mercury emission monitoring system can be adjusted, repaired, or replaced and certification tests successfully completed (or, if the conditional data validation procedures in paragraphs (b)(3)(B) through (b)(3)(I) of this Section are used, until a probationary calibration error test is passed following corrective actions in accordance with paragraph (b)(3)(B) of this Section), the owner or operator must perform emissions testing pursuant to Section 225.239.
 - B) The designated representative must submit a notification of certification retest dates as specified in Section 225.250(a)(3)(A) and a new certification application according to the procedures in Section 225.250(a)(3)(B); and
 - C) The owner or operator must repeat all certification tests or other requirements that were failed by the continuous mercury emission monitoring system, as indicated in the Agency's notice of disapproval, no later than 30 unit operating days after the date of issuance of the notice of disapproval.
- b) Recertification approval process. Whenever the owner or operator makes a replacement, modification, or change in a certified continuous mercury emission monitoring system that may significantly affect the ability of the system to accurately measure or record the gas volumetric flow rate, mercury concentration, percent moisture, or to meet the requirements of Section 1.5 of this Appendix or Exhibit B to this Appendix, the owner or operator must recertify the continuous mercury emission monitoring system, according to the procedures in this paragraph. Examples of changes which require recertification include: replacement of the analyzer; change in location or orientation of the sampling probe or site; and complete replacement of an existing continuous mercury emission monitoring system. The owner or operator must also recertify the continuous emission monitoring systems for a unit that has recommenced commercial operation following a period of long-term cold storage as defined in Section 225.130. Any change to a flow

monitor or gas monitoring system for which a RATA is not necessary will not be considered a recertification event. In addition, changing the polynomial coefficients or K factor(s) of a flow monitor will require a 3-load RATA, but is not considered to be a recertification event; however, records of the polynomial coefficients or K factor(s) currently in use must be maintained on-site in a format suitable for inspection. Changing the coefficient or K factor(s) of a moisture monitoring system will require a RATA, but is not considered to be a recertification event; however, records of the coefficient or K factor(s) currently in use by the moisture monitoring system must be maintained on-site in a format suitable for inspection. In such cases, any other tests that are necessary to ensure continued proper operation of the monitoring system (e.g., 3-load flow RATAs following changes to flow monitor polynomial coefficients, linearity checks, calibration error tests, DAHS verifications, etc.) must be performed as diagnostic tests, rather than as recertification tests. The data validation procedures in paragraph (b)(3) of this Section must be applied to RATAs associated with changes to flow or moisture monitor coefficients, and to linearity checks, 7-day calibration error tests, and cycle time tests, when these are required as diagnostic tests. When the data validation procedures of paragraph (b)(3) of this Section are applied in this manner, replace the word "recertification" with the word "diagnostic."

- 1) Tests required. For all recertification testing, the owner or operator must complete all initial certification tests in paragraph (c) of this Section that are applicable to the monitoring system, except as otherwise approved by the Agency. For diagnostic testing after changing the flow rate monitor polynomial coefficients, the owner or operator must complete a 3-level RATA. For diagnostic testing after changing the K factor or mathematical algorithm of a moisture monitoring system, the owner or operator must complete a RATA.
- 2) Notification of recertification test dates. The owner, operator, or designated representative must submit notice of testing dates for recertification under this paragraph as specified in 40 CFR 75.61(a)(1)(ii), incorporated by reference in Section 225.140, unless all of the tests in paragraph (c) of this Section are required for recertification, in which case the owner or operator must provide notice in accordance with the notice provisions for initial certification testing in 40 CFR 75.61(a)(1)(i), incorporated by reference in Section 225.140.
- 3) Recertification test period requirements and data validation. The data validation provisions in paragraphs (b)(3)(A) through (b)(3)(I) of this Section will apply to all mercury CEMS recertifications and diagnostic testing. The provisions in paragraphs (b)(3)(B) through (b)(3)(I) of this Section may also be applied to initial certifications (see Sections 6.2(a), 6.3.1(a), 6.3.2(a), 6.4(a) and 6.5(f) of Exhibit A to this Appendix) and may be used to supplement the linearity check and RATA

data validation procedures in Sections 2.2.3(b) and 2.3.2(b) of Exhibit B to this Appendix.

- A) The owner or operator must report emission data using a reference method or another monitoring system that has been certified or approved for use under this part, in the period extending from the hour of the replacement, modification, or change made to a monitoring system that triggers the need to perform recertification testing, until either: the hour of successful completion of all of the required recertification tests; or the hour in which a probationary calibration error test (according to paragraph (b)(3)(B) of this Section) is performed and passed, following all necessary repairs, adjustments, or reprogramming of the monitoring system. The first hour of quality-assured data for the recertified monitoring system must either be the hour after all recertification tests have been completed or, if conditional data validation is used, the first quality-assured hour must be determined in accordance with paragraphs (b)(3)(B) through (b)(3)(I) of this Section. Notwithstanding these requirements, if the replacement, modification, or change requiring recertification of the CEMS is such that the historical data stream is no longer representative (e.g., where the mercury concentration and stack flow rate change significantly after installation of a wet scrubber), the owner or operator must estimate the mercury emissions over that time period and notify the Agency within 15 days of the replacement, modification, or change requiring recertification of the CEMS.
- B) Once the modification or change to the CEMS has been completed and all of the associated repairs, component replacements, adjustments, linearization, and reprogramming of the CEMS have been completed, a probationary calibration error test is required to establish the beginning point of the recertification test period. In this instance, the first successful calibration error test of the monitoring system following completion of all necessary repairs, component replacements, adjustments, linearization and reprogramming must be the probationary calibration error test. The probationary calibration error test must be passed before any of the required recertification tests are commenced.
- C) Beginning with the hour of commencement of a recertification test period, emission data recorded by the mercury CEMS are considered to be conditionally valid, contingent upon the results of the subsequent recertification tests.

- D) Each required recertification test must be completed no later than the following number of unit operating hours (or unit operating days) after the probationary calibration error test that initiates the test period:
- i) For a linearity check and/or cycle time test, 168 consecutive unit operating hours, as defined in 40 CFR 72.2, incorporated by reference in Section 225.140, or, for CEMS installed on common stacks or bypass stacks, 168 consecutive stack operating hours, as defined in 40 CFR 72.2;
 - ii) For a RATA (whether normal-load or multiple-load), 720 consecutive unit operating hours, as defined in 40 CFR 72.2, incorporated by reference in Section 225.140, or, for CEMS installed on common stacks or bypass stacks, 720 consecutive stack operating hours, as defined in 40 CFR 72.2; and
 - iii) For a 7-day calibration error test, 21 consecutive unit operating days, as defined in 40 CFR 72.2, incorporated by reference in Section 225.140.
- E) All recertification tests must be performed hands-off. No adjustments to the calibration of the mercury CEMS, other than the routine calibration adjustments following daily calibration error tests as described in Section 2.1.3 of Exhibit B to this Appendix, are permitted during the recertification test period. Routine daily calibration error tests must be performed throughout the recertification test period, in accordance with Section 2.1.1 of Exhibit B to this Appendix. The additional calibration error test requirements in Section 2.1.3 of Exhibit B to this Appendix, must also apply during the recertification test period.
- F) If all of the required recertification tests and required daily calibration error tests are successfully completed in succession with no failures, and if each recertification test is completed within the time period specified in paragraph (b)(3)(D)(i), (ii), or (iii) of this Section, then all of the conditionally valid emission data recorded by the mercury CEMS will be considered quality assured, from the hour of commencement of the recertification test period until the hour of completion of the required test(s).
- G) If a required recertification test is failed or aborted due to a problem with the mercury CEMS, or if a daily calibration error test is failed during a recertification test period, data validation must be done as follows:

- i) If any required recertification test is failed, it must be repeated. If any recertification test other than a 7-day calibration error test is failed or aborted due to a problem with the mercury CEMS, the original recertification test period is ended, and a new recertification test period must be commenced with a probationary calibration error test. The tests that are required in the new recertification test period will include any tests that were required for the initial recertification event which were not successfully completed and any recertification or diagnostic tests that are required as a result of changes made to the monitoring system to correct the problems that caused the failure of the recertification test. For a 2- or 3-load flow RATA, if the relative accuracy test is passed at one or more load levels, but is failed at a subsequent load level, provided that the problem that caused the RATA failure is corrected without re-linearizing the instrument, the length of the new recertification test period must be equal to the number of unit operating hours remaining in the original recertification test period, as of the hour of failure of the RATA. However, if re-linearization of the flow monitor is required after a flow RATA is failed at a particular load level, then a subsequent 3-load RATA is required, and the new recertification test period must be 720 consecutive unit (or stack) operating hours. The new recertification test sequence must not be commenced until all necessary maintenance activities, adjustments, linearizations, and reprogramming of the CEMS have been completed;
- ii) If a linearity check, RATA, or cycle time test is failed or aborted due to a problem with the mercury CEMS, all conditionally valid emission data recorded by the CEMS are invalidated, from the hour of commencement of the recertification test period to the hour in which the test is failed or aborted, except for the case in which a multiple-load flow RATA is passed at one or more load levels, failed at a subsequent load level, and the problem that caused the RATA failure is corrected without re-linearizing the instrument. In that case, data invalidation will be prospective, from the hour of failure of the RATA until the commencement of the new recertification test period. Data from the CEMS remain invalid until the hour in which a new recertification test period is commenced, following corrective action, and a probationary calibration error test is passed, at which time the conditionally valid status of emission data from the CEMS begins again;

- iii) If a 7-day calibration error test is failed within the recertification test period, previously-recorded conditionally valid emission data from the mercury CEMS are not invalidated. The conditionally valid data status is unaffected, unless the calibration error on the day of the failed 7-day calibration error test exceeds twice the performance specification in Section 3 of Exhibit A to this Appendix, as described in paragraph (b)(3)(G)(iv) of this Section.

- iv) If a daily calibration error test is failed during a recertification test period (i.e., the results of the test exceed twice the performance specification in Section 3 of Exhibit A to this Appendix), the CEMS is out-of-control as of the hour in which the calibration error test is failed. Emission data from the CEMS will be invalidated prospectively from the hour of the failed calibration error test until the hour of completion of a subsequent successful calibration error test following corrective action, at which time the conditionally valid status of data from the monitoring system resumes. Failure to perform a required daily calibration error test during a recertification test period will also cause data from the CEMS to be invalidated prospectively, from the hour in which the calibration error test was due until the hour of completion of a subsequent successful calibration error test. Whenever a calibration error test is failed or missed during a recertification test period, no further recertification tests must be performed until the required subsequent calibration error test has been passed, re-establishing the conditionally valid status of data from the monitoring system. If a calibration error test failure occurs while a linearity check or RATA is still in progress, the linearity check or RATA must be re-started.

- v) Trial gas injections and trial RATA runs are permissible during the recertification test period, prior to commencing a linearity check or RATA, for the purpose of optimizing the performance of the CEMS. The results of such gas injections and trial runs will not affect the status of previously-recorded conditionally valid data or result in termination of the recertification test period, provided that they meet the following specifications and conditions: for gas injections, the stable, ending monitor response is within ± 5 percent or within 5 ppm of the tag value of the reference gas; for RATA trial runs, the average reference method reading and the average CEMS reading for the run differ by no more than $\pm 10\%$ of

the average reference method value or ± 15 ppm, or $\pm 1.5\%$ H₂O, or ± 0.02 lb/mmBtu from the average reference method value, as applicable; no adjustments to the calibration of the CEMS are made following the trial injection(s) or run(s), other than the adjustments permitted under Section 2.1.3 of Exhibit B to this Appendix and the CEMS is not repaired, re-linearized or reprogrammed (e.g., changing flow monitor polynomial coefficients, linearity constants, or K-factors) after the trial injection(s) or run(s).

vi) If the results of any trial gas injection(s) or RATA run(s) are outside the limits in paragraphs (b)(3)(G)(v) of this Section or if the CEMS is repaired, re-linearized, or reprogrammed after the trial injection(s) or run(s), the trial injection(s) or run(s) will be counted as a failed linearity check or RATA attempt. If this occurs, follow the procedures pertaining to failed and aborted recertification tests in paragraphs (b)(3)(G)(i) and (b)(3)(G)(ii) of this Section.

H) If any required recertification test is not completed within its allotted time period, data validation must be done as follows. For a late linearity test, RATA, or cycle time test that is passed on the first attempt, data from the monitoring system will be invalidated from the hour of expiration of the recertification test period until the hour of completion of the late test. For a late 7-day calibration error test, whether or not it is passed on the first attempt, data from the monitoring system will also be invalidated from the hour of expiration of the recertification test period until the hour of completion of the late test. For a late linearity test, RATA, or cycle time test that is failed on the first attempt or aborted on the first attempt due to a problem with the monitor, all conditionally valid data from the monitoring system will be considered invalid back to the hour of the first probationary calibration error test which initiated the recertification test period. Data from the monitoring system will remain invalid until the hour of successful completion of the late recertification test and any additional recertification or diagnostic tests that are required as a result of changes made to the monitoring system to correct problems that caused failure of the late recertification test.

I) If any required recertification test of a monitoring system has not been completed by the end of a calendar quarter and if data contained in the quarterly report are conditionally valid pending the results of test(s) to be completed in a subsequent quarter, the owner or operator must indicate

this by means of a suitable conditionally valid data flag in the electronic quarterly report, and notification within the quarterly report pursuant to 225.290(b)(1)(E), for that quarter. The owner or operator must resubmit the report for that quarter if the required recertification test is subsequently failed. If any required recertification test is not completed by the end of a particular calendar quarter but is completed no later than 30 days after the end of that quarter (i.e., prior to the deadline for submitting the quarterly report under 40 CFR 75.64, incorporated by reference in Section 225.140), the test data and results may be submitted with the earlier quarterly report even though the test date(s) are from the next calendar quarter. In such instances, if the recertification test(s) are passed in accordance with the provisions of paragraph (b)(3) of this Section, conditionally valid data may be reported as quality-assured, in lieu of reporting a conditional data flag. In addition, if the owner or operator uses a conditionally valid data flag in any of the four quarterly reports for a given year, the owner or operator must indicate the final status of the conditionally valid data (i.e., resolved or unresolved) in the annual compliance certification report required under 40 CFR 72.90 for that year. The Agency may invalidate any conditionally valid data that remains unresolved at the end of a particular calendar year.

- 4) Recertification application. The designated representative must apply for recertification of each continuous mercury emission monitoring system. The owner or operator must submit the recertification application in accordance with 40 CFR 75.60, incorporated by reference in Section 225.140, and each complete recertification application must include the information specified in 40 CFR 75.63, incorporated by reference in Section 225.140.
- 5) Approval or disapproval of request for recertification. The procedures for provisional certification in paragraph (a)(3) of this Section apply to recertification applications. The Agency will issue a notice of approval, disapproval, or incompleteness according to the procedures in paragraph (a)(4) of this Section. Data from the monitoring system remain invalid until all required recertification tests have been passed or until a subsequent probationary calibration error test is passed, beginning a new recertification test period. The owner or operator must repeat all recertification tests or other requirements, as indicated in the Agency's notice of disapproval, no later than 30 unit operating days after the date of issuance of the notice of disapproval. The designated representative must submit a notification of the recertification retest dates, as specified in 40 CFR 75.61(a)(1)(ii), incorporated by reference in Section 225.140, and must submit a new recertification application according to the procedures in paragraph (b)(4) of this Section.

c) Initial certification and recertification procedures. Prior to the applicable deadline in 35 Ill Admin. Code 225.240(b), the owner or operator must conduct initial certification tests and in accordance with 40 CFR 75.63, incorporated by reference in Section 225.140, the designated representative must submit an application to demonstrate that the continuous emission monitoring system and components thereof meet the specifications in Exhibit A to this Appendix. The owner or operator must compare reference method values with output from the automated data acquisition and handling system that is part of the continuous mercury emission monitoring system being tested. Except as otherwise specified in paragraphs (b)(1), (d), and (e) of this Section, and in Sections 6.3.1 and 6.3.2 of Exhibit A to this Appendix, the owner or operator must perform the following tests for initial certification or recertification of continuous emission monitoring systems or components according to the requirements of Exhibit B to this Appendix:

1) For each mercury concentration monitoring system:

A) A 7-day calibration error test;

B) A linearity check, for mercury monitors, perform this check with elemental mercury standards;

C) A relative accuracy test audit must be done on a $\mu\text{g}/\text{scm}$ basis;

D) A bias test;

E) A cycle time test;

F) For mercury monitors a 3-level system integrity check, using a NIST-traceable source of oxidized mercury, as described in Section 6.2 of Exhibit A to this Appendix. This test is not required for a mercury monitor that does not have a converter.

2) For each flow monitor:

A) A 7-day calibration error test;

B) Relative accuracy test audits, as follows:

i) A single-load (or single-level) RATA at the normal load (or level), as defined in Section 6.5.2.1(d) of Exhibit A to this Appendix, for a flow monitor installed on a peaking unit or bypass stack, or for a flow monitor exempted from multiple-level RATA testing under Section 6.5.2(e) of Exhibit A to this Appendix;

- ii) For all other flow monitors, a RATA at each of the three load levels (or operating levels) corresponding to the three flue gas velocities described in Section 6.5.2(a) of Exhibit A to this Appendix;
 - C) A bias test for the single-load (or single-level) flow RATA described in paragraph (c)(2)(B)(i) of this Section; and
 - D) A bias test (or bias tests) for the 3-level flow RATA described in paragraph (c)(2)(B)(ii) of this Section, at the following load or operational level(s):
 - i) At each load level designated as normal under Section 6.5.2.1(d) of Exhibit A to this Appendix, for units that produce electrical or thermal output, or
 - ii) At the operational level identified as normal in Section 6.5.2.1(d) of Exhibit A to this Appendix, for units that do not produce electrical or thermal output.
- 3) For each diluent gas monitor used only to monitor heat input rate:
- A) A 7-day calibration error test;
 - B) A linearity check;
 - C) A relative accuracy test audit, where, for an O₂ monitor used to determine CO₂ concentration, the CO₂ reference method must be used for the RATA; and
 - D) A cycle-time test.
- 4) For each continuous moisture monitoring system consisting of wet- and dry-basis O₂ analyzers:
- A) A 7-day calibration error test of each O₂ analyzer;
 - B) A cycle time test of each O₂ analyzer;
 - C) A linearity test of each O₂ analyzer; and

- D) A RATA, directly comparing the percent moisture measured by the monitoring system to a reference method.
- 5) For each continuous moisture sensor: A RATA, directly comparing the percent moisture measured by the monitor sensor to a reference method.
- 6) For a continuous moisture monitoring system consisting of a temperature sensor and a data acquisition and handling system (DAHS) software component programmed with a moisture lookup table: A demonstration that the correct moisture value for each hour is being taken from the moisture lookup tables and applied to the emission calculations. At a minimum, the demonstration must be made at three different temperatures covering the normal range of stack temperatures from low to high.
- 7) For each sorbent trap monitoring system, perform a RATA, on a $\mu\text{g}/\text{dscm}$ basis, and a bias test.
- 8) For the automated data acquisition and handling system, tests designed to verify the proper computation of hourly averages for pollutant concentrations, flow rate, pollutant emission rates, and pollutant mass emissions.
- 9) The owner or operator must provide adequate facilities for initial certification or recertification testing that include:
 - A) Sampling ports adequate for test methods applicable to such facility, such that:
 - i) Volumetric flow rate, pollutant concentration, and pollutant emission rates can be accurately determined by applicable test methods and procedures; and
 - ii) A stack or duct free of cyclonic flow during performance tests is available, as demonstrated by applicable test methods and procedures.
 - B) Basic facilities (e.g., electricity) for sampling and testing equipment.
- d) Initial certification and recertification and quality assurance procedures for optional backup continuous emission monitoring systems.
 - 1) Redundant backups. The owner or operator of an optional redundant backup CEMS must comply with all the requirements for initial certification and

recertification according to the procedures specified in paragraphs (a), (b), and (c) of this Section. The owner or operator must operate the redundant backup CEMS during all periods of unit operation, except for periods of calibration, quality assurance, maintenance, or repair. The owner or operator must perform upon the redundant backup CEMS all quality assurance and quality control procedures specified in Exhibit B to this Appendix, except that the daily assessments in Section 2.1 of Exhibit B to this Appendix are optional for days on which the redundant backup CEMS is not used to report emission data under this part. For any day on which a redundant backup CEMS is used to report emission data, the system must meet all of the applicable daily assessment criteria in Exhibit B to this Appendix.

- 2) Non-redundant backups. The owner or operator of an optional non-redundant backup CEMS or like-kind replacement analyzer must comply with all of the following requirements for initial certification, quality assurance, recertification, and data reporting:
 - A) Except as provided in paragraph (d)(2)(E) of this Section, for a regular non-redundant backup CEMS (i.e., a non-redundant backup CEMS that has its own separate probe, sample interface, and analyzer), or a non-redundant backup flow monitor, all of the tests in paragraph (c) of this Section are required for initial certification of the system, except for the 7-day calibration error test.
 - B) For a like-kind replacement non-redundant backup analyzer (i.e., a non-redundant backup analyzer that uses the same probe and sample interface as a primary monitoring system), no initial certification of the analyzer is required.
 - C) Each non-redundant backup CEMS or like-kind replacement analyzer must comply with the daily and quarterly quality assurance and quality control requirements in Exhibit B to this Appendix for each day and quarter that the non-redundant backup CEMS or like-kind replacement analyzer is used to report data, and must meet the additional linearity and calibration error test requirements specified in this paragraph. The owner or operator must ensure that each non-redundant backup CEMS or like-kind replacement analyzer passes a linearity check (for mercury concentration and diluent gas monitors) or a calibration error test (for flow monitors) prior to each use for recording and reporting emissions. When a non-redundant backup CEMS or like-kind replacement analyzer is brought into service, prior to conducting the linearity test, a probationary calibration error test (as described in paragraph (b)(3)(B) of this Section),

which will begin a period of conditionally valid data, may be performed in order to allow the validation of data retrospectively, as follows. Conditionally valid data from the CEMS or like-kind replacement analyzer are validated back to the hour of completion of the probationary calibration error test if the following conditions are met: if no adjustments are made to the CEMS or like-kind replacement analyzer other than the allowable calibration adjustments specified in Section 2.1.3 of Exhibit B to this Appendix between the probationary calibration error test and the successful completion of the linearity test; and if the linearity test is passed within 168 unit (or stack) operating hours of the probationary calibration error test. However, if the linearity test is performed within 168 unit or stack operating hours but is either failed or aborted due to a problem with the CEMS or like-kind replacement analyzer, then all of the conditionally valid data are invalidated back to the hour of the probationary calibration error test, and data from the non-redundant backup CEMS or from the primary monitoring system of which the like-kind replacement analyzer is a part remain invalid until the hour of completion of a successful linearity test. Notwithstanding this requirement, the conditionally valid data status may be re-established after a failed or aborted linearity check, if corrective action is taken and a calibration error test is subsequently passed. However, in no case will the use of conditional data validation extend for more than 168 unit or stack operating hours beyond the date and time of the original probationary calibration error test when the analyzer was brought into service.

- D) For each parameter monitored (i.e., CO₂, O₂, Hg, or flow rate) at each unit or stack, a regular non-redundant backup CEMS may not be used to report data at that affected unit or common stack for more than 720 hours in any one calendar year (in accordance with 40 CFR 75.74(c), incorporated by reference in Section 225.140), unless the CEMS passes a RATA at that unit or stack. For each parameter monitored at each unit or stack, the use of a like-kind replacement non-redundant backup analyzer (or analyzers) is restricted to 720 cumulative hours per calendar year, unless the owner or operator redesignates the like-kind replacement analyzer(s) as component(s) of regular non-redundant backup CEMS and each redesignated CEMS passes a RATA at that unit or stack.
- E) For each regular non-redundant backup CEMS, no more than eight successive calendar quarters must elapse following the quarter in which the last RATA of the CEMS was done at a particular unit or stack, without performing a subsequent RATA. Otherwise, the CEMS may not be used to

report data from that unit or stack until the hour of completion of a passing RATA at that location.

- F) Each regular non-redundant backup CEMS must be represented in the monitoring plan required under Section 1.10 of this Appendix as a separate monitoring system, with unique system and component identification numbers. When like-kind replacement non-redundant backup analyzers are used, the owner or operator must represent each like-kind replacement analyzer used during a particular calendar quarter in the monitoring plan required under Section 1.10 of this Appendix as a component of a primary monitoring system. The owner or operator must also assign a unique component identification number to each like-kind replacement analyzer, beginning with the letters "LK" (e.g., "LK1," "LK2," etc.) and must specify the manufacturer, model and serial number of the like-kind replacement analyzer. This information may be added, deleted or updated as necessary, from quarter to quarter. The owner or operator must also report data from the like-kind replacement analyzer using the system identification number of the primary monitoring system and the assigned component identification number of the like-kind replacement analyzer. For the purposes of the electronic quarterly report required under 40 CFR 75.64, incorporated by reference in Section 225.140, the owner or operator may manually enter the appropriate component identification number(s) of any like-kind replacement analyzer(s) used for data reporting during the quarter.
- G) When reporting data from a certified regular non-redundant backup CEMS, use a method of determination (MODC) code of "02." When reporting data from a like-kind replacement non-redundant backup analyzer, use a MODC of "17" (see Table 4a under Section 1.11 of this Appendix). For the purposes of the electronic quarterly report required under 40 CFR 75.64, incorporated by reference in Section 225.140, the owner or operator may manually enter the required MODC of "17" for a like-kind replacement analyzer.
- H) For non-redundant backup mercury CEMS and sorbent trap monitoring systems, and for like-kind replacement mercury analyzers, the following provisions apply in addition to, or, in some cases, in lieu of, the general requirements in paragraphs (d)(2)(A) through (d)(2)(H) of this Section:
- i) When a certified sorbent trap monitoring system is brought into service as a regular non-redundant backup monitoring system, the

system must be operated according to the procedures in Section 1.3 of this Appendix and Exhibit D to this Appendix;

- ii) When a regular non-redundant backup mercury CEMS or a like-kind replacement mercury analyzer is brought into service, a linearity check with elemental mercury standards, as described in paragraph (c)(1)(B) of this Section and Section 6.2 of Exhibit A to this Appendix, and a single-point system integrity check, as described in Section 2.6 of Exhibit B to this Appendix, must be performed. Alternatively, a 3-level system integrity check, as described in paragraph (c)(1)(E) of this Section and paragraph (g) of Section 6.2 in Exhibit A to this Appendix, may be performed in lieu of these two tests.
 - iii) The weekly single-point system integrity checks described in Section 2.6 of Exhibit B to this Appendix are required as long as a non-redundant backup mercury CEMS or like-kind replacement mercury analyzer remains in service, unless the daily calibrations of the mercury analyzer are done using a NIST-traceable source or other approved source of oxidized mercury.
- 3) Reference method backups. A monitoring system that is operated as a reference method backup system pursuant to the reference method requirements of Methods 2, 3A, 30A, 30B in appendix A of 40 CFR 60, incorporated by reference in Section 225.140, need not perform and pass the certification tests required by paragraph (c) of this Section prior to its use pursuant to this paragraph.
- e) Certification/recertification procedures for either peaking unit or by-pass stack/duct continuous emission monitoring systems. The owner or operator of either a peaking unit or by-pass stack/duct continuous emission monitoring system must comply with all the requirements for certification or recertification according to the procedures specified in paragraphs (a), (b), and (c) of this Section, except as follows: the owner or operator need only perform one Nine-run relative accuracy test audit for certification or recertification of a flow monitor installed on the by-pass stack/duct or on the stack/duct used only by affected peaking unit(s). The relative accuracy test audit must be performed during normal operation of the peaking unit(s) or the by-pass stack/duct.
 - f) Certification/recertification procedures for alternative monitoring systems. The designated representative representing the owner or operator of each alternative monitoring system approved by the Agency as equivalent to or better than a continuous emission monitoring system according to the criteria in subpart E of 40 CFR 75, incorporated by reference in Section 225.140, must apply for certification to the Agency

prior to use of the system under Part 225, Subpart B, and must apply for recertification to the Agency following a replacement, modification, or change according to the procedures in paragraph (c) of this Section. The owner or operator of an alternative monitoring system must comply with the notification and application requirements for certification or recertification according to the procedures specified in paragraphs (a) and (b) of this Section.

Section 1.5 Quality assurance and quality control requirements

- a) Continuous emission monitoring systems. The owner or operator of an affected unit must operate, calibrate and maintain each continuous mercury emission monitoring system used to report mercury emission data as follows:
- 1) The owner or operator must operate, calibrate and maintain each primary and redundant backup continuous emission monitoring system according to the quality assurance and quality control procedures in Exhibit B to this Appendix.
 - 2) The owner or operator must ensure that each non-redundant backup CEMS meets the quality assurance requirements of Section 1.4(d) of this Appendix for each day and quarter that the system is used to report data.
 - 3) The owner or operator must perform quality assurance upon a reference method backup monitoring system according to the requirements of method 2 or 3A in appendix A of 40 CFR 60, incorporated by reference in Section 225.140 (supplemented, as necessary, by guidance from the Administrator or the Agency), or one of the mercury reference methods in Section 1.6 of this Appendix, as applicable, instead of the procedures specified in Exhibit B of this Appendix.
- b) Calibration gases. The owner or operator must ensure that all calibration gases used to quality assure the operation of the instrumentation required by this Appendix must meet the definition in 40 CFR 72.2, incorporated by reference in Section 225.140.

Section 1.6 Reference test methods

- a) The owner or operator must use the following methods, which are found in appendix A-4 to 40 CFR 60, incorporated by reference in Section 225.140, or have been published by ASTM, to conduct the following tests: monitoring system tests for certification or recertification of continuous mercury emission monitoring systems; the emission tests required under Section 1.15(c) and (d) of this Appendix; and required quality assurance and quality control tests:

- 1) Methods 1 or 1A are the reference methods for selection of sampling site and sample traverses.
- 2) Method 2 or its allowable alternatives, as provided in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, except for Methods 2B and 2E, are the reference methods for determination of volumetric flow.
- 3) Methods 3, 3A, or 3B are the reference methods for the determination of the dry molecular weight O₂ and CO₂ concentrations in the emissions.
- 4) Method 4 (either the standard procedure described in Section 8.1 of the method or the moisture approximation procedure described in Section 8.2 of the method) must be used to correct pollutant concentrations from a dry basis to a wet basis (or from a wet basis to a dry basis) and must be used when relative accuracy test audits of continuous moisture monitoring systems are conducted. For the purpose of determining the stack gas molecular weight, however, the alternative wet bulb-dry bulb technique for approximating the stack gas moisture content described in Section 2.2 of Method 4 may be used in lieu of the procedures in Sections 8.1 and 8.2 of the method.
- 5) ASTM D6784-02, Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method) (incorporated by reference under Section 225.140) is the reference method for determining mercury concentration.
 - A) Alternatively, Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference in Section 225.140, may be used, with these caveats: The procedures for preparation of mercury standards and sample analysis in Sections 13.4.1.1 through 13.4.1.3 ASTM D6784-02 (incorporated by reference under Section 225.140) must be followed instead of the procedures in Sections 7.5.33 and 11.1.3 of Method 29 in appendix A-8 to 40 CFR 60, and the QA/QC procedures in Section 13.4.2 of ASTM D6784-02 (incorporated by reference under Section 225.140) must be performed instead of the procedures in Section 9.2.3 of Method 29 in appendix A-8 to 40 CFR 60. The tester may also opt to use the sample recovery and preparation procedures in ASTM D6784-02 (incorporated by reference under Section 225.140) instead of the Method 29 in appendix A-8 to 40 CFR 60 procedures, as follows: Sections 8.2.8 and 8.2.9.1 of Method 29 in appendix A-8 to 40 CFR 60 may be replaced with Sections 13.2.9.1 through 13.2.9.3 of ASTM D6784-02 (incorporated by reference under Section 225.140); Sections 8.2.9.2 and 8.2.9.3 of Method 29 in appendix A-8 to 40 CFR 60 may be replaced with Sections 13.2.10.1

through 13.2.10.4 of ASTM D6784-02 (incorporated by reference under Section 225.140); Section 8.3.4 of Method 29 in appendix A-8 to 40 CFR 60 may be replaced with Section 13.3.4 or 13.3.6 of ASTM D6784-02 (as appropriate) (incorporated by reference under Section 225.140); and Section 8.3.5 of Method 29 in appendix A-8 to 40 CFR 60 may be replaced with Section 13.3.5 or 13.3.6 of ASTM D6784-02 (as appropriate) (incorporated by reference under Section 225.140).

- B) Whenever ASTM D6784-02 (incorporated by reference under Section 225.140) or Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference in Section 225.140, is used, paired sampling trains are required. To validate a RATA run or an emission test run, the relative deviation (RD), calculated according to Section 11.6 of Exhibit D to this Appendix, must not exceed 10 percent, when the average concentration is greater than $1.0 \mu\text{g}/\text{m}^3$. If the average concentration is less than or equal to $1.0 \mu\text{g}/\text{m}^3$, the RD must not exceed 20 percent. The RD results are also acceptable if the absolute difference between the mercury concentrations measured by the paired trains does not exceed $0.03 \mu\text{g}/\text{m}^3$. If the RD criterion is met, the run is valid. For each valid run, average the mercury concentrations measured by the two trains (vapor phase, only).
- C) Two additional reference methods that may be used to measure mercury concentration are: Method 30A, "Determination of Total Vapor Phase Mercury Emissions from Stationary Sources (Instrumental Analyzer Procedure)" and Method 30B, "Determination of Total Vapor Phase Mercury Emissions from Coal-Fired Combustion Sources Using Carbon Sorbent Traps".
- D) When Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference in Section 225.140, or ASTM D6784-02 (incorporated by reference under Section 225.140) is used for the mercury emission testing required under Section 1.15(c) and (d) of this Appendix, locate the reference method test points according to Section 8.1 of Method 30A, and if mercury stratification testing is part of the test protocol, follow the procedures in Sections 8.1.3 through 8.1.3.5 of Method 30A.
- b) The owner or operator may use any of the following methods, which are found in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, or have been published by ASTM, as a reference method backup monitoring system to provide quality-assured monitor data:
- 1) Method 3A for determining O_2 or CO_2 concentration;

- 2) Method 2, or its allowable alternatives, as provided in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, except for Methods 2B and 2E, for determining volumetric flow. The sample point(s) for reference methods must be located according to the provisions of Section 6.5.4 of Exhibit A to this Appendix.
 - 3) ASTM D6784-02, Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method) (incorporated by reference under Section 225.140) for determining mercury concentration.
 - 4) Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference in Section 225.140, for determining mercury concentration;
 - 5) Method 30A for determining mercury concentration; and
 - 6) Method 30B for determining mercury concentration.
- c) Instrumental EPA Reference Method 3A in appendices A-2 and A-4 of 40 CFR 60, incorporated by reference in Section 225.140, must be conducted using calibration gases as defined in Section 5 of Exhibit A to this Appendix. Otherwise, performance tests must be conducted and data reduced in accordance with the test methods and procedures of this part unless the Agency:
- 1) Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;
 - 2) Approves the use of an equivalent method; or
 - 3) Approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors.

Section 1.7 Out-of-control periods and system bias testing

- a) If an out-of-control period occurs to a monitor or continuous emission monitoring system, the owner or operator must take corrective action and repeat the tests applicable to the "out-of-control parameter" as described in Exhibit B of this Appendix.
 - 1) For daily calibration error tests, an out-of-control period occurs when the calibration error of a pollutant concentration monitor exceeds the applicable specification in Section 2.1.4 of Exhibit B to this Appendix.

- 2) For quarterly linearity checks, an out-of-control period occurs when the error in linearity at any of three gas concentrations (low, mid-range, and high) exceeds the applicable specification in Exhibit A to this Appendix.
 - 3) For relative accuracy test audits, an out-of-control period occurs when the relative accuracy exceeds the applicable specification in Exhibit A to this Appendix.
- b) When a monitor or continuous emission monitoring system is out-of-control, any data recorded by the monitor or monitoring system are not quality-assured and must not be used in calculating monitor data availabilities pursuant to Section 1.8 of this Appendix.
 - c) When a monitor or continuous emission monitoring system is out-of-control, the owner or operator must take one of the following actions until the monitor or monitoring system has successfully met the relevant criteria in Exhibits A and B of this Appendix as demonstrated by subsequent tests:
 - 1) Use a certified backup monitoring system or a reference method for measuring and recording emissions from the affected unit(s); or
 - 2) Adjust the gas discharge paths from the affected unit(s) with emissions normally observed by the out-of-control monitor or monitoring system so that all exhaust gases are monitored by a certified monitor or monitoring system meeting the requirements of Exhibits A and B of this Appendix.
 - d) When the bias test indicates that a flow monitor, a diluent monitoring system, a mercury concentration monitoring system or a sorbent trap monitoring system is biased low (i.e., the arithmetic mean of the differences between the reference method value and the monitor or monitoring system measurements in a relative accuracy test audit exceed the bias statistic in Section 7 of Exhibit A to this Appendix), the owner or operator must adjust the monitor or continuous emission monitoring system to eliminate the cause of bias such that it passes the bias test.

Section 1.8 Determination of monitor data availability

- a) Following initial certification of the required CO₂, O₂, flow monitoring system(s), Hg concentration, or moisture monitoring system(s) at a particular unit or stack location (i.e., the date and time at which quality-assured data begins to be recorded by CEMS(s) at that location), the owner or operator must begin calculating the percent monitor data availability as described in paragraph (a)(1) of this Section, by means of the automated data acquisition and handling system, and the percent monitor data availability for each monitored parameter.

- 1) Following initial certification, the owner or operator must use Equation 8 to calculate hourly, percent monitor data availability for each calendar quarter.

$$\text{Percent monitor data availability} = \frac{\text{Total unit operating hours for which quality-assured data was recorded for the calendar quarter}}{\text{Total unit operating hours for the calendar quarter}} \times 100 \text{ (Eq. 8)}$$

- 2) When calculating percent monitor data availability using Equation 8, the owner or operator must include all unit operating hours, and all monitor operating hours for which quality-assured data were recorded by a certified primary monitor; a certified redundant or non-redundant backup monitor or a reference method for that unit.

Section 1.9 Determination of sorbent trap monitoring systems data availability

- a) If a primary sorbent trap monitoring system has not been certified by the applicable compliance date specified under 35 Ill Admin. Code Part 225, Subpart B, and if quality-assured mercury concentration data from a certified backup mercury monitoring system, reference method, or approved alternative monitoring system are unavailable, the owner or operator must perform quarterly emissions testing in accordance with Section 225.239 until such time the primary sorbent trap monitoring system has been certified.
- b) For a certified sorbent trap system, a missing data period will occur in the following circumstances, unless quality-assured mercury concentration data from a certified backup mercury CEMS, sorbent trap system, reference method, or approved alternative monitoring system are available:
- 1) A gas sample is not extracted from the stack during unit operation (e.g., during a monitoring system malfunction or when the system undergoes maintenance); or
 - 2) The results of the mercury analysis for the paired sorbent traps are missing or invalid (as determined using the quality assurance procedures in Exhibit D to this Appendix). The missing data period begins with the hour in which the paired sorbent traps for which the mercury analysis is missing or invalid were put into service. The missing data period ends at the first hour in which valid mercury concentration data are obtained with another pair of sorbent traps (i.e., the hour at

which this pair of traps was placed in service); or with a certified backup mercury CEMS, reference method, or approved alternative monitoring system.

- c) Following initial certification of the sorbent trap monitoring system, begin reporting the percent monitor data availability in accordance with Section 1.8 of this Appendix.

Section 1.10 Monitoring plan

- a) The owner or operator of an affected unit must prepare and maintain a mercury emissions monitoring plan.
- b) Whenever the owner or operator makes a replacement, modification, or change in the certified CEMS, including a change in the automated data acquisition and handling system or in the flue gas handling system, that affects information reported in the monitoring plan (e.g., a change to a serial number for a component of a monitoring system), then the owner or operator must update the monitoring plan, by the applicable deadline specified in 40 CFR 75.62, incorporated by reference in Section 225.140, or elsewhere in this Appendix.
- c) Contents of monitoring plan for specific situations. The following additional information must be included in the monitoring plan for the specific situations described. For each monitoring system recertification, maintenance, or other event, the designated representative must include the following additional information in electronic format in the monitoring plan:
- 1) Component/system identification code;
 - 2) Event code or code for required test;
 - 3) Event begin date and hour;
 - 4) Conditionally valid data period begin date and hour (if applicable);
 - 5) Date and hour that last test is successfully completed; and
 - 6) Indicator of whether conditionally valid data were reported at the end of the quarter.
- d) Contents of the mercury monitoring plan. The requirements of paragraph (d) of this Section must be met on and after July 1, 2009. Each monitoring plan must contain the information in paragraph (d)(1) of this Section in electronic format and the information in paragraph (d)(2) of this Section in hardcopy format. Electronic storage of all monitoring

plan information, including the hardcopy portions, is permissible provided that a paper copy of the information can be furnished upon request for audit purposes.

1) Electronic:

A) The facility ORISPL number developed by the Department of Energy and used in the National Allowance Data Base (or equivalent facility ID number assigned by USEPA, if the facility does not have an ORISPL number). Also provide the following information for each unit and (as applicable) for each common stack and/or pipe, and each multiple stack and/or pipe involved in the monitoring plan:

- i) A representation of the exhaust configuration for the units in the monitoring plan. Provide the ID number of each unit and assign a unique ID number to each common stack, common pipe, multiple stack, and/or multiple pipe associated with the unit(s) represented in the monitoring plan. For common and multiple stacks and/or pipes, provide the activation date and deactivation date (if applicable) of each stack and/or pipe;
- ii) Identification of the monitoring system location(s) (e.g., at the unit-level, on the common stack, at each multiple stack, etc.). Provide an indicator ("flag") if the monitoring location is at a bypass stack or in the ductwork (breaching);
- iii) The stack exit height (ft) above ground level and ground level elevation above sea level, and the inside cross-sectional area (ft²) at the flue exit and at the flow monitoring location (for units with flow monitors, only). Also use appropriate codes to indicate the material(s) of construction and the shape(s) of the stack or duct cross-section(s) at the flue exit and (if applicable) at the flow monitor location;
- iv) The type(s) of fuel(s) fired by each unit. Indicate the start and (if applicable) end date of combustion for each type of fuel, and whether the fuel is the primary, secondary, emergency, or startup fuel;
- v) The type(s) of emission controls that are used to reduce mercury emissions from each unit. Also provide the installation date, optimization date, and retirement date (if applicable) of the emission controls, and indicate whether the controls are an original

installation, and

- vi) Maximum hourly heat input capacity of each unit.

- B) For each monitored parameter (i.e., mercury concentration, diluent concentration, or flow) at each monitoring location, specify the monitoring methodology for the parameter. If the unmonitored bypass stack approach is used for a particular parameter, indicate this by means of an appropriate code. Provide the activation date/hour, and deactivation date/hour (if applicable) for each monitoring methodology.

- C) For each required continuous emission monitoring system, and each sorbent trap monitoring system (as defined in Section 225.130), identify and describe the major monitoring components in the monitoring system (e.g., gas analyzer, flow monitor, moisture sensor, DAHS software, etc.). Other important components in the system (e.g., sample probe, PLC, data logger, etc.) may also be represented in the monitoring plan, if necessary. Provide the following specific information about each component and monitoring system:
 - i) For each required monitoring system, assign a unique, 3-character alphanumeric identification code to the system; indicate the parameter monitored by the system; designate the system as a primary, redundant backup, non-redundant backup, data backup, or reference method backup system, as provided in Section 1.2(d) of this Appendix; and indicate the system activation date/hour and deactivation date/hour (as applicable).

 - ii) For each component of each monitoring system represented in the monitoring plan, assign a unique, 3-character alphanumeric identification code to the component; indicate the manufacturer, model and serial number; designate the component type; for gas analyzers, indicate the moisture basis of measurement; indicate the method of sample acquisition or operation, (e.g., extractive pollutant concentration monitor or thermal flow monitor); and indicate the component activation date/hour and deactivation date/hour (as applicable).

- D) Explicit formulas, using the component and system identification codes for the primary monitoring system, and containing all constants and factors required to derive the required emission rates, heat input rates, etc. from the hourly data recorded by the monitoring systems. Formulas using the

system and component ID codes for backup monitoring systems are required only if different formulas for the same parameter are used for the primary and backup monitoring systems (e.g., if the primary system measures pollutant concentration on a different moisture basis from the backup system). Provide the equation number or other appropriate code for each emissions formula (e.g., use code F-1 if Equation F-1 in Exhibit C to this Appendix is used to calculate SO₂ mass emissions). Also identify each emissions formula with a unique three character alphanumeric code. The formula effective start date/hour and inactivation date/hour (as applicable) must be included for each formula.

- E) For each parameter monitored with CEMS, provide the following information:
- i) Measurement scale;
 - ii) Maximum potential value (and method of calculation);
 - iii) Maximum expected value (if applicable) and method of calculation;
 - iv) Span value(s) and full-scale measurement range(s);
 - v) Daily calibration units of measure;
 - vi) Effective date/hour, and (if applicable) inactivation date/hour of each span value;
 - vii) The default high range value (if applicable) and the maximum allowable low-range value for this option.
- F) If the monitoring system or excepted methodology provides for the use of a constant, assumed, or default value for a parameter under specific circumstances, then include the following information for each such value for each parameter:
- i) Identification of the parameter;
 - ii) Default, maximum, minimum, or constant value, and units of measure for the value;
 - iii) Purpose of the value;

- iv) Indicator of use, i.e., during controlled hours, uncontrolled hours, or all operating hours;
 - v) Type of fuel;
 - vi) Source of the value;
 - vii) Value effective date and hour;
 - viii) Date and hour value is no longer effective (if applicable); and
- G) Unless otherwise specified in Section 6.5.2.1 of Exhibit A to this Appendix, for each unit or common stack on which hardware CEMS are installed:
- i) Maximum hourly gross load (in MW; rounded to the nearest MW, or steam load in 1000 lb/hr (i.e., klb/hr), rounded to the nearest klb/hr, or thermal output in mmBtu/hr, rounded to the nearest mmBtu/hr), for units that produce electrical or thermal output;
 - ii) The upper and lower boundaries of the range of operation (as defined in Section 6.5.2.1 of Exhibit A to this Appendix), expressed in megawatts, thousands of lb/hr of steam, mmBtu/hr of thermal output, or ft/sec (as applicable);
 - iii) Except for peaking units, identify the most frequently and second most frequently used load (or operating) levels (i.e., low, mid, or high) in accordance with Section 6.5.2.1 of Exhibit A to this Appendix, expressed in megawatts, thousands of lb/hr of steam, mmBtu/hr of thermal output, or ft/sec (as applicable);
 - iv) An indicator of whether the second most frequently used load (or operating) level is designated as normal in Section 6.5.2.1 of Exhibit A to this Appendix;
 - v) The date of the data analysis used to determine the normal load (or operating) level(s) and the two most frequently-used load (or operating) levels (as applicable); and
 - vi) Activation and deactivation dates and hours, when the maximum hourly gross load, boundaries of the range of operation, normal

load (or operating) level(s) or two most frequently-used load (or operating) levels change and are updated.

- H) For each unit for which CEMS are not installed, the maximum hourly gross load (in MW, rounded to the nearest MW, or steam load in klb/hr, rounded to the nearest klb/hr, or steam load in mmBtu/hr, rounded to the nearest mmBtu/hr);
- D) For each unit with a flow monitor installed on a rectangular stack or duct, if a wall effects adjustment factor (WAF) is determined and applied to the hourly flow rate data:
- i) Stack or duct width at the test location, ft;
 - ii) Stack or duct depth at the test location, ft;
 - iii) Wall effects adjustment factor (WAF), to the nearest 0.0001;
 - iv) Method of determining the WAF;
 - v) WAF Effective date and hour;
 - vi) WAF no longer effective date and hour (if applicable);
 - vii) WAF determination date;
 - viii) Number of WAF test runs;
 - ix) Number of Method 1 traverse points in the WAF test;
 - x) Number of test ports in the WAF test; and
 - xi) Number of Method 1 traverse points in the reference flow RATA.

2) Hardcopy

- A) Information, including (as applicable): Identification of the test strategy; protocol for the relative accuracy test audit; other relevant test information; calibration gas levels (percent of span) for the calibration error test and linearity check and span; and apportionment strategies under Sections 1.2 and 1.3 of this Appendix.

- B) Description of site locations for each monitoring component in the continuous emission monitoring systems, including schematic diagrams and engineering drawings specified in 40 CFR 75.53(e)(2)(iv) and (e)(2)(v), incorporated by reference in Section 225.140, and any other documentation that demonstrates each monitor location meets the appropriate siting criteria.
- C) A data flow diagram denoting the complete information handling path from output signals of CEMS components to final reports.
- D) For units monitored by a continuous emission monitoring system, a schematic diagram identifying entire gas handling system from boiler to stack for all affected units, using identification numbers for units, monitoring systems and components, and stacks corresponding to the identification numbers provided in paragraphs (d)(1)(A) and (d)(1)(C) of this Section. The schematic diagram must depict stack height and the height of any monitor locations. Comprehensive and/or separate schematic diagrams must be used to describe groups of units using a common stack.
- E) For units monitored by a continuous emission monitoring system, stack and duct engineering diagrams showing the dimensions and location of fans, turning vanes, air preheaters, monitor components, probes, reference method sampling ports, and other equipment that affects the monitoring system location, performance, or quality control checks.

Section 1.11 General recordkeeping provisions

The owner or operator must meet all of the applicable recordkeeping requirements of Section 225.290 and of this Section.

- a) Recordkeeping requirements for affected sources. The owner or operator of any affected source subject to the requirements of this Appendix must maintain for each affected unit a file of all measurements, data, reports, and other information required by Part 225, Subpart B at the source in a form suitable for inspection for at least three (3) years from the date of each record. The file must contain the following information:
 - 1) The data and information required in paragraphs (b) through (h) of this Section, beginning with the earlier of the date of provisional certification or July 1, 2009;
 - 2) The supporting data and information used to calculate values required in paragraphs (b) through (g) of this Section, excluding the subhourly data points used to compute hourly averages under Section 1.2(c) of this Appendix, beginning

with the earlier of the date of provisional certification or July 1, 2009;

- 3) The data and information required in Section 1.12 of this Appendix for specific situations, beginning with the earlier of the date of provisional certification or July 1, 2009;
 - 4) The certification test data and information required in Section 1.13 of this Appendix for tests required under Section 1.4 of this Appendix, beginning with the date of the first certification test performed, the quality assurance and quality control data and information required in Section 1.13 of this Appendix for tests, and the quality assurance/quality control plan required under Section 1.5 of this Appendix and Exhibit B to this Appendix, beginning with the date of provisional certification;
 - 5) The current monitoring plan as specified in Section 1.10 of this Appendix, beginning with the initial submission required by 40 CFR 75.62, incorporated by reference in Section 225.140; and
 - 6) The quality control plan as described in Section 1 of Exhibit B to this Appendix, beginning with the date of provisional certification.
- b) Operating parameter record provisions. The owner or operator must record for each hour the following information on unit operating time, heat input rate, and load, separately for each affected unit and also for each group of units utilizing a common stack and a common monitoring system:
- 1) Date and hour;
 - 2) Unit operating time (rounded up to the nearest fraction of an hour (in equal increments that can range from one hundredth to one quarter of an hour, at the option of the owner or operator));
 - 3) Hourly gross unit load (rounded to nearest MWge)
 - 4) Steam load in 1000 lbs/hr at stated temperatures and pressures, rounded to the nearest 1000 lbs/hr.
 - 5) Operating load range corresponding to hourly gross load of 1 to 10, except for units using a common stack, which may use up to 20 load ranges for stack or fuel flow, as specified in the monitoring plan;
 - 6) Hourly heat input rate (mmBtu/hr, rounded to the nearest tenth);

- 7) Identification code for formula used for heat input, as provided in Section 1.10 of this Appendix; and
 - 8) For Mercury CEMS units only, F-factor for heat input calculation and indication of whether the diluent cap was used for heat input calculations for the hour.
- c) Diluent record provisions. The owner or operator of a unit using a flow monitor and an O₂ diluent monitor to determine heat input, in accordance with Equation F-17 or F-18 of Exhibit C to this Appendix, or a unit that accounts for heat input using a flow monitor and a CO₂ diluent monitor (which is used only for heat input determination and is not used as a CO₂ pollutant concentration monitor) must keep the following records for the O₂ or CO₂ diluent monitor:
- 1) Component-system identification code, as provided in Section 1.10 of this Appendix;
 - 2) Date and hour;
 - 3) Hourly average diluent gas (O₂ or CO₂) concentration (in percent, rounded to the nearest tenth);
 - 4) Percent monitor data availability for the diluent monitor (recorded to the nearest tenth of a percent), calculated pursuant to Section 1.8 of this Appendix; and
 - 5) Method of determination code for diluent gas (O₂ or CO₂) concentration data using Codes 1-55, in Table 4a of this Section.
- d) Missing data records. The owner or operator must record the causes of any missing data periods and the actions taken by the owner or operator to correct such causes.
- e) Mercury emission record provisions (CEMS). The owner or operator must record for each hour the information required by this paragraph for each affected unit using mercury CEMS in combination with flow rate, and (in certain cases) moisture, and diluent gas monitors, to determine mercury concentration and (if applicable) unit heat input under Part 225, Subpart B.
- 1) For mercury concentration during unit operation, as measured and reported from each certified primary monitor, certified back-up monitor, or other approved method of emissions determination:
 - A) Component-system identification code, as provided in Section 1.10 of this

Appendix;

- B) Date and hour;
 - C) Hourly mercury concentration ($\mu\text{g}/\text{scm}$, rounded to the nearest tenth). For a particular pair of sorbent traps, this will be the flow-proportional average concentration for the data collection period;
 - D) Method of determination for hourly mercury concentration using Codes 1-55 in Table 4a of this Section; and
 - E) The percent monitor data availability (to the nearest tenth of a percent), calculated pursuant to Section 1.8 of this Appendix.
- 2) For flue gas moisture content during unit operation (if required), as measured and reported from each certified primary monitor, certified back-up monitor, or other approved method of emissions determination (except where a default moisture value is approved under 40 CFR 75.66, incorporated by reference in Section 225.140):
- A) Component-system identification code, as provided in Section 1.10 of this Appendix;
 - B) Date and hour;
 - C) Hourly average moisture content of flue gas (percent, rounded to the nearest tenth). If the continuous moisture monitoring system consists of wet-and dry-basis oxygen analyzers, also record both the wet- and dry-basis oxygen hourly averages (in percent O_2 , rounded to the nearest tenth);
 - D) Percent monitor data availability (recorded to the nearest tenth of a percent) for the moisture monitoring system, calculated pursuant to Section 1.8 of this Appendix; and
 - E) Method of determination for hourly average moisture percentage, using Codes 1-55 in Table 4a of this Section.
- 3) For diluent gas (O_2 or CO_2) concentration during unit operation (if required), as measured and reported from each certified primary monitor, certified back-up monitor, or other approved method of emissions determination:
- A) Component-system identification code, as provided in Section 1.10 of this

Appendix:

- B) Date and hour;
 - C) Hourly average diluent gas (O₂ or CO₂) concentration (in percent, rounded to the nearest tenth);
 - D) Method of determination code for diluent gas (O₂ or CO₂) concentration data using Codes 1-55, in Table 4a of this Section; and
 - E) The percent monitor data availability (to the nearest tenth of a percent) for the O₂ or CO₂ monitoring system (if a separate O₂ or CO₂ monitoring system is used for heat input determination), calculated pursuant to Section 1.8 of this Appendix.
- 4) For stack gas volumetric flow rate during unit operation, as measured and reported from each certified primary monitor, certified back-up monitor, or other approved method of emissions determination, record the information required under 40 CFR 75.57(c)(2)(i) through (c)(2)(vi), incorporated by reference in Section 225.140.
- 5) For mercury mass emissions during unit operation, as measured and reported from the certified primary monitoring system(s), certified redundant or non-redundant back-up monitoring system(s), or other approved method(s) of emissions determination:
- A) Date and hour;
 - B) Hourly mercury mass emissions (ounces, rounded to three decimal places);
 - C) Identification code for emissions formula used to derive hourly mercury mass emissions from mercury concentration, flow rate and moisture data, as provided in Section 1.10 of this Appendix.
- f) Mercury emission record provisions (sorbet trap systems). The owner or operator must record for each hour the information required by this paragraph, for each affected unit using sorbet trap monitoring systems in combination with flow rate, moisture, and (in certain cases) diluent gas monitors, to determine mercury mass emissions and (if required) unit heat input under Part 225.
- 1) For mercury concentration during unit operation, as measured and reported from each certified primary monitor, certified back-up monitor, or other approved

method of emissions determination:

- A) Component-system identification code, as provided in Section 1.10 of this Appendix;
 - B) Date and hour;
 - C) Hourly mercury concentration ($\mu\text{g}/\text{dscm}$, rounded to the nearest tenth). For a particular pair of sorbent traps, this will be the flow-proportional average concentration for the data collection period;
 - D) Method of determination for hourly average mercury concentration using Codes 1- 55 in Table 4a of this Section; and
 - E) Percent monitor data availability (recorded to the nearest tenth of a percent), calculated pursuant to Section 1.8 of this Appendix;
- 2) For flue gas moisture content during unit operation, as measured and reported from each certified primary monitor, certified back-up monitor, or other approved method of emissions determination (except where a default moisture value is approved under 40 CFR 75.66, incorporated by reference in Section 225.140), record the information required under paragraphs (e)(2)(A) through (e)(2)(E) of this Section;
 - 3) For diluent gas (O_2 or CO_2) concentration during unit operation (if required for heat input determination), record the information required under paragraphs (e)(3)(A) through (e)(3)(E) of this Section.
 - 4) For stack gas volumetric flow rate during unit operation, as measured and reported from each certified primary monitor, certified back-up monitor, or other approved method of emissions determination, record the information required under 40 CFR 75.57(c)(2)(i) through (c)(2)(vi), incorporated by reference in Section 225.140.
 - 5) For mercury mass emissions during unit operation, as measured and reported from the certified primary monitoring system(s), certified redundant or non-redundant back-up monitoring system(s), or other approved method(s) of emissions determination, record the information required under paragraph (e)(5) of this Section.
 - 6) Record the average flow rate of stack gas through each sorbent trap (in appropriate units, e.g., liters/min, cc/min, dscm/min).

- 7) Record the gas flow meter reading (in dscm, rounded to the nearest hundredth) at the beginning and end of the collection period and at least once in each unit operating hour during the collection period.
- 8) Calculate and record the ratio of the bias-adjusted stack gas flow rate to the sample flow rate, as described in Section 11.2 of Exhibit D to this Appendix.

Table 4a.--Codes for Method of Emissions and Flow Determination

<u>Code</u>	<u>Hourly emissions/flow measurement or estimation method</u>
<u>1</u>	<u>..... Certified primary emission/flow monitoring system.</u>
<u>2</u>	<u>..... Certified backup emission/flow monitoring system.</u>
<u>3</u>	<u>..... Approved alternative monitoring system.</u>
<u>4</u>	<u>..... Reference method:</u>
<u>17</u>	<u>..... Like-kind replacement non-redundant backup analyzer.</u>
<u>32</u>	<u>.... Hourly Hg concentration determined from analysis of a single trap multiplied by a factor of 1.111 when one of the paired traps is invalidated or damaged (See Appendix K, section 8).</u>
<u>33</u>	<u>.... Hourly Hg concentration determined from the trap resulting in the higher Hg concentration when the relative deviation criterion for the paired traps is not met (See Appendix K, section 8).</u>
<u>40</u>	<u>.... Fuel specific default value (or prorated default value) used for the hour.</u>
<u>54</u>	<u>.... Other quality assured methodologies approved through petition. These hours are included in missing data lookback and are treated as unavailable hours for percent monitor availability calculations.</u>
<u>55</u>	<u>.... Other substitute data approved through petition. These hours are not included in missing data lookback and are treated as unavailable hours for percent monitor availability calculations.</u>

Section 1.12 General recordkeeping provisions for specific situations

The owner or operator must meet all of the applicable recordkeeping requirements of this Section. In accordance with 40 CFR 75.34, incorporated by reference in Section 225.140, the owner or operator of an affected unit with add-on emission controls must record the applicable information in this Section for each hour of missing mercury concentration data. Except as otherwise provided in 40 CFR 75.34(d), incorporated by reference in Section 225.140, for units with add-on mercury emission controls, the owner or operator must record:

- a) Parametric data which demonstrate, for each hour of missing mercury emission data, the proper operation of the add-on emission controls, as described in the quality assurance/quality control program for the unit. The parametric data must be maintained on site and must be submitted, upon request, to the Agency. Alternatively, for units equipped with flue gas desulfurization (FGD) systems, the owner or operator may use quality-assured data from a certified SO₂ monitor to demonstrate proper operation of the emission controls during periods of missing mercury data;
- b) A flag indicating, for each hour of missing mercury emission data, either that the add-on emission controls are operating properly, as evidenced by all parameters being within the ranges specified in the quality assurance/quality control program, or that the add-on emission controls are not operating properly.

Section 1.13 Certification, quality assurance, and quality control record provisions

The owner or operator must meet all of the applicable recordkeeping requirements of this Section.

- a) *Continuous emission monitoring systems.* The owner or operator must record the applicable information in this Section for each certified monitor or certified monitoring system (including certified backup monitors) measuring and recording emissions or flow from an affected unit.
 - 1) For each flow monitor, mercury monitor, or diluent gas monitor (including wet- and dry-basis O₂ monitors used to determine percent moisture), the owner or operator must record the following for all daily and 7-day calibration error tests, all daily system integrity checks, and all off-line calibration demonstrations, including any follow-up tests after corrective action:
 - A) Component-system identification code (on and after January 1, 2009, only the component identification code is required);
 - B) Instrument span and span scale;
 - C) Date and hour;
 - D) Reference value (i.e., calibration gas concentration or reference signal value, in ppm or other appropriate units);
 - E) Observed value (monitor response during calibration, in ppm or other appropriate units);

- F) Percent calibration error (rounded to the nearest tenth of a percent) (flag if using alternative performance specification for low emitters or differential pressure flow monitors);
 - G) Reference signal or calibration gas level;
 - H) For 7-day calibration error tests, a test number and reason for test;
 - I) For 7-day calibration tests for certification or recertification, a certification from the cylinder gas vendor or CEMS vendor that calibration gas, as defined in 40 CFR 72.2, incorporated by reference in Section 225.140, and Exhibit A to this Appendix, was used to conduct calibration error testing;
 - J) Description of any adjustments, corrective actions, or maintenance prior to a passed test or following a failed test; and
 - K) Indication of whether the unit is off-line or on-line.
- 2) For each flow monitor, the owner or operator must record the following for all daily interference checks, including any follow-up tests after corrective action.
- A) Component-system identification code (after January 1, 2009, only the component identification code is required);
 - B) Date and hour;
 - C) Code indicating whether monitor passes or fails the interference check; and
 - D) Description of any adjustments, corrective actions, or maintenance prior to a passed test or following a failed test.
- 3) For each mercury concentration monitor, or diluent gas monitor (including wet- and dry-basis O₂ monitors used to determine percent moisture), the owner or operator must record the following for the initial and all subsequent linearity check(s) and 3-level system integrity checks (mercury monitors with converters, only), including any follow-up tests after corrective action:
- A) Component-system identification code (on and after July 1, 2009, only the component identification code is required);

- B) Instrument span and span scale (only span scale is required on and after July 1, 2009);
 - C) Calibration gas level;
 - D) Date and time (hour and minute) of each gas injection at each calibration gas level;
 - E) Reference value (i.e., reference gas concentration for each gas injection at each calibration gas level, in ppm or other appropriate units);
 - F) Observed value (monitor response to each reference gas injection at each calibration gas level, in ppm or other appropriate units);
 - G) Mean of reference values and mean of measured values at each calibration gas level;
 - H) Linearity error at each of the reference gas concentrations (rounded to nearest tenth of a percent) (flag if using alternative performance specification);
 - I) Test number and reason for test (flag if aborted test); and
 - J) Description of any adjustments, corrective action, or maintenance prior to a passed test or following a failed test.
- 4) For each differential pressure type flow monitor, the owner or operator must record items in paragraphs (a)(4)(A) through (E) of this Section, for all quarterly leak checks, including any follow-up tests after corrective action. For each flow monitor, the owner or operator must record items in paragraphs (a)(4)(F) and (G) of this Section for all flow-to-load ratio and gross heat rate tests:
- A) Component-system identification code (on and after July 1, 2009, only the system identification code is required).
 - B) Date and hour.
 - C) Reason for test.
 - D) Code indicating whether monitor passes or fails the quarterly leak check.

- E) Description of any adjustments, corrective actions, or maintenance prior to a passed test or following a failed test.
- F) Test data from the flow-to-load ratio or gross heat rate (GHR) evaluation, including:
- i) Monitoring system identification code;
 - ii) Calendar year and quarter;
 - iii) Indication of whether the test is a flow-to-load ratio or gross heat rate evaluation;
 - iv) Indication of whether bias adjusted flow rates were used;
 - v) Average absolute percent difference between reference ratio (or GHR) and hourly ratios (or GHR values);
 - vi) Test result;
 - vii) Number of hours used in final quarterly average;
 - viii) Number of hours exempted for use of a different fuel type;
 - ix) Number of hours exempted for load ramping up or down;
 - x) Number of hours exempted for scrubber bypass;
 - xi) Number of hours exempted for hours preceding a normal-load flow RATA;
 - xii) Number of hours exempted for hours preceding a successful diagnostic test, following a documented monitor repair or major component replacement;
 - xiii) Number of hours excluded for flue gases discharging simultaneously thorough a main stack and a bypass stack; and
 - xiv) Test number.
- G) Reference data for the flow-to-load ratio or gross heat rate evaluation, including (as applicable):

- i) Reference flow RATA end date and time;
- ii) Test number of the reference RATA;
- iii) Reference RATA load and load level;
- iv) Average reference method flow rate during reference flow RATA;
- v) Reference flow/load ratio;
- vi) Average reference method diluent gas concentration during flow RATA and diluent gas units of measure;
- vii) Fuel specific F_d -or F_c -factor during flow RATA and F-factor units of measure;
- viii) Reference gross heat rate value;
- ix) Monitoring system identification code;
- x) Average hourly heat input rate during RATA;
- xi) Average gross unit load;
- xii) Operating load level; and
- xiii) An indicator ("flag") if separate reference ratios are calculated for each multiple stack.

5) For each flow monitor, each diluent gas (O_2 or CO_2) monitor used to determine heat input, each moisture monitoring system, mercury concentration monitoring system, each sorbent trap monitoring system, and each approved alternative monitoring system, the owner or operator must record the following information for the initial and all subsequent relative accuracy test audits:

A) Reference method(s) used.

B) Individual test run data from the relative accuracy test audit for the flow monitor, CO_2 emissions concentration monitor-diluent continuous emission monitoring system, diluent gas (O_2 or CO_2) monitor used to determine heat input, moisture monitoring system, mercury concentration

monitoring system, sorbent trap monitoring system, or approved alternative monitoring system, including:

- i) Date, hour, and minute of beginning of test run;
- ii) Date, hour, and minute of end of test run;
- iii) Monitoring system identification code;
- iv) Test number and reason for test;
- v) Operating level (low, mid, high, or normal, as appropriate) and number of operating levels comprising test;
- vi) Normal load (or operating level) indicator for flow RATAs (except for peaking units);
- vii) Units of measure;
- viii) Run number;
- ix) Run value from CEMS being tested, in the appropriate units of measure;
- x) Run value from reference method, in the appropriate units of measure;
- xi) Flag value (0, 1, or 9, as appropriate) indicating whether run has been used in calculating relative accuracy and bias values or whether the test was aborted prior to completion;
- xii) Average gross unit load, expressed as a total gross unit load, rounded to the nearest MWe, or as steam load, rounded to the nearest thousand lb/hr, except for units that do not produce electrical or thermal output; and
- xiii) Flag to indicate whether an alternative performance specification has been used.

C) Calculations and tabulated results, as follows:

- i) Arithmetic mean of the monitoring system measurement values, of the reference method values, and of their differences, as specified in Equation A-7 in Exhibit A to this Appendix;
 - ii) Standard deviation, as specified in Equation A-8 in Exhibit A to this Appendix;
 - iii) Confidence coefficient, as specified in Equation A-9 in Exhibit A to this Appendix;
 - iv) Statistical “t” value used in calculations;
 - v) Relative accuracy test results, as specified in Equation A-10 in Exhibit A to this Appendix. For multi-level flow monitor tests the relative accuracy test results must be recorded at each load (or operating) level tested. Each load (or operating) level must be expressed as a total gross unit load, rounded to the nearest MWe, or as steam load, rounded to the nearest thousand lb/hr, or as otherwise specified by the Agency, for units that do not produce electrical or thermal output;
 - vi) Bias test results as specified in Section 7.4.4 in Exhibit A to this Appendix; and
- D) Description of any adjustment, corrective action, or maintenance prior to a passed test or following a failed or aborted test.
- E) For flow monitors, the equation used to linearize the flow monitor and the numerical values of the polynomial coefficients or K factor(s) of that equation.
- F) For moisture monitoring systems, the coefficient or “K” factor or other mathematical algorithm used to adjust the monitoring system with respect to the reference method.
- 6) For each mercury concentration monitor, and each CO₂ or O₂ monitor used to determine heat input, the owner or operator must record the following information for the cycle time test:
- A) Component-system identification code (on and after July 1, 2009, only the component identification code is required);

- B) Date;
- C) Start and end times;
- D) Upscale and downscale cycle times for each component;
- E) Stable start monitor value;
- F) Stable end monitor value;
- G) Reference value of calibration gas(es);
- H) Calibration gas level;
- I) Total cycle time;
- J) Reason for test; and
- K) Test number.

7) In addition to the information in paragraph (a)(5) of this Section, the owner or operator must record, for each relative accuracy test audit, supporting information sufficient to substantiate compliance with all applicable sections and appendices in this part. Unless otherwise specified in this part or in an applicable test method, the information in paragraphs (a)(7)(A) through (a)(7)(H) of this Section may be recorded either in hard copy format, electronic format or a combination of the two, and the owner or operator must maintain this information in a format suitable for inspection and audit purposes. This RATA supporting information must include, but must not be limited to, the following data elements:

- A) For each RATA using Reference Method 2 (or its allowable alternatives) in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, to determine volumetric flow rate:
 - i) Information indicating whether or not the location meets requirements of Method 1 in appendix A to 40 CFR 60, incorporated by reference in Section 225.140; and
 - ii) Information indicating whether or not the equipment passed the required leak checks.

- B) For each run of each RATA using Reference Method 2 (or its allowable alternatives in appendix A to 40 CFR 60, incorporated by reference in Section 225.140) to determine volumetric flow rate, record the following data elements (as applicable to the measurement method used):
- i) Operating level (low, mid, high, or normal, as appropriate);
 - ii) Number of reference method traverse points;
 - iii) Average stack gas temperature (°F);
 - iv) Barometric pressure at test port (inches of mercury);
 - v) Stack static pressure (inches of H₂O);
 - vi) Absolute stack gas pressure (inches of mercury);
 - vii) Percent CO₂ and O₂ in the stack gas, dry basis;
 - viii) CO₂ and O₂ reference method used;
 - ix) Moisture content of stack gas (percent H₂O);
 - x) Molecular weight of stack gas, dry basis (lb/lb-mole);
 - xi) Molecular weight of stack gas, wet basis (lb/lb-mole);
 - xii) Stack diameter (or equivalent diameter) at the test port (ft);
 - xiii) Average square root of velocity head of stack gas (inches of H₂O) for the run;
 - xiv) Stack or duct cross-sectional area at test port (ft²);
 - xv) Average velocity (ft/sec);
 - xvi) Average stack flow rate, adjusted, if applicable, for wall effects (scfh, wet basis);
 - xvii) Flow rate reference method used;
 - xviii) Average velocity, adjusted for wall effects;

- xix) Calculated (site-specific) wall effects adjustment factor determined during the run, and, if different, the wall effects adjustment factor used in the calculations; and
 - xx) Default wall effects adjustment factor used.
- C) For each traverse point of each run of each RATA using Reference Method 2 (or its allowable alternatives in appendix A to 40 CFR 60, incorporated by reference in Section 225.140) to determine volumetric flow rate, record the following data elements (as applicable to the measurement method used):
- i) Reference method probe type;
 - ii) Pressure measurement device type;
 - iii) Traverse point ID;
 - iv) Probe or pitot tube calibration coefficient;
 - v) Date of latest probe or pitot tube calibration;
 - vi) Average velocity differential pressure at traverse point (inches of H₂O) or the average of the square roots of the velocity differential pressures at the traverse point ((inches of H₂O)^{1/2});
 - vii) T_s, stack temperature at the traverse point (°F);
 - viii) Composite (wall effects) traverse point identifier;
 - ix) Number of points included in composite traverse point;
 - x) Yaw angle of flow at traverse point (degrees);
 - xi) Pitch angle of flow at traverse point (degrees);
 - xii) Calculated velocity at traverse point both accounting and not accounting for wall effects (ft/sec); and
 - xiii) Probe identification number.

- D) For each RATA using or 3A in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, to determine, CO₂, or O₂ concentration:
- i) Pollutant or diluent gas being measured;
 - ii) Span of reference method analyzer;
 - iii) Type of reference method system (e.g., extractive or dilution type);
 - iv) Reference method dilution factor (dilution type systems, only);
 - v) Reference gas concentrations (zero, mid, and high gas levels) used for the 3-point pre-test analyzer calibration error test (or, for dilution type reference method systems, for the 3-point pre-test system calibration error test) and for any subsequent recalibrations;
 - vi) Analyzer responses to the zero-, mid-, and high-level calibration gases during the 3-point pre-test analyzer (or system) calibration error test and during any subsequent recalibration(s);
 - vii) Analyzer calibration error at each gas level (zero, mid, and high) for the 3-point pre-test analyzer (or system) calibration error test and for any subsequent recalibration(s) (percent of span value);
 - viii) Upscale gas concentration (mid or high gas level) used for each pre-run or post-run system bias check or (for dilution type reference method systems) for each pre-run or post-run system calibration error check;
 - ix) Analyzer response to the calibration gas for each pre-run or post-run system bias (or system calibration error) check;
 - x) The arithmetic average of the analyzer responses to the zero-level gas, for each pair of pre- and post-run system bias (or system calibration error) checks;
 - xi) The arithmetic average of the analyzer responses to the upscale calibration gas, for each pair of pre- and post-run system bias (or system calibration error) checks;

- xii) The results of each pre-run and each post-run system bias (or system calibration error) check using the zero-level gas (percentage of span value);
 - xiii) The results of each pre-run and each post-run system bias (or system calibration error) check using the upscale calibration gas (percentage of span value);
 - xiv) Calibration drift and zero drift of analyzer during each RATA run (percentage of span value);
 - xv) Moisture basis of the reference method analysis;
 - xvi) Moisture content of stack gas, in percent, during each test run (if needed to convert to moisture basis of CEMS being tested);
 - xvii) Unadjusted (raw) average pollutant or diluent gas concentration for each run;
 - xviii) Average pollutant or diluent gas concentration for each run, corrected for calibration bias (or calibration error) and, if applicable, corrected for moisture;
 - xix) The F-factor used to convert reference method data to units of lb/mmBtu (if applicable);
 - xx) Date(s) of the latest analyzer interference test(s);
 - xxi) Results of the latest analyzer interference test(s);
 - xxii) For each calibration gas cylinder used during each RATA, record the cylinder gas vendor, cylinder number, expiration date, pollutant(s) in the cylinder, and certified gas concentration(s).
- E) For each test run of each moisture determination using Method 4 in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, (or its allowable alternatives), whether the determination is made to support a gas RATA, to support a flow RATA, or to quality assure the data from a continuous moisture monitoring system, record the following data elements (as applicable to the moisture measurement method used):
- i) Test number;

- ii) Run number;
 - iii) The beginning date, hour, and minute of the run;
 - iv) The ending date, hour, and minute of the run;
 - v) Unit operating level (low, mid, high, or normal, as appropriate);
 - vi) Moisture measurement method;
 - vii) Volume of H₂O collected in the impingers (ml);
 - viii) Mass of H₂O collected in the silica gel (g);
 - ix) Dry gas meter calibration factor;
 - x) Average dry gas meter temperature (°F);
 - xi) Barometric pressure (inches of mercury);
 - xii) Differential pressure across the orifice meter (inches of H₂O);
 - xiii) Initial and final dry gas meter readings (ft³);
 - xiv) Total sample gas volume, corrected to standard conditions (dscf);
and
 - xv) Percentage of moisture in the stack gas (percent H₂O).
- F) The raw data and calculated results for any stratification tests performed in accordance with Sections 6.5.5.1 through 6.5.5.3 of Exhibit A to this Appendix.
- G) For each RATA run using the Ontario Hydro Method to determine mercury concentration:
- i) Percent CO₂ and O₂ in the stack gas, dry basis;
 - ii) Moisture content of the stack gas (percent H₂O);
 - iii) Average stack temperature (°F);

- iv) Dry gas volume metered (dscm);
 - v) Percent isokinetic;
 - vi) Particle-bound mercury collected by the filter, blank, and probe rinse (μgm);
 - vii) Oxidized mercury collected by the KCl impingers (μgm);
 - viii) Elemental mercury collected in the $\text{HNO}_3/\text{H}_2\text{O}_2$ impinger and in the $\text{KMnO}_4/\text{H}_2\text{SO}_4$ impingers (μgm);
 - ix) Total mercury, including particle-bound mercury (μgm); and
 - x) Total mercury, excluding particle-bound mercury (μgm)
- H) All appropriate data elements for Methods 30A and 30B.
- I) For a unit with a flow monitor installed on a rectangular stack or duct, if a site-specific default or measured wall effects adjustment factor (WAF) is used to correct the stack gas volumetric flow rate data to account for velocity decay near the stack or duct wall, the owner or operator must keep records of the following for each flow RATA performed with EPA Method 2 in appendices A-1 and A-2 to 40 CFR 60, incorporated by reference in Section 225.140, subsequent to the WAF determination:
- i) Monitoring system ID;
 - ii) Test number;
 - iii) Operating level;
 - iv) RATA end date and time;
 - v) Number of Method 1 traverse points; and
 - vi) Wall effects adjustment factor (WAF), to the nearest 0.0001.
- J) For each RATA run using Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference in Section 225.140, to determine mercury concentration:

- i) Percent CO₂ and O₂ in the stack gas, dry basis;
 - ii) Moisture content of the stack gas (percent H₂O);
 - iii) Average stack gas temperature (°F);
 - iv) Dry gas volume metered (dscm);
 - v) Percent isokinetic;
 - vi) Particulate mercury collected in the front half of the sampling train, corrected for the front-half blank value (µg); and
 - vii) Total vapor phase mercury collected in the back half of the sampling train, corrected for the back-half blank value (µg).
- 8) For each certified continuous emission monitoring system, excepted monitoring system, or alternative monitoring system, the date and description of each event which requires certification, recertification, or certain diagnostic testing of the system and the date and type of each test performed. If the conditional data validation procedures of Section 1.4(b)(3) of this Appendix are to be used to validate and report data prior to the completion of the required certification, recertification, or diagnostic testing, the date and hour of the probationary calibration error test must be reported to mark the beginning of conditional data validation.
- 9) Hardcopy relative accuracy test reports, certification reports, recertification reports, or semiannual or annual reports for gas or flow rate CEMS, mercury CEMS, or sorbent trap monitoring systems are required or requested under 40 CFR 75.60(b)(6) or 75.63, incorporated by reference in Section 225.140, the reports must include, at a minimum, the following elements (as applicable to the type(s) of test(s) performed:
- A) Summarized test results.
 - B) DAHS printouts of the CEMS data generated during the calibration error, linearity, cycle time, and relative accuracy tests.
 - C) For pollutant concentration monitor or diluent monitor relative accuracy tests at normal operating load:

- i) The raw reference method data from each run, i.e., the data under paragraph (a)(7)(D)(xvii) of this Section (usually in the form of a computerized printout, showing a series of one-minute readings and the run average);
- ii) The raw data and results for all required pre-test, post-test, pre-run and post-run quality assurance checks (i.e., calibration gas injections) of the reference method analyzers, i.e., the data under paragraphs (a)(7)(D)(v) through (a)(7)(D)(xiv) of this Section;
- iii) The raw data and results for any moisture measurements made during the relative accuracy testing, i.e., the data under paragraphs (a)(7)(E)(i) through (a)(7)(E)(xv) of this Section; and
- iv) Tabulated, final, corrected reference method run data (i.e., the actual values used in the relative accuracy calculations), along with the equations used to convert the raw data to the final values and example calculations to demonstrate how the test data were reduced.

D) For relative accuracy tests for flow monitors:

- i) The raw flow rate reference method data, from Reference Method 2 (or its allowable alternatives) under appendix A to 40 CFR 60, incorporated by reference in Section 225.140, including auxiliary moisture data (often in the form of handwritten data sheets), i.e., the data under paragraphs (a)(7)(B)(i) through (a)(7)(B)(xx), paragraphs (a)(7)(C)(i) through (a)(7)(C)(xiii), and, if applicable, paragraphs (a)(7)(E)(i) through (a)(7)(E)(xv) of this Section; and
- ii) The tabulated, final volumetric flow rate values used in the relative accuracy calculations (determined from the flow rate reference method data and other necessary measurements, such as moisture, stack temperature and pressure), along with the equations used to convert the raw data to the final values and example calculations to demonstrate how the test data were reduced.

E) Calibration gas certificates for the gases used in the linearity, calibration error, and cycle time tests and for the calibration gases used to quality assure the gas monitor reference method data during the relative accuracy test audit.

- F) Laboratory calibrations of the source sampling equipment. For sorbent trap monitoring systems, the laboratory analyses of all sorbent traps, and information documenting the results of all leak checks and other applicable quality control procedures.
 - G) A copy of the test protocol used for the CEMS certifications or recertifications, including narrative that explains any testing abnormalities, problematic sampling, and analytical conditions that required a change to the test protocol, and/or solutions to technical problems encountered during the testing program.
 - H) Diagrams illustrating test locations and sample point locations (to verify that locations are consistent with information in the monitoring plan). Include a discussion of any special traversing or measurement scheme. The discussion must also confirm that sample points satisfy applicable acceptance criteria.
 - I) Names of key personnel involved in the test program, including test team members, plant contacts, agency representatives and test observers on site.
- 10) Whenever reference methods are used as backup monitoring systems pursuant to Section 1.4(d)(3) of this Appendix, the owner or operator must record the following information:
- A) For each test run using Reference Method 2 (or its allowable alternatives in appendix A to 40 CFR 60, incorporated by reference in Section 225.140) to determine volumetric flow rate, record the following data elements (as applicable to the measurement method used):
 - i) Unit or stack identification number;
 - ii) Reference method system and component identification numbers;
 - iii) Run date and hour;
 - iv) The data in paragraph (a)(7)(B) of this Section, except for paragraphs (a)(7)(B)(i), (vi), (viii), (xii), and (xvii) through (xx); and
 - v) The data in paragraph (a)(7)(C), except on a run basis.

B) For each reference method test run using Method 6C, 7E, or 3A in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, to determine SO₂, NO_x, CO₂, or O₂ concentration:

i) Unit or stack identification number;

ii) The reference method system and component identification numbers;

iii) Run number;

iv) Run start date and hour;

v) Run end date and hour;

vi) The data in paragraphs (a)(7)(D)(ii) through (ix) and (xii) through (xv); and (vii) Stack gas density adjustment factor (if applicable).

C) For each hour of each reference method test run using Method 6C, 7E, or 3A in appendix A to 40 CFR 60, incorporated by reference in Section 225.140, to determine SO₂, NO_x, CO₂, or O₂ concentration:

i) Unit or stack identification number;

ii) The reference method system and component identification numbers;

iii) Run number;

iv) Run date and hour;

v) Pollutant or diluent gas being measured;

vi) Unadjusted (raw) average pollutant or diluent gas concentration for the hour; and

vii) Average pollutant or diluent gas concentration for the hour, adjusted as appropriate for moisture, calibration bias (or calibration error) and stack gas density.

11) For each other quality-assurance test or other quality assurance activity, the owner or operator must record the following (as applicable):

- A) Component/system identification code;
- B) Parameter;
- C) Test or activity completion date and hour;
- D) Test or activity description;
- E) Test result;
- F) Reason for test; and
- G) Test code.

12) For each request for a quality assurance test extension or exemption, for any loss of exempt status, and for each single-load flow RATA claim pursuant to Section 2.3.1.3(c)(3) of Exhibit B to this Appendix, the owner or operator must record the following (as applicable):

A) For a RATA deadline extension or exemption request:

- i) Monitoring system identification code;
- ii) Date of last RATA;
- iii) RATA expiration date without extension;
- iv) RATA expiration date with extension;
- v) Type of RATA extension or exemption claimed or lost;
- vi) Year to date hours of usage of fuel other than very low sulfur fuel;
- vii) Year to date hours of non-redundant back-up CEMS usage at the unit/stack; and
- viii) Quarter and year.

B) For a linearity test or flow-to-load ratio test quarterly exemption:

- i) Component-system identification code;

- ii) Type of test;
- iii) Basis for exemption;
- iv) Quarter and year; and
- v) Span scale.

C) For a fuel flowmeter accuracy test extension:

- i) Component-system identification code;
- ii) Date of last accuracy test;
- iii) Accuracy test expiration date without extension;
- iv) Accuracy test expiration date with extension;
- v) Type of extension; and
- vi) Quarter and year.

D) For a single-load (or single-level) flow RATA claim:

- i) Monitoring system identification code;
- ii) Ending date of last annual flow RATA;
- iii) The relative frequency (percentage) of unit or stack operation at each load (or operating) level (low, mid, and high) since the previous annual flow RATA, to the nearest 0.1 percent;
- iv) End date of the historical load (or operating level) data collection period; and
- v) Indication of the load (or operating) level (low, mid or high) claimed for the single-load flow RATA.

13) For the sorbent traps used in sorbent trap monitoring systems to quantify mercury concentration under Sections 1.14 through 1.18 of this Appendix (including

sorbent traps used for relative accuracy testing); the owner or operator must keep records of the following:

- A) The ID number of the monitoring system in which each sorbent trap was used to collect mercury;
 - B) The unique identification number of each sorbent trap;
 - C) The beginning and ending dates and hours of the data collection period for each sorbent trap;
 - D) The average mercury concentration (in $\mu\text{gm/dscm}$) for the data collection period;
 - E) Information documenting the results of the required leak checks;
 - F) The analysis of the mercury collected by each sorbent trap; and
 - G) Information documenting the results of the other applicable quality control procedures in Section 1.3 of this Appendix and in Exhibits B and D to this Appendix.
- b) Except as otherwise provided in Section 1.12(a) of this Appendix, for units with add-on mercury emission controls, the owner or operator must keep the following records on-site in the quality assurance/quality control plan required by Section 1 of Exhibit B to this Appendix:
- 1) A list of operating parameters for the add-on emission controls, including parameters in Section 1.12 of this Appendix, appropriate to the particular installation of add-on emission controls; and
 - 2) The range of each operating parameter in the list that indicates the add-on emission controls are properly operating.
- c) *Excepted monitoring for mercury low mass emission units under Section 1.15(b) of this Appendix.* For qualifying coal-fired units using the alternative low mass emission methodology under Section 1.15(b), the owner or operator must record the data elements described in Section 1.13(a)(7)(G), Section 1.13(a)(7)(H), or Section 1.13(a)(7)(J) of this Appendix, as applicable, for each run of each mercury emission test and re-test required under Section 1.15(c)(1) or Section 1.15(d)(4)(C) of this Appendix.

- d) DAHS Verification. For each DAHS (missing data and formula) verification that is required for initial certification, recertification, or for certain diagnostic testing of a monitoring system, record the date and hour that the DAHS verification is successfully completed. (This requirement only applies to units that report monitoring plan data in accordance with Section 1.10(d) of this Appendix.)

Section 1.14 General provisions

- a) Applicability. The owner or operator of a unit must comply with the requirements of this Appendix to the extent that compliance is required by Part 225. For purposes of this Appendix, the term "affected unit" means any coal-fired unit (as defined in 40 CFR 72.2, incorporated by reference) that is subject to Part 225. The term "non-affected unit" means any unit that is not subject to such a program, the term "permitting authority" means the Agency, and the term "designated representative" means the responsible party under Part 225.
- b) Compliance dates. The owner or operator of an affected unit must meet the compliance deadlines established by Part 225, Subpart B.
- c) Prohibitions.
- 1) No owner or operator of an affected unit or a non-affected unit under Section 1.16(b)(2)(B) of this Appendix will use any alternative monitoring system, alternative reference method, or any other alternative for the required continuous emission monitoring system without having obtained prior written approval in accordance with paragraph (f) of this Section.
 - 2) No owner or operator of an affected unit or a non-affected unit under Section 1.16(b)(2)(B) of this Appendix will operate the unit so as to discharge, or allow to be discharged emissions of mercury to the atmosphere without accounting for all such emissions in accordance with the applicable provisions of this Appendix.
 - 3) No owner or operator of an affected unit or a non-affected unit under Section 1.16(b)(2)(B) of this Appendix will disrupt the continuous emission monitoring system, any portion thereof, or any other approved emission monitoring method, and thereby avoid monitoring and recording mercury mass emissions discharged into the atmosphere, except for periods of recertification or periods when calibration, quality assurance testing, or maintenance is performed in accordance with the provisions of this Appendix applicable to monitoring systems under Section 1.15 of this Appendix.
 - 4) No owner or operator of an affected unit or a non-affected unit under Section

1.16(b)(2)(B) will retire or permanently discontinue use of the continuous emission monitoring system, any component thereof, or any other approved emission monitoring system under this Appendix, except under any one of the following circumstances:

- A) During the period that the unit is covered by a retired unit exemption that is in effect under Part 225; or
 - B) The owner or operator is monitoring mercury mass emissions from the affected unit with another certified monitoring system approved, in accordance with the provisions of Section 225.250; or
 - C) The designated representative submits notification of the date of certification testing of a replacement monitoring system in accordance with Part 225.240(d).
- d) Quality assurance and quality control requirements. For units that use continuous emission monitoring systems to account for mercury mass emissions, the owner or operator must meet the applicable quality assurance and quality control requirements in Section 1.5 and Exhibit B to this Appendix for the flow monitoring systems, mercury concentration monitoring systems, moisture monitoring systems, and diluent monitors required under Section 1.15 of this Appendix. Units using sorbent trap monitoring systems must meet the applicable quality assurance requirements in Section 1.3 of this Appendix, Exhibit D to this Appendix, and Sections 1.3 and 2.3 of Exhibit B to this Appendix.
- e) Reporting data prior to initial certification. If, by the applicable compliance date under Part 225, the owner or operator of an affected unit has not successfully completed all required certification tests for any monitoring system(s), he or she must determine, record, and report data prior to initial certification in accordance with Section 225.239 of this Part.
- f) Petitions.
- 1) The designated representative of an affected unit that is also subject to the Acid Rain Program may submit a petition to the Agency requesting an alternative to any requirement of Sections 1.14 through 1.18 of this Appendix. Such a petition must meet the requirements of 40 CFR 75.66, incorporated by reference in Section 225.140, and any additional requirements established by Part 225, Subpart B. Use of an alternative to any requirement of Sections 1.14 through 1.18 of this Appendix is in accordance with Sections 1.14 through 1.18 of this Appendix and with Part 225, Subpart B only to the extent that the petition is approved in writing

by the Agency.

- 2) Notwithstanding paragraph (f)(1) of this Section, petitions requesting an alternative to a requirement concerning any additional CEMS required solely to meet the common stack provisions of Section 1.16 of this Appendix must be submitted to the Agency and will be governed by paragraph (f)(3) of this Section. Such a petition must meet the requirements of 40 CFR 75.66, incorporated by reference in Section 225.140, and any additional requirements established by Part 225, Subpart B.
- 3) The designated representative of an affected unit that is not subject to the Acid Rain Program may submit a petition to the Agency requesting an alternative to any requirement of Sections 1.14 through 1.18 of this Appendix. Such a petition must meet the requirements of 40 CFR 75.66, incorporated by reference in Section 225.140, and any additional requirements established by Part 225, Subpart B. Use of an alternative to any requirement of Sections 1.14 through 1.18 of this Appendix is in accordance with Sections 1.14 through 1.18 of this Appendix only to the extent that it is approved in writing by the Agency.

Section 1.15 Monitoring of mercury mass emissions and heat input at the unit level

The owner or operator of the affected coal-fired unit must:

- a) Meet the general operating requirements in Section 1.2 of this Appendix for the following continuous emission monitors (except as provided in accordance with subpart E of 40 CFR 75, incorporated by reference in Section 225.140):
 - 1) A mercury concentration monitoring system (consisting of a mercury pollutant concentration monitor and an automated DAHS, which provides a permanent, continuous record of mercury emissions in units of micrograms per standard cubic meter ($\mu\text{g}/\text{scm}$)) or a sorbent trap monitoring system, to measure the mass concentration of total vapor phase mercury in the flue gas, including the elemental and oxidized forms of mercury, in micrograms per standard cubic meter ($\mu\text{g}/\text{scm}$); and
 - 2) A flow monitoring system; and
 - 3) A continuous moisture monitoring system (if correction of mercury concentration for moisture is required), as described in 40 CFR 75.11(b), incorporated by reference in Section 225.140. Alternatively, the owner or operator may use the appropriate fuel-specific default moisture value provided in 40 CFR 75.11, incorporated by reference in Section 225.140, or a site-specific moisture value

approved by petition under 40 CFR 75.66, incorporated by reference in Section 225.140; and

- 4) If heat input is required to be reported under Part 225, the owner or operator must meet the general operating requirements for a flow monitoring system and an O₂ or CO₂ monitoring system to measure heat input rate.
- b) For an affected unit that emits 464 ounces (29 lb) of mercury per year or less, use the following excepted monitoring methodology. To implement this methodology for a qualifying unit, the owner or operator must meet the general operating requirements in Section 1.2 of this Appendix for the continuous emission monitors described in paragraphs (a)(2) and (a)(4) of this Section, and perform mercury emission testing for initial certification and on-going quality-assurance, as described in paragraphs (c) through (e) of this Section.
 - c) To determine whether an affected unit is eligible to use the monitoring provisions in paragraph (b) of this Section:
 - 1) The owner or operator must perform mercury emission testing within 18 months before the compliance date in Section 1.14(b) of this Appendix, to determine the mercury concentration (i.e., total vapor phase mercury) in the effluent.
 - A) The testing must be performed using one of the mercury reference methods listed in Section 1.6(a)(5) of this Appendix, and must consist of a minimum of 3 runs at the normal unit operating load, while combusting coal. The coal combusted during the testing must be representative of the coal that will be combusted at the start of the mercury mass emissions reduction program (preferably from the same source(s) of supply).
 - B) The minimum time per run must be 1 hour if Method 30A is used. If either Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference, ASTM D6784-02 (the Ontario Hydro method) (incorporated by reference under Section 225.140), or Method 30B is used, paired samples are required for each test run and the runs must be long enough to ensure that sufficient mercury is collected to analyze. When Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference, or the Ontario Hydro method is used, the test results must be based on the vapor phase mercury collected in the back-half of the sampling trains (i.e., the non-filterable impinger catches). For each Method 29 in appendix A-8 to 40 CFR 60, incorporated by reference, Method 30B, or Ontario Hydro method test run, the paired trains must meet the relative deviation (RD) requirement specified in Section 1.6(a)(5) of this Appendix or Method 30B, as

applicable. If the RD specification is met, the results of the two samples must be averaged arithmetically.

- C) If the unit is equipped with flue gas desulfurization or add-on mercury emission controls, the controls must be operating normally during the testing, and, for the purpose of establishing proper operation of the controls, the owner or operator must record parametric data or SO₂ concentration data in accordance with Section 1.12(a) of this Appendix.
- D) If two or more of units of the same type qualify as a group of identical units in accordance with 40 CFR 75.19(c)(1)(iv)(B), incorporated by reference in Section 225.140, the owner or operator may test a subset of these units in lieu of testing each unit individually. If this option is selected, the number of units required to be tested must be determined from Table LM-4 in 40 CFR 75.19, incorporated by reference in Section 225.140. For the purposes of the required retests under paragraph (d)(4) of this Section, it is strongly recommended that (to the extent practicable) the same subset of the units not be tested in two successive retests, and that every effort be made to ensure that each unit in the group of identical units is tested in a timely manner.

- 2) A) Based on the results of the emission testing, Equation 1 of this Section must be used to provide a conservative estimate of the annual mercury mass emissions from the unit:

$$E = N \times K \times C_{Hg} \times Q_{max} \quad \text{(Equation 1)}$$

Where:

E = Estimated annual mercury mass emissions from the affected unit, (ounces/year)

K = Units conversion constant, 9.978 x 10⁻¹⁰ oz-scm/μg-scf

N = Either 8,760 (the number of hours in a year) or the maximum number of operating hours per year (if less than 8,760) allowed by the unit's Federally-enforceable operating permit.

C_{Hg} = The highest mercury concentration (μg/scm) from any of the test runs or 0.50 μg/scm, whichever is greater

Q_{\max} = Maximum potential flow rate, determined according to Section 2.1.2.1 of Exhibit A to this Appendix, (scfh)

- B) Equation 1 of this Section assumes that the unit operates at its maximum potential flow rate, either year-round or for the maximum number of hours allowed by the operating permit (if unit operation is restricted to less than 8,760 hours per year). If the permit restricts the annual unit heat input but not the number of annual unit operating hours, the owner or operator may divide the allowable annual heat input (mmBtu) by the design rated heat input capacity of the unit (mmBtu/hr) to determine the value of "N" in Equation 1. Also, note that if the highest mercury concentration measured in any test run is less than 0.50 $\mu\text{g}/\text{scm}$, a default value of 0.50 $\mu\text{g}/\text{scm}$ must be used in the calculations.
- 3) If the estimated annual mercury mass emissions from paragraph (c)(2) of this Section are 464 ounces per year or less, then the unit is eligible to use the monitoring provisions in paragraph (b) of this Section, and continuous monitoring of the mercury concentration is not required (except as otherwise provided in paragraphs (e) and (f) of this Section).
- d) If the owner or operator of an eligible unit under paragraph (c)(3) of this Section elects not to continuously monitor mercury concentration, then the following requirements must be met:
- 1) The results of the mercury emission testing performed under paragraph (c) of this Section must be submitted as a certification application to the permitting authority, no later than 45 days after the testing is completed. The calculations demonstrating that the unit emits 464 ounces (or less) per year of mercury must also be provided, and the default mercury concentration that will be used for reporting under Section 1.18 of this Appendix must be specified in both the electronic and hard copy portions of the monitoring plan for the unit. The methodology is considered to be provisionally certified as of the date and hour of completion of the mercury emission testing.
 - 2) Following initial certification, the same default mercury concentration value that was used to estimate the unit's annual mercury mass emissions under paragraph (c) of this Section must be reported for each unit operating hour, except as otherwise provided in paragraph (d)(4)(D) or (d)(6) of this Section. The default mercury concentration value must be updated as appropriate, according to paragraph (d)(5) of this Section.

- 3) The hourly mercury mass emissions must be calculated according to Section 4.1.3 in Exhibit C to this Appendix.
- 4) The mercury emission testing described in paragraph (c) of this Section must be repeated periodically, for the purposes of quality-assurance, as follows:
 - A) If the results of the certification testing under paragraph (c) of this Section show that the unit emits 144 ounces (9 lb) of mercury per year or less, the first retest is required by the end of the fourth QA operating quarter (as defined in 40 CFR 72.2, incorporated by reference) following the calendar quarter of the certification testing; or
 - B) If the results of the certification testing under paragraph (c) of this Section show that the unit emits more than 144 ounces of mercury per year, but less than or equal to 464 ounces per year, the first retest is required by the end of the second QA operating quarter (as defined in 40 CFR 72.2, incorporated by reference) following the calendar quarter of the certification testing; and
 - C) Thereafter, retesting must be required either semiannually or annually (i.e., by the end of the second or fourth QA operating quarter following the quarter of the previous test), depending on the results of the previous test. To determine whether the next retest is due within two or four QA operating quarters, substitute the highest mercury concentration from the current test or 0.50 µg/scm (whichever is greater) into the equation in paragraph (c)(2) of this Section. If the estimated annual mercury mass emissions exceeds 144 ounces, the next test is due within two QA operating quarters. If the estimated annual mercury mass emissions is 144 ounces or less, the next test is due within four QA operating quarters.
 - D) An additional retest is required when there is a change in the coal rank of the primary fuel (e.g., when the primary fuel is switched from bituminous coal to lignite). Use ASTM D388-99 (incorporated by reference under Section 225.140) to determine the coal rank. The four principal coal ranks are anthracitic, bituminous, subbituminous, and lignitic. The ranks of anthracite coal refuse (culm) and bituminous coal refuse (gob) must be anthracitic and bituminous, respectively. The retest must be performed within 720 unit operating hours of the change.
- 5) The default mercury concentration used for reporting under Section 1.18 of this Appendix must be updated after each required retest. This includes retests that are required prior to the compliance date in Section 1.14(b) of this Appendix. The

updated value must either be the highest mercury concentration measured in any of the test runs or 0.50 µg/scm, whichever is greater. The updated value must be applied beginning with the first unit operating hour in which mercury emissions data are required to be reported after completion of the retest, except as provided in paragraph (d)(4)(D) of this Section, where the need to retest is triggered by a change in the coal rank of the primary fuel. In that case, apply the updated default mercury concentration beginning with the first unit operating hour in which mercury emissions are required to be reported after the date and hour of the fuel switch.

- 6) If the unit is equipped with a flue gas desulfurization system or add-on mercury controls, the owner or operator must record the information required under Section 1.12 of this Appendix for each unit operating hour, to document proper operation of the emission controls.

- e) For units with common stack and multiple stack exhaust configurations, the use of the monitoring methodology described in paragraphs (b) through (d) of this Section is restricted as follows:
 - 1) The methodology may not be used for reporting mercury mass emissions at a common stack unless all of the units using the common stack are affected units and the units' combined potential to emit does not exceed 464 ounces of mercury per year times the number of units sharing the stack, in accordance with paragraphs (c) and (d) of this Section. If the test results demonstrate that the units sharing the common stack qualify as low mass emitters, the default mercury concentration used for reporting mercury mass emissions at the common stack must either be the highest value obtained in any test run or 0.50 µg/scm, whichever is greater.
 - A) The initial emission testing required under paragraph (c) of this Section may be performed at the common stack if the following conditions are met. Otherwise, testing of the individual units (or a subset of the units, if identical, as described in paragraph (c)(1)(D) of this Section) is required:
 - i) The testing must be done at a combined load corresponding to the designated normal load level (low, mid, or high) for the units sharing the common stack, in accordance with Section 6.5.2.1 of Exhibit A to this Appendix;
 - ii) All of the units that share the stack must be operating in a normal, stable manner and at typical load levels during the emission testing. The coal combusted in each unit during the testing must be

representative of the coal that will be combusted in that unit at the start of the mercury mass emission reduction program (preferably from the same source(s) of supply);

- iii) If flue gas desulfurization and/or add-on mercury emission controls are used to reduce level the emissions exiting from the common stack, these emission controls must be operating normally during the emission testing and, for the purpose of establishing proper operation of the controls, the owner or operator must record parametric data or SO₂ concentration data in accordance with Section 1.12(a) of this Appendix;
 - iv) When calculating E, the estimated maximum potential annual mercury mass emissions from the stack, substitute the maximum potential flow rate through the common stack (as defined in the monitoring plan) and the highest concentration from any test run (or 0.50 µg/scm, if greater) into Equation 1;
 - v) The calculated value of E must be divided by the number of units sharing the stack. If the result, when rounded to the nearest ounce, does not exceed 464 ounces, the units qualify to use the low mass emission methodology; and
 - vi) If the units qualify to use the methodology, the default mercury concentration used for reporting at the common stack must be the highest value obtained in any test run or 0.50 µg/scm, whichever is greater; or
- B) The retests required under paragraph (d)(4) of this Section may also be done at the common stack. If this testing option is chosen, the testing must be done at a combined load corresponding to the designated normal load level (low, mid, or high) for the units sharing the common stack, in accordance with Section 6.5.2.1 of Exhibit A to this Appendix. Provided that the required load level is attained and that all of the units sharing the stack are fed from the same on-site coal supply during normal operation, it is not necessary for all of the units sharing the stack to be in operation during a retest. However, if two or more of the units that share the stack are fed from different on-site coal supplies (e.g., one unit burns low-sulfur coal for compliance and the other combusts higher-sulfur coal), then either:
- i) Perform the retest with all units in normal operation; or

value obtained in any test run for that stack or 0.50 µg/scm, whichever is greater. Whenever the main stack is bypassed, the maximum potential mercury concentration, as defined in Section 2.1.3 of Exhibit A to this Appendix, must be reported.

- f) At the end of each calendar year, if the cumulative annual mercury mass emissions from an affected unit have exceeded 464 ounces, then the owner must install, certify, operate, and maintain a mercury concentration monitoring system or a sorbent trap monitoring system no later than 180 days after the end of the calendar year in which the annual mercury mass emissions exceeded 464 ounces. For common stack and multiple stack configurations, installation and certification of a mercury concentration or sorbent trap monitoring system on each stack (except for bypass stacks) is likewise required within 180 days after the end of the calendar year, if:
- 1) The annual mercury mass emissions at the common stack have exceeded 464 ounces times the number of affected units using the common stack; or
 - 2) The sum of the annual mercury mass emissions from all of the multiple stacks or ducts has exceeded 464 ounces; or
 - 3) The sum of the annual mercury mass emissions from the main and bypass stacks has exceeded 464 ounces.
- g) For an affected unit that is using a mercury concentration CEMS or a sorbent trap system under Section 1.15(a) of this Appendix to continuously monitor the mercury mass emissions, the owner or operator may switch to the methodology in Section 1.15(b) of this Appendix, provided that the applicable conditions in paragraphs (c) through (f) of this Section are met.

Section 1.16 Monitoring of mercury mass emissions and heat input at common and multiple stacks

- a) Unit utilizing common stack with other affected unit(s). When an affected unit utilizes a common stack with one or more affected units, but no non-affected units, the owner or operator must either:
- 1) Install, certify, operate, and maintain the monitoring systems described in Section 1.15(a) of this Appendix at the common stack, record the combined mercury mass emissions for the units exhausting to the common stack. Alternatively, if, in accordance with Section 1.15(e) of this Appendix, each of the units using the common stack is demonstrated to emit less than 464 ounces of mercury per year, the owner or operator may install, certify, operate and maintain the monitoring

systems and perform the mercury emission testing described under Section 1.15(b) of this Appendix. If reporting of the unit heat input rate is required, determine the hourly unit heat input rates either by:

- A) Apportioning the common stack heat input rate to the individual units according to the procedures in 40 CFR 75.16(e)(3), incorporated by reference in Section 225.140; or
 - B) Installing, certifying, operating, and maintaining a flow monitoring system and diluent monitor in the duct to the common stack from each unit; or
- 2) Install, certify, operate, and maintain the monitoring systems and (if applicable) perform the mercury emission testing described in Section 1.15(a) or Section 1.15(b) of this Appendix in the duct to the common stack from each unit.
- b) Unit utilizing common stack with nonaffected unit(s). When one or more affected units utilizes a common stack with one or more nonaffected units, the owner or operator must either:
- 1) Install, certify, operate, and maintain the monitoring systems and (if applicable) perform the mercury emission testing described in Section 1.15(a) or Section 1.15(b) of this Appendix in the duct to the common stack from each affected unit; or
 - 2) Install, certify, operate, and maintain the monitoring systems described in Section 1.15(a) of this Appendix in the common stack; and
 - A) Install, certify, operate, and maintain the monitoring systems and (if applicable) perform the mercury emission testing described in Section 1.15(a) or Section 1.15(b) of this Appendix in the duct to the common stack from each non-affected unit. The designated representative must submit a petition to the Agency to allow a method of calculating and reporting the mercury mass emissions from the affected units as the difference between mercury mass emissions measured in the common stack and mercury mass emissions measured in the ducts of the non-affected units, not to be reported as an hourly value less than zero. The Agency may approve such a method whenever the designated representative demonstrates, to the satisfaction of the Agency, that the method ensures that the mercury mass emissions from the affected units are not underestimated; or
 - B) Count the combined emissions measured at the common stack as the

mercury mass emissions for the affected units, for recordkeeping and compliance purposes, in accordance with paragraph (a) of this Section; or

- C) Submit a petition to the Agency to allow use of a method for apportioning mercury mass emissions measured in the common stack to each of the units using the common stack and for reporting the mercury mass emissions. The Agency may approve such a method whenever the designated representative demonstrates, to the satisfaction of the Agency, that the method ensures that the mercury mass emissions from the affected units are not underestimated.
- 3) If the monitoring option in paragraph (b)(2) of this Section is selected, and if heat input is required to be reported under Part 225, the owner or operator must either:
- A) Apportion the common stack heat input rate to the individual units according to the procedures in 40 CFR 75.16(e)(3), incorporated by reference in Section 225.140; or
 - B) Install a flow monitoring system and a diluent gas (O₂ or CO₂) monitoring system in the duct leading from each affected unit to the common stack, and measure the heat input rate in each duct, according to Section 2.2 of Exhibit C to this Appendix.
- c) Unit with a main stack and a bypass stack. Whenever any portion of the flue gases from an affected unit can be routed through a bypass stack to avoid the mercury monitoring system(s) installed on the main stack, the owner and operator must either:
- 1) Install, certify, operate, and maintain the monitoring systems described in Section 1.15(a) of this Appendix on both the main stack and the bypass stack and calculate mercury mass emissions for the unit as the sum of the mercury mass emissions measured at the two stacks;
 - 2) Install, certify, operate, and maintain the monitoring systems described in Section 1.15(a) of this Appendix at the main stack and measure mercury mass emissions at the bypass stack using the appropriate reference methods in Section 1.6(b) of this Appendix. Calculate mercury mass emissions for the unit as the sum of the emissions recorded by the installed monitoring systems on the main stack and the emissions measured by the reference method monitoring systems;
 - 3) Install, certify, operate, and maintain the monitoring systems and (if applicable) perform the mercury emission testing described in Section 1.15(a) or Section 1.15(b) of this Appendix only on the main stack. If this option is chosen, it is not

necessary to designate the exhaust configuration as a multiple stack configuration in the monitoring plan required under Section 1.10 of this Appendix, since only the main stack is monitored; or

- 4) If the monitoring option in paragraph (c)(1) or (c)(2) of this Section is selected, and if heat input is required to be reported under Part 225, the owner or operator must:
 - A) Use the installed flow and diluent monitors to determine the hourly heat input rate at each stack (mmBtu/hr), according to Section 2.2 of Exhibit C to this Appendix; and
 - B) Calculate the hourly heat input at each stack (in mmBtu) by multiplying the measured stack heat input rate by the corresponding stack operating time; and
 - C) Determine the hourly unit heat input by summing the hourly stack heat input values.

- d) Unit with multiple stack or duct configuration. When the flue gases from an affected unit discharge to the atmosphere through more than one stack, or when the flue gases from an affected unit utilize two or more ducts feeding into a single stack and the owner or operator chooses to monitor in the ducts rather than in the stack, the owner or operator must either:
 - 1) Install, certify, operate, and maintain the monitoring systems and (if applicable) perform the mercury emission testing described in Section 1.15(a) or Section 1.15(b) of this Appendix in each of the multiple stacks and determine mercury mass emissions from the affected unit as the sum of the mercury mass emissions recorded for each stack. If another unit also exhausts flue gases into one of the monitored stacks, the owner or operator must comply with the applicable requirements of paragraphs (a) and (b) of this Section, in order to properly determine the mercury mass emissions from the units using that stack;
 - 2) Install, certify, operate, and maintain the monitoring systems and (if applicable) perform the mercury emission testing described in Section 1.15(a) or Section 1.15(b) of this Appendix in each of the ducts that feed into the stack, and determine mercury mass emissions from the affected unit using the sum of the mercury mass emissions measured at each duct, except that where another unit also exhausts flue gases to one or more of the stacks, the owner or operator must also comply with the applicable

requirements of paragraphs (a) and (b) of this Section to determine and record mercury mass emissions from the units using that stack; or

- 3) If the monitoring option in paragraph (d)(1) or (d)(2) of this Section is selected, and if heat input is required to be reported under Part 225, the owner or operator must:
 - A) Use the installed flow and diluent monitors to determine the hourly heat input rate at each stack or duct (mmBtu/hr), according to Section 2.2 of Exhibit C to this Appendix; and
 - B) Calculate the hourly heat input at each stack or duct (in mmBtu) by multiplying the measured stack (or duct) heat input rate by the corresponding stack (or duct) operating time; and
 - C) Determine the hourly unit heat input by summing the hourly stack (or duct) heat input values.

Section 1.17 Calculation of mercury mass emissions and heat input rate

The owner or operator must calculate mercury mass emissions and heat input rate in accordance with the procedures in Sections 4.1 through 4.3 of Exhibit F to this Appendix.

Section 1.18 Recordkeeping and reporting

- a) General recordkeeping provisions. The owner or operator of any affected unit must maintain for each affected unit and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix a file of all measurements, data, reports, and other information required by this part at the source in a form suitable for inspection for at least 3 years from the date of each record. Except for the certification data required in Section 1.11(a)(4) of this Appendix and the initial submission of the monitoring plan required in Section 1.11(a)(5) of this Appendix, the data must be collected beginning with the earlier of the date of provisional certification or the compliance deadline in Section 1.14(b) of this Appendix. The certification data required in Section 1.11(a)(4) of this Appendix must be collected beginning with the date of the first certification test performed. The file must contain the following information:
 - 1) The information required in Sections 1.11(a)(2), (a)(4), (a)(5), (a)(6), (b), (c) (if applicable), (d), and (e) or (f) of this Appendix (as applicable);
 - 2) The information required in Section 1.12 of this Appendix, for units with flue gas desulfurization systems or add-on mercury emission controls;

- 3) For affected units using mercury CEMS or sorbent trap monitoring systems, for each hour when the unit is operating, record the mercury mass emissions, calculated in accordance with Section 4 of Exhibit C to this Appendix.
 - 4) Heat input and mercury methodologies for the hour; and
 - 5) Formulas from monitoring plan for total mercury mass emissions and heat input rate (if applicable);
- b) Certification, quality assurance and quality control record provisions. The owner or operator of any affected unit must record the applicable information in Section 1.13 of this Appendix for each affected unit or group of units monitored at a common stack and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix.
- c) Monitoring plan recordkeeping provisions.
- 1) General provisions. The owner or operator of an affected unit must prepare and maintain a monitoring plan for each affected unit or group of units monitored at a common stack and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix. The monitoring plan must contain sufficient information on the continuous monitoring systems and the use of data derived from these systems to demonstrate that all the unit's mercury emissions are monitored and reported.
 - 2) Updates. Whenever the owner or operator makes a replacement, modification, or change in a certified continuous monitoring system or alternative monitoring system under 40 CFR 75, subpart E, incorporated by reference in Section 225.140, including a change in the automated data acquisition and handling system or in the flue gas handling system, that affects information reported in the monitoring plan (e.g., a change to a serial number for a component of a monitoring system), then the owner or operator must update the monitoring plan.
 - 3) Contents of the monitoring plan. Each monitoring plan must contain the information in Section 1.10(d)(1) of this Appendix in electronic format and the information in Section 1.10(d)(2) in hardcopy format.
- d) General reporting provisions.
- 1) The designated representative for an affected unit must comply with all reporting requirements in this Section and with any additional requirements set forth in 35 Ill. Adm. Code Part 225.

- 2) The designated representative for an affected unit must submit the following for each affected unit or group of units monitored at a common stack and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix:
 - A) Monitoring plans in accordance with paragraph (e) of this Section; and
 - B) Quarterly reports in accordance with paragraph (f) of this Section.
 - 3) Other petitions and communications. The designated representative for an affected unit must submit petitions, correspondence, application forms, and petition-related test results in accordance with the provisions in Section 1.14(f) of this Appendix.
 - 4) Quality assurance RATA reports. If requested by the Agency, the designated representative of an affected unit must submit the quality assurance RATA report for each affected unit or group of units monitored at a common stack and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix by the later of 45 days after completing a quality assurance RATA according to Section 2.3 of Exhibit B to this Appendix or 15 days of receiving the request. The designated representative must report the hardcopy information required by Section 1.13(a)(9) of this Appendix to the Agency.
 - 5) Notifications. The designated representative for an affected unit must submit written notice to the Agency according to the provisions in 40 CFR 75.61, incorporated by reference in Section 225.140, for each affected unit or group of units monitored at a common stack and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix.
- e) Monitoring plan reporting.
- 1) Electronic submission. The designated representative for an affected unit must submit to the Agency and USEPA, or an alternate Agency designee if one is specified, a complete, electronic, up-to-date monitoring plan file in a format specified by the Agency for each affected unit or group of units monitored at a common stack and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix, as follows: No later than 21 days prior to the commencement of initial certification testing; at the time of a certification or recertification application submission; and whenever an update of the electronic monitoring plan is required, either under Section 1.10 of this Appendix or elsewhere in this Appendix.
 - 2) Hardcopy submission. The designated representative of an affected unit must submit all of the hardcopy information required under Section 1.10 of this Appendix, for each affected unit or group of units monitored at a common stack

and each non-affected unit under Section 1.16(b)(2)(B) of this Appendix, to the Agency prior to initial certification. Thereafter, the designated representative must submit hardcopy information only if that portion of the monitoring plan is revised. The designated representative must submit the required hardcopy information as follows: no later than 21 days prior to the commencement of initial certification testing; with any certification or recertification application, if a hardcopy monitoring plan change is associated with the recertification event; and within 30 days of any other event with which a hardcopy monitoring plan change is associated, pursuant to Section 1.10(b) of this Appendix. Electronic submittal of all monitoring plan information, including hardcopy portions, is permissible provided that a paper copy of the hardcopy portions can be furnished upon request.

f) Quarterly reports.

1) Electronic submission. Electronic quarterly reports must be submitted, beginning with the calendar quarter containing the compliance date in Section 1.14(b) of this Appendix, unless otherwise specified in 35 Ill. Admin. Code Part 225. The designated representative for an affected unit must report the data and information in this paragraph (f)(1) and the applicable compliance certification information in paragraph (f)(2) of this Section to the Agency and USEPA, or an alternate Agency designee if one is specified, quarterly in a format specified by the Agency, except as otherwise provided in 40 CFR 75.64(a), incorporated by reference in Section 225.140, for units in long-term cold storage. Each electronic report must be submitted to the Agency within 45 days following the end of each calendar quarter. Except as otherwise provided in 40 CFR 75.64(a)(4) and (a)(5), incorporated by reference in Section 225.140, each electronic report must include the date of report generation and the following information for each affected unit or group of units monitored at a common stack:

A) The facility information in 40 CFR 75.64(a)(3), incorporated by reference in Section 225.140; and

B) The information and hourly data required in paragraphs (a) and (b) of this Section, except for:

i) Descriptions of adjustments, corrective action, and maintenance;

ii) Information which is incompatible with electronic reporting (e.g., field data sheets, lab analyses, quality control plan);

iii) For units with flue gas desulfurization systems or with add-on

mercury emission controls, the parametric information in Section 1.12 of this Appendix;

- iv) Information required by Section 1.11(d) of this Appendix concerning the causes of any missing data periods and the actions taken to cure such causes;
- v) Hardcopy monitoring plan information required by Section 1.10 of this Appendix and hardcopy test data and results required by Section 1.13 of this Appendix;
- vi) Records of flow polynomial equations and numerical values required by Section 1.13(a)(5)(E) of this Appendix;
- vii) Stratification test results required as part of the RATA supplementary records under Section 1.13(a)(7) of this Appendix;
- viii) Data and results of RATAs that are aborted or invalidated due to problems with the reference method or operational problems with the unit and data and results of linearity checks that are aborted or invalidated due to operational problems with the unit;
- ix) Supplementary RATA information required under Section 1.13(a)(7) of this Appendix, except that: the applicable data elements under Section 1.13(a)(7)(B)(i) through (xx) of this Appendix and under Section 1.13(a)(7)(C)(i) through (xiii) of this Appendix must be reported for flow RATAs at circular or rectangular stacks (or ducts) in which angular compensation for yaw and/or pitch angles is used (i.e., Method 2F or 2G in appendices A-1 and A-2 to 40 CFR 60, incorporated by reference in Section 225.140), with or without wall effects adjustments; the applicable data elements under Section 1.13(a)(7)(B)(i) through (xx) of this Appendix and under Section 1.13(a)(7)(C)(i) through (xiii) of this Appendix must be reported for any flow RATA run at a circular stack in which Method 2 in appendices A-1 and A-2 to 40 CFR 60, incorporated by reference in Section 225.140, is used and a wall effects adjustment factor is determined by direct measurement; the data under Section 1.13(a)(7)(B)(xx) of this Appendix must be reported for all flow RATAs at circular stacks in which Method 2 in appendices A-1 and A-2 to 40 CFR 60, incorporated by reference in Section 225.140, is used and a default wall effects adjustment factor is applied; and the data under

Section 1.13(a)(7)(I)(i) through (vi) must be reported for all flow RATAs at rectangular stacks or ducts in which Method 2 in appendices A-1 and A-2 to 40 CFR 60, incorporated by reference in Section 225.140, is used and a wall effects adjustment factor is applied.

- x) For units using sorbent trap monitoring systems, the hourly gas flow meter readings taken between the initial and final meter readings for the data collection period; and
 - C) Ounces of mercury emitted during quarter and cumulative ounces of mercury emitted in the year-to-date (rounded to the nearest thousandth); and
 - D) Unit or stack operating hours for quarter, cumulative unit or stack operating hours for year-to-date; and
 - E) Reporting period heat input (if applicable) and cumulative, year-to-date heat input.
- 2) Compliance certification.
- A) The designated representative must certify that the monitoring plan information in each quarterly electronic report (i.e., component and system identification codes, formulas, etc.) represent current operating conditions for the affected unit(s)
 - B) The designated representative must submit and sign a compliance certification in support of each quarterly emissions monitoring report based on reasonable inquiry of those persons with primary responsibility for ensuring that all of the unit's emissions are correctly and fully monitored. The certification must state that:
 - i) The monitoring data submitted were recorded in accordance with the applicable requirements of this Appendix, including the quality assurance procedures and specifications; and
 - ii) With regard to a unit with an FGD system or with add-on mercury emission controls, that for all hours where mercury data is missing in accordance with Section 1.13(b) of this Appendix, the add-on emission controls were operating within the range of parameters listed in the quality-assurance plan for the unit (or that quality-

assured SO₂ CEMS data were available to document proper operation of the emission controls).

- 3) Additional reporting requirements. The designated representative must also comply with all of the quarterly reporting requirements in 40 CFR 75.64(d), (f), and (g), incorporated by reference in Section 225.140.