

Section 6: Data Validation, Data Availability, and Substitute Data

This section discusses the requirements for determining whether data from a monitor are valid, how long invalid periods are, and how to handle periods of invalid data (through minimum availability standards or substitute data provisions, or both). The five main topics in this section are:

- 6.1 Provisional or Conditional Data Validation
- 6.2 Out of Control Periods
- 6.3 Data Reduction - Minimum Valid Data
- 6.4 Data Availability
- 6.5 Substitute Data

6.1 Retroactive, Provisional and Conditional Data Validation

This section compares how the different programs treat measurements made during the period beginning with the initial certification or recertification tests, and ending with certification or disapproval.

Federal programs in Parts 60, 61, and 63 do not have specific data validation provisions for data collected prior to CEMS certification. Pennsylvania and Part 75 have provisions for reporting and using data measurements made prior to certification or recertification approvals. Internally, the PA DEP data validity requirements differ between certification and recertification events (see table 6-1a). Table 6-1b then summarizes the different Pennsylvania and Part 75 criteria for data validation during these two periods. Table 6-2 provides additional details on the Part 75 criteria for conditional validation during recertification testing.

**Table 6-1a:
Comparison of PA DEP Data Validation Requirements for Certification and Recertification**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program Element	Certification	Recertification	NA = Not Applicable, N = No Change Recommended				
I6-001(a) and (b) Certification of new CEMS and Recertification	<p>Retroactive data validation of measurements made as of the date following completion of performance testing.</p> <p>Upon request, will consider a petition to accept data beginning with the date the CEMS were installed and calibrated and prior to completion of performance specification testing, if source indicated that no unscheduled maintenance was conducted subsequent to that time. <i>(CSM Manual, Phase II - Page 24, and CEMS Phase 3 Approval Letter -approval language)</i></p>	<p>Data are valid after completion of changes and any necessary adjustments and calibration. <i>(CSM Manual, Phase II - Page 24, and CEMS Phase 3 Approval Letter -approval language)</i></p>	1	NA	Use part 75 conditional data validation procedures	See Table 6-1b	2a, 5b

**Table 6-1b:
Comparison of PA DEP and Federal Data Validation for Certification and Recertification**

	1	2	3	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program Element	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended					
E6-001(a) Certification of new CEMS	Retroactive data validation of measurements made as of the date following completion of performance testing. Upon request, will consider a petition to accept data beginning with the date the CEMS were installed and calibrated and prior to completion of performance specification testing, if source indicated that no unscheduled maintenance was conducted subsequent to that time. <i>(CSM Manual, Phase II - Page 24, and CEMS Phase 3 Approval Letter -approval language)</i>	Provisional certification of data upon completion of certification procedures for a period not to exceed 120 days following receipt of complete certification application. <i>(75.20(a)(3))</i> Also, data can be conditionally valid beginning with hour of successful "probationary" calibration error test and ending with hour of successful completion of certification tests. [See Table 6-2 for further details.] <i>(75.20(b)(3)(I))</i>	Not specified.	1	2	NA	B (except without 120 day limit on timeframe for approval)	2a, 5b	
E6-001(b) Recertification	Data are valid after completion of changes and any necessary adjustments and calibration. <i>(CSM Manual, Phase II - Page 24, and CEMS Phase 3 Approval Letter -approval language)</i>	Same as certification. <i>(75.20(a) and (b))</i>	Not specified.	1	2	NA	B	2a	

**Table 6-2:
Additional Part 75 Conditional Data Validation Requirements**

Test Status	Part 75 Data Validation
Probationary calibration error test	Data are conditionally valid beginning with hour of successful "probationary" calibration error test and ending with hour of successful completion of all required tests. This criteria is also included in Table 6-1. <i>(75.20(b)(3)(i))</i>
All tests are passed	If passed within required time frame, all of the conditionally valid data are valid from the hour of commencement of the test period. <i>(75.20(b)(3)(vi))</i>
A test is failed or aborted except 7 day calibration error test	Failed test shall be repeated. Certification or recertification period ends and a new period begins with a new probationary calibration error test. Tests performed successfully in original period need not be performed again in new period unless a change is made which may affect results. <i>(75.20(b)(3)(vii))</i> Failed or Aborted Linearity, Cycle Time, RATA: If due to a failure of the CEMS, all conditionally valid data are invalidated from the hour of commencement of the test period to the hour in which the test is failed or aborted, except if multi-load flow RATA passed at one or more levels, fails at subsequent load level and correction does not require relinearization. In that case, data invalidation is prospective from the hour of the RATA failure to the beginning of the new test period. <i>(75.20(b)(3)(vii))</i>
A 7-day calibration error test is failed	Previously recorded conditionally valid data are not invalidated, unless the calibration error on the failed day is 2x the performance specification in App. A. Data are prospectively invalidated as of the hour in which the calibration error test is failed until the hour of subsequent successful calibration error test. At that time conditionally valid data status resumes. <i>(75.20(b)(3)(vii))</i>
Daily calibration error test	If a daily calibration error test exceeds 2x the performance specification in App. A or is missed, the data shall be invalid prospectively from the hour of the failed or missed daily calibration error test to subsequent successful test. No further certification or recertification testing shall be performed until the subsequent successful test. RATAs or linearity tests must be restarted if a calibration error test fails during the test period. <i>75.20(b)(3)(vii))</i>

(cont.)

**Table 6-2:
Additional Part 75 Conditional Data Validation Requirements (cont.)**

Test Status	Part 75 Data Validation
Trial Tests	<p>Trial gas injections or RATAs are permissible prior to commencing a test. Results shall not affect data status provided the following conditions are met:</p> <p>Gas injections: Response $\leq 5\%$ or 5 ppm of calibration gas.</p> <p>RATA trial runs: Difference $\leq 10\%$ of reference method value or 15 ppm, 1.5% H₂O), or 0.02 lb/mmBtu as applicable.</p> <p>No adjustments to the CEMS calibration are made following the trials except for routine adjustments provided for in the QA/QC plan (App. B., 2.1.3).</p> <p>The CEMS is not repaired, relinearized or reprogrammed after the trials.</p> <p>If the criteria above are not met, the trial injection or RATA shall be treated as a failed test. <i>(75.20(b)(3)(vii))</i></p>
Late Tests	<p>Linearity, RATA, Cycle Time:</p> <p>For late tests which are passed on first attempt - data shall be invalidated from the hour of the required test period expiration until the hour of completion of the late test.</p> <p>For late tests which are failed or aborted on first attempt due to CEMS problem - all conditionally valid data are invalid back to the hour of the first probationary calibration error test. Data remain invalid until hour of completion of successful late test and any additional tests due to CEMS corrections.</p> <p>7 day Calibration Error:</p> <p>For late test, regardless of whether passed on first attempt - data shall be invalidated from the hour of the test period expiration until the hour of completion of the successful test. <i>(75.20(b)(3)(viii))</i></p>

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. General Rule

Pennsylvania and Part 75 both provide for retroactive or provisional data validation back to the completion of the performance tests through the Phase III or

certification/recertification approval date. Part 75 has a 120 day limit for provisional validation, which corresponds to the EPA approval deadline following receipt of a complete application.

Note 2. Conditional Data Validation

Both programs also provide for what is called "conditional" data validation pending successful completion of all certification or recertification tests. Under Part 75 this applies for data collected prior to completion of performance testing, but after a successful probationary daily calibration error test. For Pennsylvania, conditional data status begins after calibration. It is not clear whether calibration means completion of the full 7-day test, a daily zero-calibration drift check, or a calibration error test. In addition, for certification, a source must petition for conditional data validation and show that no unscheduled maintenance occurred after the calibration. For recertification, no petition is required and there is no requirement to document unscheduled maintenance.

Part 75 also provides additional detailed criteria for conditionally valid data in the event of a failed or late performance test during certification or recertification testing. These provisions are more all encompassing than the Pennsylvania criteria because they ensure that data remain valid based on a simple calibration test only if the other tests are successfully complete. No such protection is provided in the PA DEP procedures, at least for recertification tests.

Recommendations

We recommend that PA DEP adopt provisions comparable to the Part 75 conditional data validation procedures. These procedures have comparable technical judgments as the PA DEP procedures, but more clearly address the different outcomes based on different certification test results. The Part 75 provisions also apply equally to certification and recertification, while there does not appear to be a sound technical reason for the internal difference in how PA DEP treats certification versus recertification events. This approach also will ensure that data validity will be the same for a monitoring system subject to both PA DEP and Part 75 requirements. The 120 day window under Part 75 should not apply -- see Section 7.3.1, below (except where PA DEP is subject to the 120 time frame for certification approval for NOx Budget Program systems under § 145 of the Pa. Code). This approach will ensure that data considered valid under one program will be treated the same as data under the other program.

Impacts to PA DEP Systems and Documents

The above recommendation would require modification to the CSM Manual (p. 24) and the Phase 3 approval letter.

6.2 Out-of-Control Periods

Part 75, and Part 60, Appendix F, use the term "out-of-control" period to describe the time period following a failed QA test and subsequent to passing a test that demonstrates compliance with the applicable performance specification. During this period, the monitor is said to be out-of-control, and not collecting quality assured data. Measurements made during an out-of-control period are invalid, and can not be used for compliance purposes, or counted towards data availability requirements. Pennsylvania does not use the term "out-of-control" in the CSM Manual, but similarly treats data as invalid if the monitor fails a QA test or fails to perform a QA test.

The criteria for data invalidation following a failed or late QA test across the CEMS programs are compared in Tables 6-3 through 6-8. In addition, comparisons are made between the stop and start time of the out-of-control period. Both criteria have an impact on whether data may be valid for one program while invalid for another.

6.2.1 Overdue QA Testing

Table 6-3b compares the federal versus PA DEP out-of-control period triggers for overdue QA testing. There is no general comparison of the internal PA DEP requirements, as each requirement uses the same basic criterion (out-of-control until applicable test is initiated), but uses different time periods in recognition of the fact that the tests are required at various frequencies. However, there is a discrepancy in the requirements for flow RATAs (see Table 6-3a).

**Table 6-3a:
Comparison of PA DEP Provisions for Overdue QA Testing Out-of-Control Periods**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP		NA = Not Applicable, N = No Change Recommended				
I6-002(c) Flow RATA	Flow RATA: Performance test not conducted when required (including 720 hour grace period if source qualified for testing once every 8 calendar quarters). Data are considered invalid until successful test is initiated. <i>(CSM Manual, QA Section, III.E.)</i>	Flow RATA: Test not conducted during a calendar year. Data for subsequent calendar year invalid until a successful RATA is initiated. <i>(CSM Manual QA Section, III.A.1.k.)</i>	2	1	NA	A (as modified in Table 6-3b)	2a

**Table 6-3b:
Comparison of PA DEP and Federal Requirements for Overdue QA Testing Out-of-Control Periods**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.		Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N= No Change Recommended				
E6-002(a) Daily Calibration Drift (Error) Test	Test not conducted on a calendar day. Data for any subsequent calendar days invalid until successful drift check is initiated. <i>(CSM Manual, QA Section, I.A.1.e.)</i>	Data invalid if test not conducted beginning with first hour following 26 hour validation period or first hour following 8 hour start-up grace period. End with hour of completion of successful test. Also invalid if on-line test not conducted within 26 hour of off-line test beginning with 27th hour from completion of successful off-line test. <i>(App. B, 2.1.5)</i>	No specific reference to overdue QA testing. <i>(60.13(d), 60 App. F, 5, 63.8(c)(6) and (7))</i>	1	NA	Meet PA DEP requirement, unless subject to Part 75 in which case Part 75 requirements apply.	C	2a
E6-002(b) Quarterly Calibration Error (Linearity) Test	Test not conducted in a calendar quarter in which test required (or after 168 hour grace period if source qualified for testing only once in four calendar quarters). Data for subsequent quarters invalid until successful calibration error test is initiated. <i>(CSM Manual, QA Section, I.A.1.h.)</i>	Test not conducted by end of 168 hour grace period after quarter in which test required. Data invalid beginning hour after the end of grace period and ends with the hour of completion of successful test. <i>(App. B., 2.2.4)</i>	No specific reference to overdue QA testing. <i>(60 App. F, 5, 63.8(c)(6) and (7))</i>	NA	2	Meet PA DEP requirement, unless subject to Part 75 in which case Part 75 requirements apply.	C	2a

(cont.)

**Table 6-3b:
Comparison of PA DEP and Federal Requirements for Overdue QA Testing Out-of-Control Periods (cont.)**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N= No Change Recommended				
E6-002(c) RATA	<p>Gas, Opacity, and Flow RATA: Performance test not conducted when required (including 720 hour grace period if source qualified for testing once every 8 calendar quarters). Data are considered invalid until successful test is initiated. <i>(CSM Manual, QA Section, I.A.I.k. and III.E.)</i></p> <p>Flow RATA: Test not conducted during a calendar year. Data for subsequent calendar year invalid until a successful RATA is initiated. <i>(CSM Manual QA Section, III.A.I.k.)</i></p>	Test not conducted by end of 720 hour grace period after test deadline. Data invalid beginning hour after the end of grace period and ends with the hour of completion of successful test. <i>(App. B, 2.3.3(c))</i>	No specific reference to overdue QA testing. <i>(60, App. F, 5, 63.8(c)(6) and (7))</i>	NA	2	Meet PA DEP requirement, unless subject to Part 75 in which case Part 75 requirements apply.	C	2a

Notes on Most Stringent, All-Encompassing or Alternative Requirements

Note 1. Flow RATA [*Ref. No. 6-002(c)*]

Revision 7 to the CSM Manual added the grace period concept for flow RATAs to Section III.E. of the QA section. A conforming change to Section III.A.1.k. was not made, however.

Note 2. Use of Grace Periods [*Ref. No. 6-002*]

Part 75 provides grace periods for overdue QA testing, while Pennsylvania only applies the grace period where a source qualified (because of low operating time in some calendar quarters) for a full extension (once every 4 quarters for a calibration error (linearity) test and once every 8 quarters for a RATA). Parts 60 and 63 do not specifically address overdue testing with respect to out of control periods, but also do not provide grace periods.

Note 3. End Point of Out-of-Control Period [*Ref. No. 6-002*]

The end point of the out-of-control period for an overdue test differs under the Pennsylvania and Part 75 requirements. The Pennsylvania period ends with initiation of the applicable successful QA test. The Part 75 period ends with the completion of a successful test.

Recommendations

1. PA DEP should correct the CSM Manual, QA, Section III.A.1.k. to conform to Section III.E.
2. PA DEP has adopted the grace period concept in a limited manner in the current CSM Manual. The CSM Manual provides the grace period only after the longest extension permissible for a calibration error (linearity) or RATA test. Given PA DEP's determination that a grace period is warranted technically (and does not unduly interfere with data quality) in some circumstances, we recommend that PA DEP allow Part 75 sources to consider data as valid after an overdue test, if the test is conducted within the other grace period time frames allowed under Part 75.
3. For the endpoint of the out-of-control period after overdue testing (at initiation or completion), we recommend that PA DEP require Part 75 sources to follow the Part 75 data validation procedures, which is a stricter standard that invalidates more data and would not relax a compliance obligation under PA DEP's program. This recognition would maintain consistency in whether data are considered valid across regulatory programs.

Impacts on DEP Systems and Documents

Recommendations 2 and 3 would impact only the CSM Manual (see the applicable sections cited in Table 6-3b). For Recommendation 1, the impact would be to correct CSM Manual, QA, Section III.A.1.k., regardless of whether PA DEP accepts Recommendations 2 and 3.

6.2.2 Failed QA Tests

There are significant differences between the QA test (calibration drift, calibration error test, and RATA) out-of-control criteria under Pennsylvania, Part 75, Part 60, Appendix F, and Part 63 which are compared in the following tables (Table 6-4 through 6-7). In addition the Pennsylvania and federal start/end times of the out-of-control periods due to failed RATAs differ. Start and end times for failed calibration drift and calibration error tests are the same.

Part 75 also identifies out-of-control periods when stack flow CEMS fail daily interference tests or quarterly leak checks (Table 6-8). Pennsylvania stack flow installation requirements in the CSM Manual requires daily interference tests and quarterly leak checks, but these are not addressed specifically, in the QA section of the CSM Manual.

The comparison and summary tables follow the analysis notes, recommendations, and impacts. The internal PA DEP out-of-control requirements are similar for the different tests, so there are no tables that compare the internal PA DEP requirements.

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Calibration Drift Out-of Control Criteria [*Ref. No. 6-003, 6-004(a)-(c)*]

Table 6-4 compares the out-of-control criteria across the programs, and Table 6-5 provides the underlying calibration drift performance specifications. Table 6-5 is a condensed version of Table 4-3. A comparison of the out-of-control criteria for calibration drift requires both elements. This comparison is complicated by the different bases for the calibration drift performance criteria (lowest equivalent emission limit versus span) which has been discussed earlier in section 4.2 of this report.

Pennsylvania's out-of-control criteria is less restrictive than Part 63, but comparable to Part 60. Part 63 uses 2x the daily calibration drift criteria similar to Part 75, while Part 60 uses 4x the criteria in any one day, and 2x on five consecutive days. The out-of-control criteria for the PA DEP drift specifications at 2x the specification generally are analogous to 4x the Part 60 drift specifications, although PA DEP does not have the five consecutive day criterion.

Note 2. Calibration Error Out-of Control Criteria [*Ref. No. 6-005*]

Pennsylvania, unlike the different federal programs, invalidates data only within the monitor range for the level that fails the calibration error (linearity) test. Test results are treated separately at each level. Under the federal requirements a calibration error test is failed if any level fails, and all data are invalid. The out-of-control period start and end times appear to be the same across programs. It is unclear if CSM Manual, QA Section I.A.1.g. refers to initiation or completion of the next acceptable calibration error check (if it is at completion, this would be consistent with federal standards but inconsistent with PA DEP's treatment of overdue calibration error checks).

Note 3. RATA Out-of Control Criteria [*Ref. No. 6-006*]

Pennsylvania allows up to two months following the completion of a failed RATA before data are invalidated, and does not provide for retroactive invalidation. Federal programs invalidate data with the hour that the failed test is completed. Pennsylvania ends the out-of control period with the commencement of the next successful test. Federal programs end the out-of-control period with the completion of the next successful test. Part 75 does have some ability for a source to obtain conditional data validation prior to successful completion of the subsequent RATA.

Note 4. Stack Flow CEMS, Interference and Leak Checks [*Ref. No. 6-007*]

Only Part 75 has specific out-of-control criteria for flow monitor daily interference and quarterly leak checks. Under Part 75, the beginning and end time of out-of-control periods are similar to federal requirements for other QA testing, beginning with the hour of completion of failed test and ending with the hour of completion of successful test. The CSM Manual references these specifications as installation requirements in Table IX but does not provide any details about the tests in the QA Section. However, the QA Section does state generally that data are invalid if a CEMS is operated not in accordance with the performance specifications. Given the lack of any details in the PA DEP requirements, there does not appear to be any harmonization issues for these requirements.

Recommendations

1. Calibration Drift-Error

We recommend that the CSM Manual continue to follow the PA DEP requirements, except systems subject to Part 75 shall meet Part 75 specifications, and sources subject to another, more stringent federal requirement shall meet such requirements. We also recommend that PA DEP add a requirement that a monitor (other than a Part 75 monitor) will be out of control if it exceeds the calibration drift-error specification for five consecutive days. This change will ensure that the PA DEP requirements are at least as stringent as the Part 60, Appendix F

provisions. After this change, PA DEP should seek EPA clarification that the PA DEP criteria can be used in place of the Part 60, Appendix F criteria. Alternatively, PA DEP could provide that the more restrictive specifications in Parts 60, 63, and 75 apply if a CEMS is subject to those standards. These changes also would make the specification for passing the initial 7 day calibration test consistent between the three programs. *[Ref. No. 6-004]*

2. Calibration Error Test

We recommend that PA DEP eliminate the use of invalidating only certain levels if the test is failed only at those levels. This approach is inconsistent with federal requirements, and in essence turns the test into a series of three independent tests as opposed to an integrated test that ensures that a CEMS can provide accurate data over a full range of measured values. The result of the current PA DEP approach is different data validity determinations across the programs. *[Ref. No. 6-005]*

PA DEP should also clarify in the CSM Manual if the OOC period ends with the initiation or completion of the successful test.

3. RATA

The current approach in essence treats invalid data as valid data. We recommend that the general rule should be to invalidate the data as of the date and time that the test is failed. For sources that must use wet chemistry methods and may not know test results immediately, PA DEP should allow a petition for a later date and time for commencing the invalid data period. In addition, Part 75 sources should be allowed to conditionally validate data based on Part 75 procedures. Also, shutdown or other special requirements that may apply should continue to apply. *[Ref. No. 6-006]*

4. Stack Flow CEMS Interference and Leak Check

PA DEP should add the Part 75 interference and leak check out-of-control and other QA requirements to the CSM Manual which does not specifically address these tests, even though the provisions for the checks are in Table IX. *[Ref. No. 6-007]*

Impact on PA DEP Systems and Documents

Recommendation 1. A delegation from EPA to use PA DEP out-of-control criteria in lieu of federal NSPS or NESHAP CEMS except for more stringent federal requirements would require the changes to the CSM Manual (2a) and the NSPS/NESHAP delegation letters described in Section 4.2. The recommendation to use the Part 75 out of control criteria for Part 75 monitors, and to add a 5 day criterion to parallel Appendix F, would

require changes to the CSM Manual (2a), Quality Assurance Section I.A.1.d. [*Ref. No. 6-003*]

Recommendation 2. The recommendation to eliminate the separate treatment of each level of the calibration error test for validating data would require changes to the CSM Manual (2a), Quality Assurance Section I.A.1. and III.A.1. [*Ref. No. 6-005*]

Recommendation 3. Revising the PA DEP start and end times for RATA out-of-control periods to correspond to the federal start and end times would require changes to the CSM Manual (2a), Quality Assurance Section I.A 1. and III. A. 1. [*Ref. No. 6-006*]

Recommendation 4. Adding the Part 75 interference and leak check out-of-control criteria to the QA requirements would require changes to the CSM Manual (2a), Quality Assurance Section III.A.1. [*Ref. No. 6-007*]

**Table 6-4:
Comparison of PA DEP and Federal Requirements for Out-of-Control Periods for Failed Daily Calibration Drift-Error Test**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Part 60	Part 63	NA = Not Applicable, N= No Change Recommended				
E6-003 Calibration Drift OOO Period	OOO period begins if zero or calibration drift > 2x criteria. Data are invalid until the next acceptable calibration. <i>(CSM Manual, QA Section I.A.1.d)</i>	OOO period begins with completion of failed test (> App. B. criteria), and ends with completion of successful test. If failed and successful test occur in same hour, data for the hour after completion of successful test may be used. <i>(App. B, 2.1.4(a))</i>	App. F Sources: OOO period if > 2x criteria on five consecutive days, or > 4x criteria on any one day, OOO period begins with completion of test on 5th consecutive day, or completion of test on day preceding 4x criteria test. Period ends with completion of successful CD test. <i>(App. F, 4.1 and 4.2)</i>	Part 63: OOO period begins with hour of failed test (> 2x criteria in performance specification or regulation), and ends with the hour following corrective action and completion of successful test. <i>(63.8(c)(6))</i> 63 Subpart EEE: OOO period if > 2x CD criteria, or if cumulative adjustment > 3x CD criteria. Shutdown unit and service/calibrate. Cannot resume waste combustion until unit passes absolute calibration audit (calibration error test). <i>(EEE, App., 4.1)</i>	4 (subpart EEE)	2	OOO period begins if zero or calibration drift > 2x criteria, or > criteria for 5 consecutive days, except systems subject to Part 75 shall meet Part 75 specifications, and sources subject to more stringent federal requirement shall meet such requirement. Data are invalid until the next acceptable calibration.	C	2a, delegation letters

**Table 6-5:
Comparison of PA DEP, Part 75, and NSPS/NESHAP
Daily Calibration Drift Out-of-Control Criteria for Specific Pollutants**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	3 Specific Requirement (Reference)	4 Specific Requirement (Reference)	A Most Stringent Column #	B Most All-Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60 and 61	Part 63	NA = Not Applicable, N= No Change Recommended				
E6-004(a) SO ₂ or NO _x	> 10.0% of lowest of lowest monitored emission standard equivalent)	>5.0% of span	> 5.0% of span on five consecutive days, or > 10.0% of span on any one day	> 5.0% of span	2	NA	NA	See table 4- 3 for recommendations	None
E6-004(b) Flow	> 12.0% of lowest monitored emission standard equivalent)	>6.0% of span value, or >0.02 in H ₂ O ABS for differential pressure monitors	>6.0% of span on five consecutive days, or > 12.0% of span on any one day	>6.0% of span	2	NA	NA	See table 4-3 for recommendations	None
E6-004(c) O ₂ or CO ₂	> 1.0% ABS difference	>1.0% ABS difference	>1.0% ABS difference on five consecutive days, or > 2.0% ABS difference on any one day	>1.0% ABS difference	1, 2, or 4	NA	NA	N	None
Note: Citations for the criteria are in Table 4-3.									

**Table 6-6:
Comparison of PA DEP and Federal Requirements for Out-of-Control Periods
for Failed Quarterly Calibration Error (Linearity) Test**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	3 Specific Requirement (Reference)	4 Specific Requirement (Reference)	A Most Stringent Column #	B Most All-Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60 and 61	Part 63	NA = Not Applicable, N= No Change Recommended				
E6-005 Calibration Error OOC Period	OOC period begins with the completion of failed test, data are invalid until the next acceptable test. Only the portion of the monitor range (L, M, H) that fails is out of control. <i>(CSM Manual, QA Section, I.A.1.g)</i>	If exceed linearity criteria at any level, OOC period begins with completion of failed test or aborted test, and ends with completion of successful test. Can use probationary calibration error test to validate data conditionally prior to completion of successful test. <i>(App. B, 2.2.3(e))</i>	Part 60, Appendix F: OOO period begins with time corresponding to completion of failed CGA, ends with completion of sampling of successful audit test. Each component of CEMS (pollutant and diluent) must pass, otherwise the system is out of control. <i>(App. F, 5.2.3)</i>	Part 63: OOO period begins with hour of failed test, and ends with the hour following corrective action and completion of successful test. <i>(63.8(c)(6))</i> Part 63, Subpart EEE: OOO period if exceed CE at any level. Cease operations on failure of ACA. Waste burning may not begin until corrective action and completion of successful RATA. <i>(EEE, App. 5.4)</i>	3 or 4	NA	Follow Part 60, unless Part 75 applies to a monitor in which case the Part 75 data validation procedures shall apply	C	2a

**Table 6-7:
Comparison of PA DEP and Federal Out of Control Periods for Failed RATA**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60 and 61	Part 63	NA = Not Applicable, N= No Change Recommended				
E6-006 RATA OOC Period	OOC period begins the time results are received by company or two month following completion of test, whichever is earlier. Period ends with commencement of next successful test. <i>(CSM Manual, QA, I.A.1.j.)</i>	OOC period begins with hour in which failed test is completed or aborted. Period ends with hour of completion of successful test, although conditional data validation provisions can apply. <i>(App. B, 2.3.2)</i>	OOC period begins with time corresponding to completion of sampling, ends with completion of successful audit test. <i>(App. F, 5.2.3)</i>	General Provisions: OOC period begins with hour of failed RATA, and ends with the hour following corrective action and completion of successful test. <i>(63.8(c)(6))</i> Part 63, Subpart EEE: OOC period if exceeds RA. Cease operations on failure of RATA. Waste burning may not begin until corrective action and completion of successful RATA. <i>(EEE, App. 5.4)</i>	3 or 4	NA	Follow NSPS, except Part 75 systems shall follow Part 75 data validation procedures, and any additional specific federal requirements (such as Part 63, subpart EEE) shall apply.	C	2a

**Table 6-8:
Comparison of PA DEP and Federal Out of Control Periods for Failed Flow Monitor Interference and Leak Test**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N= No Change Recommended				
E6-007(a) Daily Interference Test OOC	General requirement that data are invalid if fail to operate in accordance with performance specifications. <i>(CSM Manual, QA, Section III.A.1.)</i>	OOO begins with hour of completion of failed test and ends with hour of completion of successful test. <i>(App. B, 2.1.4(b))</i>	Test Not Required	2	NA	NA	A	2a
E6-007(b) Quarterly Leak Test OOC	General requirement that data are invalid if fail to operate in accordance with performance specifications. <i>(CSM Manual, QA, Section III.A.1.)</i>	OOO begins with hour of failed leak check and ends with hour of successful leak check. <i>(App. B, 2.2.3(g))</i>	Test Not Required	2	NA	NA	A	2a

6.3 Data Reduction - Minimum Valid Data

This section compares how many valid measurements are required to have a valid minute, six-minute, hour, or longer emission or parameter average. Tables 6-9 through 6-11 compare the different minimum data requirements for different averages.

6.3.1 One Minute and Six Minute Averages

There are no federal minimum data requirements in order to provide a one minute or six minute average. Pennsylvania requires that 75% of the measurements in the minute or six minute period be valid in order for the average to be valid. The lack of differences internally for the PA DEP requirements and the lack of federal standards removes harmonization issues for this element.

**Table 6-9:
Comparison of PA DEP and Federal Data Validation for One and Six Minute Averages**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60 and 61	Part 63	NA = Not Applicable, N= No Changes Recommended				
E6-008(a) CO and OC	75% valid data readings. <i>(CSM Manual, QA Section I.A. & B.I)</i>	No comparable requirement.	No comparable requirement.	Part 63, Subpart EEE: No specific minimum, but: 1 minute averages computed from measurements taken at least every 15 seconds. 15 second values may be disregarded as a result of a CEMS failure and if allowed by the QA plan. <i>(63.1209(f) and EEE, App, 6.5.1)</i>	1	NA	NA	N	None
E6-008(b) Other Gaseous Pollutants	75% valid data readings. <i>(CSM Manual, QA Section I.A. & B.I)</i>	No comparable requirement.	No comparable requirement.	No comparable requirement.	1	NA	NA	N	None
E6-008(c) Opacity	75% valid data readings. <i>(CSM Manual, QA Section I.B.1 through .3)</i>	Meet state data reduction requirements. <i>(75.10(d)(2))</i>	No minimum valid data requirements. 6 minute averages from 36 or more data points equally spaced over each 6-min period. Data during periods of breakdown, repair, cal checks and zero/span checks shall not be included. <i>(60.13(h))</i>	No minimum valid data requirements. 6-min avgs. calculated from 36 or more data points equally spaced over each 6-min period. Data during periods of unavoidable breakdowns, OOC periods, maintenance/QA periods, must not be included in any data average. If complying with 63.10(b)(2)(vii)(A) or (B), must include any data recorded during periods of monitor breakdown or malfunction. <i>(63.8(g)(2))</i>	1	NA	NA	N	None

6.3.2 Hourly Averages

Table 6-10b compares data reduction requirements, with respect to valid measurements, for one hour averages across programs. Internally, PA DEP has three different requirements (see Table 6-10a). Also, the hourly average is the only averaging time with both Pennsylvania and specific federal valid data requirements (see Table 6-10b).

**Table 6-10a:
Comparison of PA DEP Requirements for Data Validation of Hourly Averages**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP			NA = Not Applicable, N= No Change Recommended				
16-009 Percent Valid Readings Required	CO, Combustion Efficiency, Temperature: 90% valid readings/hr (54 minutes) <i>(HWI Policy Section E.1, MWI Policy Section IV.C.1.)</i>	Opacity, HCL, NOx SO2: 75% valid data (45 minutes) <i>(HWI Policy Section E.1, MWI Policy Section IV.C.1. FCCU Policy Section 2 II.A.1. & 2., CEMS Enforcement Policy Section 2 I.B. & II.B. and Section 3 II.B)</i>	General Requirement: 75% valid data and a minimum of 4 measurements. <i>(CSM Manual, QA Section I.A. & B. and Tables II - XI)</i>	1	NA	NA	N [but see Table 6-10b]	See Table 6-10b

**Table 6-10b:
Comparison of PA DEP and Federal Data Validation of Hourly Averages**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Part 60	Part 63	NA = Not Applicable, N= No Change Recommended				
E6-009(a) CO	HWI, MWI Policies: 90% valid readings/hr (54 minutes) <i>(PA Regs., § 139.111)</i> <i>(HWI Policy Section E.1,</i> <i>MWI Policy Section IV.C.1.)</i>	Not Applicable	60, Subparts Ea, Eb, AAAA, BBBB: 4 or more data points equally spaced. A minimum of 2 data points per hour. <i>(60.58a(b), 60.58b(1)(4), 60.1260(b)and(c), 60.1750(b))</i>	63, Subpart EEE: 1-minute readings required, except 20 minutes allowed for required calibration <i>(Subpart EEE, App., 6.2)</i>	1	NA	NA	N	None
E6-009(b) Combustion Efficiency (based on CO and CO ₂)	HWI, MWI Policies: 90% valid readings/hr (54 minutes) <i>(PA Regs., § 139.111)</i> <i>(HWI Policy Section E.1,</i> <i>MWI Policy Section IV.C.1.)</i>	Not Applicable	Not Applicable	Not Applicable	1	NA	NA	N	None
E6-009(c) Temperature	HWI, MWI Policies: 90% valid readings/hr (54 minutes) <i>(PA Regs., § 139.111)</i> <i>(HWI Policy Section E.1,</i> <i>MWI Policy Section IV.C.1.)</i>	Not Applicable	60, Subparts Eb, AAAA, BBBB: 4 or more data points equally spaced. A minimum of 2 data points per hour. <i>(60.58b(1)(10), 60.1335(b) and (c), 60.1825(b)and(c))</i>	See general requirement below.	1	NA	NA	N	None
E6-009(d) Opacity	HWI, MWI, FCC, and Boiler Policies: 75% valid data (45 minutes) <i>(HWI Policy Section E.1,</i> <i>MWI Policy Section IV.C.1.</i> <i>FCCU Policy Section 2 II.A.1. & 2., CEMS Enforcement Policy Section 2 I.B. & II.B. and Section 3 II.B)</i>	None Specified	Hourly average does not apply to opacity.	Hourly average does not apply to opacity.	1	NA	NA	N	None

(cont.)

**Table 6-10b:
Comparison of PA DEP and Federal Data Validation of Hourly Averages (cont.)**

	1	2	3	4	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	Part 60	Part 63	NA = Not Applicable, N= No Change Recommended					
E6-009(e) OC, O ₂	See general requirement below.	See general requirement below. (O ₂ only)	See general requirement below.	63, Subpart EEE: 1-minute readings required, except 20 minutes allowed for required calibration (<i>Subpart EEE, App., 6.2</i>)	4	NA	Follow PA DEP requirements, except use more stringent federal requirement if applicable.	C	2a	
E6-009(f) Municipal Waste Combustor HCl, NO _x , SO ₂	MWI Policy: 75% valid data (45 minutes) (<i>MWI Policy Section IV.C.1.</i>)	Not Applicable	60, Subparts Ea, Eb, AAAA, BBBB: 4 or more data points equally spaced. A minimum of 2 data points per hour. (<i>60.58a(h), 60.58b(i)(4), 60.1260(b)and(c), 60.1750(b)</i>)	See general requirement below.	1	NA	NA	N	None	
E6-009(g) Boiler SO ₂	Boiler Policy: 75% valid data (45 minutes) <i>CEMS Enforcement Policy Section 2 I.B. & II.B. and Section 3 II.B</i>)	Valid measurement recorded in each quadrant of the hour except during QA testing when 2 valid measurements are required. (<i>75.10(d)(1)</i>)	60, Subparts D, Da, Db, Dc: 4 or more data points equally spaced. A minimum of 2 data points per hour. (<i>60.13(h), 60.47a (f) and (g), 60.47b(c) and (d), 60.46c(b) and (f)</i>)	See general requirement below.	1	NA	Follow PA DEP requirements, except a valid hour for a system subject to Part 75 shall be considered to be a valid hour for PA DEP purposes.	C	2a, 3e	

(cont.)

**Table 6-10b:
Comparison of PA DEP and Federal Data Validation of Hourly Averages (cont.)**

	1	2	3	4	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	Part 60	Part 63	NA = Not Applicable, N= No Change Recommended					
E6-009(h) All Pollutants/ Parameters (Unless Otherwise Specified)	CSM Manual: At least 75% valid data readings. <i>(CSM Manual, QA Section I.A. & B. and Tables II - XI)</i>	CO₂, O₂, NO_x, and Flow: Valid measurement recorded in each quadrant of the hour except during QA testing when 2 valid measurements are required. <i>(75.10(d)(1))</i>	4 or more data points equally spaced over each 1 hr period. Data during periods of breakdown, repair, cal checks and zero/span checks shall not be included. No minimum number of data points except as specified in applicable subparts. <i>(60.13(h))</i>	Unless specified in regulation, 4 or more data points equally spaced over each 1-hr period, except at least 2 data points, each representing a 15 minute period, during calibration, maintenance, and QA activities. <i>(63.8(g)(2) and specific Subparts)</i>	1	NA	Follow PA DEP requirements, except a valid hour for a system subject to Part 75 shall be considered to be a valid hour for PA DEP purposes.	C	2a	

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Data Validity for Gaseous Pollutants

- The stringency of federal valid data requirements vary by program, source type and monitoring circumstances (less stringent requirements allowed during an hour in which QA testing occurs). Part 75 requires a valid measurement in each quadrant of the hour, but allows for a valid hourly average to be based on 2 valid measurements (in 2 quadrants) during QA testing. Part 60 subpart specific requirements (boilers and municipal waste combustors) specify a minimum of 2 valid data points per hour, without the QA testing caveat.
- Pennsylvania has a standard 75% valid data requirement, and has a tighter 90% requirement for specific source category requirements (hospital waste and municipal waste incinerators for CO, combustion efficiency, and temperature). The general 75% requirement works in concert with the minimum measurement cycle requirement (see Section 3.2.3) for each monitoring system type to set the minimum number of valid data. For most parameters, the 75% value means at least 3 out of 4 measurements (or 45 minutes). For other parameters, such as CO, at least 9 out of 12 measurements (or 45 minutes) is required. For the 90% requirement, temperature monitors with a 1-minute cycle time, need to record 54 minutes, while a CO monitor, with a 5-minute cycle time would have to record 11 out of 12 5-minute averages.
- For incinerators with 90% data capture requirements, the heightened scrutiny of these sources suggest that the PA DEP specifications meet a specific program objective. In addition, Part 75 requirements do not apply to these sources, so the different specifications concerning what constitutes a valid hour will not necessarily interfere with electronic reporting.
- For opacity monitors, the PA DEP specifications require 45 one-minute averages for a valid hour. For the opacity standard, given the use of one or six minute averages, the inconsistency does not raise the same issues because the minute average is the basic building block, not an hourly average.
- The general PA DEP requirement to obtain at least 3 out of the 4 15-minute data points for a valid hour is more stringent than the Part 75 and Parts 60/63 requirement for a minimum of 2 data points. It is also more stringent than the Subpart EEE provision which allows for 20 minutes to conduct calibrations (or a 66% requirement). However, QA testing such as a daily calibration drift-error test, can be scheduled to overlap hours, meet both requirements, and still provide for a 30 minute window to complete the QA test and meet the more stringent PA DEP specification.

- Some of the PA DEP policy document include a not only the percentage requirement but also the number of minutes. The minute requirement appears extraneous to the CSM Manual requirement for a percentage of valid data.

Recommendations

What constitutes a valid hourly average is a basic building block for using gaseous CEMS data to show compliance with various standards. The use of different data validity specifications can lead to inconsistent treatment of data for a specific hour and require maintenance of multiple data sets for different programs. The standard 75% requirement in the PA DEP policies should be evaluated to determine if the additional data quality provided warrants the distinction from federal requirements. Because the 75% value can straddle two hours (e.g., outage in fourth quadrant of hour 1 and first quadrant of hour 2), the 75% standard may not provide significant extra benefit from a requirement to have at least two valid points per hour in hours with QA testing.

On this basis, we recommend two steps: (a) seek delegation approval to clarify that the PA DEP valid hour standards apply in place of the less restrictive requirements in Parts 60 and 63 (except for the provisions of Subpart EEE in Part 63); and (b) allow a source reporting under Part 75 to satisfy the PA DEP requirements by meeting Part 75. The impact on data availability is minor and the benefit would be to allow the source to use standard Part 75 data validity procedures (and software routines) to ensure consistent treatment of what constitutes a valid hour for both Part 75 and PA DEP purposes.

Impacts to PA DEP Systems and Documents

The above recommendation for Part 75 sources would affect the CSM Manual (2a), Quality Assurance Section I.B.4, and the boiler policy (Item 3e). For delegation, PA DEP would have to seek a revision by EPA to the delegation letters (or a separate clarifying letter).

6.3.3 Longer Averages

Table 6-11 lists the PA DEP minimum valid data requirements to establish a valid measurement for different averaging times greater than one hour. These requirements build on each other. For example, a 30 day average requires 23 valid days, each of those valid days require 18 valid hours, and each hour requires 75% valid data. There are no comparable federal data validation requirements for averages longer than an hour. However, there are minimum data requirements in some Part 60 subparts that identify the amount of minimum data that must be collected or supplemented with non-CEMS methods. These requirements do not appear to require harmonization. Provided there is agreement on what constitutes a valid hour, the differences in specifying what constitutes a valid number of hours for a specific emission standard do not need to be harmonized. That is a compliance assessment that can be based on the hourly data submitted.

**Table 6-11:
Comparison of PA DEP and Federal Data Validation for Averages Longer Than One Hour**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N= No Change Recommended				
E6-010(a) Averages less than a day	3-hr average: 2 valid hourly averages. 4-hr average: 3 valid hourly averages. 6-hr average: 4 valid hourly averages. 8-hr average: 6 valid hourly averages. 12-hr average: 9 valid hourly averages. <i>(CSM Manual, QA Section I.A. & B.)</i>	Part 75 does not have data validation requirements comparable to PA DEP's for longer averages. All valid 1 hour averages are used in the average calculation.	Parts 60, 61, and 63 do not have data validation requirements comparable to PA DEP's for longer averages. All valid 1 hour averages are used in the average calculation.	1	NA	NA	N	None
E6-010(b) Daily averages	18 valid hourly averages. <i>(CSM Manual, QA Section I.A. & B.)</i>	same as above	Same as above. Subparts with requirement to use supplement data to obtain at least 18 hrs per day (or 75% per day): Subparts Da, Db, Dc, Ea, Eb, J, AAAA, BBBB	NA	1	NA	N	None
E6-010(c) Monthly or 30 day averages	30-day average: 23 valid daily averages, and at least 360 valid hourly averages or ≥50% of hrs during any running 30-day period <i>(CSM Manual, QA Section I.A. & B. and Boiler CEMS Enforcement Policy, 2.II.A. Interim Compliance Strategy - RACT For Major NO_x Sources)</i>	same as above.	Same as above. Subparts with 22 out of 30 rolling operating days: Subparts Da, Db, Dc, with 22 out of 30 rolling calendar days: J (FCCU), with 75% of days per month: Ea, Eb, with 90% of days per month: AAAA, BBBB	1	NA	NA	N	None
E6-010(d) Other averages	4-day average: 3 valid daily averages <i>(CSM Manual, QA Section I.A. & B.)</i>	same as above	Same as above. Subparts with 90% of days per calendar quarter: Ea and Eb	3	NA	NA	N	N

6.4 Data Availability

Data availability requirements are not comparable between programs, and we do not recommend any harmonization between programs. Part 75 has no data availability requirements. Instead Part 75 relies on conservative substitute data routines, based on percent data availability, as an incentive for sources to maintain a high level of quality assured data. Part 60 uses the percent data availability during the reporting period to determine if a source is required to submit a detailed excess emission report (see Table 6-12). In Part 63, all CEMS are required to submit detailed excess emission reports, except for Subpart Y which uses data availability to determine if a source submits a detailed excess emission report. Part 63, Subpart EEE, requires 100% data availability (except for 20 minutes to conduct calibration), and the unit must shut down if the CEMS is not operating or is out-of-control.

Table 6-12:
Parts 60 and 63 Data Availability (Ref. No. 6-011)

Parts 60, 63	Requirement
60, A: General	Submit detailed excess emission report if CMS downtime \geq 5% of operating time during the reporting period. (60.7(c))
63, Y: 312 (Marine Vessel Loading and Unloading)	Submit detailed excess emission report if CMS downtime \geq 10% of operating time during the reporting period. (63.567(e))
63, EEE: 331 (Hazardous Waste Incinerators)	100% data availability except maximum of 20 minutes downtime for CEMS calibration. Cease waste burning if CEMS down or out of control. (EEE, App., 4.1, 5.4, 6.2)

Pennsylvania data availability requirements are listed in Table 6-13. Exceeding the data availability requirement may result in an enforcement action and penalty. The internal PA DEP differences generally reflect technical judgments about each specific emission limit and the relative need for data to provide a reasonable assurance of compliance. The differences, so long as they are based on a consistent definition of what constitutes a valid hour, do not present harmonization issues. The existing PA DEP data systems are structured to provide for multiple averaging periods. For sources, while multiple reports may be required, the reports can all be generated from the same data set. Thus, we do not recommend harmonizing these internal requirements.

**Table 6-13:
Comparison of PA DEP Requirements for Data Availability**

	1	2	3	4	5
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)
Program	PA DEP				
16-011 Data Availability	<p>General Rule: ≥90% of the emission standard time periods in each calendar month, or ≥95% of hours in each calendar quarter. <i>(25 Pa. Code, Part I, Subpart C, Article III, 139.101(12))</i> <i>(25 Pa. Code, Part I, Subpart C, Article III, 139.103(2))</i> <i>(Cement Kiln Policy, 2.II.A.1. & 2.)</i> <i>(FCCU Policy, 2.II.A.1. & 2.)</i> <i>(Boiler CEMS Enforcement Policy, 2.II.A.)</i></p>	<p>TRS: ≥ 75% of 12 hour averages during each calendar month shall be valid, and ≥ 85% of 12 hour averages in each calendar quarter shall be valid. <i>(25 Pa. Code, Part I, Subpart C, Article III, 139.108(1) and (2))</i></p>	<p>Opacity (HWI and MWI): ≥95% of data hours per day shall be valid. <i>(25 Pa. Code, Part I, Subpart C, Article III, 139.111(2) and Hospital Waste Incinerator Policy, E.1., Municipal Waster Incinerator Policy, IV.C.1.)</i></p> <p>Note: ≥95% also applies to O₂ CEMS by permit condition. <i>(Permit No. 25-00688)</i></p>	<p>HCL, NO_x, SO₂ (HWI and MWI): ≥90% of hours each month shall be valid hours. <i>(25 Pa. Code, Part I, Subpart C, Article III, 139.111(3))</i> <i>(Municipal Waste Incinerator Policy, IV.C.1.)</i> <i>(Hospital Waste Incinerator Policy, E.1.)</i></p>	<p>CO, CE, and Temp. (HWI and MWI): 100% of the data hours shall be valid hours. <i>(25 Pa. Code, Part I, Subpart C, Article III, 139.111(1))</i> <i>(Hospital Waste Incinerator Policy, E.1., Municipal Waster Incinerator Policy, IV.C.1.)</i></p>

A	B	C		
Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
NA = Not Applicable, N= No Change Recommended				
5	NA	NA	NA	None

6.5 Substitute Data

Part 75 requires the use of substitute data for missing or invalid data hours, and when over-scaling of the high range of a SO₂, NO_x, or flow CEMS occurs. Part 75 sources also may use default values (in lieu of a high range value, or as a diluent cap value). There are no Part 60 provisions for substitute data, and only Subpart EEE in Part 63 (hazardous waste incinerators) requires substitute data for over-scaling. The Pennsylvania substitute data requirements only apply to units with total mass emission limits.

**Table 6-14:
Comparison of PA DEP and Federal Substitute/Missing Data Procedures**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Pollutant	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
E6-012(a) Substitute Date for Invalid/Missing Data Hours	Units with total mass limits (tons/yr, etc.) provide substitute data for invalid hours. Highest one hour emission value during the quarter, or alternative procedure approved by department. Pro-rate substitute value during hours of partial operation. <i>(CEMS Phase 3 Approval Letter Elements)</i> Permit-specific NO _x CEMS substitute data procedures. <i>(Permit No. 25-00923)</i>	Must use substitute data when a valid QA hour is not measured. <i>(75.30(a))</i> Gas CEMS: Generally, use the average of the values for the hour before and the hour after the missing data period, or a value determined over a look back period, whichever is greater. Stack Flow CEMS: Use either a look-back substitution approach which is load based or the maximum potential stack flow rate. The look-back statistic is compared to the hour before/hour after average and whichever is greater is substituted. <i>(75.33)</i>	No applicable requirements.	NA	2	Allow sources subject to these substitution requirements to substitute these data for purposes of PA DEP reporting, as applicable.	C	5b (Phase 3 approval letter elements)
E6-012(b) Default Values	Not specified.	Default SO₂ A unit with an SO ₂ CEMS can substitute a 2.0 ppm SO ₂ default value for hours when it combusts "very low sulfur fuel." <i>(75.11(e))</i> Default NO_x A unit with NO _x control may use a default high level value of 200.0% of the MPC instead of a dual range CEMS. <i>(App. A, 2.1.2.4(e))</i>	No applicable requirements.	2	NA	Allow sources subject to these substitution requirements to substitute these data for purposes of PA DEP reporting, as applicable.	C	2a

(cont.)

**Table 6-14:
Comparison of PA DEP and Federal Substitute/Missing Data Procedures (cont.)**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Pollutant	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
E6-012(c) Diluent Cap	Not specified.	<p>Diluent Cap (CO₂, O₂): A default value for CO₂ or O₂ may be used to calculate NO_x rate, CO₂ mass emission rate, and heat input rate when the hourly CO₂ is below the value and the hourly O₂ is above the value.</p> <p>Boilers: CO₂ = 5.0%, O₂ = 14.0%</p> <p>Combustion Turbines: CO₂ = 1.0%, O₂ = 19.0%</p> <p><i>(App. F, 3, 4, 5)</i></p>	No applicable requirements.	2	NA	Allow sources subject to these substitution requirements to substitute these data for purposes of PA DEP reporting, as applicable.	C	2a
E6-012(d) Substitute Data for Over-scaling	Not specified.	<p>SO₂, NO_x, Flow Substitute 200% of full scale range when high scale range exceeded. <i>(App. A 2.1.1.5, 2.1.2.5, 2.1.4.3)</i></p> <p>Two methods for partial over-scale hours: 1) Substitute 200% for the complete hour, or 2) Substitute 200% only for each complete cycle in hour with over-scale measurement. <i>(Part 75 Emissions Monitoring Policy Manual, Q10.27)</i></p>	<p>63, Subpart EEE (CO and THC):</p> <p>Substitute value of 10,000 ppm if one minute average CO is ≥3000 ppm span value, and there is no high dual range. <i>(63.1209(a)(3))</i></p> <p>Substitute value of 500 ppm if one minute average THC is ≥100 ppm span value, and there is no high dual range. <i>(63.1209(a)(4))</i></p>	3	2	Allow sources subject to these substitution requirements to substitute these data for purposes of PA DEP reporting, as applicable.	C	2a

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Invalid Hour Data Substitution

Pennsylvania substitute data requirements are specified in the Phase III approval letter, and require either substituting the highest value in the quarter for the invalid hour, or an alternative procedure approved by the DEP. The highest value in the quarter approach potentially results in a higher substitute data value for the hour than the hour before-hour after, or look back approach in Part 75.

Note 2. Other Data Substitution

As noted earlier, Pennsylvania does not have provisions for substitute high range default values, diluent cap values, or over-scaling. For Part 75 sources that can use various default values in particular situations, it is important to note that these values are considered quality-assured, valid hours for calculating percent monitor availability. This approach may cause discrepancies with PA DEP standards, that do not explicitly accept these values as quality assured, valid hourly data averages. Because the Electronic Data Reporting Formats for Part 75 use specific Method of Determination Codes for these default values, a Part 75 source can segregate these values from other monitored hours.

Recommendations

1. We recommend that PA DEP accept, on a case by case basis, invalid hour data substitution for Part 75 sources that also have PA DEP mass emission limits, based on the Part 75 substitute data procedures. This approach addresses a reasonably limited set of situations, and allows a source to use one substitute data method.
2. PA DEP should accept Parts 63 and 75 default values from CEM monitored units as acceptable quality-assured data. Because these defaults are used as valid data only when the CEMS is still operating in control, there is technical justification for accepting the values as valid. A decision to exclude these values will not provide an incentive for improved monitor performance, and will result in different data validity determinations for the same operating hours.

Impacts on DEP Systems and Documents

1. Recommendation No. 1 requires no changes as this issue is addressed on a case by case basis currently. The approval letter process enables PA DEP to specify the appropriate data substitution procedures. If DEP chooses, the current approval letter form materials could be modified to clarify this point (Item 5b).
2. For Recommendation No. 2, some clarification of this point should be included in the CSM Manual (for instance, in the QA section, as a new Note 4) (Item 2a).

Section 7: Notifications and Approvals

The implementing agency must certify an allowable monitoring method before it can be used for monitoring under State and federal programs. In addition recertification may be required if the facility replaces, modifies, or changes a certified CEMS in a way that may significantly affect the ability of the system to accurately measure monitored parameters.

Section 7 compares notification and approval requirements in three areas which correspond to the steps in Pennsylvania's CSM Manual for CEMS certification:

- 7.1 Phase I - Monitoring Plan
- 7.2 Phase II - Performance Testing
- 7.3 Phase III - Certification and Recertification

7.1 Phase I - Monitoring Plan

Pennsylvania's Phase I application consists of a monitoring plan which should demonstrate the probable capability of the system to meet regulatory requirements. Part 75 also requires submittal of a monitoring plan. There are no similar detailed CEMS monitoring plan submittal requirements in Parts 60 or 63. Table 7-1b compares the Pennsylvania Phase I and Part 75 monitoring plan submittal deadlines, format, and agency approval requirements.

The Pennsylvania Phase I initial application requirements are similar across monitored parameters (CSM Manual, Phase I, I.), except for units subject to Chapter 145, NO_x Budget Trading Program units. The Chapter 145 units must also meet the monitoring plan requirements in Part 75 Subpart H (see Table 7-1a). The content and format of the monitoring plans are further examined in Section 10 of this report.

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Submittal Deadline [*Ref. No. 7-001(a)*]

The submittal deadlines are different reflecting the different approach to the approval framework. PA DEP approves the Phase I submittal; the Part 75 monitoring plan is not approved, but submitted to assist with observing performance tests and reviewing certification results. Pennsylvania approves the Phase I application prior to performance testing, and separate from the Phase III or certification approval. Thus, the Phase I application must be received well in advance of the certification test timeframe.

Note 2. Format [*Ref. No. 7-001(b)*]

Part 75 provides for electronic submittal of parts of the monitoring plan. PA DEP does not provide an equivalent electronic format for the Phase I submittal. However, PA DEP has developed optional forms (using MS Word) that allow a wordprocessing-based electronic submittal. In addition, the CSM Manual requires electronic submittal at such time as PA DEP includes electronic formats as attachments to the Manual.

Note 3. Plan Approval [*Ref. No. 7-001(c)*]

Under Part 75, an agency does not separately approve the monitoring plan, as Pennsylvania does.

**Table 7-1a:
PA DEP CSM Manual Phase I Application and Ch. 145 Monitoring Plan Requirements**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-001(a) Phase I-Monitoring Plan Submittal Deadline	Submitted so that Phase I approval is received 6 months prior initial start-up (for new sources) or within 6 months of promulgation of new CSMS rule or permit requirement. <i>(CSM Manual, Phase I, Page 4)</i>	No later than 45 days prior to certification test, electronic submittal included in each quarterly report. Changes to the hard copy portion of the plan submitted within 30 days. <i>(145.74(b) and 40 CFR 75.62(a) and 75.73(e))</i>	1	NA	NA	N	None
I7-001(b) Format	Hard Copy. There is an optional software package that generates Phase I submittal forms using Word software. <i>(CSM Manual, Phase I, page 4, Phase I Monitoring Plan Submittal Forms)</i>	Electronic and Hard Copy. <i>(145.74(b) and 40 CFR 75.53(e)(1),(2) and 75.73(e))</i>	NA	2	Electronic format for submittal of Phase I form, with minimal hardcopy elements.	C	See Section 10
I7-001(c) Agency Approval or Disapproval Notice	Phase I approval or disapproval letter is sent as appropriate. <i>(CEMS Approval Procedures, Review of Phase I Proposals, I.E.)</i>	Monitoring plan approval is not required under Subpart H. <i>(145.74(b) and 40 CFR 75.63(b) and 75.70(d))</i> But, note: PA DEP as a matter of practice has been reviewing, commenting on, and approving Subpart H monitoring plans as part of the overall Subpart H certification process.	1	NA	NA	N	None

**Table 7-1b:
Comparison of PA DEP Phase I Application versus Part 75 Monitoring Plan Submittal and Approval Requirements**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	NA = Not Applicable, N = No Change Recommended				
E7-001(a) Phase I-Monitoring Plan Submittal Deadline	Submitted so that Phase I approval is received 6 months prior to initial start-up (for new sources) or within 6 months of promulgation of new CSMS rule or permit requirement. <i>(CSM Manual, Phase I, Page 4)</i> Ch 145 NO _x Budget Program units also subject to requirements in Part 75, Subpart H. <i>(145.74(b))</i>	No later than 45 days prior to certification test, electronic submittal included in each quarterly report. Changes to the hard copy portion of the plan submitted within 30 days. Hard copy portion sent to EPA and state. <i>(75.62(a))</i> Subpart H Same as above. <i>(75.73(e))</i>	1	NA	NA	N	None
E7-001(b) Format	Hard Copy. There is an optional software package that generates Phase I submittal forms using Word software. <i>(CSM Manual, Phase I, page 4, Phase I Monitoring Plan Submittal Forms)</i> Ch 145 NO _x Budget units also subject to requirements in Part 75, Subpart H. <i>(145.74(b))</i>	Electronic and Hard Copy. <i>(75.53(e)(1) and 75.53(e)(2))</i> Subpart H Same as above. <i>(75.73(e))</i>	NA	2	Electronic format for submittal of Phase I form, with minimal hardcopy elements.	C	See Section 10
E7-001(c) Agency Approval or Disapproval Notice	Phase I approval or disapproval letter is sent as appropriate. <i>(CEMS Approval Procedures, Review of Phase I Proposals, I.E.)</i>	Monitoring plan is not approved. <i>(75.63(b))</i>	1	NA	NA	N	None

Recommendations

There is no need to harmonize the Pennsylvania and Part 75 Phase I - monitoring plan submittal and approval processes. PA DEP has determined that an approval of the Phase I submittal is important to ensure effective oversight. Note that this recommendation is limited to the process -- Section 10, below, discusses harmonization issues associated with the content of Phase 1 submittals and Part 75 monitoring plans.

7.2 Phase II - Performance Testing

Phase II of the Pennsylvania CEM approval process involves performance testing. Table 7-3 on the following pages compares performance test notification and approval requirements. There are no internal Pennsylvania differences (CSM Manual, Phase II, page 24) except for the Chapter 145 NO_x Budget Program units which are also subject to Part 75, Subpart H requirements.

Parts 60, 61, and 63 provide that a copy of a state or local agency notification sent to the Administrator, will satisfy the performance test notification requirements if the notification is substantially similar (see Table 7-2). In addition Part 61 explicitly allows substitution of the state deadlines for notifications.

**Table 7-2:
Use of State Notifications to Meet Federal Requirements**

Program	Citation	Criteria for Use of State Notification or Timelines
Part 60	60.7(g)	Copy of state or local notification if substantially similar to 60.7(a)
Part 61	61.10(h)	States with delegated authority, if state has established timelines consistent with reporting frequencies in Part 61, the report may be submitted consistent with the state's schedule.
Part 63	63.9(a)(3)	Copy of state notification if it contains all the information required in a notification in 63.9.
	63.9(a)(4)	States with delegated authority, shall receive Part 63 notifications directly, with a copy to the appropriate regional EPA office. The EPA regional office may waive the requirement for a copy.
	63.13(c)	Any state submittal with all the information required in an application, notification, request, report, statement, or other communication required by Part 63 may be copied to the EPA regional office to satisfy the Part 63 requirements.

**Table 7-3a:
Comparison of PA DEP Phase II - Performance Testing: Notification and Approval Requirements/Deadlines**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-002(a) Performance Test Deadline	Within 210 days of startup; Within 60 days of normal capacity. <i>(CSM Manual, Phase II - Page 24)</i>	Certification Deadlines: Existing Units (pre 2002): 5/1/2000 or 5/1/2002 Post 2001 Units: 5/1/2002, 180 days after commenced operation, 90 days after new stack or flue, or the following May 1. <i>(145.70(2) and 145.71(b))</i>	2	NA	NA.	N	None
I7-002(b) Minimum Prior Agency Performance Test Notification	45 days <i>(CSM Manual, Phase II - Page 24)</i>	1) Initial certification and full recertification: 21 days prior to the first scheduled day of testing. 2) Retest and partial recertification: 7 days prior to RATA in writing or by telephone. Date may be changed with 7 day notice in writing or by telephone. 3) New units, newly affected units, new stacks, must provide date 45 days prior to date commence operation of new equipment, 7 day notification for test changes. A waiver may be granted for recertification tests. <i>(145.71(b) and 40 CFR 75.20 and 75.61(a)(1))</i>	1	NA	NA	N	None
I7-002(c) Performance Test Plan Submittal	Testing protocol must be submitted with testing notification. <i>(CSM Manual, Phase II - Page 24)</i>	None	1	NA	NA	N	None
I7-002(d) Performance Test Plan Approval	No agency deadline. Phase II approval letter is sent, or if test protocol does not meet appropriate requirements, a letter is sent requesting appropriate information. <i>(CEMS Approval Procedures, Review of Phase II Protocols, II.C.)</i>	None	1	NA	NA	N	None

(cont.)

**Table 7-3a:
Comparison of PA DEP Phase II - Performance Testing: Notification and Approval Requirements/Deadlines (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-002(f) Test Results Reporting	10 days for notice of completion. 60 days for report results with Phase III application <i>(CSM Manual, Phase II - Page 24 and Phase III - Page 36)</i>	Within 45 days of completing certification or recertification tests. <i>(145.71(b) and 40 CFR 70.20 and 75.63(a))</i>	2	NA	NA	N	None

**Table 7-3b:
Comparison of PA DEP and Federal Notification and Approval Requirements/Deadlines for Performance Testing**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	Part 63	NA = Not Applicable, N = No Change Recommended				
E7-002(a) CEMS Performance Test Deadline	<p>Within 210 days of startup; Within 60 days of normal capacity. <i>(CSM Manual, Phase II - Page 24)</i></p> <p>Ch 145 NOx Budget Trading units: Certification Deadlines: Existing Units (pre 2002): 5/1/2000 or 5/1/2002 Post 2001 Units: 5/1/2002, 180 days after commenced operation, 90 days after new stack or flue, or the following May 1. <i>(145.70(2) and 145.71(b))</i></p>	<p>All certification tests shall be completed the earlier of 90 operating days or 180 calendar days after the date the unit first operates after subject to Part 75, the unit first operates after a shutdown, or the unit first exhausts through stack/controls after new stack or control device. <i>(75.4(b),(c), (d), and (e))</i></p> <p>Subpart H Meet compliance deadlines in Ch. 145. <i>(75.70(b))</i></p>	<p>Part 60: Within 30 days after 60.8 performance tests, which must be performed within 60 days of maximum production rate or within 180 days of initial startup. <i>(60.13(c) and 60.8(a))</i></p> <p>COMS used for 60.8 emission performance testing per 60.11(e)(5) shall complete test prior to 60.8 tests. <i>(60.13(c))</i></p> <p>Part 61: Subparts N, O, P: 90 days after startup or the subpart effective date. <i>(61.163(b), 61.175(a)(1), 61.183(b)(1))</i></p>	<p>Part 63: CMS data must be verified prior to or in conjunction with 63.7 performance tests. 63.7 performance test required within 180 days of compliance date. <i>(63.8(c) and 63.7(a)(2))</i></p> <p>COMS used for 63.7 performance test shall complete test at least 15 days prior to 63.7 performance tests. <i>(63.8(e)(4) and (5))</i></p>	2	NA	NA	N	None

(cont.)

**Table 7-3b:
Comparison of PA DEP and Federal Notification and Approval Requirements/Deadlines for Performance Testing (cont.)**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	Part 63	NA = Not Applicable, N = No Change Recommended				
E7-002(b) Minimum Prior Agency Performance Test Notification	45 days <i>(CSM Manual, Phase II - Page 24)</i> Ch 145 Also subject to same requirements as in Part 75. <i>(145.71(b) and 40 CFR 75.20)</i>	1) Initial certification and full recertification: 21 days prior to the first scheduled day of testing. 2) Retest and partial recertification: 7 days prior to RATA in writing or by telephone. Date may be changed with 7 day notice in writing or by telephone. 3) New units, newly affected units, new stacks, new FGD must provide date 45 days prior to date commence operation of new equipment, 7 day notification for test changes. A waiver may be granted for recertification tests. <i>(75.61(a)(1))</i>	Part 60: 30 days, 7 days for rescheduled test. <i>(60.7(a)(5))(75.61(a)(1))</i> Part 61: None	General Provisions: Notification simultaneous with performance test notification of 63.7(b) (60 days prior to performance test), or at least 60 days prior to the performance evaluation if no performance test required. <i>(63.8(e), 63.9(g)(1), and 63.7(c))</i> Subpart EEE: Notification of intention for comprehensive performance test plan at least one year prior to tests, and 60 day notice prior to test date. Confirmatory test plan at least 60 days prior to test. <i>(63.1207(e)(1))</i>	4	NA	NA	N	None

(cont.)

**Table 7-3b:
Comparison of PA DEP and Federal Notification and Approval Requirements/Deadlines for Performance Testing (cont.)**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	Part 63	NA = Not Applicable, N = No Change Recommended				
E7-002(c) Performance Test Plan Submittal	Testing protocol must be submitted with testing notification. <i>(CSM Manual, Phase II - Page 24)</i>	None	None	Site-specific test plan may be required, must be submitted 60 days before test date. <i>(63.8(e)(3))I</i>	1	NA	NA	N	None
E7-002(d) Performance Test Plan Approval	No agency deadline. Phase II approval letter is sent, or if test protocol does not meet appropriate requirements, a letter is sent requesting appropriate information. <i>(CEMS Approval Procedures, Review of Phase II Protocols, II.C.)</i>	None	None	Part 63: If requested, within 30 days of original submittal or within 30 days of additional submittals. <i>(63.8(e)(3) and 63.7(c)(3))</i> Subpart EEE: Administrator will notify within 9 months of receipt of comprehensive test. 30 days for confirmatory tests <i>(63.1207(e)(1))</i>	4	NA	NA	N	None

(cont.)

**Table 7-3b:
Comparison of PA DEP and Federal Notification and Approval Requirements/Deadlines for Performance Testing (cont.)**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	Part 63	NA = Not Applicable, N = No Change Recommended				
E7-002(e) Public Notice	None	None	None	Subpart EEE: After approval source will issue public notice and make test plans available for review. <i>(63.1207(e)(2))</i>	4	NA	NA	N	None
E7-002(f) Test Results Reporting	10 days for notice of completion. 60 days for report results with Phase III application <i>(CSM Manual, Phase II - Page 24 and Phase III - Page 36)</i> Ch 145 Also subject to same requirements as in Part 75 <i>(145.71(b) and 40 CFR 70.20)</i>	Within 45 days of completing certification or recertification tests. <i>(75.63(a))</i>	Part 60: Provide 2 copies of written results report within 60 days of completion (unless COM used for performance test described in 60.11(e)(5)). <i>(60.13(c)(2))</i> COMS used for 60.8 performance test - 10 days before the 60.8 performance tests <i>(60.13(c)(1))</i> Part 61: Subparts N, O, P: Within 60 days of the evaluation. <i>(61.165(f)(1), 61.177(c)(1) or 61.186(b)(1))</i>	Submit with 63.7 performance test results (unless COMS used for performance test described in 63.6(d)(6)), or within 60 days of evaluation if no 63.7 test required. COMS used for 63.7 performance test - At least 15 days prior to 63.7 performance test. <i>(63.8(e)(5))</i>	2	NA	NA	N	None

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Test Deadlines [*Ref. No. 7-002(a)*]

The PA DEP and federal performance test deadlines vary between 180 to 210 days following start-up or compliance date. Part 75 includes a 90 operating day deadline in addition to the 180 calendar deadline. The 90 operating day deadline may be the most stringent. Pennsylvania and Part 60 include earlier deadlines for new units based on capacity (within 60 days of normal capacity - Pennsylvania, within 90 days of maximum production rate - Part 60).

Note 2. Test Notifications [*Ref. No. 7-002(b)*]

Test notifications vary from 21 to 60 days. The Part 75 notification deadlines are the most lenient at 21 days, Part 63 most stringent at 60 days.

Note 3. Test Plans [*Ref. No. 7-002(c) and (d)*]

Only Pennsylvania requires submittal of the test plans with the test notification. Pennsylvania also requires approval. Part 63 allows the agency to request a site-specific test plan within 60 days before the test, and Subpart EEE has specific requirements (see Note 5 for more on Subpart EEE).

Note 4. Test Results Submittal [*Ref. No. 7-002(f)*]

Pennsylvania requires a test completion notice in addition to submittal of the test results (within 10 days of test completion). Test results must be submitted within 60 days for Pennsylvania, Parts 60 and 63. Part 75 requires submittal of the test results within 45 days of test completion.

Note 5. 40 CFR Part 63, Subpart EEE [*Ref. No. 7-002(b),(d), and (e)*]

Part 63, Subpart EEE has subpart specific options that differ from the general Part 63 requirements. These include test plan notification and submittal, agency notice of receipt of test results, and a requirement to provide a public notice that test plans are available for review. These additional requirements reflect the high visibility concern with hazardous waste incinerators as a source category.

Recommendations

The underlying federal requirements generally have several different deadlines, timeframes, and approval requirements for these types of notifications. Pennsylvania should follow its own requirements as there are no conflicts. Nothing precludes a source

from meeting the most stringent requirement, whether State or federal. However, we do recommend that, based on the language in the NSPS and NESHAP rules, PA DEP should seek explicit approval to use its test notification procedures in place of NSPS and NESHAP required notices. We recommend that PA DEP seek explicit clarification through the delegation process that a source can meet the Part 60, 61, or 63 notification requirements by sending a copy of the PA DEP notice to EPA. *[Ref. No. 7-002(a)-(d) and (f)]*

Impact on PA DEP Systems and Documents

The delegation clarification would only impact the delegation letters (or require a separate clarifying letter). *[Ref. No. 7-002(a)-(d), and (f)]*

7.3 Phase III - Certification and Recertification

7.3.1 Certification

Parts 60, 61, and 63 do not identify a certification process similar to Pennsylvania's Phase III approval or the Part 75 certification/recertification approval. Table 7-4b compares the Pennsylvania and Part 75 certification process, and Table 7-5b compares the application content. Table 7-5b also includes Parts 60, 61, and 63 requirements, which do require submittal of performance test results. There are no differences in internal Pennsylvania requirements except for the additional Chapter 145 NO_x Budget Trading Program requirements which reference Subpart H and other Part 75 certification/recertification requirements (see Tables 7-4a and 7-5a).

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Deadline [*Ref. No. 7-003(a)*]

Part 75 provides a shorter deadline than PA DEP requirements between completion of performance testing and submittal of the certification application, 45 days versus 60 days (two months).

Note 2. Provisional Certification [*Ref. No. 7-003(b)*]

Both Pennsylvania and Part 75 provide for provisional or retroactive certification of data back to the date of completion of performance testing. PA DEP includes some special requirements for allowing provisional certification for waste incinerators that are more stringent than the requirements for other sources. These extra requirements reflect the additional scrutiny for this source category. Part 75 also provides for conditional data validation, back to the probationary calibration drift test.

Note 3. Agency Approval Requirements [*Ref. No. 7-003(c)-(e)*]

Part 75 requires EPA to provide notice of receipt of a complete application, and requires that the complete application is approved or denied within 120 days. Failure by EPA to act results in a default approval. Pennsylvania does not have an approval deadline like Part 75 except for the Chapter 145 units in the NO_x trading program (NO_x CEMS). The 120 day approval window for Part 75 could potentially create differences in the treatment of data validity. If EPA fails to act within the window, a subsequent disapproval invalidates the data prospectively from the date of the disapproval. Based on the PA DEP CSM Manual, data are invalidated retrospectively if a Phase III application is disapproved.

Note 4. Performance Test Results [*Ref. No. 7-004(b)*]

Part 75 provides for electronic reporting of performance test result summaries. Both PA DEP and Part 75 require submittal of hard copy performance test reports.

**Table 7-4a:
Comparison of PA DEP Processes for Certification (Phase III) Application and Approval**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-003(a) Certification Application Deadline	Within two months of completion of testing. <i>(CSM Manual, Phase III - Page 36)</i>	Within 45 days of completing certification or recertification tests. <i>(145.71((b) and 40 CFR 70.20 and 75.63(a))</i>	2	NA	NA	N	None
I7-003(b) Provisional Certification	Retroactive - day following completion of testing. Upon request, may get data validated for new unit based on successful calibration if all tests completed successfully without corrective action. <i>(CSM Manual, Phase II - Page 24)</i> Also, for waste incinerators: Conditional acceptance of results of all Phase II testing, except RA, and data telemetry system must be obtained prior to incinerating waste. Phase III approval must be obtained within 60 days of achieving maximum operating rate but not later than 180 days after startup. Department review time for Phase III report (company post mark to DEP approval post mark) and days source did not operate will not be charged towards noncompliance. <i>(CEMS Permit Conditions Manual, Page 6)</i>	Provisional certification upon successful completion of certification tests for 120 days beginning date of certification application submittal, beginning [Note: Conditional data validation may occur earlier, following a successful probationary calibration error test, if source meets certain conditions]. <i>(145.71(b)(3) and 40 CFR 75.20(a)(3)and b(3))</i>	1	NA	NA	N	None
I7-003(c) Agency Complete Application Notice	Not Specified	Agency will provide notice for incomplete applications. <i>(145.71(b)(3) and 40 CFR 75.20(a)(4))</i>	2	NA	NA	N	None

(cont.)

**Table 7-4a:
Comparison of PA DEP Processes for Certification (Phase III) Application and Approval (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-003(d) Agency Certification Deadline	No agency deadline. Phase III approval letter sent after review of performance specification test reports. <i>(CEMS Approval Procedures, Review of Phase III Performance Test Reports, III.,D.)</i>	Within 120 days of receipt of complete application. Application approved by default if EPA misses deadline. <i>(145.71(b)(3) and 40 CFR 75.20(a)(4))</i>	2	NA	NA	N	None
I7-003(e) Agency Disapproval Notice	No agency deadline. Phase III approval or disapproval letter is sent after review of performance specification test reports. <i>(CEMS Approval Procedures, Review of Phase II Protocols, II.C.) (CEMS Approval Procedures, Review of Phase III Performance Test Reports, III.,D.)</i>	Agency will provide disapproval if application fails to meet performance specifications or is incomplete within 120 days of receipt. Provisional certification is invalidated, retroactively. <i>(145.71(b)(3) and 40 CFR 75.20(a)(4))</i>	2	NA	NA	N	None

**Table 7-4b:
Comparison of PA DEP and Federal Requirements for Certification Application and Approval**

	1	2	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	NA = Not Applicable, N = No Change Recommended					
E7-003(a) Certification Application Deadline	<p>Within two months of completion of testing. <i>(CSM Manual, Phase III - Page 36)</i></p> <p>Ch 145 (NO_x Budget Trading Program) Also subject to same requirements as Part 75. <i>(145.71(b) and 40 CFR 75.20)</i></p>	<p>Within 45 days of completing certification or recertification tests. <i>(75.63(a))</i></p>	2	NA	NA	N	None	
E7-003(b) Provisional Certification	<p>Retroactive - day following completion of testing. Upon request, may get data validated for new unit based on successful calibration if all tests completed successfully without corrective action. <i>(CSM Manual, Phase II - Page 24)</i></p> <p>Conditional acceptance of results of all Phase II testing, except RA, and data telemetry system must be obtained prior to incinerating waste. Phase III approval must be obtained within 60 days of achieving maximum operating rate but not later than 180 days after startup. Department review time for Phase III report (company post mark to DEP approval post mark) and days source did not operate will not be charged towards noncompliance. <i>(CEMS Permit Conditions Manual, Page 6)</i></p> <p>Ch 145 Also subject to provisional requirements in Part 75 <i>(145.71(b) and 40 CFR 75.20)</i></p>	<p>Provisional certification upon successful completion of certification tests for 120 days beginning date of certification application submittal, beginning [Note: Conditional data validation may occur earlier, following a successful probationary calibration error test, if source meets certain conditions]. <i>(75.20(a)(3)and b(3))</i></p>	1	NA	Follow PA DEP requirements, but PA DEP will accept Part 75 conditional data validation for systems subject to Part 75.	C	2a	

(cont.)

**Table 7-4b:
Comparison of PA DEP and Federal Requirements for Certification Application and Approval (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	NA = Not Applicable, N = No Change Recommended				
E7-003(c) Agency Complete Application Notice	Not Specified	Agency will provide notice for incomplete applications. <i>(75.20(a)(4))</i>	2	NA	NA	N	None
E7-003(d) Agency Certification Deadline	No agency deadline. Phase III approval letter sent after review of performance specification test reports. <i>(CEMS Approval Procedures, Review of Phase III Performance Test Reports, III.,D.)</i> Ch 145 Also subject to same requirements as Part 75. <i>(145.71(b) and 40 CFR 75.20(a)(4))</i>	Within 120 days of receipt of complete application. Application approved by default if EPA misses deadline. <i>(75.20(a)(4))</i>	2	NA	NA	N	None
E7-003(e) Agency Disapproval Notice	No agency deadline. Phase III approval or disapproval letter is sent after review of performance specification test reports. <i>(CEMS Approval Procedures, Review of Phase II Protocols, II.C.) (CEMS Approval Procedures, Review of Phase III Performance Test Reports, III.,D.)</i> Ch 145 Also subject to same requirements as Part 75. <i>(145.71(b) and 40 CFR 75.20(a)(4))</i>	Agency will provide disapproval if application fails to meet performance specifications or is incomplete within 120 days of receipt. Provisional certification is invalidated, retroactively. <i>(75.20(a)(4))</i>	2	NA	NA	N	None

**Table 7-5a:
Comparison of PA DEP Content Requirements for Certification (Phase III) Application**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-004(a) Monitoring Plan	Submitted prior to Performance Testing -Phase I Application. <i>(CSM Manual, Phase I - Page 4)</i>	Updated electronic portion of monitoring plan and any changed portions of the hardcopy portions of the plan. <i>(145.74(c) and 40 CFR 75.63(b)(1)(I) and (2)(I))</i>	2	NA	NA	N	None
I7-004(b) Performance Test Results	Provide test results in hard copy format with all raw data and calculations for the performance tests. <i>(CSM Manual, Phase III, I. and II.)</i>	Provide in an electronic and hardcopy format (as applicable) for each test: type of test, test date, and test results information required by 75.59(a)(9). Include results from failed tests. <i>(145.75(c) and 40 CFR 75.63(b)(1)(ii) and (2)(ii))</i>	NA	2	Require submittal of test results in electronic format as specified by PA DEP.	C	2a, 4f, 4g

**Table 7-5b:
Comparison of PA DEP and Federal Requirements for Content of Certification (Phase III) Application**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
E7-004(a) Monitoring Plan	Submitted prior to Performance Testing - Phase I Application. <i>(CSM Manual, Phase I - Page 4)</i> Ch 145 (NO _x Budget Program) Also subject to same requirements as Part 75. <i>(145.74(c))</i>	Updated electronic portion of monitoring plan and any changed portions of the hardcopy portions of the plan. <i>(75.63(b)(1)(I) and (2)(I))</i>	Not Specified	2	NA	NA	N	None
E7-004(b) Performance Test Results	Provide test results in hard copy format with all raw data and calculations for the performance tests. <i>(CSM Manual, Phase III, I. and II.)</i> Ch 145 Also subject to same requirements as Part 75. <i>(145.74(c))</i>	Provide in an electronic and hardcopy format (as applicable) for each test: type of test, test date, and test results information required by 75.59(a)(9). Include results from failed tests. <i>(75.63(b)(1)(ii) and (2)(ii))</i>	Summarize in tabular form the results of performance tests as appropriate. Include all data sheets, calculations, charts, cylinder gas and calibration cell certifications to confirm that the CEMS meets the performance specifications. Check with appropriate regional EPA office, state, or local agency for additional requirements if any. <i>(App. B., PS2, 8.5)</i>	NA	2	Require submittal of test results in electronic format as specified by PA DEP.	C	2a, 4f, 4g

Recommendations

Generally, there is no need to harmonize these certification processes. The issue of potential data validity differences will only arise in rare cases where EPA does not meet its self-imposed deadline for acting on certification approvals (unlike PA DEP's general approach, under Part 75 data will be invalid only prospectively from the date EPA finally disapproves an application in this instance). PA DEP could address data validity issues on a case by case basis if those circumstances arise. Pennsylvania may wish, though, to incorporate the Part 75 conditional data validation provisions into its CSM Manual for systems with components subject both to PA DEP and Part 75. That approach would ensure that if data were valid as a result of inaction under Part 75, but the system was subsequently decertified, the issue of data validity would be treated equally under either program. Because this scenario is extremely unlikely to occur with any frequency, we recommend handling the data validity issue either on a case by case approach or through adopting this special Part 75 provision into PA DEP's general CEM requirements for systems that are subject to both Part 75 and PA DEP requirements. *[Ref. No. 7-003(b)]*

With respect to test results reporting, Section 8.3 below, discusses harmonization issues for hard copy test result reporting under the CSM Manual versus electronic reporting under Part 75. *[Ref. No. 7-00(b)]*

Impact on PA DEP Systems and Documents

Allowing Part 75 conditional data validation for Part 75 sources would require revisions to the CSM Manual (2a) in the first page of the Phase II section, but other documents or systems would not be affected. *[Ref. No. 7-004(b)]*

7.3.2 Recertification

Recertification requirements apply when a CEMS or CEMS component are modified or replaced. The federal NSPS and NESHAP programs do not specifically address recertification. Pennsylvania and Part 75 do address recertification, Pennsylvania in the QA Section of the CSM Manual and in Chapter 145 for NO_x Budget Program CEMS, and Part 75 in § 75.20(b). Tables 7-6a and 7-6b compare these recertification requirements.

**Table 7-6a:
Comparison of PA DEP Requirements for Recertification**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	A Most Stringent Column #	B Most All- Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	CSM Manual	Ch 145	NA = Not Applicable, N = No Change Recommended				
I7-005(a) Recertification Events	Addition or replacement of components. <i>(CSM Manual, QA Sections, I.C.2., III.C.2.)</i>	When a facility replaces, modifies, or changes a CEMS in a way that significantly affects accurate measurements. <i>(145.71(b)(2) and 40 CFR 75.20(b))</i>	NA	2	NA	B	2a
I7-005(b) Data Validation	May require performance testing prior to use of data. Contact DEP for specific information. Also see below on use of data following calibration. <i>(CSM Manual, QA Sections, I.C.2., III.C.2.)</i>	Use substitute data according to standard missing data procedures from hour of replacement or modification until either: 1) successful completion of all recertification tests, or 2) probationary calibration error test is performed and passed to take advantage of conditional data validation. <i>(145.71(b)(2) and 40 CFR 75.20(b)(3)(i))</i>	NA	1	NA	N	None
I7-005(c) Recertification Test Period and Probationary Calibration Error Test	Data are valid following change and calibration of CEMS. <i>(CSM Manual, Phase II - Page 24)</i>	Begins with completion of probationary calibration error test following completion of changes to CEMS. This CE test must be passed before commencing any of the required recertification tests. <i>(145,71(b)(2) and 40 CFR 75.20(b)(3)(ii))</i>	2	NA	NA	N	None

(cont.)

**Table 7-6a:
Comparison of PA DEP Requirements for Recertification (cont.)**

	1	2	4	A	B	C	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Items Affected
Program	CSM Manual	Ch 145	Part 63	NA = Not Applicable, N = No Change Recommended			
17-005(d) Performance Tests	May require performance testing prior to use of data. Contact DEP for specific information. <i>(CSM Manual, QA Sections, I.C.2., III.C.2.)</i>	All initial certification testing is required. <i>(145.71(b)(2), 40 CFR 75.20(b) and 75.61(a)(1))</i> Tables describing tests required (recertification or diagnostic) for various modifications. Two simplified diagnostic tests are available in some cases: 1)abbreviated linearity, 2) alternative system response check. <i>(Part 75 Emissions Monitoring Policy Manual, Q13.21)</i>	2	1	NA	N	None
17-005(e) Performance Test Deadlines	Not specific to recertification, but the std. 45 day notice for Phase II testing would apply.	Varies by test. Shall be completed within the following time period after the probationary CE test: 1) linearity and cycle time - 168 consecutive unit operating hours, 2) RATA - 720 consecutive unit operating hours, 3) 7 day CE test - 21 consecutive unit operating days. <i>(145.71(b)(2) and 40 CFR 75.20(b)(3))</i>	2	NA	NA	N	None

(cont.)

**Table 7-6a:
Comparison of PA DEP Requirements for Recertification (cont.)**

	1	2	4	A	B	C	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Items Affected
Program	CSM Manual	Ch 145	Part 63	NA = Not Applicable, N = No Change Recommended			
I7-005(f) Performance Test Notification	Not specific to recertification.	1) Full recertification: 21 days prior to the first scheduled day of testing. 2) Retest and partial recertification: 7 days prior to RATA , in writing or by telephone. Date may be changed with 7 day notice in writing or by telephone. A notification waiver may be granted for recertification tests. <i>(145.71(b)(2), 40 CFR 75.20(b, and 75.61(a)(1))</i>	2	NA	NA	N	None

**Table 7-6b:
Comparison of PA DEP and Federal Requirements for Recertification**

	1	2	3	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended					
E7-005(a) Recertification Events	Addition or replacement of components. <i>(CSM Manual, QA Sections, I.C.2., III.C.2.)</i> Ch 145 (NO _x Budget Program) Also subject to same requirements as Part 75. <i>(145.71(b)(2))</i>	When a facility replaces, modifies, or changes a CEMS in a way that significantly affects accurate measurements. <i>(75.20(b)) (Part 75 Emissions Monitoring Policy Manual, Q13.21)</i>	Not specified.	NA	2	NA	B	2a	
E7-005(b) Data Validation	May require performance testing prior to use of data. Contact DEP for specific information. Also see below on use of data following calibration. <i>(CSM Manual, QA Sections, I.C.2., III.C.2.)</i> Ch 145 Also subject to same requirements as Part 75 <i>(145.71(b)(2))</i>	Use substitute data according to standard missing data procedures from hour of replacement or modification until either: 1) successful completion of all recertification tests, or 2) probationary calibration error test is performed and passed to take advantage of conditional data validation. <i>(75.20(b)(3)(i))</i>	Not specified.	NA	1	NA	N	None	
E7-005(c) Recertification Test Period and Probationary Calibration Error Test	Data are valid following change and calibration of CEMS. <i>(CSM Manual, Phase II - Page 24)</i> Ch 145 Also subject to same requirements as Part 75 <i>(145.71(b)(2))</i>	Begins with completion of probationary calibration error test following completion of changes to CEMS. This CE test must be passed before commencing any of the required recertification tests. <i>(75.20(b)(3)(ii))</i>	Not specified.	2	NA	NA	N	None	

(cont.)

**Table 7-6b:
Comparison of PA DEP and Federal Requirements for Recertification (cont.)**

	1	2	3	4	A	B	C	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	Part 63	NA = Not Applicable, N = No Change Recommended			
E7-005(d) Performance Tests	May require performance testing prior to use of data. Contact DEP for specific information. <i>(CSM Manual, QA Sections, I.C.2., III.C.2.)</i> Ch 145 Also subject to same requirements as Part 75 <i>(145.71(b)(2))</i>	All initial certification testing is required. <i>(75.61(a)(1))</i> Tables describing tests required (recertification or diagnostic) for various modifications. Two simplified diagnostic tests are available in some cases: 1) abbreviated linearity, 2) alternative system response check. <i>(Part 75 Emissions Monitoring Policy Manual, Q13.21)</i>	Not specified.	2	1	NA	N	None
E7-005(e) Performance Test Deadlines	Not specific to recertification. Ch 145 Also subject to same requirements as Part 75 <i>(145.71(b)(2))</i>	Varies by test. Shall be completed within the following time period after the probationary CE test: 1) linearity and cycle time - 168 consecutive unit operating hours, 2) RATA - 720 consecutive unit operating hours, 3) 7 day CE test - 21 consecutive unit operating days. <i>(75.20(b)(3))</i>	Not specified.	2	NA	NA	N	None

(cont.)

**Table 7-6b:
Comparison of PA DEP and Federal Requirements for Recertification (cont.)**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Items Affected	
Program	PA DEP	Part 75	Parts 60, 61, 63	Part 63	NA = Not Applicable, N = No Change Recommended				
E7-005(f) Performance Test Notification	Not specific to recertification. Ch 145 Also subject to same requirements as Part 75 (145.71(b)(2))	1) Full recertification: 21 days prior to the first scheduled day of testing. 2) Retest and partial recertification: 7 days prior to RATA , in writing or by telephone. Date may be changed with 7 day notice in writing or by telephone. A notification waiver may be granted for recertification tests. (75.61(a)(1))	Not specified.	2	NA	NA	N	None	

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Explicit Requirements [*Ref. No. 7-005(a)*]

Part 75 provides more explicit requirements for recertification than Pennsylvania. It also identifies "diagnostic" tests that may be required in lieu of a full recertification in some cases. The Part 75 Emissions Monitoring Policy Manual now includes tables which identify whether a monitor change is significant, and the type of response required.

Note 2. Diagnostic Testing [*Ref. No. 7-005(a)*]

Pennsylvania has recognized the Part 75 "diagnostic" test concept, and requires reporting of diagnostic tests if they lead to corrective actions.

Recommendations

Pennsylvania should provide a guidance document similar to the Part 75 Emissions Monitoring Policy Manual tables which describe the response required for different types of CEMS modifications (or make reference to EPA's guidance). These specific guidelines help ensure consistent treatment of different sources for the most common types of CEMS modifications. Otherwise there do not appear to be conflicts in the recertification related requirements that require resolution. The PA DEP requirements are broadly applicable and provide PA DEP discretion to make recertification determinations consistent with comparable determinations made under the Part 75 provisions. [*Ref. No. 7-005(a)*]

Impacts on Pennsylvania Systems and Documents

A guidance document describing the types of testing required for different CEMS modifications would require a new document and PA DEP should include a reference to that new document in the CSM Manual (2a). Reference to this guidance could be added at the end of the "Submittal and Approval" section of the Manual, and also to Quality Assurance, Sections I.C. and III.C. No other existing documents or systems would be affected. [*Ref. No. 7-005(a)*]

Section 8: Performance and Quality Assurance Test Reporting

This section compares the requirements for performance and quality assurance test results reporting between Pennsylvania and federal programs. The contents and general format (electronic or hardcopy) of performance test reports are compared in Section 8.1, and quality assurance test reports in Section 8.2. Specific elements of Part 75 electronic data reporting of performance and QA test results are listed in tables in Section 8.3. This section also discusses how the harmonization efforts might be able to facilitate the use of Part 75 electronic test data for purposes of reporting to PA DEP as part of implementing the states's CEM program.

8.1 Performance Test Reporting

Pennsylvania reporting requirements for performance test results are consistent across monitored parameters, so no tables with internal comparisons of performance test reporting are provided. The basic requirement is to provide in hardcopy all raw data and calculations for each required test (CSM Manual, Phase III, page 36). The specific data elements and calculations will vary by performance test.

The general requirements for performance test reporting is also comparable across state and federal programs for the performance tests that are common to each program. As discussed in Sections 3-6, there are differences in the performance tests required, both in terms of what tests are required and how they are performed. In addition to hard copy reporting, Part 75 requires electronic reporting of performance test results which are described in Tables 8-6 through 8-12 of Section 8.3. Because a critical aspect for harmonization is the extent to which these Part 75 formats can be used to satisfy PA DEP reporting obligations, Section 8.3 also identifies comparable data fields from PA DEP's CEMDPS database, and what issues would arise in trying to use the Part 75 electronic formats for PA DEP program purposes. However, it is important to note that the all-encompassing hardcopy reporting required in the CSM Manual means that PA DEP's existing requirements are as all-encompassing or stringent as federal requirements. Thus, Section 8.3 does not try to compare the stringency of the Part 75 electronic reporting versus what data elements PA DEP currently tracks electronically. Section 8.3 instead attempts to see what types of data system impacts may occur in order for PA DEP to use electronically reported Part 75 performance test data.

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

The content of the Pennsylvania performance test reporting requirements encompass all of the Part 75 and Parts 60, 61, 63 requirements to the extent the underlying tests are overlapping and comparable. There are no specific reporting content conflicts (that are separate from the underlying test requirement conflicts discussed in Sections 3-6), and no actions are needed to harmonize the general content requirements for performance

test reporting requirements. The harmonization issues concerning how the data are submitted are discussed further in Section 8.3.

Recommendations

We do not recommend any changes to what is reported, beyond taking into account our recommendations on changes to what performance tests are conducted (or how they are conducted), as discussed throughout Sections 3-6. Section 8.3, below, discusses recommendations for electronic reporting of performance test results if PA DEP were to update its CEM data systems outside the context of this harmonization effort.

Impact on PA Documents and Systems

None, although see Section 8.3 for potential impact associated with electronic reporting of test results.

**Table 8-1:
Comparison of PA DEP and Federal Performance Test Results Reporting for Gas CEMS**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
E8-001(a) Format	Hardcopy <i>(CSM Manual, Phase III - Page 36)</i>	Electronic and Hard Copy <i>(75.63(b)(1)(ii) and (2)(ii))</i>	Hardcopy <i>(60.13(e), 63.8(e)(5))</i>	NA	2	Submit in electronic form where required by PA DEP.	C	2a, PA DEP data systems

(cont.)

**Table 8-1:
Comparison of PA DEP and Federal Performance Test Results Reporting for Gas CEMS (cont.)**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
E8-001(b) RATA	Include all raw data and calculations. Summarize in tabular form the results of the performance tests as appropriate. Include all data sheets, calculations, charts, cylinder gas and calibration cell certifications to confirm that the CEMS meets the performance specifications. <i>(CSM Manual, Phase III, I.B. and PS2 (1979), 8)</i>	Summarized test results. Include DAHS printouts of the CEMS data generated during the performance tests. Raw reference method data for each run, and tabulated final reference method run data including calculations. Calibration gas certificates, laboratory calibrations for source sampling equipment, test location diagrams, test protocol and narrative, and key source personnel. <i>(75.59(a)(9))</i>	Summarize in tabular form the results of performance tests as appropriate. Include all data sheets, calculations, charts, cylinder gas and calibration cell certifications to confirm that the CEMS meets the performance specifications. Check with appropriate regional EPA office, state, or local agency for additional requirements if any. <i>(App. B., PS2, 8.5, and PS4B and 8A)</i> PS9 (GOC): If required by permit. <i>(App. B, PS9, 8.5)</i> PS8A (THC): At minimum summarize in tabular form the results of the response time test. Include all data sheets, CEMS data, calculations and reference material certifications. <i>(App. B, PS8A, 8)</i>	NA	1	Submit in electronic form where required by PA DEP.	C	2a, CEMDPS database tables and related applications (4f, 4g, 4i)
E8-001(c) 2 hr or 7 Day 24 hr Calibration Drift/Error								
P8-001(d) Calibration Error or Linearity								
P8-001(e) Response or Cycle Time								

(cont.)

**Table 8-1:
Comparison of PA DEP and Federal Performance Test Results Reporting for Gas CEMS (cont.)**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
P8-001(f) Conditioning and Operational Period	Provide statement to the effect that the CEMS operated continuously for a minimum of 168 hours, and CEMS data to substantiate. <i>(CSM Manual, Phase III, I.B. and PS2 (1979), 8)</i>	Not Required	Not Required	1	NA	NA	N	None

**Table 8-2:
Comparison of PA DEP and Federal Performance Test Results Reporting for
Opacity CEMS**

	1	2	3	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended					
E8-002(a) Format	Hardcopy <i>(CSM Manual, Phase III - Page 36)</i>	Not Required. Meet state reporting. <i>(Part 75 Emissions Monitoring Policy Manual, Q5.1)</i>	Hardcopy <i>(60.13(c), 63.8(e)(5))</i>	1	NA	NA	N	None	
E8-002(b) RATA	Include all raw data and calculations. <i>(CSM Manual, Phase III - Page 36)</i>	Not Required. Meet state reporting. <i>(Part 75 Emissions Monitoring Policy Manual, Q5.1)</i>	Not Required	1	NA	NA	N	None	
E8-002(c) 7 Day Calibration Drift	Include all raw data and calculations. Report the 24 hour ZD error and 24 hr CD error. <i>(CSM Manual, Phase III, I.A. and App. B, PSI, 8.1(4))</i>	Not Required. Meet state reporting. <i>(Part 75 Emissions Monitoring Policy Manual, Q5.1)</i>	Report the 24 hour ZD error and 24 hr CD error. <i>(App. B, PSI, 8.1(4))</i>	1	NA	NA	N	None	
E8-002(d) Calibration Error	Include all raw data and calculations. Report calculated calibration error results for each of the 3 attenuators. <i>(CSM Manual, Phase III, I.A. and App. B, PSI, 8.1(3)(ii))</i>	Not Required. Meet state reporting. <i>(Part 75 Emissions Monitoring Policy Manual, Q5.1)</i>	Report calculated calibration error results for each of the 3 attenuators. <i>(App. B, PSI, 8.1(3)(ii))</i>	1	NA	NA	N	None	
E8-002(e) Response Time	Include all raw data and calculations. Report upscale and downscale response time. <i>(CSM Manual, Phase III, I.A. and App. B, PSI, 8.1(3)(iii))</i>	Not Required. Meet state reporting. <i>(Part 75 Emissions Monitoring Policy Manual, Q5.1)</i>	Report upscale and downscale response time. <i>(App. B, PSI, 8.1(3)(iii))</i>	1	NA	NA	N	None	

**Table 8-3:
Comparison of PA DEP and Federal Performance Test Results Reporting for
Flow CEMS**

	1	2	3	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended					
E8-003(a) Format	Hardcopy <i>(CSM Manual, Phase III - Page 36)</i>	Electronic and Hard Copy <i>(75.63(b)(1)(ii) and (2)(ii))</i>	Hardcopy <i>(60.13(e), 63.8(e)(5))</i>	NA	2	Submit in electronic format to the extent required by PA DEP.	C	2a, 4f, 4g, CEMDPS tables (4i)	
E8-003(b) RATA	Include all raw data and calculations. Report results for each test. <i>(CSM Manual, Phase III, II., A.)</i>	Summarized test results. DAHS printouts of the CEMS data generated during the performance tests. Raw reference method data for each run, and tabulated final reference method run data including calculations. Laboratory calibrations for source sampling equipment, test location diagrams, test protocol and narrative, and key source personnel. <i>(75.59(a)(9))</i>	Summarize in tabular form the results of performance tests as appropriate. Include all data sheets, calculations, charts, cylinder gas and calibration cell certifications to confirm that the CEMS meets the performance specifications. Check with appropriate regional EPA office, state, or local agency for additional requirements if any. <i>(App. B., PS2, 8.5)</i>	NA	NA	Submit in electronic format to the extent required by PA DEP.	C	2a, 4g, CEMDPS tables (4i)	
E8-003(c) 7 Day Calibration Drift/Error	Include all raw data and calculations. Report results for zero and calibration drift. <i>(CSM Manual, Phase III, II., B.)</i>	Summarized test results. DAHS printouts of the CEMS data generated during the performance tests. <i>(75.59(a)(9))</i>		1	NA	Submit in electronic format to the extent required by PA DEP.	C	2a, 4f, CEMDPS tables (4i)	

(cont.)

**Table 8-3:
Comparison of PA DEP and Federal Performance Test Results Reporting for
Flow CEMS (cont.)**

	1	2	3	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended					
E8-003(d) Calibration Error or Linearity	Include all raw data and calculations. Report results for each level. <i>(CSM Manual, Phase III, II., C. and D.)</i>	Not Required	Not Required	1	NA	Submit in electronic format to the extent required by PA DEP.	C	2a, 4g, CEMDPS tables (4i)	
E8-003(e) Response or Cycle Time	Include all raw data and calculations. <i>(CSM Manual, Phase III, II.E.)</i>	Not Required	Not Required	1	NA	Submit in electronic format to the extent required by PA DEP.	C	2a, CEMDPS tables (4i)	

**Table 8-4:
Comparison of PA DEP and Federal Performance Test Reporting for
DAHS Verification**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Parts 60, 61, 63	NA = Not Applicable, N = No Change Recommended				
E8-004(a) Format	Hardcopy <i>(CSM Manual, Phase III - Page 36)</i>	Hardcopy or electronic	Not Required	NA	2	Submit in electronic format to the extent required by PA DEP.	C	2a
E8-004(b) Submittal	Method used to convert the CEMS data to emission or parameter results must be verified in the report. <i>(CSM Manual, Phase III - Page 36)</i>	Not required. Results maintained on-site in format suitable for inspection. <i>(75.63(a)(2))</i>	Not Required	1	NA	NA	N	None

8.2 Quality Assurance Test Reporting

Pennsylvania does not specify the report contents in the QA or the Record Keeping and Reporting sections of the CSM Manual as explicitly as does Part 60, Appendix F and Part 75. The PA DEP requirements are to simply report quarterly information in accordance with the appropriate electronic report formats, if applicable, and report the results of all tests and audits performed in the quarter (CSM Manual, Record Keeping and Recording, Section B.1).

The electronic report format in Attachment 3 of the CSM Manual (Standard Emissions Report) requires quarterly reporting of calibration error results at each level (low, mid, high) truncated to one decimal place, and indirectly requires zero-calibration drift results (pass/fail) through the use of monitor codes which provide the reason for invalid data hours.

Based on the CEM Audit Procedures guidance document for PA DEP staff, sources are required to submit the same level of detail for quality assurance RATAs as required for reporting the Phase III performance test results (CEM Audit Procedures, Section IV). This requirement does not extend to the other QA tests (zero-calibration drift, interference check, calibration error, or leak check).

Part 60 and 63 units have QA test results reporting requirements only to the extent that the CEMS is subject to Part 60, Appendix F, QA/QC requirements for gas CEMS. As noted above, Appendix F explicitly describes the report contents. Part 60 allows for electronic reporting of Appendix F QA test results.

Part 75 requires electronic reporting of QA test results. There are no Part 75 requirements for submitting hard copy QA test results. The only overlap between Part 75 and PA DEP electronic reporting of QA data is for periodic calibration error (linearity) testing. However, Part 75 has a more all-encompassing report for this test. See Section 8.3 for a discussion of the extent to which the Part 75 approach for reporting these test results may provide a model for PA DEP electronic reporting.

Internal Pennsylvania differences are summarized in Table 8-5a, while Table 8-5b compares requirements across programs. The Part 75 Electronic Data Report elements for each test are described in more detail in Section 8.3, Tables 8-8 through 8-13. That section also examines whether the Part 75 elements could be used to satisfy PA DEP reporting requirements.

**Table 8-5a:
Comparison of Pennsylvania Format and Content Requirements for QA Test Reporting**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	Calibration Error	Zero-Calibration Drift	RATA	NA = Not Applicable, N = No Change Recommended				
I8-005(a) Format and Content	Test result summary submitted electronically. <i>(CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1)</i>	Pass-Fail status submitted electronically based on hourly Monitor Code. <i>CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1)</i>	Test results submitted in hard copy. Includes all raw data and calculations. Report results for each test. <i>CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1, and Phase III, II, A.; CEM Audit Procedures, IV)</i>	NA	NA	Submit in electronic format to the extent required by PA DEP.	C	2a, 4g, 4i, CEMDPS tables (4i)

**Table 8-5b:
Comparison of PA DEP and Federal Requirements for QA Test Reporting**

	1	2	3	A	B	C			
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
Program	PA DEP	Parts 60, 61, 63	Part 75	NA = Not Applicable, N = No Change Recommended					
E8-005(a) Frequency	Quarterly <i>(CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1)</i>	Semi-annual unless more frequent reporting specified in individual subparts. <i>(60.7(c), 63.10(e)(3))</i>	Quarterly <i>(75.64(a))</i>	1 or 2	NA	NA	N	None	
E8-005(b) Format	Quarterly calibration error test results for each level submitted electronically, as well as monitor status with respect to daily drift test. RATA reports submitted in hard copy. <i>(CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1)</i>	Part 60: Written, electronic format if acceptable to administrator. <i>(60.7(a))</i> Part 63: Not specified.	All required test results submitted electronically. <i>(75.64(a))</i>	NA	NA	Submit in electronic format to the extent required by PA DEP.	C	2a, 4g, 4i, 4i	

(cont.)

**Table 8-5b:
Comparison of PA DEP and Federal Requirements for QA Test Reporting (cont.)**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	3 Specific Requirement (Reference)	A Most Stringent Column #	B Most All-Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Parts 60, 61, 63	Part 75	NA = Not Applicable, N = No Change Recommended				
E8-005(c) RATA	Results of all tests and audits conducted during the quarter. Test results submitted in hard copy. Includes all raw data and calculations. Report results for each test. <i>CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1, and Phase III, II., A.; CEM Audit Procedures, IV) (CSM Manual, Recordkeeping and Reporting, I B.1. and III.B.1)</i>	60 A, 63 A - General: Summary Report: Date of last certification or audit (60.7(d), Figure 1, 63.10(e)(3)) -CEMS ID and location -Reference method -Date of audit -Results, mean of CEMS and reference values, mean difference, CC, and RA -EPA audit sample (lot and number) and results -OOC periods - date and number of days -Description of corrective actions <i>(App. F, 7.4, 7.5, 7.6, Figure 1)</i> 60, Da: Statement that required QA tests and calibration drift tests have or have not been performed. <i>(60.49a(g)(1))</i>	EDR RT 610, 611 -Unit/Stack ID -System ID -Test No. -Run No. -Run start and end times -Unit of measure -CEMS Run Value -RM Run Value -Run Status Flag -Operating Level -Unit Load -RM Used -Results mean of CEMS and RM, mean of difference, SD, CC, RA, and Bias Adjustment Factor -Reason for test EDR RT 614, 615, 616 Flow RATAs Reference Method run information is also required including traverse point data for 2F, 2G, 2H	NA	1	Submit in electronic format to the extent required by PA DEP	C	2a, 4g, 4i, 4l

(cont.)

**Table 8-5b:
Comparison of PA DEP and Federal Requirements for QA Test Reporting (cont.)**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	3 Specific Requirement (Reference)	A Most Stringent Column #	B Most All-Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Parts 60, 61, 63	Part 75	NA = Not Applicable, N = No Change Recommended				
E8-005(d) Calibration Error (Linearity or CGA)	Test result summary at each level submitted electronically. <i>(CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1, Attachment 3).</i>	60 A, 63 A - General: Summary Report: Date of last certification or audit <i>(60.7(d), Figure 1, 63.10(e)(3))</i> -CEMS ID and location -Span and scale -Reference level -Date and time -Reference value -Mean of CEMS at each level -CE at each level -Cal gas certification, date and type -OOC periods - date and number of days -Description of corrective actions <i>(App. F, 7.4, Figure 1)</i>	EDR RT 601,602 -Unit/Stack ID -Component ID -System ID -Date and time -Span -Reference level -Span scale (H, L) -Reference value -Measured value For each level: -Reference level -Mean of reference values -Mean of measured values -Results -Alternative criteria flag -Reason for Test	2	NA	Submit in electronic format to the extent required by PA DEP	C	2a, 4g, 4i, 4l

(cont.)

**Table 8-5b:
Comparison of PA DEP and Federal Requirements for QA Test Reporting (cont.)**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	3 Specific Requirement (Reference)	A Most Stringent Column #	B Most All-Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Parts 60, 61, 63	Part 75	NA = Not Applicable, N = No Change Recommended				
E8-005(e) Relative Accuracy Audit (RAA)	Test not required under PA DEP regulations.	60 A, 63 A - General: Summary Report: Date of last certification or audit (<i>60.7(d), Figure 1, 63.10(e)(3)</i>) -CEMS ID and location -Reference method -Date of audit -Results, mean of CEMS and reference values, RA -EPA audit sample (lot and number) and results -OOC periods - date and number of days -Description of corrective actions (<i>App. F, 7.4, 7.5 Figure 1</i>)	Test not required	2	NA	NA	N	None
E8-005(f) Daily Zero-Calibration Drift	Pass-Fail status submitted electronically based on hourly Monitor Code. <i>CSM Manual, Recordkeeping and Recording, I.B.1, III.B.1, Attachment 3</i>	Failed Tests (OOC periods) are reported: - Dates and number of days - Description of corrective action (<i>App. F, 7.4, 7.6, Figure 1</i>)	EDR RT 230 -Unit Stack ID -Component ID -System ID -Date and time -Span -Reference level -Reference value -Measured value -Results -Alternative criteria flag	3	NA	Submit in electronic format to the extent required by PA DEP	C	2a, 4F, 4i, 4l

(cont.)

**Table 8-5b:
Comparison of PA DEP and Federal Requirements for QA Test Reporting (cont.)**

	1	2	3	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Parts 60, 61, 63	Part 75	NA = Not Applicable, N = No Change Recommended				
E8-005(g) Daily Stack Flow CEMS Interference Check	Test report not required under PA DEP regulations	Test not required	EDR RT 231 Unit Stack ID -Component ID -System ID -Date and time Pass/Fail Status	3	NA	NA	N	None
E8-005(h) Quarterly Stack Flow CEMS Leak Check	Test report not required under PA DEP regulations	Test not required	EDR RT603 Unit Stack ID -Component ID -System ID -Date and time - Pass/Fail Status -Reason for test	3	NA	NA	N	None
E8-005(i) Flow-to-load Test	Test not required	Test not required	EDR RT605 and RT606	3	NA	NA	N	None

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. RATAs [*Ref. No. 8-005(c)*]

PA DEP requirements for reporting RATA QA test results are the most all encompassing of the programs, requiring submittal of the complete hard copy performance test report. Appendix F only requires results for each run, the means of reference values, mean difference, confident coefficient and calculated relative accuracy. Part 75 also does not require the complete report, but requires more detailed information than Appendix F reported in an electronic format.

Note 2. Calibration Error [*Ref. No. 8-005(d)*]

The Appendix F report is the most comprehensive including span and scale, reference level, reference value, results, and calibration gas certificate. The Part 75 electronic report content is similar except for the calibration gas certificates. The PA DEP electronic report is less comprehensive providing only the results at each level.

Note 3. Calibration Drift [*Ref. No. 8-005(f)*]

The Part 75 electronic reports are the most comprehensive including the span, reference value, measured value, and results. Appendix F only requires identification of the dates of failed drift tests, and PA DEP also requires reporting daily results indirectly (through identification of pass/fail status based on monitoring codes in the hourly data reporting in the Standard Emissions Report).

Recommendations

We recommend that Pennsylvania describe in more detail the expected QA test report contents or format in the CSM Manual in either the Recordkeeping and Reporting or QA sections. The manual is currently not clear on what is reported.

As the lead compliance and enforcement agency, PA DEP should continue to receive the complete hard copy RATA report, which is the primary measure of CEMS performance. Section 8.3 reviews in detail the options for modifying receipt of other test results in electronic form and potential harmonization with Part 75 reporting.

Impacts on PA DEP Systems and Documents

Clarifying QA test report contents would only impact the CSM Manual (2a), in either the "Record Keeping and Reporting" or the "Quality Assurance" section.

8.3 Performance and QA Test Electronic Data Reporting

The following tables list test result elements required by the Part 75 Electronic Data Reports (EDR) for performance and QA tests. These tables provide detailed elements for the tests compared at a general level in Sections 8.1 and 8.2. In some cases, the performance and QA test reports are similar (RATAs and calibration error - linearity), with a field in the report record which identifies whether the test was done as a performance, QA, or diagnostic test.

The following tables include the EDR "record type" corresponding to the report, and the data elements which make up separate report fields. The EDR is an ASCII text format, with each line representing a separate record, referred to as a "record type," and each element or field assigned to text columns in the row.

Where applicable, the tables provide a summary of the corresponding data tables in the PA DEP CEMDPS software. The fields in this column indicate how PA DEP currently tracks test results electronically, based primarily on manual entry of hardcopy test results reported by the source.

It is important to recognize that we compare these tables not to assess which requirements are more stringent, but to explore the general harmonization issues concerning the ability to take Part 75 test data and use it for PA DEP purposes in CEMDPS or in a modified system. After each table, we present notes, recommendations, and impacts concerning the information presented in each table.

**Table 8-6:
 7-Day Calibration Error Performance Test Reporting**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS 24hr_test_data_table
600	Record type code	N/A
	Unit/Stack ID	No
	Component ID	Analyzer ID
	Monitoring system ID	No
	Date (YYMMDD)	Yes, plus date data entered in system, although date format is different.
	Hour (HH)	No
	Instrument span	No
	Reference value	Different Test Structure: Use zero/upscale beginning value (1-7), then zero/upscale end value (1-7). Also, PA DEP flags whether a zero adjustment is made before test.
	Measured value	See above.

(cont.)

**Table 8-6:
 7-Day Calibration Error Performance Test Reporting (cont.)**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS 24hr_test_data_table
600	Alternative performance specification (APS) flag	No
	Results (calibration error or R-A) (% , ppm)	CEMDPS calculates, PA DEP does not enter, results. See 24hr_calculated_results_table.
	Reference signal or calibration gas level (Z-zero, M-mid, H-high)	See Different Test Structure comment above.
	Span scale (H-high, L-low)	No
	Test number	No
	Reason for test (C-initial cert, D-diagnostic, R-recert)	No

For the 7-Day Calibration test, one primary hindrance to using the Part 75 electronic report format to also report results to PA DEP are the differences in the underlying test procedures. As discussed in Section 5.3.1, the PA DEP and Part 75 test procedures, while somewhat analogous, are different. We recommend in Section 5.3.1 that PA DEP modify the test to match current federal test procedures. If PA DEP accepts that recommendation, it would be possible to use the Part 75 test reporting data for PA DEP purposes. However, it would still require an object identifier crosswalk. As discussed in Chapter 2, we recommend that the Part 75 to PA DEP object identification crosswalk be conducted by the Part 75 sources' systems, not the PA DEP data management system. In addition, the Part 75 source or the CEMDPS system would have to establish a method for converting how the data is reported in Part 75 and the method used in CEMDPS. With the changes to the underlying test procedure, PA DEP would have to modify the structure of this table and the calculated results table. At that time, PA DEP could modify the table structure to be consistent with the Part 75 EDR data fields listed in Table 8-6, using Drift Reference Value as the term in place of "span."

**Table 8-7:
 Cycle (Response) Time Performance Test Reporting**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS 24hr_test_data_table
621	Record type code	No
	Unit/Stack ID	No
	Component ID	Analyzer ID
	Monitoring system ID	No
	Date (YYMMDD)	Yes, although date format is different.

(cont.)

**Table 8-7:
Cycle (Response) Time Performance Test Reporting (cont.)**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS 24hr_test_data_table
621	Start time (HHMM)	No
	End time (HHMM)	No
	Component cycle time (min)	No
	Stable starting monitor value	Use MSF element
	Stable ending monitor value	See above
	Calibration gas value	Yes (ZCV, UCV)
	Calibration gas level (Z-zero, H-high)	Part of calibration gas value element
	Total or system cycle time (min)	Not entered by PA DEP; Response time_calculated_results_table calculates upscale and downscale response time.
	Reason for test (C-initial cert, D-diagnostic, R-recert)	No
	Test number	Yes

As noted in Section 5.7, the test procedures for response time differ (in terms of stable value criteria, number of determinations, and applicability to flow CEMS). Thus, the ability to allow Part 75 sources to use the Part 75 electronic data to satisfy DEP requirements is limited. In order not to weaken the response time test procedures for non-Part 75 systems, we recommend in Section 5.7 not trying to harmonize these requirements. This recommendation limits the ability to harmonize the reporting requirements, and we would recommend no changes to reporting for this test.

**Table 8-8:
Linearity (Calibration Error) Performance and QA Test Reporting**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS Calibration_error_test_data_table
601	Record type code	No
	Unit/Stack ID	No
	Component ID	Analyzer ID
	Monitoring system ID	No
	Date (YYMMDD)	Yes
	Time (HHMM)	No
	Instrument span	No
	Reference value	Just one value for low, mid, and high

(cont.)

**Table 8-8:
Linearity (Calibration Error) Performance and QA Test Reporting (cont.)**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS Calibration_error_test_data_table
601 (cont.)	Measured value (3 repetitions)	Yes (for 5 repetitions at 3 levels)
	Calibration gas level (Z-zero, L-low, M-mid, H-high)	Indicated as part of Measured Value data field (L1, L2, etc.)
	Span scale (H-high, L-low)	No
	Test number	Yes
	Indicator of aborted test (A-aborted test)	No
602	Record type code	Not applicable; PA DEP does not enter results, but CEMDPS calculates. See calibration_error_calculated_results_table. Also note: PA DEP uses these tables only for the performance test data, not the QA test data, which are reported in summary fashion as part of the quarterly emission reports.
	Unit/Stack ID	
	Component ID	
	Monitoring system ID	
	Date (YYMMDD)	
	Instrument span	
	Mean of reference values	
	Mean of measured values	
	Results (linearity error or R-A) (% , ppm)	
	Alternative performance specification (APS) flag	
	[Reserved]	
	Calibration gas level (Z-zero, L-low, M-mid, H-high)	
	Span scale (H-high, L-low)	
	Test number	
Reason for test (C-initial cert, D-diagnostic, R-recert, Q-QA, G-grace period QA)		

As noted in Section 5.4, the PA DEP and Part 75 performance test calibration error/linearity tests, while analogous, use different methods. Thus, it would not be possible to use the Part 75 performance test reporting to satisfy existing PA DEP requirements, unless the test procedures are harmonized. We recommend in Section 5.4 that PA DEP modify their procedures to be consistent with the Part 75 test. If that recommendation is adopted, it would be possible to use the Part 75 data for reporting to PA DEP. This would require changes to the CEMDPS application to accept the data "as is" from the Part 75 report (beyond CEMDPS changes based on modifying the test procedures). This would require a complete redesign of the fields in the applicable CEMDPS table to be analogous to the Part 75 fields.

A more limited effort would be to provide a simple template form for reporting the elements of this test in the format PA DEP wants for its data system purposes, and then allow the Part 75 sources to use that template (along with all other sources). This

approach would force the Part 75 sources to implement the manipulation necessary to take the Part 75 records and turn them into PA DEP formatted records. Even in this situation, however, the need to harmonize PA DEP's electronic tracking of test results with Part 75 appears limited, based on current PA DEP practices. First, only the certification test must be entered manually by PA DEP, not the ongoing QA tests. For ongoing QA tests, the existing electronic reports provide the results at each level, and whether the test was passed. Assuming PA DEP believes this level of documentation is sufficient, no harmonization appears necessary or warranted.

In addition, for the reasons discussed in Chapter 2, we recommend in any event that the required object identifier crosswalk (to link the Part 75 system and component IDs with the applicable PA DEP Analyzer ID) be managed by the sources' data system, not managed by PA DEP's data system.

**Table 8-9:
Performance and QA RATA Reporting Requirements**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS Relative_accuracy_non_opacity_ test_data_table
610	Record type code	No
	Unit/Stack ID	No
	Monitoring system ID	Yes
	Run start date (HHMM)	Date (only one), plus date data entered in system, also a flag to indicate whether DEP conducted test
	Run start time (YYMMDD)	No
	Run end date (YYMMDD)	No
	Run end time (HHMM)	No
	Units of measure (1-ppm, 2-lb/mmBtu, 3-scfh, 4-%CO ₂ , 5-%O ₂ 6-mmBtu/hr (OTC NBP only), 7-%H ₂ O)	No (linked through CEMS ID)
	Value from CEM system being tested	Yes (M1-M12)
	Value from reference method, adjusted as necessary for moisture and/or calibration bias	Yes (RM1-RM12)
	Run number	Indicated as part of value data fields
	RATA run status flag 0 - RATA used, run not used 1 - run data used in calculating relative accuracy and bias 9 - test aborted	Part of value (e.g. RMnu or Mnu used to indicate run not used)
	Operating level (L-low, M-mid, H-high) (Use N-normal for peaking units only)	No
	Gross unit load or average velocity at operating level (MWe, 1000 lbs/hr, ft/sec)	No
Test number	Yes	

(cont.)

**Table 8-9:
Performance and QA RATA Reporting Requirements (cont.)**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS Relative_accuracy_non_opacity_ test_data_table
611	Record type code	Not applicable; CEMDPS relative_accuracy_non_opacity provides calculated results (up to 5 RA specification options)
	Unit/Stack ID	
	Monitoring system ID	
	RATA end date (YYMMDD)	
	RATA end time (HHMM)	
	Reference method used ⁵	
	Units of measure (1-ppm, 2-lb/mmBtu, 3-scfh, 4-% CO ₂ , 5-% O ₂ , 6-mmBtu/hr, 7-% H ₂ O)	
	Arithmetic mean of CEMS values	
	Arithmetic mean of reference method values	
	Arithmetic mean of the difference data	
	Standard deviation of difference data	
	Confidence coefficient	
	Relative accuracy	
	Tabulated t- value (bias test)	
	Bias adjustment factor at this load level	
	Operating level (L-low, M-mid, H-high) (Use N-normal, for peaking units only)	
	Average gross unit load (MWe or steam) or average velocity at operating level (MWe, 1000 lbs/hr, ft/sec)	
	[Reserved]	
	Indication of normal load (or operating level) (N-normal, otherwise, blank)	
	Alternative performance specification (APS) flag	
Test number		
Reason for RATA (C-initial cert, D-diagnostic, R-recert, Q-QA, G-grace period QA)		

(cont.)

**Table 8-9:
 Performance and QA RATA Reporting Requirements (cont.)**

Record Type	Part 75 Data Element Description	PA DEP CEMDPS Relative_accuracy_non_opacity_ test_data_table
611	Number of load (or operating) levels comprising test (1 for gas RATAs, 1-3 for flow or heat input RATAs)	Not applicable; CEMDPS relative_accuracy_non_opacity provides calculated results (up to 5 options)
	System bias adjustment factor for a multiple load (multiple level) flow RATA	

The PA DEP electronic data storage for RATA testing relies on far fewer data elements than the Part 75 reporting formats provide. However, the basic data which PA DEP currently tracks in CEMDPS can be provided from the Part 75 formats. There are, however, some basic problems. First, for SO₂, the data in the Part 75 report is on a ppm basis, not corrected to any percent oxygen or submitted as a combined SO₂-flow RATA. This RATA result is generally inapplicable as a RATA result in Pennsylvania. The Part 75 flow RATA data (reported as stack flow only) is also nearly unused in Pennsylvania. NO_x-diluent RATA data (in lb/mmBtu) likely will be the only RATA results directly useable in PA DEP's system from Part 75 RATA testing. Thus, any effort to harmonize these electronic report formats is limited, and nearly all Part 75 sources, if required to submit RATA results electronically, would have to manipulate their Part 75 records to match the PA DEP results in terms of applicable emission standards (or the PA DEP system would have to be designed to combine various RTs from a Part 75 report to obtain the appropriate RATA data and results).

For these reasons, the Part 75 electronic records for RATA tests have limited direct applicability for PA DEP purposes. We recommend that PA DEP not attempt to redesign its data systems to allow for direct use of these Part 75 record types.

In addition to the RATA records described above, Part 75 requires electronic submittal of detailed supporting information for flow RATAs (see Table 8-10). PA DEP currently has no comparable electronic data tracking of these details of a flow RATA procedure. It is important to note that for PA DEP purposes, flow RATAs are reported as separate tests only for systems that report in units of stack flow. For mass pollutant standards, the test is a combination of the pollutant and flow measurements. At this time, there appears to be no need to evaluate how to allow for electronic submittal of these Part 75 data for PA DEP purposes. The information in Table 8-10 is presented solely to provide a full understanding of the breadth of electronic reporting under Part 75.

**Table 8-10:
Performance and QA Flow RATA Reference Method Reporting**

Record Type	Part 75 Data Element Description
614	Record type code
	Unit/Stack ID
	Monitoring system ID
	Test number
	Operating level
	Run number
	Run start date (YYYYMMDD)
	Run start time (HHMM)
	Run end date(YYYYMMDD)
	Run end time (HHMM)
	Flow rate reference method(s) used ⁵
	Number of traverse points
	P_{bar} , barometric pressure, in. Hg (in. Hg)
	P_g , stack static pressure, in. H ₂ O (in. H ₂ O)
	% CO ₂ in stack gas, dry basis (%)
	% O ₂ in stack gas, dry basis(%)
	CO ₂ and O ₂ reference method
	% moisture in stack gas (%H ₂ O)
	M_d , stack gas molecular weight, dry basis (lbs/lbs-mole)
	M_w , stack gas molecular weight, wet basis (lbs/lbs-mole)
	Stack diameter at test port location (ft)
	A_s , stack or duct cross-sectional area at test port(ft ²)
	v_s , Average velocity for run, not accounting for wall effects (ft/sec)
	v_s , Average velocity for run, accounting for wall effects (ft/sec)
	Calculated wall effects adjustment factor (WAF) derived from this test run
	Calculated WAF applied to all runs of this RATA
	Default WAF applied to all runs of this RATA
	Average stack flow rate, wet basis, adjusted if applicable for wall effects (scfh)

(cont.)

**Table 8-10:
 Part 75 Performance and QA Flow RATA Reference Method Reporting (cont.)**

Record Type	Part 75 Data Element Description
615	Record type code
	Unit/Stack ID
	Monitoring system ID
	Test number
	Operating level
	Run number
	Reference method probe type
	Probe ID
	Pressure measurement device type
	Method 1 traverse point ID
	Probe or pitot tube velocity calibration coefficient
	Date of latest probe or pitot tube calibration (YYYYMMDD)
	Average velocity differential pressure at traverse point (in. H ₂ O)
	Average of square roots of velocity differential pressures at traverse point ((in H ₂ O) ^{1/2})
	T _s , stack temperature at traverse point (°F)
	Exterior Method 1 traverse point identifier
	Number of wall effects measurement points used to derive replacement velocity
	Yaw angle of flow at traverse point (degrees)
	Pitch angle of flow at traverse point (degrees)
	Calculated velocity at traverse point, not accounting for wall effects (ft/sec)
Replacement velocity at traverse point, accounting for wall effects (ft/sec)	

(cont.)

**Table 8-10:
Part 75 Performance and QA Flow RATA Reference Method Reporting (cont.)**

Record Type	Part 75 Data Element Description
616	Record type code
	Unit/Stack ID
	Monitoring system ID
	Test number
	Operating level (L,M,H,N)
	RATA end date (YYYYMMDD)
	RATA end time (HHMM)
	Default wall effects adjustment factor used

PA DEP does not obtain reports of the flow CEMS leak check, and does not track this information on a hard copy or data system basis currently. We assume that no harmonization issues apply as the source will have records of this test on-site, and that PA DEP is not interested in detailed tracking of these results. For informational purposes, Table 8-11 summarizes how these test results are reported under Part 75.

**Table 8-11:
Flow Monitor Leak Check Reporting**

Record Type	Part 75 Data Element Description
603	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Status (P-pass, F-fail)
	[Reserved]
	Reason for test (D-diagnostic, Q-QA, G-grace period QA)

PA DEP does not obtain reports of the daily drift test or daily interference check currently (except to the extent that the Monitor Codes in the quarterly report indicate whether a drift test was failed). The source must maintain copies of these results on-site. Unless PA DEP were to expand the requirements for reporting these data, there is no need to evaluate how to provide for use of the Part 75 electronic data for PA DEP purposes. For informational purposes, Table 8-12 provides a summary of the Part 75 electronic data.

**Table 8-12:
 Daily Calibration Error and Interference Test Data and Results**

Record Type	Part 75 Data Element Description
230	Daily Calibration Test Data and Results
	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Instrument span
	Reference value
	Measured value
	Results (calibration error or R-A) (% ,ppm)
	Alternative performance specification (APS) flag
	[Reserved]
	Calibration gas or reference signal level (Z-zero, M-mid, H-high)
	Span scale (H-high, L-low)
231	Flow Daily Interference Check Results
	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Status (P-pass, F-fail)
[Reserved]	

Section 9: Emission and Parameter Data Reporting

9.1 Overview of Harmonizing CEMS Data Reporting Requirements

CEMS data reporting requirements are driven by the underlying program. In the NSPS and NESHAP programs, most CEMS are not used for direct compliance determination. Instead the CEMS are used to indicate compliance, so reporting is limited to summary reports and excess emission reports which provide information on CEMS availability and duration and magnitude of excess emission periods. These summaries are then used to identify sources for follow-up action.

In Pennsylvania, CEMS are used for direct compliance and enforcement is taken based on the duration and magnitude of excess emission periods and data availability. As a result, more detailed information is collected related to the data required to demonstrate continuous compliance with the emission or parameter limits. The NSPS boiler subparts (Da, Db, Dc) which also use CEMS to determine compliance, like Pennsylvania, require reporting for all emission periods in terms of the relevant emission limits, not just excess emission periods.

The Part 75 CEMS program supports emission trading programs that require accounting of each ton emitted. Detailed hourly reporting is required to verify that equivalent tons are traded and are equal to allowances. Part 75 systems generally are used for long term standards (annual or ozone season mass emissions (SO₂ and NO_x) or annual average NO_x emission rate). Unlike for many other CEMS subject to PA DEP regulation, the EPA reporting for these systems does not have to adapt to multiple forms of emissions limits, with different correction factors, in numerous different units of the standards, and varying averaging periods. Thus, EPA has been able to design a data system with only minor tolerances for different input needs that allows EPA to manage the data in a highly consistent fashion across all affected units.

For determining compliance with the non-Part 75 emission limits, the PA DEP reporting system is the most all-encompassing in all cases, as it enables PA DEP to determine compliance with the various emission limits for which monitoring is required. The NSPS and NESHAP summary reports identify excess emission and monitor downtime events, but do not have the full hourly average detail provided by the PA DEP reporting system. Even the Subpart Da, Db, and Dc reports do not provide each hourly average, but instead provide data for each averaging period (such as each 30-day rolling average). The Part 75 reports have the full hourly detail, but do not include process status codes (which may be necessary to evaluate exceptions to short-term emission limits) and are not linked directly with the applicable PA DEP emission standards for a facility. Because those emission standards often are expressed on a different basis from any Part 75 standard (ppm corrected to %O₂, for example) or can apply at a different source combination level than

the Part 75 monitoring location, the Part 75 data reports are not as all-encompassing as the PA DEP data format.

Tables 9-1a and Tables 9-1b summarize the general elements of the PA DEP reports and the primary report types under federal standards. Table 9-1a compares the PA DEP requirements internally. Table 9-1b then compares those requirements to the federal requirements. The general regulatory reference for Table 9-1a is Attachment 3 to the CSM Manual. For Table 9-1b, the general regulatory reference is specified in the header row.

**Table 9-1a:
Comparison of PA DEP Quarterly Emission/Parameter Data Reporting**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
	Standard Emission	Opacity Excess Emission	Low Temperature	Interlock Incident	NA = Not Applicable, N= No Change Recommended				
19-001 Applicability	All CSM Manual sources. <i>(CSM Manual, Recordkeeping and Reporting, Phase III Approval Letter)</i>	For CSM Manual sources as specified in Phase III approval letter. <i>(CSM Manual, Recordkeeping and Reporting, Phase III Approval Letter)</i> Specified in Policy Guidance: Large Coal Boilers <i>(CEMS Enf Policy, H)</i> HWI <i>(CAP for HWI, H.)</i> MWI <i>(CAP for MWI, H.)</i> FCCU <i>(FCCU Enf. Policy, H)</i>	For CSM Manual sources as specified in Phase III approval letter. <i>(CSM Manual, Recordkeeping and Reporting, Phase III Approval Letter)</i> Specified in Policy Guidance HWI <i>(CAP for HWI, I.)</i> MWI <i>(CAP for MWI, I.)</i>	For CSM Manual sources as specified in Phase III approval letter. <i>(CSM Manual, Recordkeeping and Reporting, Phase III Approval Letter)</i> Specified in Policy Guidance HWI <i>(CAP for HWI, J.)</i> MWI <i>(CAP for MWI, J.)</i>	NA	1	NA	N	None

(cont.)

**Table 9-1a:
Comparison of PA DEP Quarterly Emission/Parameter Data Reporting (cont.)**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
	Standard Emission	Opacity Excess Emission	Low Temperature	Interlock Incident	NA = Not Applicable, N= No Change Recommended				
I9-001(c and d) Emission or Parameter Data Reported	For each hour, valid or invalid with substitute data, hourly data averages truncated to a whole number (ppm, %, degrees, lbs/hr, lbs/mmBtu, mmBtu/hr, Klbs/hr, and others as needed. Monitor codes are reported for invalid hours if substitute data are not allowed.	For excess emission hours only, report number of 1 minute or other averaging period as appropriate within specified ranges: MIN 10-29%, and MIN > 29% Also enter highest average and 4th highest average during hour.	For low temperature incident hour only, report number of low temperature minutes, average of low temperature minutes, and lowest 1minute average.	For interlock incident hour only, report number of minutes with no charging, parameter, and average of parameter causing incident truncated to whole number (Opacity, CE, CO, Temperature).	NA	NA	NA	N	None
I9-001(f) Excess or Incident Time Period	Not applicable	Day and hour of each excess emission hour.	Date, hour, beginning minute, total minutes. of each low temperature hour	Date, hour, beginning minute, total minutes of each interlock incident	NA	NA	NA	N	None
I9-001(g) Monitor Status Code	Provided for invalid data hours.	Not provided, but can be cross referenced to Standard Emissions Report	Not provided, but can be cross referenced to Standard Emissions Report	Not provided	NA	NA	NA	N	None
I9-001(h) Process Status Code	Provided for each valid data hour, and invalid hour without substitute data.	Provided for each excess emission hour.	Provided for each low temperature hour.	Provided for each interlock incident hour.	NA	NA	NA	N	None

**Table 9-1b:
Comparison of Pennsylvania and Federal Emission/Parameter Data Reporting**

	1	2	3	4	6	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Notes on Most Stringent, All Encompassing, Proposed Alternatives and Impacts
Program	PA DEP Source Submittals (CSM Manual, Attach 3)	Part 75 (See generally EDR Version 2.2)	Part 60, Subparts Da, Db, Dc (Boilers) Excess Emissions (See generally 40 CFR Subparts Da, Db, Dc)	Parts 60 and 63 Summary and Excess Emissions (See generally § 60.7 and § 63.10)	Part 61 Excess Emissions (See applicable Part 61 subparts)	
E9-001(a) Submittal Schedule	Quarterly	Quarterly, except State may allow a NO _x Budget Program unit to submit ozone season reports only.	Da: Semi-annual, except quarterly if submitted electronically and for excess opacity emission reports Db: Semi-annual, quarterly if submitted electronically Dc: Semi-annual	Semi-annual unless more frequent specified in subpart. (60.7 and 63.10) Some subparts specify quarterly reporting if there are excess emissions. Part 60: Excess emission report only submitted if excess emissions ≥1% and monitor downtime ≥5% of operating time.	Quarterly, except Semi-annual for Subpart N	PA DEP and Part 75 quarterly reporting requirements are the most stringent. PA DEP most all encompassing for PA DEP standards. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.
Format E9-001(b)	Electronic	Electronic Data Report	Hard copy. May submit electronically if format approved by the permitting authorities.	Part 60: Hard copy. May submit electronically if approved. (60.7(a)) Part 63: Not specified.	Not specified	PA DEP and Part 75 most stringent. Part 60 most all encompassing. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.

(cont.)

**Table 9-1b:
Comparison of Pennsylvania and Federal Emission/Parameter Data Reporting (cont.)**

	1	2	3	4	6	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Notes on Most Stringent, All Encompassing, Proposed Alternatives and Impacts
Program	PA DEP Source Submittals (CSM Manual, Attach 3)	Part 75 (See generally EDR Version 2.2)	Part 60, Subparts Da, Db, Dc (Boilers) Excess Emissions (See generally 40 CFR Subparts Da, Db, Dc)	Parts 60 and 63 Summary and Excess Emissions (See generally § 60.7 and § 63.10)	Part 61 Excess Emissions (See applicable Part 61 subparts)	
E9-001(c) Hourly Emission or Parameter Data Averages	For each hour, valid or invalid with substitute data, hourly data averages truncated to a whole number in terms of the emission result (ppm, %, degrees, lbs/hr, lbs/mmBtu, mmBtu/hr, Klbs/hr, and others as needed. Monitor codes are reported for invalid hours if substitute data are not allowed.	Data from each analyzer reported on an hourly basis, and also lb/hr for SO ₂ and NO _x (Subpart H units) mmBtu/hr for NO _x (Acid Rain units), and mmBtu/hr (Acid Rain units). Opacity not reported.	Not Reported	Only reported for excess emission hours if standard averaging time is on an hourly basis.	Not Reported	PA DEP most all encompassing for PA DEP standards. See Note 2. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.
E9-001(d) Other Emission or Parameter Data Averages	Not applicable	Not applicable	F-factor used and method for determination of fuel type, and annual fuel capacity factor for each 24-hr period. Da and Db : SO ₂ and NO _x lb/mmBtu, and SO ₂ % Reduction for each successive 30 operating days. Db : SO ₂ lb/mmBtu for each day. Dc : SO ₂ lb/mmBtu, and SO ₂ % of Potential for each successive 30 operating days Opacity is subject to Subpart A excess emission requirements.	Part 60 : Magnitude reported for excess emission periods. Varies by basis and averaging time. (Subpart A general requirements and specific subparts) Part 63 : Not required.	Magnitude reported for excess emission periods. Varies by basis and averaging time.	Most Stringent and All Encompassing are not applicable. See Note 2. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.

(cont.)

**Table 9-1b:
Comparison of Pennsylvania and Federal Emission/Parameter Data Reporting (cont.)**

	1	2	3	4	6	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Notes on Most Stringent, All Encompassing, Proposed Alternatives and Impacts
Program	PA DEP Source Submittals (CSM Manual, Attach 3)	Part 75 (See generally EDR Version 2.2)	Part 60, Subparts Da, Db, Dc (Boilers) Excess Emissions (See generally 40 CFR Subparts Da, Db, Dc)	Parts 60 and 63 Summary and Excess Emissions (See generally § 60.7 and § 63.10)	Part 61 Excess Emissions (See applicable Part 61 subparts)	
E9-001(e) Missing Data	Substitute data is reported for invalid hours for mass emission limit CEMS.	Missing data is reported for invalid hours.	Not applicable	Not Applicable	Not Applicable	Part 75 is Most Stringent. See Note 2. No changes recommended.
E9-001(f) Excess or Incident Time Period	Opacity Day and hour of each excess emission hour. Temperature and Interlock Date, hour, beginning minute, and total minutes of each low temperature hour	Not applicable	Start and end time of each excess emission period, date and time.	Start and end time of each excess emission period, date and time.	Start and end time of each excess emission period, date and time.	Most Stringent and All Encompassing are not applicable. See Note 2. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.
E9-001(g) Monitor Downtime, OOC Periods, Monitor Status Code	Monitor code provided for invalid data hours. Identifies reason for invalid data.	Method of determination code provided for each hour, but does not provide reasons for invalid/substitute data hours.	Date and time of each monitor down time, out of control period, full span exceedance, and manual sampling hours. Provide reason for each downtime period.	Date and time of each monitor down time and out of control period. Requires reason for each downtime period.	Date and time of each monitor down time period.	PA DEP is most All Encompassing. See Note 3. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.

(cont.)

**Table 9-1b:
Comparison of Pennsylvania and Federal Emission/Parameter Data Reporting (cont.)**

	1	2	3	4	6	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Notes on Most Stringent, All Encompassing, Proposed Alternatives and Impacts
Program	PA DEP Source Submittals (CSM Manual, Attach 3)	Part 75 (See generally EDR Version 2.2)	Part 60, Subparts Da, Db, Dc (Boilers) Excess Emissions (See generally 40 CFR Subparts Da, Db, Dc)	Parts 60 and 63 Summary and Excess Emissions (See generally § 60.7 and § 63.10)	Part 61 Excess Emissions (See applicable Part 61 subparts)	
E9-001(h) Cause of Excess Emissions, Process Status Code	Provided for each invalid non-substitute data hour, and valid data hour. Describes process operating condition. Excess, Low Temperature, Interlock Incidents: Provided for each excess or incident period.	Not applicable	Requires reason for each excess emission period.	Requires reason for each excess emission period.	Requires reason for each excess emission period.	PA DEP is most All Encompassing. See Note 3. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports - See Recommendations. May impact the CEMDPS Emission Result Summary Report, Delegation Letters.
E9-001(i) Description of Corrective Action	Not required. Maintain records only. (CSM Manual, Record Keeping and Reporting, Section I.A.3.j.)	Not required	Required for both invalid and excess emission periods.	Required for both invalid and excess emission periods.	Required for both invalid and excess emission periods.	NSPS and NESHAP requirements are most stringent. See Note 4. Investigate with EPA substitution of PA DEP generated reports for NSPS and NESHAP reports. Would require change to PA DEP reporting - See Recommendations. May impact the submitted CEMDPS Emission Reports, and Result Summary Report, Delegation Letters.

(cont.)

**Table 9-1b:
Comparison of Pennsylvania and Federal Emission/Parameter Data Reporting (cont.)**

	1	2	3	4	6	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Notes on Most Stringent, All Encompassing, Proposed Alternatives and Impacts
Program	PA DEP Source Submittals (CSM Manual, Attach 3)	Part 75 (See generally EDR Version 2.2)	Part 60, Subparts Da, Db, Dc (Boilers) Excess Emissions (See generally 40 CFR Subparts Da, Db, Dc)	Parts 60 and 63 Summary and Excess Emissions (See generally § 60.7 and § 63.10)	Part 61 Excess Emissions (See applicable Part 61 subparts)	
E9-001(j) Minimum Data, Requirement, Excluded Data, Manual Sampling	Not applicable	Not applicable	Identify day when minimum data not met and provide justification. Identify excluded data times and provide reasons. Identify manual sampling hours.	Part 60, Subpart J: Identify periods failing minimum data requirements and manual sampling hours.	Not required.	These are NSPS subpart specific requirements, so they are Most Stringent. No general change recommended, but may require PA DEP systemic reporting changes to allow substitution of PA DEP generated reports for NSPS reports - See Recommendations. May impact the submitted CEMDPS Emission Reports, and Result Summary Report, Delegation Letters.
E9-001(k) Excess Emission Summary	Not Required	Not applicable	Da: Signed statement on any operation changes during periods when data unavailable, of excess emissions during emergency conditions. Da and Db: For any 30 successive days not meeting minimum data quality for percent reduction provide statistical analysis of available data.	-Parameter -Standard -Operating Time (hr - gas, min - opacity) -Duration of excess emission by cause -CMS duration of downtime by cause -Total excess emission time and as % of operating time -Total CMS	Not required.	NSPS and NESHAP requirements are Most Stringent. No general change recommended, but may require PA DEP systemic reporting changes to allow substitution of PA DEP generated reports for NSPS reports - See Recommendations. May impact the submitted CEMDPS Emission Reports, and Result Summary Report, Delegation Letters.

(cont.)

**Table 9-1b:
Comparison of Pennsylvania and Federal Emission/Parameter Data Reporting (cont.)**

	1	2	3	4	6	
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Notes on Most Stringent, All Encompassing, Proposed Alternatives and Impacts
Program	PA DEP Source Submittals (CSM Manual, Attach 3)	Part 75 (See generally EDR Version 2.2)	Part 60, Subparts Da, Db, Dc (Boilers) Excess Emissions (See generally 40 CFR Subparts Da, Db, Dc)	Parts 60 and 63 Summary and Excess Emissions (See generally § 60.7 and § 63.10)	Part 61 Excess Emissions (See applicable Part 61 subparts)	
E9-001(l) Monitor Downtime Summary	Not Required	Not Required	Da and Db : For any 30 successive days not meeting minimum data quality for percent reduction provide statistical analysis of available data.	-Date of last certification/audit -CMS duration of downtime by cause -Total CMS downtime and as % of operating time -Description of any change in CMS, process, or controls since last report	Not required.	NSPS and NESHAP requirements are Most Stringent. No general change recommended, but may require PA DEP systemic reporting changes to allow substitution of PA DEP generated reports for NSPS reports - See Recommendations. May impact the submitted CEMDPS Emission Reports, and Result Summary Report, Delegation Letters.

Notes on Most Stringent, All-Encompassing, or Alternative Requirements

Note 1. Reporting Entity (*Ref. No. 9-001 generally*)

The PA DEP and NSPS/NESHAP reports are designed to obtain results in terms of the applicable emission standard from the entity (which PA DEP refers to as "source combination") affected by an applicable emission standard. The Part 75 report first obtains component hourly averages for each monitor location and also then obtains data in terms of the limited emission results required under Part 75 (SO₂ and CO₂ mass emissions and NO_x emission rate for Acid Rain Program units, and NO_x mass emissions for NO_x Budget Program units). The identification hierarchy is not consistent between PA DEP and Part 75, and the Part 75 results are not necessarily provided in the same units of measure as needed for PA DEP purposes. Table 9-3 provides a general comparison of these differences.

Note 2. Excess Emissions versus All Hourly Data (*Ref. No. 9-001(c) - (f)*)

The NSPS and NESHAP reports generally provide data only for excess emission periods. For boilers subject to NSPS subparts Da through Dc, sources will report all data, but on an averaging period basis (30-day rolling average or daily basis). PA DEP, in contrast, obtains each hourly average and then uses its CEMDPS system to calculate excess emission periods and monitor downtime summaries from the raw data. PA DEP produces a Quarterly CSM Report from the source submittals. After review, this report is provided to PA DEP regional office and to EPA Region III, and is made available on the PA DEP internal website. Table 9-4 outlines the content of this report.

For opacity and temperature emission limits, sources provide to PA DEP both an hourly average value in the standard report format, and an excess emission report. These reports are generally consistent with federal excess emission reports, although the PA DEP opacity standards are based on one-minute averages as opposed to the 6-minute average used for federal standards. The reason PA DEP uses the excess emission reports for opacity and temperature is that the standards apply on less than an hourly basis. Because of the amount of data for one-minute averages, the report is submitted on an excess emission basis, rather than a full report of each one minute average. Tables 9-5 and 9-6 summarize the elements of these reports.

Note 3. Reasons for Missing Data or Excess Emissions (*Ref. No. 9-001(g) and (h)*)

The general report under Parts 60, 61, and 63 require the source to identify the reasons for monitor downtime and for excess emission incidents. Part 75 reports contain no indication of the reasons for monitor downtime and have no excess emission concept at all. Instead, Part 75 uses method of determination codes, which indicate the basis for each hourly emission record. The PA DEP report meets the NSPS/NESHAP report requirements through the use of monitor and process codes. Table 9-2, below, provides a

comparison of the NSPS/NESHAP reason categories and the monitor and process codes used by PA DEP.

Note 4. Description of Corrective Action (*Ref. No. 9-001(i)*)

For excess emission periods, the general NSPS and NESHAP reporting provisions require the source to describe corrective actions for both monitor downtime and excess emission events. No similar information is provided under the PA DEP reporting system. Instead, the source is required to maintain records of all corrective actions.

Recommendations

We do not recommend any general changes to the PA DEP reporting provisions at this time. The current reporting system enables PA DEP to determine compliance with the emission standards being monitored and to assess penalties for noncompliance. The data elements included in the reports can identify excepted periods (when compliance is not required). The reports also include all of the necessary information for PA DEP to apply the penalty criteria in its enforcement policies. The NSPS/NESHAP or Part 75 reporting models would not necessarily provide all of the relevant information for that penalty analysis.

There may be methods of harmonizing the emissions/parameter reporting process without modifying the PA DEP report structure. First, for NSPS/NESHAP systems, one step to harmonize data reporting would be to substitute the quarterly continuous source monitoring reports received and generated by DEP for the excess emission reporting under Parts 60, 61, and 63. Pennsylvania's Standard Emission Report is very different from the summary and excess emission reports typically submitted under the NSPS and NESHAP programs. The PA DEP report provides data for each hour and day with no summarization or emission limit averaging. However, PA DEP uses these reports, and the Opacity Excess Emission Report and Low Temperature Report, to provide nearly all of the information required in the NSPS and NESHAP excess emission and summary reports. For instance, the process and monitor codes that PA DEP uses meet the minimum requirements in the NSPS/NESHAP report to identify causes of excess emissions and monitor downtime (see Table 9-2). PA DEP also uses the CEMDPS to process source reported data, and to summarize emissions and monitor availability data (see Table 9-4). In nearly all respects, these reports exceed the requirements of the NSPS and NESHAP reporting requirements (see Tables 9-9 and 9-10). We recommend that PA DEP explore with EPA the possibility of substituting the PA DEP report for most of the required NSPS and NESHAP excess emission and summary reports because they are more encompassing and provide functionally equivalent information. The primary exception is for opacity data, as discussed below.

There still are differences in the PA DEP versus federal excess emission and summary reports. The list below identifies items required in the NSPS and NESHAP

reports that are not included in Pennsylvania's Standard Emission Report, Opacity Excess Emission Report, or Low Temperature Report, or that is not generated by PA DEP from these reports. The remaining general summary and excess emission reporting elements under the NSPS and NESHAP reports are available in the Pennsylvania reports.

- (1) Opacity six minute averages. However, Pennsylvania receives hourly averages, and daily minute averages for state emission standards. Pennsylvania does receive excess emission information based on compliance with 6-minute average standards if only the federal 6-minute standard applies.
- (2) Summary Reports - Date of last certification or audit. Also, summary of excess emissions (and monitor downtime) by cause.
- (3) Excess Emission Reports - Description of corrective action in response to malfunctions or measures taken to minimize emissions during excess emission periods.
- (4) 40 CFR Part 60, Subpart J - Full span exceedances.

For Item (1), because of the different opacity averaging periods under PA DEP versus federal regulation, we recommend that PA DEP attempt to obtain EPA approval of using the PA DEP report in place of the NSPS/NESHAP report for opacity monitoring only where the PA DEP report is based on 6-minute averages. For the NSPS/NESHAP summary reports for other pollutants, PA DEP will have the information in Item (2) above, in its data system (based on the test and emissions reports received from the sources). To the extent EPA would want to have easy access to this information, we recommend that PA DEP consider modifying the summary report produced by CEMDPS to include this information. These changes would enhance the ability of EPA to use the CEMDPS generated reports in their oversight role in place of the NSPS/NESHAP summary reports. As an alternative, this information could be included in the cover letter from the source. For Items 3 and 4 above, the general PA DEP recordkeeping requirements could provide this information. Again, sources could include this information in the cover letter.

One issue with this approach is that the source is supposed to generate its own report to enable the source to meet its report compliance obligations under Parts 60, 61, and 63. Section 63.12(c) allows EPA to waive the requirement to submit a report to EPA if the delegated state agency requires the report. No similar explicit authority exists under Parts 60 and 61. PA DEP will need to discuss with EPA the feasibility and legality of the recommendation to substitute the PA DEP report for the NSPS and Part 61 NESHAP excess emission and summary reports.

A second possible step for harmonization would be to accept the PA DEP standard reports in place of the full emission reports received under Subparts Da, Db, and Dc for boilers. However, as discussed in Section 9.4 and listed in Tables 9-18 through 9-20, there

are several specific data elements required in these reports that are not part of PA DEP's standard emissions reporting or are not part of the summary reports PA DEP generates. Because of these differences, we do not recommend that PA DEP seek approval to use its existing report as a functional equivalent for these NSPS reports.

A third possible step for harmonization is to enable Part 75-affected sources to use Part 75 electronic emissions/parameter data to meet PA DEP reporting requirements. In 2001, DEP performed a study to investigate the use of Part 75 Electronic Data Reports in place of DEP quarterly reports. The study provided detailed comparisons of EDR record types and data required by DEP. That year DEP also proposed separate EDR record types in a similar format to the Part 75 EDR, which would be provided by sources in addition to Part 75 record types. Non-Part 75 sources would have submitted only the Pennsylvania record types.

Based on a review of that report and the general program reasons identified in Section 2.4 of this report, we do not recommend pursuing this option. Even though these efforts would harmonize DEP formats with Part 75 formats to some degree, there would still be separate emission reporting reflecting the different emission limits and averaging time, and different CEMS object identification codes used by Pennsylvania and Part 75. So, at this time, we do not recommend that Pennsylvania change its method for identifying CEMS to match that of Part 75 (see object identification summary in Table 9-3). The Part 75 sources are in the best position to match their component elements with the different object identifiers (such as PA DEP CEMS ID and the Emission Result ID) within their own data management software.

As noted in many other sections of this report, we do recommend revisions to PA DEP's program that can provide a common database of valid data hours. The Part 75 source could then use the Part 75 component data and its crosswalk between Part 75 and PA DEP object identification to generate the reports needed to meet both reporting obligations. So, even if the reports are different, reporting will be simplified because the reports can be generated using the same set of data. This objective type of harmonization was an underlying consideration in our analysis and recommendations in other sections of this report.

Impacts on DEP Systems and Documents

Generally, the above recommendations do not suggest modifications to PA DEP reporting requirements. We do recommend that PA DEP explore with EPA the possibility that EPA waive the standard NSPS/NESHAP summary and excess emission report requirements and allow sources to submit instead the standard PA DEP reports. For EPA oversight, PA DEP could continue to provide the reports that PA DEP already provides to EPA. We also noted above in the Recommendations discussion that EPA may still want to obtain some of the summary information that is not included in the current summary reports generated by PA DEP (see Table 9-4). Most importantly, the current PA DEP

summary reports do not provide a summary of excess emission or monitor downtime periods by cause. If EPA required this information as a precondition of waiving a NSPS or NESHAP reporting requirement, then PA DEP would have to generate this information as part of its summary report format. This would require changes to the report format to include this information, and would require changes to the portions of the CEMDPS application that generate this report, specifically the CEMCalc Visual Basic application (see the "frmCEMReport.frm" form).

In addition, as noted above, there are a few specific data elements which the source could provide in the cover letter (or PA DEP in some cases could pull from the CEMDPS database). If the information was to come from the CEMDPS database, it would impact the CEMCalc application as well. This would add some work for the source and/or the state, but would be part of an overall streamlining effort to eliminate the redundant report sent to EPA. In addition, this recommendation would require a clarification of EPA's delegation to Pennsylvania, which could occur in a revision to the delegation letters (or a separate clarifying letter).

**Table 9-2:
Comparison of PA DEP and NSPS/NESHAP Reports
(Process and Monitor Conditions)**

Excess Emission Reasons		Monitor Downtime Reasons	
NSPS/NESHAP (60.7 and 63.10)	PA DEP (CSM Manual, Attachment 3)	NSPS/NESHAP (60.7 and 63.10)	PA DEP (CSM Manual, Attachment 3)
Startup/Shutdown	Startup/Shutdown	Monitor Equipment Malfunction	<ul style="list-style-type: none"> • Primary Analyzer Malfunction • Auxiliary Analyzer Malfunction • Data Handling System Malfunction • Sample Interface Malfunction
Control Equipment Problems	<ul style="list-style-type: none"> • Control Equipment Malfunction • Clean Control Equipment 		
Process Problems	<ul style="list-style-type: none"> • Changing Fuels • Changing Operating Levels • Clean Process Equipment 	Non-Monitoring Equipment Malfunction	Other
		QA Calibration	Recalibration
Other Known Causes	Other Normal Operation	Other Known Causes	<ul style="list-style-type: none"> • Excess Drift -- Primary Analyzer • Excess Drift -- Secondary Analyzer • Preventive Maintenance • Corrective Maintenance • Process Down
Unknown Causes	(Not applicable)	Unknown Causes	(Not applicable)

**Table 9-3:
Comparison of PA DEP and Federal Reporting Provisions
(Reporting Entity/Object Identification)**

PA DEP	Part 75	NSPS/NESHAP
Facility ID: Statewide unique number assigned by PA DEP for the entire plant.	ORISPL ID: Facility ID. Unique plant ID assigned by the Department of Energy or CAMD.	Identify: <ul style="list-style-type: none"> • Company • Emission/parameter limitation • Monitor manufacturer and model no. • Process unit description
Source Combination ID: Statewide unique number assigned by PA DEP for an emission source or combination of sources at the associated facility required to meet specific emission limits or operational criteria.	Unit ID: Unit ID, that is unique for the facility only, as it appears in allowance database. If no allowance database ID, than ID corresponding to plant naming "1" for boiler 1, "CT1" for combustion turbine 1.	
Emission Result ID: Statewide unique number assigned by PA DEP which corresponds to units of measurement combination (i.e., lbs/mmBtu, ppm) required to be reported for the associated source combination. Related to one or more CEMS.	Stack/Pipe ID: ID, unique to the facility only, that corresponds to the monitor location.	
CEMS ID: Statewide unique number assigned by PA DEP corresponding to all of the hardware and software used to measure emissions or parameters in terms of the associated emission results. Backup or standby CEMS have separate ID from primary CEMS, as do dual range systems. Related to one or more analyzers.	Monitoring System ID: Three character alphanumeric ID assigned to the combination of analytical components, sensors, and data software (components) for which a RATA is specified and is unique for a unit/stack/pipe. For fuel flow rate it corresponds to the combination of flowmeter and software components needed to calculate hourly fuel flow. Examples: <ul style="list-style-type: none"> • SO₂ Concentration System • Flow Monitoring System • NO_x-diluent System • CO₂ or O₂ System • Moisture System • NO_x Concentration System 	

(cont.)

**Table 9-3:
Comparison of PA DEP and Federal Reporting Provisions
(Reporting Entity/Object Identification) (cont.)**

PA DEP	Part 75	NSPS/NESHAP
Analyzer: Statewide unique number assigned by PA DEP corresponding to a hardware or software component of one or more associated CEMS. An analyzer shared between CEMS on a single Source Combination is assigned a single ID, but an analyzer shared by more than one source combination is assigned multiple unique IDs corresponding to each source combination.	Component ID: Three character alphanumeric ID unique to each hardware and software component associated with a monitoring system. A component may be part of two different monitoring systems (e.g., O ₂ monitor for NO _x -diluent and moisture), but still has the same unique component ID.	No additional requirements (see prior page)
<i>Source: PA DEP CEMS Approval Procedures</i>	<i>Source: Revised EDR Version 2.2 Reporting Instructions, CAMD, March 2003.</i>	<i>Source: 40 CFR 60.7</i>

9.2 Additional Details on PA DEP Emission and Parameter Data Reporting

PA DEP requires sources to submit, on a quarterly basis, emissions data electronically for processing by Pennsylvania's CEM Data Processing System (CEMDPS). The electronic data submittal is due within 30 days of the end of the quarter. There are four reports which are compared above in Table 9-1a.

The standard emission report is reported for all CEMS subject to the CSM Manual and certified by PA DEP. One standard emissions report is submitted for each Emission Result ID. Table 9-3, above, identifies the objects and hierarchy (Emission Result, CEMS, Analyzer) used by CEMDPS.

CEMDPS processes the emission data and generates a quarterly Continuous Source Monitoring System report. After review, the quarterly reports are distributed to regional offices and EPA Region 3, and posted on DEP's internal website. Table 9-4 outlines the content of the report.

The standard data report submitted by a source is shown in Table 9-5, the opacity excess emissions report in Table 9-6, and low temperature report in Table 9-7. There is also an interlock incident report for incinerators (see Table 9-8).

**Table 9-4:
PA DEP Quarterly Continuous Source Monitoring Reports
(Generated by PA DEP using Source Reports and CEMDPS)**

Facility Summary	Emission Result Summary	Emission Result Averages
Company Information Year and Quarter Source Emission Result ID Monitored Parameter Quarterly Average Monitoring Time in Quarter Emission Violation Days Excess Invalid Averages Report Penalties	Company Information Year and Quarter Source Parameter Certification Date Emission Result ID Operation Summary Time Subject to Monitoring (hours or % of quarter) Valid CMS Time (hours or % of quarter) % Valid of Time Subject Parameter Average Compliance Summary Report Submittal Postmark Emission Standard Emission Compliance (in compliance or number of violations) Data Availability Standard Data Availability Compliance (in compliance or number of violations)	Standard Report Source Parameter Date Averaging Period Emission Results Process Code Monitor Code Valid Hours Down Hours Invalid Hours Calibration Error Check Results Analyzer ID L Result M Result H Result

(cont.)

Table 9-4:
PA DEP Quarterly Continuous Source Monitoring Reports (cont.)
(Generated by PA DEP using Source Reports and CEMDPS)

Facility Summary	Emission Result Summary	Emission Result Averages
No additional items (see prior page)	No additional items (see prior page)	<p>Opacity Excess Emission Report Source Parameter Date Process Code Monitor Code Excess Minutes by Standard Valid Hours Down Hours Invalid Hours Calibration Error Check Results Analyzer ID L Result M Result H Result</p> <p>Low Temperature Report Source Parameter Date Process Code Monitor Code Excess Minutes by Standard Valid Hours Down Hours Invalid Hours</p>

**Table 9-5:
PA Standard Emission Report (CSM Manual, Attach.)**

Field	Field Description
For the Quarter	
Descriptive Information	
Company Name	
Location	
Source	
CEMS ID No.	CEMS ID No., Source ID No., Analyzer ID No.
Parameter	Opacity, SO ₂ , Temperature, C.E., etc.
Quarter	1, 2, 3, or 4
Year	Last 2 Digits
Units	Units Reported: ppm, %x100, degrees
Calibration Error Results	
Analyzer ID No.	CEMS ID No., Source ID No., Analyzer ID No.
LOW Calibration Error	Report as % truncated to 1 decimal place
MID Calibration Error	Report as % truncated to 1 decimal place
High Calibration Error	Report as % truncated to 1 decimal place
For Each Hour	
Valid Data Value and Process Code	Valid data hour: ppm and degrees truncated to whole number; for % basis, multiply by 100 and truncate to whole number, for other units, contact source monitoring section. Valid data are followed by a period and the process code that best describes operating conditions during hour. Alternative multiplication and truncation procedures may be specified by the DEP on a case by case basis (to account for very low or very high emission standards. Other units of measure are listed below. Additional units and parameters may be added as necessary.
	lbs/hr - CO, NO _x , SO ₂ , TRS, VOC
	lbs/Mbtu - CO, NO _x , and SO ₂
	Mbtu/hr - Heat Input
	Klbs/hr - Steam Flow
Invalid Data/Nonsubstituted - Monitor Code and Process Code	Invalid data hour without substitute data requirement: Enter monitor code (preceded by "II") most responsible for the invalid data, followed by period and process code that best describes operating conditions during hour
Invalid Data/Substituted - Data Value and Monitor Code	Invalid data hour with substitute data requirement: Substitute value is entered in the same way as for valid data as described in the Valid Data Value row above.

(cont.)

**Table 9-5:
 PA Standard Emission Report (CSM Manual, Attach.) (cont.)**

Field	Field Description
For Each Hour	
Monitor Codes	Monitor Codes:
	10 - Required adjustment not made
	11 - Excess drift primary analyzer
	12 - Excess drift ancillary analyzer
	13 - Process down
	14 - Recalibration
	15 - Preventive maintenance
	16 - Primary analyzer malfunction
	17 - Ancillary analyzer malfunction
	18 - Data Handling System Malfunction
	20 - Corrective Maintenance
21 - Other	
Process Codes	Process codes:
	01- Changing fuels
	02 - Control equipment malfunction
	03 - Startup
	04 - Shutdown
	05 - Changing Operating Level
	06 - Clean Process Equipment
	07 - Clean Control Equipment
	08 - Normal Operation
09 - Other	

**Table 9-6:
 PA Opacity Excess Emission Report (CSM Manual, Attach.)**

Field	Field Description
For the Quarter	
Descriptive Information	
Company Name	
Location	
Source	
CEMS ID No.	CEMS ID No., Source ID No., Analyzer ID No.
Quarter	1, 2, 3, or 4
Year	Last 2 Digits
Each Excess Emission Hour	
Date	mm/dd/yy
Hour	01-24
Process Code	01 - Changing fuels
	02 - Control equipment malfunction
	03 - Startup
	04 - Shutdown
	05 - Changing Operating Level
	06 - Clean Process Equipment
	07 - Clean Control Equipment
	08 - Normal Operation
	09 - Other
MIN 10-29	Number of 1 minute averages in specified range (for standards other than MWI opacity standards, contact DEP)
MIN >29	Number of 1 minute averages in specified range (for standards other than MWI opacity standards, contact DEP)
1MAX MIN	Enter value of highest 1 minute average during hour (01-99)
4MAX MIN	Enter value of 4th highest 1 minute average during hour (01-99)

**Table 9-7:
 PA Low Temperature Report (CSM Manual, Attach.)**

Field	Field Description
For the Quarter	
Descriptive Information	
Company Name	
Location	
Source	
CEMS ID No.	CEMS ID No., Source ID No., Analyzer ID No.
Quarter	1, 2, 3, or 4
Year	Last 2 Digits
Each Low Temperature Hour	
Date	mm/dd/yy - Low temperature incident
Hour Began	01-24 - Hour low temperature incident began
Minute Began	01-60 - Minute low temperature incident began
Minute Long	Number of minutes of low temperature during hour
Process Code	01 - Changing fuels
	02 - Control equipment malfunction
	03 - Startup
	04 - Shutdown
	05 - Changing Operating Level
	06 - Clean Process Equipment
	07 - Clean Control Equipment
	08 - Normal Operation
	09 - Other
Average	Average of low temperatures during the hour
Low	Lowest one-minute average temperature during the hour

**Table 9-8:
 MWI Interlock Incident Report (CSM Manual, Attach.)**

Field	Field Description
For the Quarter	
Descriptive Information	
Company Name	
Location	
Source	
CEMS ID No.	CEMS ID No., Source ID No., Analyzer ID No.
Quarter	1, 2, 3, or 4
Year	Last 2 Digits
Each Interlock Incident Hour	
Date	mm/dd/yy - Charging ceased
Hour Began	01-24 - Hour when charging ceased
Minute Began	01-60 - Minute when charging was ceased
Minute Long	Number of minutes of the incident during the hour
Process Code	01 - Changing fuels
	02 - Control equipment malfunction
	03 - Startup
	04 - Shutdown
	05 - Changing Operating Level
	06 - Clean Process Equipment
	07 - Clean Control Equipment
	08 - Normal Operation
	09 - Other
Average	Average of parameter (opacity, temperature, O ₂ , C.E.) responsible for incident during period when charging ceased
Parameter Name	Parameter that caused incident (opacity, temperature, O ₂ , C.E.)

9.3 Additional Details on Parts 60, 61, and 63 Summary and Excess Emission Reporting

As noted earlier, the NSPS and NESHAP reporting requirements, for the most part are limited to summary and excess emission reports which report on excess emission or monitor downtime periods only, not all the hours of data as Pennsylvania and Part 75 require.

9.3.1 Part 60 and 63 Subpart A Requirements

Parts 60 and 63 have general requirements in Subpart A (§§ 60.7 and 63.10) for semi-annual reporting of summary and excess emission reports. The content of the reports are similar and compared in Table 9-9 and Table 9-10. Summary reports are required for each reporting period. Under Part 60, an excess emission report is required only if monitor downtime and out-of-control time exceeds 5% of unit operating time. Part 63 requires submittal of the excess emission report regardless of the amount of downtime or excess emissions. The reports are to be submitted within 30 days of the end of the reporting period, which is semi-annual (60.7(c) and 63.10(e)(3)).

CEMS are subject to these requirements, unless subject to subpart specific reporting requirements. Subpart specific requirements are discussed in the next section.

**Table 9-9:
Subpart A - Summary Report**

Report Element	Part 60, Subpart A, 60.7(d) Figure 1	Part 63, Subpart A, 63.10(e)(3)
Reporting Period Dates	Required - Start and End	Required - Start and End
Company	Required - Name and address	Required - Name and address
Emission or Parameter Limitation	Required - Pollutant and limitation	Required - Pollutant and limitation
Monitor Manufacturer and Model No.	Required	Required
Date of Last CMS Certification or Audit	Required	Required
Process Unit Description	Required	Required
Total Source Operating Time	Required (opacity - min, gases - hrs)	Required (opacity - min, gases - hrs)
Duration of Excess Emissions by Cause	Required (opacity - min, gases - hrs)	Required (opacity - minutes, gases - hours)
Total Duration of Excess Emissions	Required (opacity - min, gases - hrs)	Required (opacity - min, gases - hrs)
Total Duration of Excess Emissions as % of Source Operating Time	Required	Required
CMS Downtime Duration by Cause	Required (opacity - min, gases - hrs)	Required (opacity - min, gases - hrs)
Total CMS Downtime Duration	Required (opacity - min, gases - hrs)	Required (opacity - min, gases - hrs)
Total CMS Downtime as % of Source Operating Time	Required	Required
Description of Any Change in CMS, Processes or Controls (since last report)	Required	Required
Responsible Official Certification	Not Required (Summary Report Requires)	Required

**Table 9-10:
Subpart A - Excess Emission Report**

Report Element	Part 60, Subpart A, 60.7(c)	Part 63, Subpart A, 63.10(c), 63.8(c)(8), 63.10(e)(3)
Excess Emission Report Trigger	Total duration of excess emissions \geq 1% of operating time or total CMS downtime during period \geq 5% of operating time	No excess emission or downtime criteria. Report is submitted unless exempted in applicable subpart.
Unit Operating Time During Reporting Period	Required	Required
Start and End Time of Each Excess Emission Period	Required	Required
CEMS Measurement Value (Magnitude of Excess Emissions)	Required - For excess emission periods	Not Required
Magnitude of Excess Emission	Required - For excess emission periods	Not Required
Identification of Each Excess Emission Period Due to Startups, Shutdown, Malfunctions	Required	Required
Nature and Cause of Any Malfunction, and Corrective Action	Required	Required
Date and Time of Each CMS Downtime Period (except calibration drift checks)	Required	Required
Date and Time of Each CMS Out of Control Period	Not Required	Required
Statement that no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted (if applicable)	Required	Required
Responsible Official Certification	Not Required (Summary Report Requires)	Required

9.3.2 Subpart Specific Excess Emission Reports Parts 60, 61, and 63

Part 61 does not have Subpart A general requirements for summary and excess emission reports comparable to those in Subpart A of Parts 60 and 63. Instead reporting requirements are contained in individual subparts. In addition, a number of Part 60 and 63 subparts have subpart specific excess emission reporting requirements which replace or supplement the Subpart A reporting.

9.3.2.1 Part 61

The Part 61 reporting requirements are simpler than the Subpart A excess emission reports. Table 9-11 shows the required elements of opacity excess emission reports in Subparts N, O, and P, and Table 9-12 show organic compound excess emission reporting requirements in Subparts F, BB, and FF. The contents of the reports by pollutant are similar across the subparts. Frequency of reporting varies from a quarterly to semi-annual basis, and reports are due within 30 days of the end of the reporting period.

**Table 9-11:
Part 61 Opacity Excess Emission Reports**

Report Element	Source Type (Subpart)		
	309 (Glass Manufacturing Plant)(N)	308 (Primary Copper Smelter)(O)	308 (Arsenic Trioxide and Metallic Arsenic Production) (P)
Reporting Rule Citation	61.165(f)(3)	61.177(e)	61.186(c)
Excess Emission Report Trigger	If excess emissions occurred during period	Not Specified	Not Specified
Frequency	Semi-annual	Quarterly	Quarterly
Start and End Time of Each Excess Emission Period	6 minute average	1 hour average	6 minute average
CEMS Measurement Value (Magnitude of Excess Emissions)	Required	Required	Required
Cause of Each Exceedance, and Measures Taken to Minimize Emissions	Not Specified	Required	Required
Identification of Each Excess Emission Period Due to Startups, Shutdown, Malfunctions	Required	Required	Required
Date and Time of Each CMS Downtime Period (except calibration drift checks)	Required	Required	Required
Description of Downtime Repairs-Adjustments	Required	Required	Required

**Table 9-12:
Part 61 Organic Compound Excess Emission Reports**

Report Element	Source Type (Subpart)		
	313 (Vinyl Chloride, PVC, and Ethylene Dichloride Manufacturing)(F)	313 (Benzene Transfer Operations-Carbon Absorbers)(BB)	305, 312, 313 (Benzene Waste Operations - Carbon Absorbers, Condensers or other Vapor Recovery Systems)(FF)
Reporting Rule Citation	61.70 (a) and (c)	61.305(f)	61.357(d)(7)
Pollutant	VCM	OC	OC or Benzene
Excess Emission Report Trigger	Not Specified	Not Specified	Not Specified
Frequency	Quarterly	Quarterly	Quarterly
Start and End Time of Each Excess Emission Period	Required	Required	Required
CEMS Measurement Value (Magnitude of Excess Emissions)	VCM ppm - 3 hour average > Emission Limit	VOC ppm - 3 hour average > 20% of compliance test average	OC or Benzene ppm - 3 hour average >20% of design concentration
Number of Emission Averages During the Period.	Required	Not Specified	Not Specified
Statement that No Excess Emissions Occurred During Period	Required	Not Specified	Not Specified

9.3.2.2 Part 60 - Subpart Specific Excess Emission Reports

Table 9-13 shows the Part 60 subparts that have subpart specific excess emission reporting requirements. The subparts cover municipal waste combustion, petroleum refining, and web based coating source types. Tables 9-14 through 9-16 then provide a brief overview of reporting under each of these subparts.

**Table 9-13:
Part 60 Subparts with Specific Excess Emission Reporting Requirements**

Source Type	Subpart
340 (MWC after 12/20/89, before 9/20/94)(Ea)	Ea
340 (MWC after 9/20/94)(Eb)	Eb

(cont.)

**Table 9-13:
Part 60 Subparts with Specific Excess Emission Reporting Requirements (cont.)**

Source Type	Subpart
312 (Petroleum Refinery)(J)	J
340 (Small MWC after 8/30/99, modification after 6/6/01)(AAAA)	AAAA
340 (Small MWC after 8/30/99, modification after 8/30/99)(BBBB)	BBBB
399 (Flexible vinyl and urethane coating/printing)(FFF)	FFF
312 (Petroleum Refinery - WW Systems)(QQQ)	QQQ
399 (Magnetic tape coating)(SSS)	SSS
399 (Polymeric coating of supporting substrates)(VVV)	VVV

**Table 9-14:
Part 60 Municipal Waste Combustion
Semi-Annual Excess Emission Reporting**

Subpart Ea, 60.59a(b)(3) and (e)(3) - 340 (MWC after 12/20/89, before 9/20/94)(Ea)		
Subpart Eb, 60.59b(h) and (d)(2) - 340 (MWC after 9/20/94)(Eb)		
Time Period	Reporting Element	Description
Excess Emission Day-Pollutant or Parameter Exceeds Limit (Ea - 60.59a(e)(2), Eb - 60.59b(h))	Calendar Date	
	Reasons for Exceedance	
	Description of Corrective Action	
	SO ₂ % reduction and ppm @7% O ₂	24 hour daily geometric average
	NO _x ppm @ 7% O ₂	24 hour daily arithmetic average
	CO ppm @7% O ₂	4 hour block or 24 hour daily arithmetic average as applicable
	Steam Flow (klb/hr)	4 hour block average
	Control Device Temperature (Degrees)	4 hour block average
	Opacity	6 minute average
Subpart AAAA, 60.1425 - 340 (Small MWC after 8/30/99, modification after 6/6/01)(AAAA)		
Subpart BBBB, 60.1900 - 340 (Small MWC after 8/30/99, modification after 8/30/99)(BBBB)		
Time Period	Reporting Element	Description
Excess Emission Day-Pollutant or Parameter Exceeds Limit (AAAA - 60.1425(a), BBBB - 60.1900(a))	Calendar Date	
	Reasons for Exceedance	
	Description of Corrective Action	
	SO ₂ % reduction and ppm @7% O ₂	24 hour daily block average and recorded data for the day
	NO _x ppm @7% O ₂	24 hour daily block average and recorded data for the day

(cont.)

Table 9-14:
Part 60 Municipal Waste Combustion
Semi-Annual Excess Emission Reporting (cont.)

Time Period	Reporting Element	Description
	CO ppm @7% O ₂	4 hour block or 24 hour daily block average as applicable and recorded data for the day
	Steam Flow (lb/hr)	4 hour block average and recorded data for the day
	Control Device Temperature (Degrees)	1 hour average and recorded data for the day
	Opacity	6 minute average and recorded data for the day

Table 9-15:
Part 60 Subpart J - Petroleum Refinery Semi-annual Excess Emission Reporting

Time Period	Reporting Element (60.107(c) and (d))	Description
Reporting Period	Periods failing minimum data requirements	30 day periods (60.104(d)) and 18 hour periods (60.104(b))
	Manual Sampling Hours	Identify hours using manual sampling methods
	Span Exceedances	Times when monitor exceeded full span
	CEMS Modifications	Description of modification that could affect meeting PS2 and PS3
	Periods for which SO ₂ data unavailable	Signed statement indicating if any changes were made in the emission control system operation. Operation of control system and affected facility during data unavailability are to be compared with operation before and following the unavailability period.
FCCU 7 Day Excess Emission Periods (60.107(c)(1))	Date of exceedance	
	SO ₂ % Reduction	7 day average < 90%
	SO ₂ ppm @ 0% O ₂	7 day average > 50 ppm
	Reason for exceedance	
	Exceedance during startup, shutdown, malfunction	Identify
	Description of Corrective Action	

**Table 9-16:
Part 60 - Organic Compound Excess Emission Reporting**

Source Type (Subpart)	Time Period	Reporting Element	Description
399 (Flexible vinyl and urethane coating/printing)(FFF)	Semi-annual (60.585(b))	VOC Excess Emission Periods (60.585(b))	Report 3 hour clock periods - ppm
312 (Petroleum Refinery – Wastewater Systems)(QQQ)	Semi-annual (60.698(d))	VOC Excess Emission Periods (60.585(b))	Report 3 hour clock periods > 20% design ppm
399 (Magnetic tape coating)(SSS)	Semi-annual (60.717(d))	VOC Excess Emission Periods (60.717(d))	Report 3 hour rolling averages > 20% performance test ppm
399 (Polymeric coating of supporting substrates)(VVV)	Quarterly (60.747(d))	VOC Excess Emission Periods (60.747(d))	Report 3 day rolling averages > 20% performance test ppm

9.3.2.3 Part 63 - Subpart Specific Excess Emission Reports

For this analysis we only included Part 63 subparts that required that the relevant CEMS or CMS meet a Part 60 performance specification. This was done to eliminate requirements for monitors that would not be certified under Pennsylvania's CSM Manual.

Table 9-17 lists the Part 63 subparts which have subpart specific CEMS reporting requirements, in addition to or in place of Subpart A requirements. Part 63 is different from Part 60 in that each subpart identifies which of the Subpart A requirements are applicable. Most often the subpart specific requirements are similar to the Subpart A excess emission requirements.

**Table 9-17:
Part 63 Subparts with Specific CEM Reporting Requirements**

Source Type (Subpart)	Pollutants or Parameter	Subject to Subpart A Reporting	Description/Comment of Subpart Requirement
305 (Coke Ovens; Pushing, Quenching, and Battery Stacks)(CCCCC)	Opacity	No	Similar to Subpart A. Submit quarterly if there are excess emissions. (63.7341(b) and (c))
307 (Integrated Iron and Steel Manufacturing)(FFFFF)	Opacity	No	Similar to Subpart A (63.7841(b))
309 (Taconite Iron Ore Processing)(RRRRR)	Opacity	No	Similar to Subpart A (63.9641(b))
309 (Refractory Products Manufacturing)(SSSSS)	OC	No	May be non-certified parameter monitoring. Similar to Subpart A except refers to CPMS. (63.9814(c))
312 (Marine Vessel Loading and Unloading)(Y)	OC	Yes	Submit excess emission report if $\geq 5\%$ excess emissions. (63.567(e))
312 (Petroleum Refinery)(UUU)	Opacity, CO, SO ₂ , TRS, O ₂	No	Similar to Subpart A (63.1575(b), (c) and (e))
313 (Manufacture of Amino/Phenolic Resins)(OOO)	OC	No	Each period and monitored average value during each deviation and each period and duration of monitor downtime. (63.1417(f))
315 (Pulp Mill Chemical Recovery Combustion Sources)(MM)	Opacity	Yes	Same as Subpart A, quarterly submittal if there are excess emissions. (63.867(c))

(cont.)

**Table 9-17:
Part 63 Subparts with Specific CEM Reporting Requirements (cont.)**

Source Type (Subpart)	Pollutants or Parameter	Subject to Subpart A Reporting	Description/Comment of Subpart Requirement
331 (Hazardous Waste Incinerators)(EEE)	CO, OC, O ₂ , Opacity	Yes	Requires Excess Emission Report, if more than 10 exceedances of standards while waste combusted during 60 day block period. (63.1211(a) and 63.1206(c)(3)(vi))
399 (Aerospace Manufacturing and Rework)(GG)	OC	Yes	May be non-certified parameter monitoring. (63.753)
399 (Asphalt Processing and Asphalt Roofing Manufacturing)(LLLLL)	Opacity	No	Similar to Subpart A (63.8693(b) and (c))
399 (Cellulose Products Manufacturing)(UUUU)	H ₂ S, HAP, OC, TRS	No	Similar to Subpart A (63.5580(e))
399 (Engine Test Cells/Standards)(PPPPP)	CO, O ₂ or CO ₂	No	Similar to Subpart A (63.9350(b))
399 (EtO Sterilizer Facility)(O)	OC	Yes	Requires information on failed calibration tests. (63.366(a))
399 (Magnetic Tape Manufacturing)(EE)	OC	Yes	Except for identifying excess emissions due to startup, shutdown. (EE, Table 1)
399 (Natural Gas Transmission and Storage)(HHH)	OC	Yes	Additional requirement for magnitude of excess emissions. (63.1285(e))

(cont.)

**Table 9-17:
Part 63 Subparts with Specific CEM Reporting Requirements (cont.)**

Source Type (Subpart)	Pollutants or Parameter	Subject to Subpart A Reporting	Description/Comment of Subpart Requirement
399 (Oil and Natural Gas Production)(HH)	OC	Yes	Additional requirement for magnitude of excess emissions. (63.775(e))
399 (Paper and Other Web Coating)(JJJJ)	OC	No	Similar to Subpart A (63.3400(c)(6))
399 (Site Remediation)(GGGGG)	OC	No	Similar to Subpart A (63.7951(b))

9.4 Part 60: Da, Db, Dc Emission Reporting Requirements

Only the boiler NSPS in Subparts Da, Db, and Dc of Part 60 require reporting of SO₂ and NO_x (NO_x not applicable to Dc) for all emission periods, not just excess emission periods. See Tables 9-18 through 9-20.

**Table 9-18:
Subpart Da Semiannual and Quarterly Reporting
[306 (Boilers >250MBtu) after 9/18/78]**

Time Period	Reporting Element	Description	Available in PA DEP Report?
For the Period	Any periods for which opacity, SO ₂ , or NO _x emission data are unavailable (60.49a(f))	Signed statement indicating if any changes were made in the emission control system operation. Operation of control system and affected facility during data unavailability are to be compared with operation before and following the unavailability period.	No
	If minimum data quality not met for any 30 successive days (60.49a(c))	Number of hourly averages available for inlet and outlet emissions rates (as applicable)	No
		Standard deviation of hourly averages for outlet and inlet emissions rates (as applicable)	No
		Ratio of upper confidence limit for mean outlet rate to lower confidence limit for mean inlet rate (as applicable)	No
For the Quarter	For the purpose of 60.7 excess emission reports (60.49a(h)): Opacity excess emission defined as 6-min periods with averages over the standard.	For each excess emission period - opacity levels and dates	Yes

(cont.)

Table 9-18:
Subpart Da Semiannual and Quarterly Reporting
[306 (Boilers >250MBtu) after 9/18/78] (cont.)

Time Period	Reporting Element	Description	Available in PA DEP Report?
	Signed statement of excess emissions due to emergency conditions (60.49a(d))	If emergency conditions existed and 60.46(a)(d) was met, provide operating and emissions information in 60.49a(d)(2)	No
	Signed CEMS data statement 60.49a(g):	CEMS calibration drift checks and audits have or have not been performed	No
		Data used to show compliance was or was not obtain with approved methods and representative of plant performance	No
		Minimum data requirements have or have not been met, or have not been met due to unavoidable errors	No
		Compliance with standard has or has not been achieved.	No
For Each Day (24-hr Period) (60.49a(b))	Calendar Date		Yes
	SO ₂ and NO _x Emission Rate (lbs/mmBtu)	Average for each successive 30 boiler operating days	Yes (CEMDPS calculates)
	SO ₂ Percent Reduction (%)	Average for each successive 30 boiler operating days	Yes (CEMDPS calculates)
	Minimum Data Requirement not Met	Identify day and provide justification and description of corrective actions	No
	Excluded Data Times (not used in daily average)	NO _x due to start-up, shutdown, malfunction, SO ₂ emergency, or other reasons and justification for excluding data for other reasons	No
	F-Factor	F-factor used, method of determination and fuel type	No
	Manual Sampling Hours	Identify hours using manual sampling methods	No
	Span Exceedances	Times when monitor exceeded full span	No
	CEMS Modifications	Description of modification that could affect meeting PS2 and PS3	No

**Table 9-19:
Subpart Db Semi-Annual and Quarterly Reporting
302 (Boilers $\geq 100\text{MBtu}$ and $\leq 250\text{MBtu}$)**

Time Period	Reporting Element	Description	Available in PA DEP Report?
For the Period	If minimum data quality not met for any 30 successive days (60.49b(m))	Number of hourly averages available for inlet and outlet emissions rates (as applicable)	Not directly
		Standard deviation of hourly averages for outlet and inlet emissions rates as determined by Method 19	No
		Lower confidence limit for mean outlet emission rate, and upper confidence limit for mean inlet emission rates as determined by Method 19	No
		Ratio of upper confidence limit for mean outlet rate to lower confidence limit for mean inlet rate as determined by Method 19	No
	For the purpose of 60.7 excess emission reports (60.49b(h)): Opacity excess emission defined as 6-min periods with averages over the standard.	For each excess emission period - opacity levels and dates	Yes
For Each Day 24-hr Period (60.49b(g)(i)(k) (1))	Calendar Date		Yes
	NO _x Emission Rate (lbs/mmBtu)	Average hourly NO _x rates, and average for each successive 30 boiler operating days	Yes (CEMDPS calculates)
	SO ₂ Emission Rate (lbs/mmBtu) (60.42b)	Average for each successive 30 boiler operating days	Yes (CEMDPS calculates)
	SO ₂ Emission Rate (lbs/mmBtu) (60.42b(d))	24 hr average SO ₂ rate for each day	Yes (CEMDPS calculates)
	SO ₂ Percent Reduction (%) (60.42b)	Average for each successive 30 boiler operating days	Yes (CEMDPS calculates)
	Excess Emission Days	Identify days when 30 day average exceeds limit, provide reasons, and description of corrective actions	Not completely
	Minimum Data Requirement not Met	Identify day and provide justification and description of corrective actions	No
	Excluded Data Times (not used in daily average)	Provide reasons and for excluding data	No

(cont.)

**Table 9-19:
 Subpart Db Semi-Annual and Quarterly Reporting
 302 (Boilers $\geq 100\text{MBtu}$ and $\leq 250\text{MBtu}$) (cont.)**

Time Period	Reporting Element	Description	Available in PA DEP Report?
	F-Factor	F-factor used, method of determination and fuel type	No
	Manual Sampling Hours	Identify hours using manual sampling methods	No
	Span Exceedances	Times when monitor exceeded full span	No
	CEMS Modifications	Description of modification that could affect meeting PS2 and PS3	No
	SO ₂ - Capacity Factor	Annual capacity factor of each fuel fired	No

**Table 9-20:
Subpart Dc Semi-Annual and Quarterly Reporting
302 (Boilers \geq 10MBtu and \leq 100MBtu)**

Time Period	Reporting Element	Description	Available in PA DEP Report?
For the Period	For the purpose of 60.7 excess emission reports (60.48c(c)): Opacity excess emissions	Submit excess emission reports for any excess emissions that occur	Yes
For Each Day 24-hr Period (60.48c(e))	Calendar Date		Yes
	SO ₂ Emission Rate (lbs/mmBtu) (60.42b)	Each 30 day average ending with the last 30 day period	Yes (CEMDPS calculates)
	SO ₂ Percent of Potential (%)	Each 30 day average ending with the last 30 day period	Yes (CEMDPS calculates)
	Minimum Data Requirement not Met	Identify day and provide justification and description of corrective actions	No
	Excluded Data Times (not used in daily average)	Provide reasons and for excluding data	No
	F-Factor	F-factor used, method of determination and fuel type	No
	Manual Sampling Hours	Identify hours using manual sampling methods	No
	Span Exceedances	Times when monitor exceeded full span	No
	CEMS Modifications	Description of modification that could affect meeting PS2 and PS3	No
	SO ₂ - Capacity Factor	Annual capacity factor of each fuel fired	No

9.5 Part 75 Emission Reporting

Part 75 requires quarterly electronic reports that provide hourly and cumulative emissions and operating data. Reports are submitted within 30 days of the end of the quarter (75.64(a)).

Hourly emissions and parameter (flow, heat input, load) data record types used in Part 75 electronic reports are displayed in Tables 9-21 to 9-28.

**Table 9-21:
Part 75: Hourly Pollutant Gas Concentration**

RECORD TYPE	DATA ELEMENT DESCRIPTION
SO ₂ Concentration Data ARP Only 200	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Percent monitor data availability for SO ₂ (%)
	Average SO ₂ concentration for the hour (ppm)
	Average SO ₂ concentration for the hour adjusted for bias (ppm)
Method of determination code	
NO _x Concentration Data 201	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Average NO _x concentration for the hour (ppm)
	Method of determination code
	Adjusted average NO _x concentration for the hour (ppm)
Percent monitor data availability for NO _x concentration (%)	
CO ₂ Concentration Data ARP Only 202	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Average CO ₂ concentration for the hour (%)
	Method of determination code
Percent monitor data availability for CO ₂ concentration (%)	
CO ₂ Diluent Concentration Data 210	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
Average CO ₂ concentration for the hour (%)	

(cont.)

Table 9-21:
Part 75: Hourly Pollutant Gas Concentration (cont.)

RECORD TYPE	DATA ELEMENT DESCRIPTION
	Method of determination code
	Percent monitor data availability for CO ₂ concentration (%)
O ₂ Diluent Concentration Data 211	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Average O ₂ concentration for the hour (%)
	Method of determination code
	Moisture basis of measurement (W-wet or D-dry (for O ₂ used for moisture calculations), Blank (for O ₂ used only for diluent purposes))
	Percent monitor data availability for O ₂ concentration (%)

Table 9-22:
Part 75: Hourly Moisture Data

RECORD TYPE	DATA ELEMENT DESCRIPTION
Moisture Data 212	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Average moisture content of flue gases for the hour (%H ₂ O)
	Formula ID
	Method of determination code
	Percent monitor data availability for moisture (%)

Table 9-23:
Part 75: Hourly Volumetric Flow Data

RECORD TYPE	DATA ELEMENT DESCRIPTION
Volumetric Flow Data 220	Record type code
	Unit/Stack ID
	Component ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Percent monitor data availability for volumetric flow (%)
	Average volumetric flow rate for the hour (scfh)
	Average volumetric flow rate for the hour adjusted for bias (scfh)
	Load range or operational bin number
	Method of determination code

Table 9-24:
Part 75 Unit Operating Data

RECORD TYPE	DATA ELEMENT DESCRIPTION
Unit Operating Parameters 300	Record type code
	Unit/Stack/Pipe ID
	Date (YYMMDD)
	Hour (HH)
	Unit operating time
	Gross unit load during unit operation (MWe)
	Steam load during unit operation (1000 lb/hr)
	Load range or operational bin number
	Hourly heat input rate during unit operation for all fuels (mmBtu/hr)
	Heat input formula ID
	F-factor for heat input calculation
	Use of diluent cap for heat input calculation for this hour (Y-cap used)
	Total heat input for the hour (Optional) (mmBtu)
	Type of fuel combusted during the hour

**Table 9-25:
 Part 75: SO₂ Mass Emissions Data**

RECORD TYPE	DATA ELEMENT DESCRIPTION
SO ₂ Mass Emissions Data	Record type code
	Unit/Stack ID
ARP Only 310	Date (YYMMDD)
	Hour (HH)
	SO ₂ mass emission rate for the hour (lb/hr)
	SO ₂ mass emission rate during unit operation based on adjusted values (lb/hr)
	Formula ID from monitoring plan for hourly SO ₂ emissions
	Total SO ₂ mass emissions for the hour (Optional) (lb)

**Table 9-26:
 Part 75: NO_x Emissions Rate Data**

RECORD TYPE	DATA ELEMENT DESCRIPTION
NO _x Emissions Rate Data 320	Record type code
	Unit/Stack ID
	Monitoring system ID
	Date (YYMMDD)
	Hour (HH)
	Percent monitor data availability for NO _x emission rate calculations (%)
	F-factor converting NO _x concentrations to emission rates
	Average NO _x emission rate for the hour (lb/mmBtu)
	Adjusted average NO _x emission rate for the hour (lb/mmBtu)
	Load range or operational bin number
	Formula ID from monitoring plan for hourly NO _x emission rate
	Method of determination code

**Table 9-27:
Part 75: NO_x Mass Emissions Data**

RECORD TYPE	DATA ELEMENT DESCRIPTION
NO _x Mass Emissions Data Subpart H Only 328	Record type code
	Unit/Stack/Pipe ID
	Date (YYMMDD)
	Hour (HH)
	Unit operating time
	NO _x mass emission rate during unit operation (Optional) (lb/hr)
	Total NO _x mass emissions for the hour (lb)
	Formula ID from monitoring plan for total NO _x mass
	NO _x methodology for the hour
	Heat input rate methodology for the hour

**Table 9-28:
CO₂ Mass Emissions Data**

RECORD TYPE	DATA ELEMENT DESCRIPTION
CO ₂ Mass Emissions Data ARP Only 330	Record type code
	Unit/Stack/Pipe ID
	Date (YYMMDD)
	Hour (HH)
	CO ₂ mass emission rate for the hour (ton/hr)
	Formula ID from monitoring plan for hourly CO ₂ mass emission rate
	Total CO ₂ mass emissions for the hour (Optional) (ton)
	Use of diluent cap value for CO ₂ calculation for this hour (Y-cap used)

Section 10: Monitoring and QA/QC Plans

Pennsylvania Phase I requirements have been discussed previously in Section 7 in terms of notification and approval requirements. In this section we compare the content requirements between the Pennsylvania Phase I program and the federal requirements. QA/QC plan requirements across programs are first compared in Section 10.1 followed by the comparison of monitoring plan content requirements in Section 10.2.

10.1 QA/QC Plan Requirements

The QA/QC plan is a set of standard operating procedures which detail all aspects of how to operate a CEMS, and is central to the QA/QC requirements. At a minimum, QA/QC plans describe the detailed step by step procedures and operations for: CEMS settings; QA tests; calibration adjustments; preventive maintenance and any adjustments to the system; a spare parts list; a troubleshooting matrix; and emission data and QA/QC recordkeeping and reporting.

Table 10-1 compares QA/QC plan requirements with respect to: CEMS applicability; whether or not the plan is submitted to the State or EPA; and requirements for revising or updating the plan. QA/QC plans are required for all CEMS under the PA DEP CEM program, so there is no need for an internal summary of PA DEP requirements. Table 10.2 then compares the PA DEP versus the federal QA/QC plan content requirements.

Notes on Most Stringent, All-Encompassing, and Alternative Requirements

Note 1. Applicability [*Ref. No. 10-001(a)*]

As noted above, QA/QC plans are required for all CEMS under the PA DEP CEM program. QA/QC plans are also required for all CEMS under Parts 61, 63, and 75. Only Part 60 gas CEMS subject to Appendix F (CEMS directly used for compliance) and opacity CEMS are subject to QA/QC plan requirements. Opacity monitor QA/QC plans are called quality management systems in PS1.

Note 2. Plan Submittal [*Ref. No. 10-001(b)*]

Only Pennsylvania requires submittal of the QA/QC plan, and submittal of plan revisions. The QA/QC plan is submitted as part of the initial Phase I application.

Note 3. Plan Review and Revision [*Ref. No. 10-001(c)*]

PA DEP requires annual plan review and revision. Appendix F and Part 63, Subpart EEE requires review and revision after 2 successive quarters with monitor out-of-control periods. Part 75 does not have requirements for plan reviews.

Note 4. Plan Content Requirements [*Ref. No. 10-002(a) - (f)*]

The different programs all require comparable written procedures, with additional procedures required for hazardous waste combustors by Part 63, Subpart EEE. The additional procedures in Subpart EEE for hazardous waste combustors (waste feed interlock procedures and training procedures) reflect requirements specific to that standard.

Recommendations

None of the QA/QC requirements establish conflicting requirements between programs that need to be harmonized to improve program performance. Different requirements and reporting procedures required by underlying programs mean the QA/QC plans will differ in some ways.

**Table 10-1:
Comparison of PA DEP and Federal QA/QC Plan Requirements**

Reference No. and Description	1 Specific Requirement (Reference)	2 Specific Requirement (Reference)	3 Specific Requirement (Reference)	4 Specific Requirement (Reference)	A Most Stringent Column #	B Most All-Encompassing Column #	C Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP	Part 75	Part 60	Part 63	NA = Not Applicable, N = No Change Recommended				
E10-001(a) Applicability	All CEMS required to meet CSM Manual. (Phase I, I.F.)	All Part 75 CEMS. (App. B, 1)	All gas CEMS subject to Appendix F. (60.13(a)) PS1 (Opacity) Quality management system documented in systematic and orderly manner. (App. B, PS1, 9.0 and ASTM D6216, 8.2.2)	Required CEMS. (63.8(d)(2))	All comparable	NA	NA	N	None
E10-001(b) Plan Submittal	QA/QC Plan submitted as part of Phase I application, and revisions are submitted. (Phase I, I.F., Page 5 and QA Section, Note: 1.)	Submittal not required. Must be accessible for inspections. (App. B, 1)	Submittal not required. Must be accessible for inspections. (App. F, 3)	Submit upon request of Administrator. (63.8(d)(2))	1	NA	NA	N	None
E10-001(c) Source Review and Revise Requirement	Source is to review on an annual basis and update as needed. (QA Section, NOTE:1)	Not Specified	Must review and revise whenever excessive inaccuracies occur in two consecutive quarters. (Excessive inaccuracy - monitor out of control during quarter.) (App. F, 3)	Not specified except for EEE and subparts which specify compliance with 60, App. F which are the same as column 3. (63.8(d)(2)) 3, EEE and 60, App., F:	1	NA	NA	N	None

**Table 10-2:
Comparison of PA DEP and Federal QA/QC Plan Content - Required Written Procedures**

	1	2	3	4	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP (CSM Manual, QA Section I.C.D., E. F.; III.C.D.E)	Part 75 (App. B, 1.2, 1.3)	Part 60 (App. F, 3)	Part 63 (63.8(d)(2) and EEE, App 3.1)	NA = Not Applicable, N= No Change Recommended				
E10-002(a) Calibration Procedures	Required	Required	Required	Required	Same	NA	NA	N	None
E10-002(b) QA Test Procedures	Required	Required	Required	Required	Same	NA	NA	N	None
E10-002(c) Preventive Maintenance Procedures	Required	Required	Required	Required	Same	NA	NA	N	None
E10-002(d) Corrective Action Procedures	Required	Required	Required	Required	Same	NA	NA	N	None
E10-002(e) Recordkeeping and Reporting Procedures	Required	Required	Required	Required	Same	NA	NA	N	None
E10-002(f) CEMS - Waste Feed Interlock Procedures	Not Required	Not Required	Not Required	63, EEE only: Required (EEE App, 3.1)	4	NA	NA	N	None
E10-002(f) Operator Training and Certification	Not Required	Not Required	Not Required	63, EEE only: Required (EEE App, 3.1)	4	NA	NA	N	None

10.2 Phase I Application/Monitoring Plan Contents

The monitoring plan submitted as part of Pennsylvania's Phase I application is submitted in a hard copy format. In addition, PA DEP has provided a word processing based format (optional Phase I Submittal Forms) that sources can submit electronically. PA DEP staff review the plan to determine if the plan complies with appropriate sections of the CSM Manual, permit or plan review, and regulations. In addition, portions of the plan information are entered into CEMDPS by PA DEP staff. The Part 75 monitoring plan has both hard copy and electronically submitted components. As noted earlier, the NSPS and NESHAP programs do not have a comparable requirement.

Table 10-3 lists all of the PA DEP Phase I application content requirements, and indicates any comparable information required by Part 75. Table 10-4 summarizes the electronic Part 75 monitoring plan requirements by EDR record type.

Notes on Most Stringent, All-Encompassing, and Alternative Requirements

Note 1. General Process and Pollution Control Description [*Ref. No. 10-003(a)*]

The Pennsylvania requirement in the CSM Manual is for a general description of the process and control equipment as it relates to monitoring equipment. The CEMS Approval Procedure document suggests that the information should provide the reviewer with a general understanding of the process with respect to materials flow, stack flow, exhaust flow, and pollution control equipment. The Part 75 electronic records which provide specific unit, fuel, control type, and operating information, combined with the hard copy schematic diagram of gas flow [*10-003(b)*] provides similar information.

Note 2. Monitoring Location Diagrams [*Ref. No. 10-003(b)*]

Diagrams and description of the monitoring locations are required by both programs to demonstrate compliance with measurement location requirements in the performance specifications. The requirements are the same.

Note 3. System Information [*Ref. No. 10-003(c)*]

Electronic Part 75 data records (parameter, monitoring methodology, sample method, manufacturer model and serial number, range and span) combined with hard copy description of monitoring site locations [*10-003(b)*], provide system information comparable to that required by PA DEP except for elements included in the Part 75 QA/QC plan (detailed documentation of operating principles, manufacturers' literature, and maintenance checklist). The Part 75 QA/QC plan is not submitted. Also, the

system/analyzer identification system of the Part 75 EDR and CEMDPS are structured differently as discussed in Section 9.

Note 4. Part 75 QA/QC Plan Information [*Ref. No. 10-003(d),(e), and (f)*]

Performance specifications, process and control device parameters which affect emissions, and the QA/QC plan itself, are elements of the Phase I application which are not included in the Part 75 monitoring plan, but are included in the Part 75 QA/QC plan. An explanation of recordkeeping and recording procedures is also a Part 75 QA/QC plan requirement, but there are some recordkeeping and reporting elements provided in the Part 75 monitoring plan in both electronic and hard copy format. The Part 75 electronic plan reports identify DAHS components, formulas, and default values, and a hard copy data handling flow diagram.

Note 5. Facility Location Coordinates [*Ref. No. 10-003(h)*]

Facility UTM requirements are not provided by the Part 75 monitoring plan. Part 75 requires submittal of latitude and longitude in the general facility information of each quarterly report (see EDR Record Type 102). PA DEP uses the UTM and standard latitude/longitude coordinates to be consistent with facility location data in PA DEP's AIMS database.

Note 6. Calibration Drift Reference Values [*Ref. No. 10-003(i)*]

The calibration drift reference values, which PA DEP staff enters into CEMDPS, are not provided in the Part 75 monitoring plan. The appropriate reference values differ between the state and federal programs (see Section 3.2.3 of this report).

Recommendations

The Part 75 EDR monitoring plan provides much of the information required by Pennsylvania, but is not a sufficient substitute because of the differences in system and analyzer identification, and missing information on facility location coordinates, Pennsylvania performance specifications, and calibration drift reference values. Therefore, we do not recommend adapting the Part 75 requirements as a revision to the PA DEP Phase I application requirements for the purpose of harmonization between programs.

If, however, PA DEP opts to update its data systems to provide for enhanced electronic submittal of Phase I applications, sources may suggest that Pennsylvania consider the Part 75 monitoring plan model as a possible starting point for its electronic submittal process. However, based on a review of the specific data fields, and taking note that the Phase I submittal is a one-time submittal (unless system changes require resubmittal), we do not recommend this approach. Many of the elements have specific differences that reflect the differences in the program. The main areas of congruence are

for fuel and control equipment type, capacity data, and make, model number, and serial number for a CEMS component. These limited areas of direct overlap limit the utility in attempting to use Part 75 monitoring plan data directly in PA DEP's Phase I process.

Impact on Pennsylvania Systems and Documents

Because we do not recommend changes in this area, the impacts issue is not applicable.

**Table 10-3:
Comparison of PA DEP Phase I Application and Part 75 Monitoring Plan Elements**

	1	2	A	B	C			
Reference No. and Description	PA DEP Monitoring Plan Element (CSM Manual Reference)	Comparable Part 75 Plan Elements (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected	
			NA = Not Applicable, N= No Change Recommended					
E10-003(a) Process and Pollution Control Description	General description of processes and air pollution control equipment. All factors that may affect the operation and maintenance of monitoring system must be included. <i>(Phase I, I.A.)</i>	Electronic submittal: Facility information, type of boiler, fuel type, types of pollution control equipment, capacity and operating information (range, normal, high loads), program information. <i>(75.53(e)(1)(i),(ix), (xii), (xiii))</i>	NA	NA	NA	N	None	
E10-003(b) Flow Diagram of Measurement Points/Paths	Provide a flow diagram that clearly shows the measurement points or paths. Include any test data and an explanation as to the basis for location. Explain any deviations from PS1 and PS2. The location of the monitoring system measurement points or paths in relation to: 1. Flow disturbances 2. Pollution Control Equipment 3. Emission point of monitored gases to the atmosphere 4. Flue walls at the measurement interface location. <i>(Phase I, I.B.1.-4.)</i>	Hard copy submittal: Description of site locations for each monitoring component in the continuous emission or opacity monitoring systems, including schematic diagrams and engineering drawings and any other documentation that demonstrates each monitor location meets the appropriate siting criteria. <i>(75.53(e)(2)(ii))</i> A schematic diagram identifying entire gas handling system from boiler to stack for all affected units, using identification numbers for units, monitor components, and stacks <i>(75.53(e)(2)(iv))</i> 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. <i>(75.53(e)(2)(v))</i> Electronic submittal: Inside cross-sectional area (ft ²) at flue exit (for all units) and at flow monitoring location (for units with flow monitors, only). <i>(75.53(e)(1)(vii))</i>	NA	NA	NA	N	None	

(cont.)

**Table 10-3:
PA DEP Phase I Application and Part 75 Monitoring Plan Elements (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP CSM Manual Phase I Element	Comparable Part 75 Monitoring Plan	NA = Not Applicable, N= No Change Recommended				
E10-003(a) Process and Pollution Control Description	General description of processes and air pollution control equipment. All factors that may affect the operation and maintenance of monitoring system must be included. <i>(Phase I, I.A.)</i>	Electronic submittal: Facility information, type of boiler, fuel type, types of pollution control equipment, capacity and operating information (range, normal, high loads), program information. <i>(75.53(e)(1)(i),(ix), (xii), (xiii))</i>	NA	NA	NA	N	None
E10-003(b) Flow Diagram of Measurement Points/Paths	Provide a flow diagram that clearly shows the measurement points or paths. Include any test data and an explanation as to the basis for location. Explain any deviations from PS1 and PS2. The location of the monitoring system measurement points or paths in relation to: 1. Flow disturbances 2. Pollution Control Equipment 3. Emission point of monitored gases to the atmosphere 4. Flue walls at the measurement interface location. <i>(Phase I, I.B.1.-4.)</i>	Hard copy submittal: Description of site locations for each monitoring component in the continuous emission or opacity monitoring systems, including schematic diagrams and engineering drawings and any other documentation that demonstrates each monitor location meets the appropriate siting criteria. <i>(75.53(e)(2)(ii))</i> A schematic diagram identifying entire gas handling system from boiler to stack for all affected units, using identification numbers for units, monitor components, and stacks <i>(75.53(e)(2)(iv))</i> 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. <i>(75.53(e)(2)(v))</i> Electronic submittal: Inside cross-sectional area (ft ²) at flue exit (for all units) and at flow monitoring location (for units with flow monitors, only). <i>(75.53(e)(1)(vii))</i>	NA	NA	NA	N	None

(cont.)

**Table 10-3:
PA DEP Phase I Application and Part 75 Monitoring Plan Elements (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP CSM Manual Phase I Element	Comparable Part 75 Monitoring Plan	NA = Not Applicable, N= No Change Recommended				
E10-003(c) System Information	<p>The following system information:</p> <ol style="list-style-type: none"> Pollutants or parameters to be monitored A separate document explaining in detail the operating principles of the measurement devices. Number of measurement devices, including number of measurement point (s) or path (s) per device and locations monitored by each. Note that measurement devices must be designated as primary (devices normally used), standby (additional device operated and maintained identical to primary, but not measuring until needed) or backup (additional device not installed until needed). All valid data from primary devices must be used. Equipment manufacturer (s) and model number (s) Manufacturer's literature A copy of the electronics checklist to be used by instrument technicians for periodic checking of the measurement device (s). The checklist must include a description of checks to be done using either on-board diagnostics or electronics test equipment. Normal values or ranges for each check must also be included. The expected normal and maximum measurement device readings. <i>(Phase I, I.C.1.-7.)</i> 	<p>Electronic submittal:</p> <ol style="list-style-type: none"> Monitoring Systems/Analytical Components: System Parameter and ID; Component ID, Type, Sample Method, Manufacturer, Model, Serial Number Monitoring Methodologies: Parameter, Methodology, Fuel Type, Missing Data Approach. Span Values: Parameter, Scale, MPC/MEC/MPF, Max. NO_x Rate, Span Value, Full-Scale Range, Units of Measure. <i>(75.53(e)(1)(ii),(iv)(x))</i> <p>Detailed explanation of operating principles and , instrument checklist are components of the QA/QC plan required by App. B, which is not required in the monitoring plan submittal. <i>(App. B., I.)</i></p>	NA	NA	NA	N	None
E10-003(d) Performance Specifications	<p>Applicable CSM manual performance specifications. <i>(Phase I, I.D.)</i></p>	<p>Part 75 performance specification information is required in the on-site QA/QC Plan pp. B. Not required in the monitoring plan submittal <i>(App. B., I.)</i></p>	NA	NA	NA	N	None

(cont.)

**Table 10-3:
PA DEP Phase I Application and Part 75 Monitoring Plan Elements (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP CSM Manual Phase I Element	Comparable Part 75 Monitoring Plan	NA = Not Applicable, N= No Change Recommended				
E10-003(f) QA/QC Plan	A step-by-step quality assurance plan, including an explanation of procedures to be used to address all of the items in applicable paragraphs of the Quality Assurance section of this manual. <i>(Phase I, I.F.)</i>	Not required in monitoring plan submittal. On-Site QA/QC Plan is required by App. B. <i>(App. B., I.)</i>	NA	NA	NA	N	None
E10-003(g) Records and Reporting Procedures	An explanation of procedures to be used to satisfy the Department's requirements as listed in the "Record Keeping and Reporting" section of this manual. <i>(Phase I, I.G.)</i>	Electronic submittal provides identification and description of all major hardware and software components of the automated data acquisition and handling system. Includes: Explicit formulas for each measured emission parameter, using component/system identification codes; default values; and reporting frequency. <i>(75.53(e)(1)(iii),(v), (vi), (xi))</i> Hardcopy submittal includes data flow diagram denoting the complete information handling path from output signals of CEMS components to final reports. <i>(75.53(e)(2)(iii))</i> An explanation is not required in monitoring plan submittal. An explanation of records and recordkeeping procedures is required by the on-Site QA/QC Plan. <i>(App. B., I.)</i>	NA	NA	NA	N	None
E10-003(h) Facility Location Coordinates	The UTM Northing, UTM Easting, UTM Zone, latitude and longitude of the facility main gate (general public entrance) area. For existing facilities, this information may be obtained from the Department. <i>(Phase I, I.H.)</i>	Not required.	NA	NA	NA	N	None

(cont.)

**Table 10-3:
PA DEP Phase I Application and Part 75 Monitoring Plan Elements (cont.)**

	1	2	A	B	C		
Reference No. and Description	Specific Requirement (Reference)	Specific Requirement (Reference)	Most Stringent Column #	Most All-Encompassing Column #	Proposed Alternative Reqmt.	Recommended Reqmt. Letter (A, B, C)	Items Affected
Program	PA DEP CSM Manual Phase I Element	Comparable Part 75 Monitoring Plan					
E10-003(i) Calibration Drift Reference Values	For each measurement device, except for fuel flowmeters, opacity, O2 or CO2 measurement devices, the equivalent reading at the level of the monitored emission standard (s) (standards monitored by the specific measurement device range) for the system, using values for other measurement devices in the system that would be expected to occur during expected normal operation. These values will be used in calculation of measurement device drift. Note - If an equivalent emission standard is not well defined in terms of the measurement device output or multiple measurement devices are required to monitor a pollutant or parameter, an alternative equivalent emission standard may be proposed for Department consideration <i>(Phase I, I.I.)</i>	Not required.	NA	NA	NA	N	None

**Table 10-4:
Summary of Part 75 Electronic Monitoring Plan Information
(Source: U.S. EPA, EDR Version 2.2 Reporting Instructions, March 2003)**

Electronic Monitoring Plan (Record Type)	Summary Description of Data Elements
Stack/Pipe Header (RT 503)	Required for units monitoring in more than one location or shared location. Stack/Pipe ID, Height, Stack Area
Unit Operation Information (RT 504)	Unit ID, Boiler Type, Maximum Heat Input, Areas at Flow Monitor and Stack Exit
Program Indicator (RT 505)	Regulatory Program, State Regulatory Codes
EIA Cross Reference (RT 506)	EIA Boiler and Flue IDs
Fuel Usage Qualification (Appendix E) (RT 507)	Capacity or Gas Usage, Qualification Type, Method
Subpart H Reporting (RT 508)	Used to indicate change in reporting frequency (ozone season reporters only)
Monitoring Systems/Analytical (RT 510) Components	System Parameter and ID; Component ID, Type, Sample Method, Manufacturer, Model, Serial Number
Emission Formulas (RT 520)	Parameter, Formula Code, Formula
Span Values (RT 530)	Parameter, Scale, MPC/MEC/MPF, Max. NO _x Rate, Span Value, Full-Scale Range, Units of Measure
Max, Min, Defaults, Constants (RT 531)	Missing Data MPC and Constants, Default Values,
Load Range (RT 535)	Maximum Hourly Load
Range of Operation (RT 536)	Upper and Lower Bounds of Operating Range, Most Frequently Used Loads, Normal Load
Fuel Flow Meter Data (Appendix D) (RT 540)	Parameter, Fuel Type, Maximum Fuel Flow, Initial Accuracy Test Method
NO _x Correlation Segments (Appendix E) (RT 560)	Test Date, Test Number, Operating Level, Segment, Heat Input, NO _x Rate, Fuel Type
Monitoring Methodologies (RT 585)	Parameter, Methodology, Fuel Type, Missing Data Approach
Control Information (RT 586)	Parameter, Type of Control, Control Dates
Fuel Type (RT 587)	Primary/Secondary Fuels