

RECERTIFICATION and DIAGNOSTIC TESTING POLICY

October 24, 2001

Topic: Recertification and Diagnostic Testing

Question: According to § 75.20(b), “Whenever the owner or operator makes a replacement, modification, or change in the certified continuous emission monitoring system or continuous opacity monitoring system that may significantly affect the ability of the system to accurately measure or record the SO₂ or CO₂ concentration, stack gas volumetric flow rate, NO_x emission rate, percent moisture, or opacity, or to meet the requirements of § 75.21 or appendix B to this part, the owner or operator shall recertify the continuous emission monitoring system or continuous opacity monitoring system according to the procedures in this paragraph.” This section goes on to give the following examples of events which require recertification: “replacement of the analyzer; change in location or orientation of the sampling probe or site; and complete replacement of an existing continuous emission monitoring system or continuous opacity monitoring system. The owner or operator shall recertify a continuous opacity monitoring system whenever the monitor path length changes or as required by an applicable State or local regulation or permit.” Section 75.20(b)(1) states that “for all recertification testing, the owner or operator shall complete all initial certification tests in paragraph (c) of this section that are applicable to the monitoring system, except as otherwise approved by the Administrator.” Can EPA provide a more comprehensive list of events which require recertification and the appropriate tests required for each event?

In addition, § 75.20(b) states that “any change to a flow monitor or gas monitor for which a RATA is not necessary shall not be considered a recertification event. In such cases, any other tests that are necessary to ensure continued proper operation of the monitoring system (e.g., 3-load flow RATAs following changes to flow monitor polynomial coefficients, linearity checks, calibration error tests, DAHS verifications, etc.) shall be performed as diagnostic tests, rather than as recertification tests.” Can EPA provide guidance on diagnostic test events and the appropriate diagnostic tests for each event?

Answer: The following Tables describe various events as either recertification events or diagnostic test events and outline the appropriate tests to be performed for each event. The Tables clarify which types of changes to a monitoring system “may significantly affect the ability of the system to accurately measure or record” emissions or flow rate and therefore require recertification testing, and which types of changes require less rigorous diagnostic testing “to ensure continued proper operation of the monitoring system.”

The recertification events listed in the Tables include the examples given in § 75.20(b) (i.e., analyzer replacements, complete monitoring system replacements, and changes in probe location). The Tables also identify four other events that EPA believes are likely to have the potential to significantly affect the accuracy of the monitoring system and that EPA therefore intends to treat as recertification events in applying § 75.20(b). These four events are: (1) replacement of the heated umbilical line on a dry-extractive gas monitoring system; (2) changing from

in-stack dilution methodology to out-of-stack dilution methodology; (3) replacement of the critical orifice in a dilution extractive system with an orifice of a different size; and (4) rebuilding of a continuous opacity monitor at the factory.

Section 75.20(b)(1) specifies that for recertification, the same battery of tests which was performed for initial certification must be repeated, unless otherwise approved by the Administrator. The Tables reflect EPA's intention to require, for most of the recertification events listed in the Tables, the full battery of certification tests to be repeated. However, note that in a number of instances, EPA intends to exercise its authority under § 75.20(b)(1) to require less than the full battery of tests.

The diagnostic test events listed in the Tables are the types of component replacements and repairs which are most commonly done on continuous monitoring systems. The Tables reflect EPA's intention to require only specified tests for these events. The diagnostic tests listed for each event are consistent with case-by-case determinations previously made by EPA and are tests that EPA believes are likely to be necessary to ensure continued proper operation of the monitoring system.

EPA notes that § 75.63(a)(2) requires, for all recertification events, submission of a recertification application no later than 45 days after completion of the required tests. In addition, § 75.64(a)(2) and § 75.65 require that the recertification test results be submitted electronically in the appropriate quarterly EDR report. However, the regulations do not require submittal of a formal application for approval after completion of diagnostic tests. Rather, § 75.63(a)(2)(iii) requires only that the results of diagnostic tests be submitted electronically in the quarterly EDR report. Under § 75.64(d) and EDR Version 2.1 Reporting Instructions, III.C(19) (RT 556: Monitoring System Recertification, Maintenance, or Other Events), EDR record type 556 is used to submit electronically test results for recertification events and most diagnostic test events.

EPA recognizes that this guidance cannot possibly address every situation that may arise and is not binding for situations that it does address. You may want to contact EPA concerning your specific situation, particularly in cases where:

- (a) An event occurs that is not listed in the Tables, and you do not know which (if any) tests are required; or
- (b) An event occurs which is listed in the Tables, but for which you believe, based on sound engineering judgment or other technical considerations, that the tests listed in the Tables may be inappropriate or unnecessary.

Recertification and Diagnostic Test Policy for Dry-Extractive CEMS ¹								
Description of Event	Event Status (2)	RATA	7 Day Cal Error (3)	Cycle Time Test	Linearity Check	Calibration Error Test (4)	Submit RT 556	Comments
Permanently replace NO _x , SO ₂ , O ₂ or CO ₂ analyzer with like-kind analyzer as defined in Acid Rain Program Policy Manual Question 7.22.	R	X	X		X	X	X	Modify RTs 510 and 530 as necessary.
Permanently replace NO _x , SO ₂ , O ₂ or CO ₂ analyzer with new analyzer which does not qualify as a like-kind analyzer.	R	X	X	X	X	X	X	Modify RTs 510, and 530 as necessary.
Replace or repair a major analyzer component that may be subject to drift.	D		X		X	X	X	Examples include measurement cell, lamp, detector, photomultiplier, ozone generator, and NO _x converter.
Replace or repair a major analyzer component that is not likely to be subject to drift.	D				X	X	X	Examples include power supply, circuit board, and valves.
Replace or repair minor analyzer component or perform routine analyzer maintenance (as specified in the QA/QC plan).	D					X		Examples include display, filter replacement, and power cord replacement
Replace or repair signal wiring in CEMS shelter.	D					X		
Replace or repair sample tubing in CEMS shelter.	D					X		EPA recommends performing both a pressure and vacuum leak check.
Replace or repair vacuum pump or pressure pump.	D			X		X	X	
Replace or repair moisture removal system (chiller).	D					X		EPA recommends performing both a pressure and vacuum leak check.
Replace CEMS probe (same probe material, dimension, and location).	D				X	X	X	EPA recommends performing both a pressure and vacuum leak check.
Change probe dimensions or location.	R	X	X	X		X	X	
Change probe material.	D				X	X	X	
Routine probe filter maintenance (e.g., clean coarse filter).	D					X		
Replace heated umbilical line.	R	X	X	X	X	X	X	EPA recommends performing both a pressure and vacuum leak check.
Replace probe heater or sample line heaters.	D					X		
Change from extractive CEMS to in-situ CEMS.	R	X	X	X	X	X	X	Modify RTs 510, 520, and 530, as necessary
Change from extractive CEMS to dilution CEMS.	R	X	X	X	X	X	X	Modify RTs 510, 520, and 530, as necessary

1. The relevant tests for CEMS are listed in § 75.20(c)(1).
2. "R" means a recertification event, and "D" means diagnostic test event.
3. The 7-day calibration error test is not required for a "regular" non-redundant backup system (§ 75.20(d)(2)(i)).
4. A calibration error is required after every repair or corrective maintenance event that may affect system accuracy (Part 75, Appendix B, section 2.1.3(a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20(b)(3)(ii)).

Recertification and Diagnostic Test Policy for Dilution-Extractive CEMS¹

Description of Event	Event Status (2)	RATA	7 Day Cal Error (3)	Cycle Time Test	Linearity Check	Calibration Error Test (4)	Submit RT 556	Comments
Permanently replace NO _x , SO ₂ , O ₂ or CO ₂ analyzer with like-kind analyzer as defined in Acid Rain Program Policy Manual Question 7.22.	R	X	X		X	X	X	Modify RTs 510 and 530 as necessary.
Permanently replace NO _x , SO ₂ , O ₂ or CO ₂ analyzer with new analyzer which does not qualify as a like-kind analyzer.	R	X	X	X	X	X	X	Modify RTs 510, 530 as necessary.
Replace or repair a major analyzer component that may be subject to drift.	D		X		X	X	X	Examples include measurement cell, lamp, detector, photomultiplier, ozone generator, and NO _x converter.
Replace or repair a major analyzer component that is not likely to be subject to drift.	D				X	X	X	Examples include power supply, circuit board, and valves.
Replace or repair minor analyzer component or perform routine analyzer maintenance (as specified in the QA/QC plan).	D					X		Examples include display, filter replacement, and power cord replacement.
Replace or repair signal wiring in CEMS shelter.	D					X		
Replace or repair sample tubing in CEMS shelter.	D					X		EPA recommends performing both a pressure and vacuum leak check.
Replace or repair vacuum pump or pressure pump.	D			X		X	X	
Replace critical orifice in dilution system with orifice of different size.	R	X	X	X	X	X	X	
Replace critical orifice in dilution system with orifice of the same size.	D			X	X	X	X	
Disassemble and reassemble dilution probe for maintenance or service.	D				X	X	X	EPA recommends performing both a pressure and vacuum leak check.
Replace umbilical line.	R	X	X	X	X	X	X	EPA recommends performing both a pressure and vacuum leak check.
Replace CEMS probe (same probe material, dimension, and location).	D				X	X	X	EPA recommends performing both a pressure and vacuum leak check.
Change probe dimensions or location.	R	X	X	X		X	X	
Change probe material.	D				X	X	X	
Replace probe heater or sample line heaters.	D					X		
Change from dilution CEMS to in-situ CEMS.	R	X	X	X	X	X	X	Modify RTs 510, 520 and 530, as necessary
Change from dilution CEMS to extractive CEMS.	R	X	X	X	X	X	X	Modify RTs 510, 520, and 530, as necessary
Change from in-stack dilution to out-of-stack dilution methodology (or vice-versa).	R	X	X	X	X	X	X	EPA recommends performing both a pressure and vacuum leak check.
Major change to dilution air supply.	D				X	X	X	EPA recommends performing both a pressure and vacuum leak check.

1. The relevant tests for CEMS are listed in § 75.20(c)(1).

2. "R" means a recertification event, and "D" means diagnostic test event.

3. The 7-day calibration error test is not required for a “regular” non-redundant backup system (§ 75.20(d)(2)(i)).
4. A calibration error is required after every repair or corrective maintenance event that may affect system accuracy (Part 75, Appendix B, section 2.1.3(a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20(b)(3)(ii)).

Recertification and Diagnostic Test Policy for In-situ CEMS¹								
Description of Event	Event status (2)	RATA	7 Day Cal Error (3)	Cycle Time Test	Linearity Check	Calibration Error Test (4)	Submit RT 556	Comments
Permanently replace NO _x , SO ₂ , O ₂ or CO ₂ analyzer with like-kind analyzer as defined in Acid Rain Program Policy Manual Question 7.22.	R	X	X		X	X	X	Modify RTs 510 and 530, as necessary.
Permanently replace NO _x , SO ₂ , O ₂ or CO ₂ analyzer with new analyzer which does not qualify as a like-kind analyzer.	R	X	X	X	X	X	X	Modify RTs 510 and 530, as necessary.
Replace or repair a major analyzer component that may be subject to drift.	D		X		X	X	X	Examples include, optics, photomultiplier, transceiver, retro reflector, and reference cell.
Replace or repair a major analyzer component that is not likely to be subject to drift.	D				X	X	X	Examples include power supply, lamp, circuit board, and valves.
Replace or repair minor analyzer component or perform routine analyzer maintenance (as specified in the QA/QC plan).	D					X		Examples include display, filter replacement, and power cord replacement.
Change from in-situ to dry-extractive or dilution-extractive methodology.	R	X	X	X	X	X	X	Modify RTs 510, 520 and 530, as necessary
Change monitor or probe location or dimensions.	R	X	X			X	X	Modify RTs 510, 520, and 530, as necessary

1. The relevant tests for CEMS are listed in § 75.20(c)(1).
2. “R” means a recertification event, and “D” means diagnostic test event.
3. The 7-day calibration error test is not required for a “regular” non-redundant backup system (see § 75.20(d)(2)(i)).
4. A calibration error is required after every repair or corrective maintenance event that may affect system accuracy (Part 75, Appendix B, section 2.1.3(a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20(b)(3)(ii)).

Diagnostic Test Policy for DAHS ¹								
Description of Event	Event Status (2)	Formula Verification	Missing Data Verification	RATA	Linearity Check	Calibration Error Test	Submit RT 556	Comments
	Replace entire DAHS (i.e., different vendor).	D	X	X			X	
Upgrade DAHS to support a new EDR version using existing hardware, same equations and algorithms to calculate emissions data.	D	X	X				X	See Policy Manual question 14..96.
Change or insert new mathematical algorithm in DAHS.	D			X	X	X	X	Examples include molecular weight algorithms for dilutions systems and corrections from NO to NOx. EPA recommends these type of changes be made immediately prior to the RATA for affected systems.
Change missing data algorithm in DAHS.	D		X				X	

1. The relevant tests for DAHS are listed in § 75.20(c)(1) and (9).
2. "R" means a recertification event, and "D" means diagnostic test event.

Recertification and Diagnostic Test Policy for Flow Monitors ¹								
Description of Event	Event Status (2)	RATA	Abbreviated Flow to Load	Leak Check (3)	7 Day Cal Error (4)	Calibration Error Test (5)	Report RT 556	Comments
	Permanently replace flow monitor (includes like-kind monitor).	R	X		X	X	X	
Replace or repair major component of flow monitor.	D		X			X	X	Perform abbreviated flow to load test. Perform a RATA if abbreviated flow to load test is failed. (Part 75, App. B 2.2.5.3)
Replace or repair minor component of flow monitor.	D					X		Examples of minor components include: circuit board, blower, or fan. Perform any diagnostic testing as recommended by the manufacturer.
Change polynomial coefficients or K factors used to compute flow.	D	X				X	X	

1. The relevant tests for FLOW CEMS are listed in § 75.20(c)(2) and Part 75, Appendix B, sections 2.2.2 and 2.2.5.3.
2. "R" means a recertification event, and "D" means diagnostic test event.
3. For differential pressure flow monitor only.
4. The 7-day calibration error test is not required for a "regular" non-redundant backup system (see § 75.20(d)(2)(i)).
5. A calibration error is required after every maintenance event that may affect system accuracy (Appendix B, section 2.1.3(a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20(b)(3)(ii)).

Recertification and Diagnostic Test Policy for Fuel Flowmeters¹							
Description of Event	Event Status (2)	Flowmeter Calibration (3)	Transmitter Calibration (4)	Primary Element Inspection (4)	Re-determine Flow Coefficients (5)	Report RT 556	Comments
Replace a fuel flowmeter with one certified by design (e.g., orifice, nozzle or venturi-type).	R		X	X	X	X	Edit RT 510 and 540 as necessary.
Replace a fuel flowmeter with one certified by actual calibration.	R	X				X	Edit RT 510 and 540 as necessary.
Replace primary element of a fuel flowmeter that was certified by actual calibration.	D	X				X	Examples of primary elements include vortex shedding element of vortex fuel flowmeter, turbine of turbine meter, coriolis flow tubes or vibrating element of coriolis meter, and transmitters or transducers of ultrasonic meters.
Replace primary element of fuel flowmeter that was certified by design with an element of the same dimensions.	D			X		X	
Replace primary element of fuel flowmeter that was certified by design with an element of different dimensions.	D			X	X	X	
Replace or repair flowmeter electronics.	D						Perform any diagnostic testing as recommended by the manufacturer.

1. The relevant tests for fuel flowmeter are listed in Part 75, Appendix D, sections 2.1.5 and 2.1.6.
2. "R" means a recertification event, and "D" means diagnostic test event.
3. Calibration by a reference flowmeter, by the manufacturer or by a laboratory (Part 75, Appendix D, section 2.1.5).
4. Transmitter calibrations and primary element inspection only apply to orifice, nozzle and venturi-type fuel flowmeters (Part 75, Appendix D, sections 2.1.6.1 and 2.1.6.4).
5. Redetermine orifice, nozzle or venturi flow coefficients using the procedures of AGA Report No. 3 or ASME MFC-3M whenever you change the size of the primary orifice, nozzle or venturi (Part 75, Appendix D, section 2.1.5.1).

Recertification Test Policy for Opacity Monitors¹

Description of Event	Event Status (2)	Required Test s (3)	Report RT 556	Comments
Replace the entire continuous opacity monitoring system (COMS).	R	X	X	
Factory rebuild of the COMS.	R	X	X	

1. The relevant tests for opacity monitor are listed in Part 60, Appendix B, Performance Specification 1.
2. "R" means a recertification event.
3. Perform all factory and field tests required under the latest version of the Performance Specification 1 in the Appendix B of 40 CFR Part 60.