Question 3.36

Topic: Flow-to-load Ratio Test -- Multiple Stacks

Question: For a unit with a multiple stack configuration, if primary flow monitors (but no redundant backup monitors) are installed on each stack, please clarify how to perform the data analysis and report the test results for the quarterly flow-to-load ratio or gross heat rate (GHR) test.

Answer: For a multiple stack configuration, Section 2.2.5(a) in Appendix B to Part 75 allows the flow-to-load ratio or GHR test to either be done on a combined basis or on an individual stack basis. Perform the test and report the results in the following way:

(1) Identify all of the candidate hours for the flow-to-load analysis (all hours in the quarter for which the unit load was within ten percent of L_{avg}, the average load during the last normal load flow RATA (if the flow-to-load analysis is done on an individual stack basis) or RATAs (if the flow-to-load analysis is done on a combined basis). For a more complete explanation of how to determine L_{avg} when the flow-to-load analysis is done on a combined basis, see the ECMPS Quality Assurance and Certification Reporting Instructions, Section 2.5.2, specifically noting the field descriptions instructions for the <AverageReferenceMethodFlow> field of the <FlowToLoadReferenceData> record.

(2) Select from among the hours identified in (1), and count all hours in which a quality-assured flow rate value was obtained and recorded (in the <MonitorHourlyValueData> record for stack flow) at the stack (if the analysis is done on individual stack basis) or at all of the multiple stacks (if the analysis is done on a combined basis). Call this number of hours "n."

(3) If n < 168, then there is not enough data for the combined flow-to-load test and you should report "FEW168H" in the <TestResultCode> field of the <TestSummaryData> record, as the test result for all monitoring systems. If n _ 168, you may either analyze all of the data or claim the allowable exclusions (see Appendix B, Section 2.2.5(c)) and then analyze the remaining data. If you claim exclusions and there are < 168 hours of data remaining after the exclusions, report "EXC168H" as the test result for all monitoring systems. If you choose not to claim exclusions or if you have at least 168 hrs of valid data remaining after claiming allowable exclusions, proceed to step (4).

(4) Perform the flow-to-load analysis as follows.

(a) If the analysis is done on an individual stack basis:

_ For each candidate hour that was not excluded under (3), above, use the hourly flow rates and the corresponding hourly unit loads, in conjunction with the reference flow-to-load ratio and Equations B-1 and B-2 in Appendix B, to calculate E_f, the

average percentage deviation of the hourly ratios from the reference ratio.

(b) If the analysis is done on a combined basis:

_ For each candidate hour that was not excluded under (3), above, determine the combined flow rate by adding together the individual hourly stack flow rates.

_ Combine the hourly flow rates together on a consistent basis throughout the quarter (i.e., combine the bias-adjusted stack flow rates or the unadjusted flow rates for each hour).

_ Use the combined hourly flow rates and the corresponding hourly unit loads, in conjunction with the reference flow-toload ratio and Equations B-1 and B-2 in Appendix B, to calculate E_f, the average percentage deviation of the hourly ratios from the reference ratio.

(5) If the flow-to-load ratio test is done on a combined basis, you will obtain a single flow-to-load test result to be applied to each of the flow monitoring systems at each of the stacks in the multiple stack configuration. Therefore, in this case, you must report this test result in a Flow-to-Load Test record for each flow monitoring system separately (once under each flow monitoring system ID associated with each of the multiple stacks).

(6) If you elect to use the gross heat rate (GHR) option instead of the flow-to-load ratio, you would use hourly unit heat input rates (reported in the <DerivedHourlyValueData> record for the unit) instead of hourly flow rates, use the reference GHR value instead of the reference flow-to-load ratio, and use Equation B-1a instead of Equation B-1 in the data analysis.

References: Appendix B, Sections 2.2.5(a)(1) and 2.2.5(a)(3); ECMPS Quality Assurance and Certification Reporting Instructions, Sections 2.5 and 2.6; and ECMPS Emissions Reporting Instructions, Section 2.5.

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