



Project Summary

Data Assessment Reports for CEMS at Subpart Da Facilities

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The full report is a summary of the information provided in Data Assessment Reports for the first two quarters of calendar year 1988. The reports were submitted to enforcement agencies by owners or operators of Subpart Da Electric Steam Generating units in response to the requirements of 40 CFR Part 60 Appendix F. Appendix F establishes minimum quality assurance requirements for continuous emission monitoring systems when used as the New Source Performance Standard performance test method.

Data on Relative Accuracy Test Audits (RATA) were obtained for 24 facilities. Fifty-three RATAs were done for SO₂; 31 audits were done for NO_x. Eight continuous emission monitoring systems at six facilities exceeded the criteria of 20 percent relative accuracy for acceptable performance. In three cases the audits were repeated and relative accuracy was demonstrated to be less than 20 percent. In the remaining cases the boilers were taken out-of-service for maintenance. No periods of invalid data were reported because of excessive inaccuracy based on RATAs. A comparison of audit results with data from a prior study suggests an improved distribution of Relative Accuracy values for the Da monitoring systems.

Data for approximately 190 Cylinder Gas Audits (CGAs) were obtained for SO₂, NO_x, CO₂, and O₂ analyzers at 19 facilities. With the exception of one audit, all analyzers were demonstrated to be operating within the specified plus or minus 15 percent

accuracy. Approximately 60 percent of the results were within plus or minus three percent accuracy. No periods of invalid data were reported because of excessive inaccuracy based on CGAs.

Almost 50 percent of the Data Assessment Reports (DAR) contained no information on Calibration Drift Assessment. Nine DARs indicated no excessive calibration drift. Fourteen reports included days on which one or more analyzers were found to exceed Appendix F criteria for excessive drift. In all cases the criterion exceeded was for one day's operation. In almost all cases, periods of invalid data because of excessive drift were incorrectly reported in fractions of a day.

Corrective actions for excessive drift were noted in the 14 DARs which included information on excessive drift. A majority of the corrective actions appear to be items that should be performed routinely in response to the facilities quality control plan.

This Project Summary was developed by EPA's Atmospheric Research and Exposure Assessment Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Background

The U.S. Environmental Protection Agency (EPA) promulgated a New Source Performance Standards (NSPS) for Electric Utility Steam Generating Units under 40 CFR Part 60 Subpart Da in

December, 1978. Subpart Da applies to units for which construction was commenced after September 18, 1978. For convenience, the term "Da" is used in the full report as a short-hand for "Subpart Da."

The Da emission standards for sulfur dioxide (SO₂) and nitrogen oxides (NO_x) are based on an average emission rate for 30 consecutive boiler operating days; a new 30-day performance test is completed at the end of each boiler operating day. The NSPS requires the use of continuous emission monitoring systems (CEMS) as the performance test method.

The EPA promulgated minimum quality assurance (QA) requirements for the CEMS in 40 CFR Part 60 Appendix F. Appendix F requires Da source owners to develop site-specific QA plans and to report the results of EPA specified QA activities each calendar quarter. The first calendar quarter for which a report was to be submitted is January through March, 1988.

The report of QA activities under Appendix F is called a Data Assessment Report (DAR). The DAR includes identifying and descriptive information for the CEMS, results of periodic audits, identification of periods when calibration drift exceeds specified criteria, identification of periods when the analyzers or CEMS are out-of-control (OOC), and descriptions of corrective actions in response to OOC conditions. An OOC period occurs when an analyzer or a CEMS fails to meet criteria specified in Appendix F. The criteria are expressed in terms of CEMS relative accuracy, analyzer accuracy, and analyzer drift.

The names of the quarterly audits are: (a) Relative Accuracy Test Audit (RATA),

(b) Cylinder Gas Audit (CGA), and (c) Relative Accuracy Audit (RAA).

The principle objective of this study is an evaluation of the information in DARs for the first and second quarters of calendar year 1988. Secondary study objectives include: (1) the establishment of contacts with agency staff who normally receive the DARs each quarter and (2) identification of facilities for which DARs were apparently not received, for follow-up by the appropriate agency.

Summary of Information

Thirty-six facilities operated by 28 companies were identified as operating Da units at the start of this study. DARs were obtained for 27 facilities. Data on RATAs were obtained for 24 Da facilities. The minimum RA for 53 SO₂ RATAs is Da units at the start of this study. DARs were obtained for 27 facilities. Data on RATAs were obtained for 24 Da facilities. The minimum RA for 53 SO₂ RATAs is 0.9 percent; the maximum is 34.8 percent. The distribution of SO₂ RA values is different for the inlet and outlet monitors. A comparison of SO₂ RA values with a previous EPA study appears to indicate an improvement in CEMS performance.

The minimum RA for 31 NO_x RATAs is 2.2 percent; the maximum is 47.1 percent. A comparison of NO_x RA values with a previous EPA study clearly indicates an improvement in CEMS performance.

No correlation is evident between SO₂ or NO_x RA and CEMS type or manufacturer. The data suggest improved results when EPA instrumental methods are used as the reference test method.

Data on CGAs were obtained for 21 Da facilities. For SO₂ and NO_x, the values

appear to be distributed normally around a central value of zero percent. The data for the inlet and outlet SO₂ monitors appear to have slightly different distributions, with the data for the outlet monitors showing a greater range from maximum to minimum values. There is insufficient data to warrant further analysis of this possibility, although it is consistent with the RATA results.

No correlation is evident between the results of the CGAs and other parameters such as CEMS type, manufacturer, or reported OOC periods.

Copies of DARs with information on Calibration Drift Assessments (CDA) were obtained for 15 facilities. Ten of the 11 facilities defined at least one out-of-control (OOC) period. Seven of the facilities listed on OOC period for more than one analyzer.

Appendix F requires a reporting of corrective actions for OOC periods. The two corrective actions mentioned the most often are manual calibration and resetting of the automatic drift compensator. Replacement of analyzer lamp and calibration gas are the next most frequent corrective actions. More than 60 percent the corrective actions are in the category of Periodic Maintenance and Calibration.

Appendix F includes an example format for a DAR. Except for a few cases the example or slight modifications of the example was followed. In those cases where the example format was not followed, the audit results appear to be included as portions of more comprehensive quarterly reports.



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The complete report, entitled "Data Assessment Reports for CEMS at Subpart Da Facilities," (Order No. PB 89-169 866/AS; Cost: \$15.95, subject to change) will be available only from:

*National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650*

The EPA Project Officer can be contacted at:

*Atmospheric Research and Exposure Assessment Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711*

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