



Project Summary

Accuracy and Reliability of CEMS Subpart Da (Electric Utilities) Facilities

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This report is a summary of the information provided in Data Assessment Reports for calendar year 1988 and the first two quarters of calendar year 1989. 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 were obtained for 30 facilities. Ninety-eight Relative Accuracy Test Audits were done for SO₂; Fifty-four audits were done for NO_x. Ten continuous emissions monitoring systems at eight 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. At two sources, periods of invalid data were reported because of excessive inaccuracy based on Relative Accuracy Test Audits.

Data for approximately 440 Cylinder Gas Audits were obtained for SO₂, NO_x, CO₂, and O₂ analyzers at 30 facilities. Five continuous emissions monitoring systems at four facilities exceeded the criteria of ± 15 percent accuracy. All other 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. At only one source was a period of invalid data reported because of excessive inaccuracy based on a Cylinder Gas Audit.

Almost 50 percent of the Data Assessment Reports contained no information on Calibration Drift Assessment. Seventeen reports included days on which one or more analyzers were found to exceed Appendix F criteria for excessive drift. In most cases the criterion exceeded was for one day's operation. In many cases, periods of invalid data because of excessive drift were incorrectly reported as fractions of a day.

Corrective actions for excessive drift were noted in most of the Data Assessment Reports 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 Standard (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 this 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. A day is defined as a 24-hour period from midnight to midnight. A boiler operating day is defined as a day during which fuel is burned for the entire 24 hours. The NSPS requires the use of continuous emission monitoring system (CEMS's) as the performance test method.

EPA promulgated minimum quality assurance (QA) requirements to be implemented by the source owner when the CEMS is specified as the performance test method. The QA requirements were published in 40 CFR Part 60 Appendix F and became effective in December 1987. 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.

QA activities reported under Appendix F comprise a Data Assessment Report (DAR). The DAR includes identifying and descriptive information of the CEMS's, results of periodic audits, identification of periods when calibration drift exceeds specified criteria, identification of periods when the analyzers or CEMS's 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. Criteria are expressed in terms of CEMS relative accuracy, analyzer accuracy, and analyzer drift.

Data generated by a CEMS after it is found to be OOC cannot be used to meet the minimum number of measurements required in Da to calculate 30-day averages. When minimum data needs are not met by the CEMS, supplemental sampling is required.

Appendix F requires an audit of each CEMS every calendar quarter. These audits include Relative Accuracy Test Audits (RATA's), Cylinder Gas Audits

(CGA's), and Relative Accuracy Audits (RAA's).

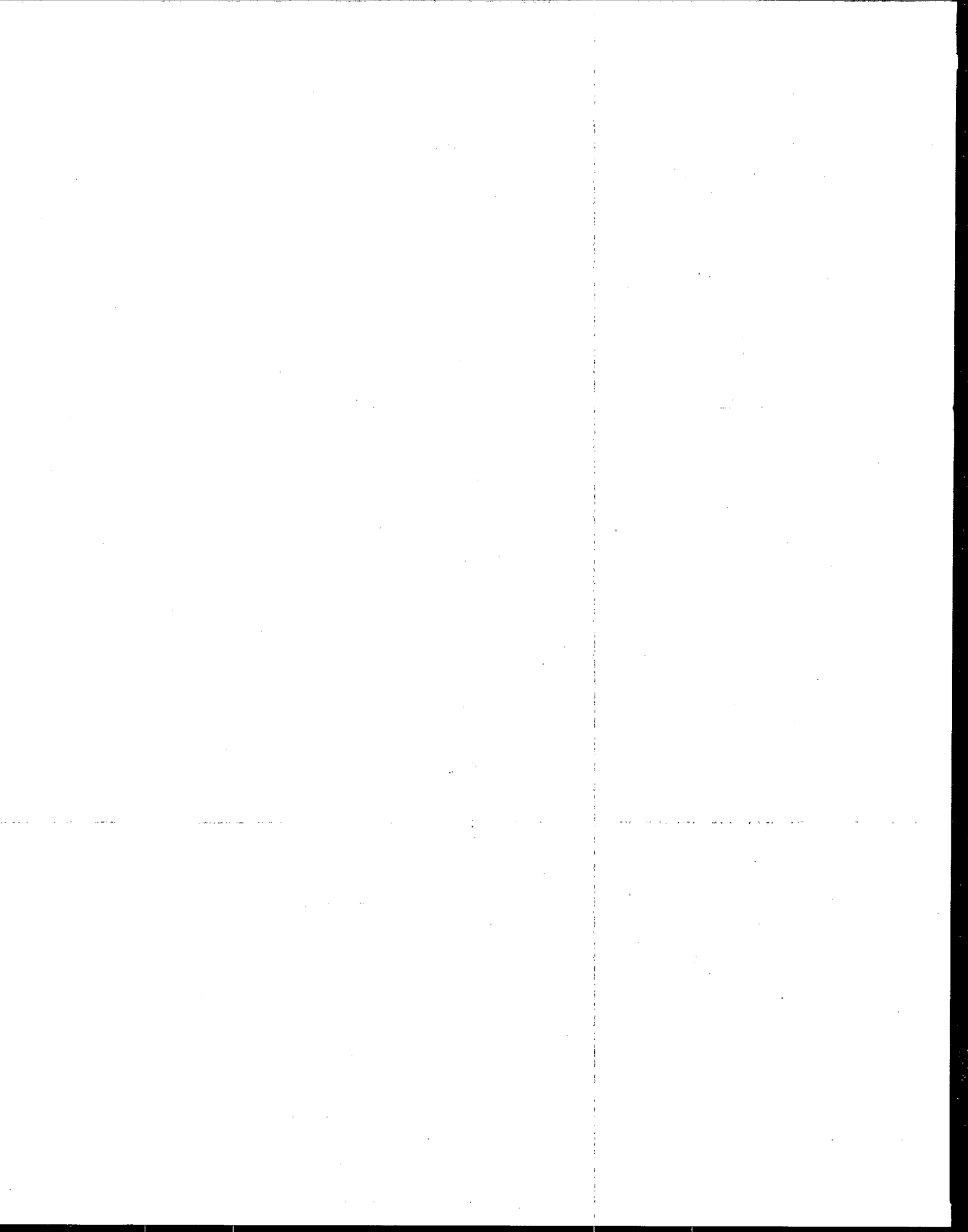
The NSPS General Provisions (Subpart A) and Appendix F require a daily assessment of drift. In Appendix F the daily check is called a Calibration Drift Assessment (CDA).

The principle objective of this study is an evaluation of the information in DAR's 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 DAR's each quarter and (2) identification of facilities for which DAR's were apparently not received, for follow-up by the appropriate agency.

Summary of Information

Forty Subpart Da facilities owned or operated by 30 companies were identified through contacts with personnel in Federal, State, and local control agencies. Although an attempt was made to compile Data Assessment Reports from all forty facilities, reports were not obtained for all quarters. Primary reasons for not obtaining reports for all quarters are an apparent failure to communicate the request to agency contacts and, in some cases, a failure to establish a viable contact person. Based on the reports obtained for the report, the following conclusions are drawn:

1. Continuous emission monitoring systems on Subpart Da facilities routinely achieve the quarterly audit and daily drift criteria for acceptable performance.
2. The monitoring systems produce quality-assured data over 95 percent of the time.
3. Some owners/operators report relative accuracy results in concentration units, not in units of the standard.
4. Out-of-Control (OOC) periods are reported frequently as a result of excessive drift. In many cases, however, the duration of the OOC period was reported as less than one day, which is inconsistent with the definitions in Appendix F.



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The complete report, entitled "Accuracy and Reliability of CEMS Subpart Da (Electric Utilities) Facilities," (Order No. PB 90-250 168/AS; Cost: \$17.00, subject to change) will be available only from:

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