QUALITY ASSURANCE & QUALITY CONTROL PLAN

PARTICULATE MATTER CONTINUOUS EMISSIONS MONITORING SYSTEMS

Aquila
Sibley Generating Station

Prepared by:

Aquila Environmental Services

Revision Number:_____
Date of Revision:_____

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SECTION 1 – THE QUALITY ASSURANCE PLAN

This Quality Assurance (QA) Plan is the basis for assessing and maintaining the quality of particulate matter continous emission monitoring system ("PM-CEMS") data. The QA Plan has been prepared for Aquila, operators of one (1) PM-CEMS at the Sibley Generating Station. The PM-CEMS are installed pursuant to 40 CFR Part 64, Compliance Assurance Monitoring ("CAM"). As such, the PM-CEMS is not to be used for direct compliance demonstration for any applicable regulation. Per Part 64.3(a), the purpose of the PM-CEMS is to "provide a reasonable assurance of compliance with emission limitations or standards for the anticipated range of operations at a pollutant-specific emissions unit." Specifically, the PM-CEMS will provide data to help in the operation and maintenance of the electrostatic precipitators ("ESP") installed at this facility. Similarly, 40 CFR Part 60, Appendix F, Procedure 2 has been partly utilized to develop this QA Plan, but is not directly applicable to Sibley's PM-CEMS per Appendix F, Procedure 2, Section 1.0. Also, Two documents related to Sibley's CAM have been developed and approved by the Missouri Department of Natural Resources ("MDNR"). The two documents are Sibley's CAM Plan and CAM Test Plan. Where conflicts arise between the Sibley CAM Plan/Test Plan and 40 CFR Part 60 regulations, the MDNR-approved Plans will be followed.

Table I below illustrates the PM-CEMS that have been installed at the facility.

Table I. PM-CEMS installed and certified at Aquila's Sibley Generating Station

Mfr/Model	Serial Number	Measurement Range	Location	Correlation Test Date
Teledyne Monitor Labs / LaserHawk 360	TBD	TBD	Common Stack	TBD

1.1 QUALITY ASSURANCE POLICY, GOAL, AND OBJECTIVES

Quality Assurance (QA) and Quality Control (QC) are two independent and interrelated functions. Quality Assurance can be defined as the system of activities to provide assurance that the QC is performing adequately.

A QA Plan has two functions:

(1) QA – the assessment of the quality of the data (accuracy and precision) and, (2) QC – activities that maintain or improve data quality. Both functions form a control loop. When accuracy or precision is unacceptable, QC must increase until the quality of data is acceptable.

Quality control functions are usually a series of frequent internal checks, such as system inspections, periodic calibrations, and routine maintenance. Quality assurance, on the other hand, involves less frequent external checks on data quality. These external checks may include independent system audits, third party sampling and analysis for accuracy and precision, comparison to known calibration standards or inter-laboratory audits. This Quality Assurance Plan encompasses both QA and QC functions, and whenever possible, specific activities are identified by the function that is fulfilled by the activity.

1.2 DISTRIBUTION AND DOCUMENT CONTROL

This QA Plan will be reviewed on an annual basis. Revision tracking system will be provided on the front page of this document and includes revision number and date of revision.

1.2.1 MAINTENANCE OF THE QA/QC PLAN

To properly maintain the QA Plan, the following activities are monitored:

(1) Maintain a current list of QA/QC plan holders.

(2) Prepare revisions and updates of the QA/QC Plan as a result of the following:

- Changes in regulations.
- Modifications or improvements of QA/QC procedures.
- Changes in personnel or organization.
- Replacement of PM-CEMS components.
- Modifications to operating permit.

1.3 ORGANIZATION AND RESPONSIBILITY

Specific facility personnel are assigned responsibility for the PM-CEMS operational status instrument maintenance and system control. The following are provided as a guideline, which organize responsibilities for the operation and maintenance of a PM-CEMS.

1.3.1 RESPONSIBLE OFFICIAL AND DESIGNEE

The Title V Permit Responsible Official or designee is responsible for reviewing and signing all quarterly reports.

1.3.2 SIBLEY INSTRUMENTS AND CONTROLS DEPARTMENT

Has overall responsibility for the operation and maintenance of the PM-CEMS, and generation of appropriate reports. The department reports all major problem associated with the PM-CEMS to the Plant Manager and Environmental Services.

1.3.3 ENVIRONMENTAL SERVICES DEPARTMENT

Environmental Services is responsible for corresponding with regulatory agencies, including reviewing/submitting all required reports, and maintaining compliance with Sibley's Title V Permit.

1.4 FACILITIES, EQUIPMENT, AND SPARE PARTS INVENTORY

The Sibley Generating Station consists of three (3) steam generating units, with each unit equipped with a dedicated ESP to control particulate emissions. All three units exhaust through a common stack, where the PM-CEMS is located.

The PM-CEMS is wired to a programmable logic controller located in the CEM shelter and will record data in the Continuous Emission Monitoring System DAHS.

1.4.1 PARTICULATE MATTER CONTINOUS EMISSION MONITORING SYSTEM

The particulate monitoring system utilized is a Teledyne Monitor Labs 360 particulate monitor, located on the Sibley common stack. Measurement of particulate concentration is accomplished by passing a beam of laser light into the duct and measuring the intensity of the backscattered light.

1.4.2 RECOMMENDED SPARE PARTS AND STACK DRAWINGS

A list of spare parts is included in the instrument operations manual. Stack drawings and process diagrams are also kept on site and available for review.

1.5 METHODS AND PROCEDURES – ANALYSIS AND DATA ACQUISITION

The PM-CEMS data acquisition system (DAS) is an automated system that records PM-CEMS data and provides readouts as one-minute averages, which are used in subsequent calculations and report preparation. Reports prepared by the system include alarm, calibration, and emission reports.

The DAS is capable of reading all values over the full range of each measurement device and creates a permanent record of all required measured and calculated data for storage, review, and reporting. A continuous readout in units allowed by the Sibley CAM Plan is recorded.

1.6 CALIBRATION AND QUALITY CONTROL CHECKS

A set of operation and maintenance manuals for all systems components is maintained in the CEMS shelter. These manuals provide complete descriptions of the PM-CEMS including theory, installation, operation, and maintenance.

Factory supplied filter standards are used to calibrate the instrument at a reference zero and upscale span value. These calibration standards will be maintained in accordance with the manufacturer's recommendations. Following this calibration an internal "zero-span" cycle will be initiated, thus establishing initial values for future reference. Daily "zero-span" cycles will follow with the results stored in the data system and compared with the initial values. Should either of the "zero or span" value error exceed plus or minus 4% of the starting value, an alarm will be initiated to signal the need for recalibration of the instrument to the factory standards.

In addition a quarterly reference calibration will be performed as described in the instrument operations manual. The factory standards will be used to measure instrument response at a zero and upscale value. Should either of these readings exceed the factory standard by more than plus or minus 4% of the full-scale measurement range, the instrument will be reset to the factory standard values. Finally, routine scheduled maintenance procedures will be established in accordance with the manufacturer's recommendations.

1.7 MAINTENANCE - PREVENTIVE

The preventive maintenance program for the PM-CEMS is based on the equipment manufacturers recommended procedures.

1.8 SYSTEMS AUDITS

A systems audit involves a general inspection of the monitoring system. It is intended as a walk through audit and used to provide a quick assessment of the availability of data, general effectiveness of operation and maintenance, and the completeness of recordkeeping procedures. Systems audit involves the following areas:

- Administrative
  - Maintenance logs – timely, complete
  - Recordkeeping – completeness, available
  - Verify correct range values entered into the data acquisition system
- Technical
  - Printer – operational, legible printouts consistent with process conditions
  - Data system – cabinets clean, areas maintained

- Monitor enclosure – clean, all systems operational
- Purge air blowers – operational

1.9 PERFORMANCE AUDITS

The following performance audits are required to quality assure PM-CEMS data. These audits are based upon 40 CFR 60, Appendix F, Procedure 2, however Appendix F is not directly applicable to the PM-CEMS.

1.9.1 ABSOLUTE CORRELATION AUDIT (ACA)

An Absolue Correlation Audit is required once each calendar quarter but no sooner than 2 months after the previous ACA. ACAs are not required in quarters in which a Response Correlation Audit (RCA) is performed.

- Challenge the PM-CEMS three times at each audit point and use the average of the three responses in determining accuracy at each audit point. Audit points are audit filters that produce particulate levels of known values.

Audit Point	Audit Range
1	0 - 20 percent of measurement range
2	40 -60 percent of measurement range
3	70 -100 percent of measurement range

- Challenge the PM-CEMS at each audit point for a sufficient period of time to ensure that the PM-CEMS response has stabilized.
- Alternate filter insertions so that no filter is measured twice in succession during the audit.
- The difference between the actual known value of the audit standard and the response of the monitor is used to assess the accuracy of the PM-CEMS.
- The beginning of the out of control period is the time corresponding to the completion of an unsuccessful ACA. The end of the out of control period is the time corresponding to the completion of the subsequent successful calibration test.
- During an out of control period the CEMS data may not be used in calculating emission compliance nor be counted towards meeting minimum data availability.
- The PM-CEMS is considered out of control if the required quarterly absolute correlation audit is not conducted during a calendar quarter.

The criteria for excessive inaccuracy are:

- ± 10% of the average audit value or 7.5% of the applicable standard, whichever is greater.

- Repeated excessive inaccuracies (i.e., out of control) conditions resulting from the quarterly audits, indicates the QC procedures are inadequate or that the CEMS is incapable of providing quality data.

NOTE: The ACA must be conducted using the calibration kit with the same serial number as the particulate monitor.

1.9.2 RELATIVE RESPONSE AUDIT (RRA)

Perform a Relative Response Audit (RRA) annually. Perform a RRA by collecting three (3) sets of simultaneous Reference Method data and Particulate Monitor data. Determine compliance with the RRA using the criteria specified in 40CFR60, Appendix F. If failed RRA tests trigger the need to conduct an RCA and/or new correlation test, performance and acceptance criteria will be based on the MDNR-approved Sibley CAM Plan and CAM Test Plan.

The RRA will be performed annually and will replace the Absolute Correlation Audit in the quarter when both audits are due.

1.9.3 RESPONSE CORRELATION AUDIT (RCA)

An RCA is required to be performed at least once during each Title V Operating Permit renewal cycle (i.e. once per 5-year period). The RCA is conducted by collecting a minimum of twelve (12) sets of simultaneous Reference Method data and Particulate Monitor data. To pass an RCA the following criteria must be met

- For all 12 data points, the PM-CEMS response value can be no greater than the greatest PM-CEMS response value used to develop the correlation curve;
- For 9 of the 12 data points, the PM-CEMS response value must lie within the PM-CEMS output range used to develop the correlation curve.

The criteria for excessive inaccuracy are:

- At least 75% of a minimum number of 12 sets of PM-CEMS/reference method measurements from the test must fall within a specified area on a graph developed by the calibration relation regression line over the calibration range and the tolerance interval set at ± 25% of the emission limit.
- The specified area on a graph is (a) bounded by two lines parallel with the calibration regression line, and offset at a distance ±25% of the numerical emission limit from the calibration regression line on the y-axis and (b) traversing across the calibration range bounded by the lowest and the highest CEMS reading of the calibration test on the x-axis.

The PM-CEMS is considered out of control if the required RCA is not performed during the permit renewal interval (once every 5 years). See 2.6.2 Relative Correlation Audit for details on failure of an RCA. The RCA will replace the Absolute Correlation Audit and Relative Response Audit when done in the same quarter. In the event that a new correlation test is required, the performance and acceptance criteria will be based on the MDNR-approved Sibley CAM Plan and CAM Test Plan.

1.10 CORRECTIVE ACTION PROGRAM

Whenever the PM-CEMS is found to be "out of control" the data generated from the system will not be used to demonstrate a reasonable level of compliance assurance with permit limits or data capture requirements. Corrective action is performed "as soon as possible" after determining the PM-CEMS is not operating according to manufacturer's specifications or is "out of control."

Corrective action is defined as the resolution of problems that occur on a non-routine basis.

1.10.1 SUGGESTED CORRECTIVE ACTION

References to specific PM-CEMS troubleshooting procedures are listed in the Instrument's Operation Manual.

1.11 REPORTS

Documentation of QA/QC data and information is an integral part of any QA Plan. This section describes reports and other records that provide adequate documentation of QA/QC activities. The two primary means of documentation used are:

- Data Acquisition System (DAS).
- Manually prepared QA/QC forms, logs and reports.

During QA audits, the DAS will be operated to collect data in a normal fashion, and will print all instantaneous emissions values for real time comparison with audit standards. The DAS is used not only to document QA/QC data and information, but it also serves as the PM-CEMS data acquisition and processing system.

A number of written QA/QC reports are needed to provide supporting documentation of the continued operation of the PM-CEMS in an acceptable manner. All reports are used to notify individuals of problems related to operation of the PM-CEMS. Completion of these reports is intended to assist in identifying the need for remedial maintenance, training, or supply action, as well as the need to revise operating procedures for this QA Plan.

SECTION 2 – STANDARD OPERATING PROCEDURES

Quality control checks may be defined as those checks performed on a routine basis such as system inspections, periodic calibrations and routine maintenance.

LASER SAFETY WARNING: Any person working on or auditing the particulate monitoring equipment must be adequately trained in Laser Safety and have thoroughly reviewed the operations manual due to the inherent dangers in working with Laser equipment.

2.1 START-UP AND OPERATION

The Instrument and Controls Department maintains a detailed written procedure for start-up of the equipment at the facility. The document contains the step-by-step procedures for starting up and shutting down all equipment at the facility.

2.2 PM-CEMS INSPECTION AND PREVENTIVE MAINTENANCE

A CEMS maintenance log is maintained in the Unit 3 computer room to document system operational status and record any maintenance performed. An electronic file contains a record of the PM-CEMS calibration activities.

The routine inspection begins with a visual inspection of the electrical systems and components. This procedure allows early detection of accidental damage to the PM-CEMS.

The plant technician will examine the data acquisition system's computer screens and files to verify the computer has the correct time, date, and settings as applicable. A calibration history of the calibrations is reviewed for excessive calibration drift on a weekly basis or more often as needed.

Indicator lights and alarms on the system or monitor control panel are examined next. The system indicator lights notify the plant Technician of out-of-range conditions or other potential problems associated with the PM-CEMS. Action is initiated immediately if an indicator light is illuminated; subsequent data acquired may be suspect and will be flagged accordingly.

2.3 CALIBRATION PROCEDURES

The 360 calibration cycle automatically checks and corrects zero and span drift. The calibration cycle can be programmed to activate at selectable hourly intervals, manually activated from either the control room or stack, or externally activated from the programmable logic controller or data acquisition system.

2.3.1 DAILY CALIBRATION CHECK

A daily calibration is performed for the PM-CEMS that is measuring and reporting particulate concentration. Typically the zero and span calibration are programmed to be performed once every 24-hours. The zero calibration is conducted at a measurement level between zero and twenty (0 – 20) percent of instrument measurement range. The span calibration is conducted at a measurement level between fifty and one hundred (50 – 100) percent of instrument measurement range. A copy of the daily calibration for the PM-CEMS will be filed or electronically archived. Table II below illustrates calibration ranges of the PM-CEMS.

Table II. Recommended zero and high level calibration levels

Emission Point	ZERO VALUE (0 – 20% RANGE)	SPAN VALUE (50 – 100% RANGE)
Common stack	TBD	TBD

2.3.2 DAILY PM-CEMS DRIFT ASSESSMENT AND CORRECTIVE ACTION

The PM-CEMS typically performs a calibration once every 24 hours. The PM-CEMS shall be adjusted when the drift exceeds twice the performance specificaion. The PM-CEMS are considered out-of-control when:

(1) Either the zero or span calibration drift exceeds 4 percent the applicable performance specification in 40 CFR 60 for five (5) consecutive days, or

(2) Either the zero or span calibration drift exceeds 8 percent the applicable performance specification in 40 CFR 60 for any single calibration.

Table III below illustrates out-of-control calibration drift criteria for the PM-CEMS.

Table III. Calibration Drift Criteria

Monitor	Level at which CEM shall be adjusted	Level at which CEM is Out-of-Control	
		Any one day	Any five consecutive days
Common stack	4%	8%	4%

If an out-of-control condition exists, corrective action will be initiated immediately. Corrective action steps are identified in the Teledyne Monitor Labs Operation and Maintenance Manual or the Analyzer Operator Manual. Corrective action steps may include: adjustment of the electronics and potentiometers, care of the optics, replacement of the dessicator and/or purge blower air filter. Calibration drift checks will

be repeated following corrective action to verify the PM-CEMS meets calibration requirements and is no longer out-of-control.

During an out-of-control period, the data collected by the PM-CEMS will not be used in determining particulate emissions compliance; nor will it be counted toward meeting the minimum data availability requirements.

2.4 PREVENTIVE MAINTENANCE PROCEDURES

The recommended maintenance schedule is used initially as a guideline and then adjusted for the application following actual field experience. Preventive maintenance checks and procedures are identified in the Maintenance and Trouble Shooting Section of the analyzer Operator Manual.

Some items in the recommended periodic maintenance chart, such as filter changes, will not exhibit a failure condition until probable damage to other components has resulted. These items require special attention for determining replacement frequency. Close and continuous observation of the operating characteristics of the system, with particular notation of any shift, either sudden or prolonged, in one direction of any of the many visual indicators in the system, should prompt a maintenance response and prevent loss of data and/or equipment damage.

The system's equipment alarms are indications that maintenance is required. They do not necessarily indicate the data is invalid. However, they do indicate that the system is operating outside of a design tolerance and inaccurate data and equipment damage will occur if the system is allowed to continue operation with the problems. For this reason, the alarms are exercised on a regular basis to assure that they are operational.

One of the best indications of system performance is the validity of the data it is generating. Scrutiny of the daily calibration results will indicate whether or not there is a need for maintenance.

2.5 CORRECTIVE MAINTENANCE PROCEDURES

A trouble-shooting section is included in each analyzer Operator Manual.

Zero and calibration drift checks will be conducted immediately prior to any maintenance, if possible. Additionally, zero and calibration drift checks will be conducted immediately following any maintenance. If the post-maintenance zero or calibration drift checks show drift in excess of twice the applicable performance specifications, recalibration is conducted in accordance with the Operator Manual.

2.6 PERFORMANCE AUDIT PROCEDURES

2.6.1 ABSOLUTE CORRELATION AUDIT (ACA)

ACAs are required on a quarterly basis, unless an RRA or RCA is conducted in that quarter. The audit is completed and the results are determined using the procedures contained in 40 CFR 60, Appendix F. Acceptable ranges for the ACA filters are included in Table IV.

TABLE IV. ACA Audit Filters

Emission Point	LOW (0 – 20% of Range)	MID (40 – 60% of Range)	HIGH (70 – 100% of Range)
Common stack	TBD	TBD	TBD

For EACH Audit

1. Record the requested data in the appropriate blocks on the data sheet(s) for the analyzer(s) being checked. Each analyzer should have its own data sheet.
2. Open the optical head on the particulate monitor.
3. Install the calibration jig onto the optical head.
4. Alternately insert each of the 3 known particulate standards into the calibration jig. Leave each filter in place for 5 minutes to ensure stable readings. Repeat this process until 3 readings have been made with each filter.
5. Uninstall the calibration jig from the optical head.
6. Close the optical head so that the instrument is reading process conditions again.
7. Calculate and record the average of the monitor's responses (A) for each level of calibration filter (high-, mid- and low-).
8. Using the equations in Appendix D, calculate the mean value and and correlation accuracies for each particulate level.

The monitor passes the ACA if, at all three levels of filters, the percentage difference is less than or equal to 10.0 percent of the average audit value or the percentage difference is less than or equal to 7.5 percent of the applicable particulate standard. If these criteria are not met at any level, the monitor is considered out-of-control. Indication will be made on the data sheet(s) whether the monitor(s) passed or failed the calibration error test.

2.6.2 RELATIVE RESPONSE AUDIT (RRA)

The Relative Response Audit requires the support of an independent stack sampling team. Three (3) simultaneous measurements are taken by the contracted test team and the particulate monitor in accordance with 40CFR60, Appendix F, Performance Specification 2. It is recommended that the test team perform duplicate measurements to ensure the maximum accuracy of the sampling.

The RRA will be conducted annually unless an RCA is completed during that same period then an RRA will not be required.

The monitor passes the RRA if all of the following occur:

(1) The response from all three measurements is less than the highest response used to generate the correlation curve,
(2) At least two of the three responses lie within the PM-CEMS output range used to develop the correlation curve, and
(3) At least two of the three responses fall within the area specified in the correlation curve and defined as the regression line ± 25% of the numerical emission limit.

2.6.3 RELATIVE CORRELATION AUDIT (RCA)

The Relative Response Audit is conducted in accordance with 40 CFR Part 60, Appendix F, Performance Specification 2, and requires the support of an independent stack sampling team. The MDNR-approved Sibley CAM Plan and CAM Test Plan shall be followed where conflicts arise between 40 CFR Part 60 and the Sibley CAM Plan and CAM Test Plan.

The correlation test includes:

(1) Paired reference method trains are recommended for collecting manual PM data to identify and screen the reference method data for imprecision and bias;
(2) test runs may be shorter than 60 minutes in duration (e.g., 20 to 30 minutes);
(3) convert the reference method results to units consistent with the conditions of the PM CEMS measurements (e.g., mg/acm);
(4) during each test run coordinate process operations, reference method sampling and PM CEMS operations to ensure that the process is operating at the targeted conditions
   a. coordinate the start and stop times of each run between the reference method sampling (if batch sampling start the reference method at the same time as the PM CEMS sampling);
   b. note the times for port changes (and other periods when the reference method sampling may be suspended) on the data sheets (to make any required adjustments);
   c. properly align the time periods for the PM CEMS and the reference method measurements to account for the PM CEMS response time;

i. conduct a minimum of 12 sets of CEMS and reference method measurements – additional measurements may be completed and rejected but a minimum of 12 sets is required;
ii. report all data, including rejected data;
iii. up to five test runs may be rejected without explanation;
iv. explicit explanations are required for greater than five rejected runs;

(5) simultaneous PM CEMS and reference method measuremens must be performed in a manner to ensure that the range of data that will be used to establish the correlation for the PM CEMS is maximized. First attempt to maximize the correlation range by following the procedures described in 5 (i) through (iv) (this section). If the three levels described in (i) through (iv) cannot be achieved, use the procedures in section 8.6(5);

i. attempt to obtain the three different levels of PM mass concentration by varying process operating conditions, varying PM control device conditions, or by means of PM spiking;
ii. the three PM concentration levels used in the correlation tests must be distributed over the complete operating range experienced by the source;
iii. at least 20 percent of the minimum 12 measured data points should be contained in each of the following levels:

Correlation Test /RCA	
Level 1	from no PM (zero concentration) emissions to 50 percent of the maximum PM concentration
Level 2	25 yo 75 percent of the maximum PM concentration
Level 3	50 to 100 percent of the maximum PM concentration

iv. although the above levels overlap, only apply individual run data to one level;

(6) if three distinct levels of PM concentration cannot be obtained, perform correlation testing over the maximum range of PM concentrations that is practical for the PM CEMS;

(7) ensure that the range of the data used to establish the correlation for the PM CEMS is maximized by the following:
a. zero point data for in-situ instruments is obtained by removing the instrument from the stack and monitoring ambient air on a test bench or
b. perform a manual reference method measurement when the flue gas is free of PM emissions or contains very low PM concentrations (e.g., when the process is not operating, but the fans are operating) or
c. if neither of the steps are possible, estimate the monitor response when no PM is in the flue gas (e.g., 4 mA =) mg/acm).

(8) Failure of an RCA requires the following actions:
a. Combine RCA data with data from the active PM-CEMS correlation and perform the mathematical evaluations defined in PS-11 for development

of a PM-CEMS correlation, including examination of alternate correlation models (i.e., linear, polynomial, logarithmic, exponential, and power). If the expanded data base and revised correlation meet PS-11 statistical criteria or Sibley CAM Plan/Test Plan criteria, whichever is less stringent, then use the revised correlation;

b. If the criteria specified above (in a. above) are not achieved, develop a new PM-CEMS correlation based on revised data. The revised data set must consist of the test results from only the RCA. The new data must meet all requirements of the MDNR-approved Sibley CAM Plan and Test Plan to develop a revised PM-CEMS correlation for 12 sets. The PM-CEMS is considered to be back in controlled status when the revised correlation meets all of the performance criteria specified in the MDNR-approved Sibley CAM Plan and Test Plan;
c. If the actions specified above (in a. and b.) do not result in an acceptable correlation, evaluate the cause(s) and comply with the actions below within 90 days after the completion of the failed RCA:
    i. Completely inspect the PM CEMS for mechanical or operational problems, repair the PM CEMS and repeat the RCA;
    ii. If you must relocate the PM CEMS to a more appropriate measurement location, perform a new correlation test according to the MDNR-approved CAM Plan and Test Plan;
    iii. The characteristics of the PM or gas in the flue gas stream may have changed such that the PM CEMS technology is no longer appropriate. If this is the case, install a PM CEMS with measurement technology that is appropriate for the flue gas characteristics. Perform a new correlation test according to the MDNR-approved Sibley CAM Plan and Test Plan;
    iv. If the corrective actions above (3i through 3iii) were not successful, petition the regulators for approval of alternative criteria or an alternative for continuous PM monitoring.

2.7 SYSTEM AUDIT PROCEDURES

System audits will be performed and recorded in the maintenance logbook. The following checks will be recorded during the system audit and may be revised as operating experience dictates.

(1) Multiday calibration reports for the previous seven (7) days for all PM-CEMS. Check for trends in drift.
(2) Verification that correct span values are entered into the computer.
(3) Examination of the PM-CEMS, noting any alarms displayed and/or that the readings are consistent with monitor operation.

Quarterly system audits will be performed to:

(1) Check maintenance logbooks for timely and completed repairs.

(2) Determine the printer is operational and printout is legible, readings are consistent with process conditions.
(3) Acknowledge that the computer and monitor areas are clean and well maintained.
(4) Determination that the purge air blower is operational and alignment of monitor is correct.

2.8 DATA BACKUP PROCEDURES

The PM-CEMS data are retained on a data acquisition and handling system (DAS). Particulate Emissions Data is backed up as part of the network or tape backup procedures used for all emissions data collected at the facility.

2.9 DATA REPORTING PROCEDURES

The results from each audit or the routinely generated particulate data are reviewed prior to it being included into reports submitted to the regulatory agencies.

As part of the operating permit requirements, all PM-CEMS data are made available for review, in the form of a computerized database or printed opacity logs, for 24 months. Quarterly compliance reports are submitted to the MDNR within 30 days of the ending quarter as defined in the operating permit. All data will be maintained for the life of the current Title V Operating Permit (5 years).

Note that Appendix B of the CAM Test Plan is not included above. Appendices A through D of the CAM QA/QC Plan are not included either.

Prepared by:

Cheryl Steffan

Cheryl Steffan
Environmental Engineer

MEMORANDUM

DATE: March 1, 2006

TO: Aquila – Sibley Generating Station

FROM: Cheryl Steffan – Environmental Engineer

SUBJECT: Response to Public Comments File: 2003-09-030

Ten comments were received from Mr. Jeff Creason, Environmental Engineer for Aquila – Sibley Generating Station. These comments are listed below in the same order given by Mr. Creason, with a response to each. A near-duplicate of the first of these comments was also received from Mr. Richard Vani, Missouri Department of Natural Resources, Air Pollution Control Program, Kansas City Regional Office. It is listed with the first comment, since the response is the same.

Comment # 1 – Permit Wide:
The Air Quality Program of the Kansas City, Missouri Health Department has no regulatory authority outside of the incorporated city limits of Kansas City, Missouri. Since the Sibley Station is located outside of Kansas City, Missouri, Aquila requests the removal of all references to the Kansas City Air Quality Program in the Draft.
Near-duplicate comment from KCRO:
You list KC Air Quality as the agency to report to. They are actually in KCRO's territory.
Response to Comment:
All references to the Kansas City Air Quality Program were removed.

Comment # 2 – Permit Condition (EU0050 through EU0070)-001:
This condition discusses Compliance Assurance Monitoring (CAM) requirements for Sibley's three boilers in regards to 10 CSR 10-2.040. The December 23, 2004 CAM plan ("CAM Plan") and July 6, 2005 Test Plan ("CAM Test Plan") were approved by MDNR, and contain specific requirements for siting, installing, testing, and operating the ESC P5b Particulate Monitor. Aquila requests the addition of a reference to the CAM Plan and CAM Test Plan at the beginning of Condition (EU0050 through EU0070)-001, since these documents are critical to CAM implementation at Sibley. The CAM Plan and CAM Test Plan are attached.

Response to Comment:
This change was made. Also, a reference to 40 CFR Part 64 was added to this permit condition's heading, and the CAM Test Plan was added to the Statement of Basis.

Comment # 3 – Permit Condition (EU0050 through EU0070)-001, "Monitoring" Item 2:
The requirements for siting and installing the recently installed ESC P5v Particulate Monitor are contained in the CAM Plan and CAM Testing Plan. This monitor is not required to meet Performance Specification 11 of Part 60 Appendix B. The last sentence under "Monitoring" Item 2 of the Draft references and implicitly indicates that siting and installation shall conform to PS-11. Aquila requests the removal of this sentence, or replacing the sentence with a reference to the MDNR approved CAM Plan and CAM Testing Plan.
Response to Comment:
Wording was added to both Permit Condition (EU0050 THROUGH EU0070)-001 and to the Statement of Basis regarding the applicability of 40 CFR Part 60 Appendix B Performance Specification 11 to the Continuous Emission Monitoring System being used for CAM.

Comment # 4 – Permit Condition (EU0050 through EU0070)-001, "Monitoring" Item 8b:
The MDNR approved CAM Plan states that the ESC P5b Particulate Monitor ". . shall not be used to directly demonstrate compliance with 10 CS 10-2.040," and consequently allows for monitor output to be recorded in units other than lbs/MMBtu. Note that "Monitoring" Item 8b also conflicts with "Testing" Item 2d in the Draft. Aquila requests that "Monitoring" Item 8b be modified to allow monitor output to be in units other than lbs/MMBtu, or simply reference the approved CAM Plan and CAM Test Plan.
Response to Comment:
This occurrence of "lbs/MMBtu" was replaced by the approved CAM Plan's wording of "in the units of the required standard."

Comment # 5 – Permit Condition (EU0050 through EU0070)-001, "Testing" Item 1:
The MDNR approved CAM Test Plan allows for the use of TEOM 7000 series instruments and associated ASTM methodologies. Aquila requests of the removal of the parenthetical reference to "EPA Methods 5 or 17," or the replacement of Item 1 with references to the approved CAM Testing Plan.
Response to Comment:
The original wording in the approved CAM Plan was "(normally EPA Methods 5 or 17.)" The CAM Test Plan, approved later, does allow for the use of TEOM-7000 series instruments and associated ASTM methodologies. To avoid confusion, the parenthetical reference to the EPA methods was removed entirely.

Comment # 6 – Permit Condition (EU0050 through EU0070)-005, "Emission Limitations" Item 1:

All three boilers at the Sibley Station are cyclone EGUs, located in Jackson County, and burn tire-derived fuel. Consequently, these units qualify for the 0.68 lbs/MMBtu limit of 10 CSR 10-

6.350(3))A)3B. Aquila requests modification to "Emission Limitations" Item 1 to allow for the 0.68 lbs/MMBtu limit.

Response to Comment:

This permit condition was changed to specify a limit of 0.68 lbs/MMBtu for control periods during which these cyclone electric generating units burn enough tire-derived fuel to qualify for that limit. The limit of 0.35 lbs/MMBtu was left for any control periods during which the units do not qualify.

Comment # 7 – Permit Condition EU0130-003:

This condition indicates that 10 CSR 10-2-230, *Control of Emissions from Industrial Surface Coating*, applies to spray booth EU0130. Historically, MDNR has not included facility-specific maintenance in the definition of "industrial surface coating operation." The Sibley spray booth is used rarely and exclusively for Sibley Station maintenance, and consequently is not an "industrial surface coating operation." In addition, the VOC potential to emit of the spray booth is likely less than the rule's applicability threshold of 6.8 kg/day and 2.7 tons/year. Aquila requests the removal of Condition EU0130-003, and inclusion of a 10 CSR 10-2-230 non-applicability explanation in the permit's Statement of Basis.

Response to Comment:

This permit condition was removed. The requested non-applicability explanation was added to "Other Air Regulations Determined Not to Apply to the Operating Permit" in the Statement of Basis.

In the process of doing this, it was discovered that the non-applicability explanations for 10 CSR 10-2-260, *Control of Petroleum Liquid Storage, Loading and Transfer*, and for 10 CSR 10-6.360 *Control of NO_X Emissions From Electric Generating Units and Non-Electric Generating Boilers*, had been incorrectly located in the "Other Regulatory Determinations" section. These were also moved to the "Other Air Regulations Determined Not to Apply to the Operating Permit" section.

Comment # 8 – Permit Condition EU0130-004:

This condition indicates that 10 CSR 10-6.400, *Restriction of Emission of Particulate Matter from Industrial Processes*, applies to spray booth EU0130. The spray booth is used rarely and exclusively for Sibley Station maintenance. The average "process weight" (presumed to be total weight of coating material in this case) used *annually* in the spray booth has been less than 10 pounds. Please note that the lowest category in the rule is for process weights less than 60,000 lbs/hr and 7,000 cubic feet/minute. A common-sense reading of 10 CSR 10-6.400 suggests that the rule is not intended to apply to a source such as a small, facility maintenance-only spray booth. If the rule does apply to processes such as the Sibley spray booth, the potential to emit may be calculated as follows:

(10 lb coating/hr) x (10% is overspray) x (90% control for filters) = 0.1 lbs PM/hr
Since the Sibley spray booth has potential to emit less than 0.5 lbs/hr, the rule is not applicable per exemption 10 CSR 10-6.400(B)(11). Aquila requests removal of Condition EU01030-004, and addressing 10 CSR 10-6.400 in the Statement of Basis.

Response to Comment:
This permit condition was removed. A non-applicability explanation was added to the other non-applicability explanations for this rule, and the whole group was moved to the "Other Air Regulations Determined Not to Apply to the Operating Permit" section in the Statement of Basis.

Comment # 9 – Draft page 39, 10 CSR 10-6.020(2)(R)12:
Effective March 31, 2006, Glenn P. Keefe will be replaced as Responsible Official. The new Responsible Official is Scott Heidtbrink, Vice President, Generation and Energy Resources.

Response to Comment:
This change was made.

Comment # 10 – Statement of Basis:
The Compliance Assurance Monitoring (CAM) documents approved by MDNR are the December 23, 2004 CAM Plan and July 6, 2005 CAM Test Plan. Currently, only the December 23, 2004 CAM Plan is attached to the Statement of Basis. Aquila requests that the July 6, 2005 CAM Test Plan also be included in the attachments to the Statement of Basis.

Response to Comment:
This change was made.
Note: After EPA review, and before issuance, these plans were again updated and re-approved. The final Statement of Basis included the following:

- The latest, approved CAM Plan, submitted August 1, 2006 (although the document was still internally dated December 23, 2004);
- The latest, approved CAM Test Plan, submitted on August 16,2006; and
- The latest, approved CAM Quality Assurance and Quality Control Plan, submitted on July 28, 2007.

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