

April 17, 2008

Mr. Michael L. Menne  
Alternative Designated Representative  
Ameren Energy Generating Company  
One Ameren Plaza  
1901 Chouteau Avenue  
St. Louis, Missouri 63166-6149

Re: Petition for Validation of SO<sub>2</sub> Concentration Data from April 6, 2007 through July 18, 2007 for Unit 6 at the Hutsonville Power Plant (Facility ID (ORISPL) 863)

Dear Mr. Menne:

The United States Environmental Protection Agency (EPA) has reviewed the September 18, 2007 petition submitted by the Ameren Energy Generating Company (Ameren) under 40 CFR 75.66, in which Ameren requested that sulfur dioxide (SO<sub>2</sub>) data recorded during April 6 through July 18, 2007 for Unit 6 at the Hutsonville Power Plant be considered valid. EPA denies the petition and approves the use of alternative substitute data for this period, as discussed below.

#### Background

Unit 6 at Ameren's Hutsonville Power Plant in Crawford County, Illinois, is a coal-fired, 978 mmBtu/hr tangentially-fired boiler. The unit has no emission controls for either SO<sub>2</sub> or nitrogen oxides (NO<sub>x</sub>) and uses an electrostatic precipitator to control particulate matter (PM) emissions. Unit 6 is subject to the Acid Rain Program. Therefore, Ameren is required to continuously monitor and report SO<sub>2</sub>, NO<sub>x</sub>, and carbon dioxide (CO<sub>2</sub>) emissions and to report heat input data for the unit, in accordance with 40 CFR Part 75.

In the September 18, 2007 petition, Ameren requested that EPA accept as valid, SO<sub>2</sub> concentration data recorded by Unit 6's SO<sub>2</sub> continuous emission monitoring system (CEMS) in the time period April 6 through July 18, 2007. During that time period, daily calibrations of the SO<sub>2</sub> monitor were performed using a reference gas believed to have a concentration of 2,984 ppm. However, the actual concentration of the gas was 2,484 ppm. Apparently, an error was made in entering the reference gas concentration value into the data acquisition and handling system (DAHS). According to Ameren, calibrating the CEMS to match a concentration of 2,984 ppm, instead of the true value (2,484 ppm), introduced an artificially high bias into the SO<sub>2</sub> readings, possibly as high as 20.1 percent. On July 18, 2007, the error in the calibration gas concentration was discovered and the SO<sub>2</sub> reference gas concentration was corrected to 2,484 ppm in the DAHS. The SO<sub>2</sub> CEMS was then recalibrated to match the correct reference gas concentration.

In its 2<sup>nd</sup> quarter 2007 electronic data report (EDR) submittal, Ameren invalidated the SO<sub>2</sub> data recorded for April 6 through June 30, 2007 and replaced them with substitute data, in accordance with 40 CFR 75.33. Ameren similarly invalidated the SO<sub>2</sub> data for June 30 through July 18, 2007 and used missing data substitution in its 3<sup>rd</sup> quarter EDR submittal. As a result of the data substitution, the unit's reported SO<sub>2</sub> emissions for the full missing data period was 1,182 tons or 50% of the 2,369 tons reported for the full year. Of the 1,182 tons of SO<sub>2</sub>, 780 tons were reported for July 1 through July 18, 2007 utilizing the maximum potential concentration (MPC) of 2,400 ppm. Based on the following supporting evidence in the September 18, 2007 petition, Ameren requested that the SO<sub>2</sub> concentration data recorded for April 6, 2007 through July 18, 2007 be deemed valid:

- First, on April 5, 2007, before the 2,484 ppm SO<sub>2</sub> reference cylinder was placed in service, the SO<sub>2</sub> CEMS passed a linearity check.
- Second, on April 11, 2007, after several days of calibrating the monitor to match the incorrect 2,984 ppm value, the SO<sub>2</sub> CEMS passed a relative accuracy test audit (RATA).
- Third, for the entire time period in question, the SO<sub>2</sub> CEMS continued to pass daily calibration error tests.
- Finally, on August 2, 2007, after correcting the reference gas concentration in the DAHS and recalibrating the monitor, the SO<sub>2</sub> CEMS passed another RATA.

#### EPA's Determination

EPA concludes that the use of substitute data (rather than the originally reported data) is warranted for the period April 6 through July 18, 2007 when daily calibrations of the SO<sub>2</sub> monitor at Unit 6 were performed with an incorrect reference gas. However, the use of the incorrect reference gas appears to have had relatively little effect on the accuracy of the SO<sub>2</sub> data recorded for that time period. Moreover, use of the standard missing data substitution results in substitute data that grossly overstate this unit's likely actual emissions. Therefore, the Agency denies Ameren's request to validate Unit 6's SO<sub>2</sub> data for that time period but approves the use of alternative substitute data. To begin, EPA notes the following circumstances concerning the April 6 through July 18, 2007 period:

- First, the record of passed daily calibrations during that time period (albeit with an incorrect reference gas concentration value of 2,984 ppm) indicates that the SO<sub>2</sub> CEMS was recording consistent values from day-to-day, though it may have been overstating the SO<sub>2</sub> concentration at the high end of the range.
- Second, the SO<sub>2</sub> CEMS passed a RATA during that time period, on April 11, 2007. Unit 6 was burning low sulfur coal during the RATA, the reference method indicated an average SO<sub>2</sub> concentration of 311 ppm, and the SO<sub>2</sub> CEMS indicated an average SO<sub>2</sub> concentration of 313 ppm. This shows that the SO<sub>2</sub> readings in the lower part of the monitor's 0 to 3,000 ppm measurement range were reasonably accurate, even though the

monitor was out-of-adjustment at the high end of the range.

- Third, Unit 6 burned only low sulfur coal during the entire time period. The SO<sub>2</sub> concentrations recorded by the CEMS ranged from 154 to 389 ppm, averaging 235 ppm. Thus, all of the SO<sub>2</sub> data were recorded at the lower end of the range, in the vicinity of the average SO<sub>2</sub> concentration measured during the successful April 11, 2007 RATA.

The fact that Unit 6's SO<sub>2</sub> monitor was improperly calibrated for more than three months is sufficient basis for invalidating the SO<sub>2</sub> data recorded during that period and using substitute data. For EPA to grant Ameren's request to resubmit the 2<sup>nd</sup> and 3<sup>rd</sup> quarter 2007 EDRs, treating the SO<sub>2</sub> data recorded from April 6, 2007 through July 18, 2007 as though they met Part 75 quality-assurance requirements, would be inappropriate and inconsistent with the purposes of Part 75 missing data substitution procedures. The purposes of data substitution include not only assuring that the emissions are not underestimated but also providing a strong incentive for owners and operators to ensure that the monitoring systems are properly operated and maintained. See 58 FR 3590, 3635 (Jan. 11, 1993).

The standard missing data provisions in §§75.30 through 75.33 require that substitute data, determined as specified in these provisions, be reported for any unit operating hour in which quality-assured data are not obtained with a certified CEMS. The specified substitute data become more conservative the longer the period of missing data. Specifically, the Part 75 missing data provisions require Ameren to report for Unit 6 an SO<sub>2</sub> concentration of 248.5 ppm, which is the maximum value recorded in a 720-hour lookback prior to April 6, 2007, for the period April 6 through June 30, 2007 and then to report 2,400 ppm, which is the maximum potential SO<sub>2</sub> concentration (MPC), for the period July 1 through July 18, 2007. EPA maintains that the standard missing data provisions should be applied to Unit 6 unless the resulting substitute data grossly overstate the unit's emissions.

For the April 6 through June 30, 2007 portion of the missing data period, the applicable standard missing data do not grossly overstate Unit 6's emissions. While Ameren stated that the recorded SO<sub>2</sub> readings during the entire missing data period may have been biased high by as much as 20.1 percent, the RATA on April 11, 2007 indicated that, at least at the low end of the measurement scale where the SO<sub>2</sub> data for the entire missing data period were recorded for Unit 6, the data were not biased high. Further, during April –June 2007 the unit's monitor data availability was above 80%. Under §75.33(b)(3), when the monitor data availability is between 80% and 90%, the owner or operator must report a substitute data value equal to the maximum hourly SO<sub>2</sub> concentration value from the previous 720 quality-assured monitor operating hours, which in this case was 248.5 ppm. Therefore, for April 6 through June 30, 2007, use of standard missing data results in total SO<sub>2</sub> emissions of 402 tons, which are less than 7% higher than the unit's total recorded SO<sub>2</sub> emissions of 376 tons for that period. Consequently, EPA concludes that Ameren should continue to use standard substitute data for April 6 through June 30, 2007 for Unit 6.

The only portion of the missing data period for which the applicable standard substitute data seems to grossly overstate the unit's emissions is July 1 through July 18, 2007 during this

period, because the monitor data availability dropped below 80%. When the monitor data availability drops below 80%, §75.33(b)(4) requires that the owner or operator substitute the MPC, which for this unit was 2,400 ppm. For that portion of the missing data period, use of standard missing data results in total SO<sub>2</sub> emissions of 780 tons, which are about 10.5 times higher than the unit's total recorded SO<sub>2</sub> emissions of 74 tons. The standard substitute data overstated the unit's SO<sub>2</sub> emissions during this period by a factor of over ten because the MPC in the monitoring plan reflected the higher sulfur coal that the unit was previously combusting as late as October 2006. The MPC that was reported by Ameren at the time of the missing data period does not reflect the lower sulfur coal that Unit 6 was actually combusting. The fact that the unit's CEMS passed daily calibrations and RATAs (albeit using the incorrect reference gas) and that the recorded data were at the lower end of the monitor range provides some assurance the recorded data correctly indicated a relatively constant SO<sub>2</sub> concentration during July 1-18, 2007. For example, there were unlikely to be any peaks caused by combusting higher sulfur coal remaining in the bottom of the coal pile from previous higher-sulfur, coal shipments.

For July 1 through July 18, 2007, EPA believes that an alternative substitute data value of 365.7 ppm, which is the highest SO<sub>2</sub> concentration prior to the invalid data period, should be used in lieu of the MPC of 2,400 ppm, whose value in the this period would fail to take account of the unit's switching to lower sulfur coal for SO<sub>2</sub> emission control. Using the 365.7 ppm value will result in total SO<sub>2</sub> emissions about 1.5 times the unit's total recorded emissions for the period. This approach provides a strong incentive for proper operation and maintenance of CEMS in accordance with Part 75 requirements without grossly overstating Unit 6's emissions for that portion of the missing data period. Consequently, EPA concludes that Ameren should use alternative substitute data for April 6 through June 30, 2007 for Unit 6 based on an SO<sub>2</sub> concentration of 365.7 ppm, rather than 2,400 ppm.

As conditions for the using the alternative substitute data:

- (1) Ameren shall resubmit the 2<sup>nd</sup> and 3<sup>rd</sup> quarter 2007 EDRs for Hutsonville Unit 6;
- (2) For the time period extending from April 6, 2007 through July 18, 2007, Ameren shall apply the standard substitute data routines. However, Ameren shall report 365.7 ppm for those hours starting July 1, 2007 when the percent monitor data availability of the monitor drops below 80%;
- (3) Ameren shall apply the appropriate bias adjustment factor (BAF) to the SO<sub>2</sub> concentration data reported in RT 200, column 35;
- (4) Ameren shall report a Method of Determination Code (MODC) of "01" for each hour of adjusted SO<sub>2</sub> concentration data;
- (5) Ameren shall include EDR record type 910 in each of the two resubmitted EDRs for Hutsonville Unit 6. Each 910 record shall indicate the period(s) of time for which the SO<sub>2</sub> concentration data have been adjusted in accordance with this approval; and

- (6) Ameren shall coordinate resubmission of the EDRs with Mr. Kevin Tran, who may be reached at (202) 343-9074, or by e-mail at tran.kevin@epa.gov.

Finally, EPA notes that the SO<sub>2</sub> span and range values defined in the electronic monitoring plan for Hutsonville Unit 6 (i.e., 2,400 ppm and 3,000 ppm, respectively) may be inappropriate. Nearly all of the SO<sub>2</sub> data reported for the first three quarters of 2007 are in the lower 10 percent of the measurement scale. This is inconsistent with the guideline in Part 75, Appendix A, section 2.1, requiring (to the extent practicable) the majority of the data to be between 20 and 80 percent of full-scale. It appears that either a second (low-scale) SO<sub>2</sub> span and range may be required for Unit 6 or the present span and range values may have to be lowered to meet the guideline in section 2.1 of Appendix A. Whether a dual span or simply a lower SO<sub>2</sub> span is needed depends chiefly upon the sulfur content of the coal(s) that will be combusted in the unit and the percentage of the unit operating time that each type of coal will be burned. In view of this, Ameren is advised to perform a span and range evaluation for Hutsonville Unit 6, as described in section 2.1.1.5 of Part 75, Appendix A, and to make any necessary adjustments or additions to Unit 6's SO<sub>2</sub> span and range.

EPA's determination relies on the accuracy and completeness of: Ameren's September 18, 2007 petition and the electronic data reports for Hutsonville Unit 6. This determination is appealable under 40 CFR Part 78. If you have any questions regarding this correspondence, please contact Louis Nichols at (202) 343-9008.

Sincerely,

/s/

Sam Napolitano, Director  
Clean Air Markets Division

cc: Constantine Blathras, EPA Region V  
Kevin Mattison, IL EPA  
John Justice, IL EPA  
Louis Nichols, CAMD  
Kevin Tran, CAMD