

June 20, 2007

Mr. David Saliba
Alternate Designated Representative
Arizona Public Service Company
Mail Station 4900
P.O. Box 355
Fruitland, New Mexico 87416

Re: Petition for Approval to Use Alternative Substitute Data for Unit 5 at the Four Corners Power Station (Facility ID (ORISPL) 2442)

Dear Mr. Saliba:

The United States Environmental Protection Agency (EPA) has reviewed the May 23, 2006 petition submitted under §75.66 by the Arizona Public Service Company (APS), in which APS requested to use alternative data substitution procedures for Unit 5 at the Four Corners Power Plant, to recalculate Unit 5's sulfur dioxide (SO₂) emissions for 2004 and 2005. APS also requested that EPA consider accepting a series of performance tests conducted in April and November, 2005 on a replacement SO₂ analyzer as sufficient to certify the analyzer as the new primary SO₂ monitoring system for Unit 5. EPA approves the petition in part, with conditions, as discussed below.

Background

Unit 5 at APS's Four Corners facility (Four Corners) in Fruitland, New Mexico, is a coal-fired 825 megawatt boiler equipped with a wet lime flue gas desulfurization (FGD) system to control SO₂ emissions. Unit 5 is subject to the Acid Rain Program. Therefore, APS is required to monitor and report SO₂ mass emissions from the unit in accordance with 40 CFR Part 75. To meet the SO₂ monitoring requirements of Part 75, APS uses a dry extractive continuous emission monitoring system (CEMS).

In 2004, APS, in cooperation with the Navajo Nation EPA, U.S. EPA Region 9, and various environmental groups, voluntarily agreed to phase in an SO₂ emissions reduction program at Four Corners Unit 5, in order to determine the maximum achievable SO₂ removal efficiency with the existing pollution control equipment at the plant. APS began implementing procedures to increase the SO₂ scrubber efficiency in July 2004. These procedures resulted in an estimated 65 percent reduction in Unit 5's SO₂ emissions by April 2005.

In the May 23, 2006 petition, APS states that on June 21, 2004, Unit 5's primary SO₂

monitor malfunctioned and a temporary “like-kind replacement” SO₂ analyzer was installed in accordance with §75.20(d)(2). Section 75.20(d)(2)(iii) requires a linearity check to be performed on the like-kind analyzer when it is brought into service. Subsequent daily calibration error checks of the analyzer must also be performed, and possibly additional quarterly linearity checks, depending on how long the analyzer remains in service. However, §75.20(d)(2)(v) limits the use of a temporary like-kind replacement analyzer to 720 hours per year at a particular unit or stack location, unless the owner or operator redesignates the like-kind analyzer as a component of a backup monitoring system and the system passes a relative accuracy test audit (RATA) at that location.

Upon installation of the like-kind replacement SO₂ analyzer, APS successfully performed the required linearity check and the subsequent daily calibration error checks. Then, in accordance with §75.20(d)(2)(v), APS used the analyzer to collect quality-assured SO₂ data for the allotted 720 hours, in the time period extending from June 21, 2004, hour 12 through July 21, 2004, hour 15. However, APS continued to use the replacement analyzer for an additional 5,681 hours after July 21, 2004, hour 15, without performing the RATA required by §75.20(d)(2)(v). The original primary SO₂ analyzer which had malfunctioned was never returned to service. A RATA of the replacement SO₂ monitor was finally performed and passed in the second quarter of 2005, at the time of the scheduled annual RATAs of Unit 5’s CEM systems. The SO₂ RATA was completed on April 1, 2005, at hour 14. Consequently, the 5,681 hours of SO₂ data recorded by the replacement monitor from July 21, 2004, hour 15 through April 1, 2005, at hour 14 are considered to be invalid, and missing data substitution is required for those hours.

In the May 23, 2006 petition, APS requested an alternative to applying the standard SO₂ missing data routines in §75.33(b) to the 5,681 hour missing data period. According to APS, the Part 75 missing data routines would grossly overstate Unit 5’s SO₂ emissions and would not take into account the 65 percent reduction in SO₂ emissions that was achieved during that time period. APS therefore set forth several alternative substitute data calculation methods in the May 23, 2006 petition, but specifically requested that EPA approve Option 4, which would apply a 1 percent upward adjustment to each hour of SO₂ data recorded by the replacement analyzer during the missing data period. According to APS, this adjustment to the SO₂ emissions data, though relatively small, is both reasonable and environmentally conservative because the replacement monitor regularly passed daily calibration error tests and quarterly linearity checks during the missing data period, and no pre-test adjustments of the replacement SO₂ monitor were made prior to the RATA on April 1, 2005, and the test was passed.

APS also requested that EPA consider allowing the replacement analyzer to be permanently redesignated as the new primary SO₂ monitor for Unit 5, on the basis of the April 1, 2005 RATA plus linearity checks of the analyzer performed on April 6 and 7, 2005 and 7-day calibration error tests of the analyzer’s low and high ranges that were done in April and November, 2005, respectively. According to APS, if the rules of conditional data validation in §75.20(b)(3) are applied to this series of tests, data from the replacement analyzer should be considered to be quality-assured as of April 1, 2005, since all of the tests were passed in sequence with no failures, and (with the exception of the high-range 7-day calibration error test)

all tests were performed in a timely manner, consistent with §75.20(b)(3)(iv). APS further asserts that the late date of the high-range 7-day calibration error test has no effect on the quality-assured status of the SO₂ data between April 2005 and November 2005 since no data were recorded on the high range of the analyzer during that time period.

Finally, APS requested that EPA consider allowing the SO₂ percent monitor data availability (PMA) to be reset on April 1, 2005 and the PMA calculation to be restarted on that date using Equation 8 in §75.32(a)(1). This request, if granted, would also require the SO₂ initial missing data procedures in §75.31 to be restarted.

EPA's Determination

(1) Alternative Data Substitution

EPA approves APS's petition to use an alternative data substitution routine for Four Corners Unit 5, in the time period extending from July 21, 2004, hour 15 through April 1, 2005, hour 14. However, the Agency denies APS's request to adjust the hourly SO₂ averages upward by 1 percent, and approves instead a more conservative adjustment factor of 1.6 percent of the analyzer span value, to be applied to each hourly SO₂ average. The approved data adjustment factor is based on the results of the daily calibration error tests of the SO₂ monitoring system that were performed between July 21, 2004 and April 1, 2005. On December 27, 2006 APS provided a summary of these calibrations to EPA.

During the time period in question, 279 daily calibrations of the SO₂ monitoring system were performed, using a zero-level calibration gas and a high-level gas. For 69 of the 279 injections of the zero-level reference gas (i.e., for 24.7% of the injections), the SO₂ monitor reading was lower than the reference value. Similarly, for 46 of the 279 high-level reference gas injections (i.e., for 16.5% of the injections), the SO₂ monitor reading was lower than the reference value.

EPA determined the calibration error, as a percentage of the analyzer span value, for each of the 69 zero-level and 46 high-level calibration gas injections where the monitor reading was below the reference gas value. The zero-level and high-level calibration error values were separated into two data sets and the data in each set were arranged in rank order. The 95th percentile value in each data set was then determined. For the zero-level and high-level data sets, the 95th percentile values were, respectively, 1.90 and 1.30 percent of span.

EPA averaged the two 95th percentile values to obtain the adjustment factor (i.e., 1.6 percent of span) for Unit 5's SO₂ data. The Agency believes that applying this conservative adjustment factor to all of the SO₂ hourly averages in question, nearly 80 percent of which were recorded on days where the SO₂ monitor readings were equal to or higher than the reference gas values during the daily calibrations, ensures that the SO₂ emissions for the time period in question will not be under-reported. EPA's approval of this adjustment factor provides APS an alternative to using the standard missing data routines in §75.33(b) that is consistent with the purposes of Part 75 and emissions monitoring and reporting under the Acid Rain Program.

Specifically, EPA is approving use of this alternative for the following reasons:

- (a) First, as part of its SO₂ emissions reduction initiative, APS continued to enhance the SO₂ removal efficiency of Unit 5's scrubber throughout the missing data period. Applying the standard missing data procedures to this time period would require APS to report conservatively high substitute data values for several months using SO₂ data that were recorded prior to the start of the emissions reduction initiative, and then, when the PMA dropped below 80.0 percent, to report the maximum potential SO₂ concentration for the remainder of the 5,681 hour missing data period. EPA believes that, in these unique circumstances, this use of standard missing data substitution would unreasonably overstate Unit 5's SO₂ emissions during the missing data period.
- (b) Second, the results of quality assurance tests performed on the like-kind replacement analyzer between July 21, 2004 and April 1, 2005 indicate that the SO₂ data recorded during that time period are of reasonably good quality. Throughout the missing data period, daily calibration error tests and quarterly linearity checks of the high and low ranges of the analyzer were regularly performed and passed in accordance with Part 75, Appendix B, sections 2.1 and 2.2. Further, the April 1, 2005 RATA was performed without any pre-test adjustments and was passed with a relative accuracy (RA) of 3.83 percent and a bias adjustment factor (BAF) of 1.000. The Agency also notes that the 2004 RATA of the old SO₂ monitor, which was connected to the same probe and sample interface as the replacement analyzer, was passed with a 1.86 percent RA and a BAF of 1.000. Thus, in recent history, both before and after installation of the like-kind replacement analyzer, Unit 5's primary SO₂ monitoring system has achieved consistently low RA percentages and has exhibited no measurement bias.
- (c) Third, APS has taken corrective actions to prevent a recurrence of this missing data incident. The measures taken by APS to ensure proper management of like-kind analyzers include implementation of an automatic tracking system, personnel training, improvements to the CEMS maintenance manual, and analyzer serial number verification.

(2) Redesignation of the Like-Kind Replacement Analyzer

EPA approves APS's request to redesignate the like-kind replacement analyzer as the new, certified primary SO₂ monitor for Unit 5. The results of the RATA conducted on April 1, 2005, taken together with the monitor's history of passed calibration error tests and linearity checks and the successful recertification testing performed in November 2005 (which included a 7-day calibration drift test on the high range of the SO₂ analyzer), are deemed sufficient for this purpose. Data from the new primary SO₂ monitoring system are considered to be quality-assured beginning on April 1, 2005, hour 15, i.e., the hour after completion of the RATA.

(3) Percent Monitor Data Availability (PMA)

EPA denies APS's request to reset the SO₂ PMA on April 1, 2005 and to recommence calculation of the PMA using Equation 8 in §75.32(a)(1). Notwithstanding this denial, APS may continue to calculate the PMA using Equation 9 in §75.32(a)(2) in the time period extending from July 21, 2004, hour 15 through April 1, 2005, hour 14. Further, APS may report the hourly SO₂ data for this time period using a method of determination code (MODC) of "01" in electronic data reporting (EDR) record type 200, except for hours in which the SO₂ monitor was out-of-service.

(4) Conditions of Approval

As conditions of this petition approval, APS shall:

- (a) Resubmit to EPA all of the quarterly EDR reports for Four Corners Unit 5, from the second quarter of 2004 through the fourth quarter of 2006. These reports shall be submitted no later than September 15, 2007. Contact Kevin Tran of my staff, at (202) 343-9074 for assistance with the resubmittals;
- (b) In the second quarter, 2004 EDR, report the make, model and serial number of the like-kind replacement SO₂ analyzer in EDR record type (RT) 510, under components 520 and 521 (which represent the low and high measurement scales of the SO₂ analyzer) of the primary SO₂ monitoring system. Report a status code of "C"(change) for components 520 and 521 in column 16 of RT 510, to indicate that the SO₂ analyzer information changed during the quarter. Briefly describe the nature of the change in RT 910. Then, in the subsequent quarters, report a status code of "U" (unchanged) for these two components;
- (c) Apply the approved adjustment factor to each hourly average SO₂ concentration recorded by the like-kind analyzer during unit operation in the time period extending from July 21, 2004, hour 12 through April 1, 2005, hour 14. Adjust each hourly average SO₂ concentration in that time period upward by 1.6 percent of span, i.e., add 6.2 ppm to each hourly average¹, and report the adjusted SO₂ concentration in column 29 of EDR record type (RT) 200. Except for unit operating hours in that time period where the SO₂ monitor was out-of-service, report a MODC value of "01" in RT 200 for all operating hours. Treat these as "monitor available" hours, and use them for missing data lookback purposes. Then, for any hour(s) in which the SO₂ monitor was out-of-service, apply the standard Part 75 missing data procedures;
- (d) In the second quarter, 2005 EDR, report the results of the low-range 7-day calibration error test, low and high range linearity checks, and RATA of the replacement SO₂ monitor that were performed in April 2005. Also report EDR

¹ The SO analyzer span value is 390 ppm. Therefore, 1.6 percent of span equates to 6.2 ppm.

record type 556, describing this series of tests as a recertification of the primary SO₂ monitoring system. Report “11” as the code for required tests in column 19 of RT 556;

- (e) Report the results of the high-range 7-day calibration error test that was completed in November 2005 in the fourth quarter, 2005 EDR. However, do not report an additional 556 record in this EDR;
- (f) In the EDRs for the 3rd and 4th quarters of 2004 and for the 1st and 2nd quarters of 2005, include a record type 910 in each report, indicating which hourly SO₂ data have been adjusted upward in accordance with this approval;
- (g) Report quality-assured data from the new primary SO₂ monitor, beginning at April 1, 2005, hour 15. For hours in which quality-assured SO₂ data are unavailable, perform standard Part 75 missing data; and
- (h) Contact Kenon Smith of my staff, at (202) 343-9164, to implement the appropriate deductions of SO₂ allowances from Unit 5’s account for 2004 and 2005, in accordance with §73.35. For each year, the number of allowances deducted will be equal to the difference between the cumulative number of tons of SO₂ originally reported for Unit 5 in that year and the number of tons of SO₂ obtained for that year by applying the approved alternative data substitution methodology described above.

EPA’s determination relies on the accuracy and completeness of the information provided in APS’s May 23, 2006 petition and on December 27, 2006 and is appealable under Part 78. If you have any questions regarding this determination, please contact Charles Frushour at (202) 343-9847. Thank you for your continued cooperation.

Sincerely,

/s/

Sam Napolitano, Director
Clean Air Markets Division

cc: Steve Frey, USEPA Region IX
Stephan Etsitty, Navajo Nation EPA
Charles Frushour, CAMD
Kenon Smith, CAMD
Kevin Tran, CAMD