



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 26 2006

OFFICE OF
AIR AND RADIATION

Robert E. Hughes, Jr.
Designated Representative
East Kentucky Power Cooperative
4775 Lexington Road
Winchester, KY 40391

Re: Supplement to the August 25, 2006 Petition Approval for East Kentucky Power Cooperative, Dale Units 1 and 2 (Facility ID (ORISPL) 1385)

Dear Mr. Hughes:

This letter supplements the petition approval that EPA issued on August 25, 2006, regarding Units 1 and 2 at East Kentucky Power Cooperative's (EKPC's) Dale facility. On March 1, 2006, EKPC submitted a petition to EPA under §75.66, requesting to use an alternative method of missing data substitution to estimate the sulfur dioxide (SO₂) emissions from these units prior to completion of the required continuous emission monitoring system (CEMS) certification tests. On August 25, 2006, EPA conditionally approved the petition. The petition approval covered the reporting of Unit 1 and 2's SO₂ mass emissions only for 2000 through 2005. The August 25, 2006 petition approval stated that the 2006 emissions would be addressed in a separate response. Today's letter addresses the portion of the March 1, 2006 petition concerning 2006 SO₂ emissions and provides the necessary 2006 emissions reporting instructions for Units 1 and 2 for all relevant pollutants and parameters.

Background

EKPC operates two coal-fired boilers, Units 1 and 2, at the Dale Power Station (Dale) in Ford, Kentucky. The units discharge to the atmosphere through common stack CS1. For the purposes of the March 1, 2006 petition, EKPC assumed that these units became subject to Phase II of the Acid Rain Program and that, starting on January 1, 2000, EKPC was required to hold allowances covering the units' sulfur dioxide (SO₂) mass emissions and was required to continuously monitor and report the units' SO₂, nitrogen oxides (NO_x), carbon dioxide (CO₂) emissions and heat input, in accordance with 40 CFR Part 75¹. Solely for purposes of addressing

¹ In submitting that petition, EKPC stated that it was not waiving any claims concerning the applicability of the Acid Rain Program to these units.

the March 1, 2006 petition, EPA is also assuming that Dale Units 1 and 2 are subject to the NO_x Budget Trading Program, under Title 401 of the Kentucky Administrative Regulations (KAR) Chapter 51, Section 160 (401 KAR 51:160) and that, starting on May 31, 2004, EKPC was required to hold allowances covering the units' NO_x mass emissions during the ozone season, i.e., from May 31 through September 30 for 2004 and from May 1 through September 30 for each year thereafter.

EKPC did not meet the continuous emission monitoring and reporting requirements in 40 CFR Part 75 for Dale Units 1 and 2. For example, EKPC did not install and certify the SO₂, NO_x, CO₂, and stack gas flow rate monitors required by Part 75 to quantify the SO₂, NO_x, and CO₂ mass emissions, NO_x emission rate, and heat input for Units 1 and 2. In such cases, §§75.31(b)(2) and (c)(3) require conservatively high substitute data values (i.e., the maximum potential values of SO₂ concentration, NO_x emission rate, and stack gas volumetric flow rate) to be reported for each unit operating hour until the relevant CEMS have been certified. In the March 1, 2006 petition, EKPC requested to use an alternative substitute data methodology to determine the SO₂ mass emissions from Dale Units 1 and 2 in the period extending from January 1, 2000 until the date and hour of successful completion of the certification testing of the SO₂ and stack gas flow rate monitoring systems.

EPA reviewed the March 1, 2006 petition and concluded that the alternative SO₂ missing data substitution methodology proposed by EKPC was reasonable, but that an upward adjustment to EKPC's SO₂ mass emissions estimates for 2000 through 2005 was needed to ensure that the SO₂ emissions would not be under-reported. Specifically, EPA found that EKPC's Part 60 SO₂ concentration monitor on CS1 generally met the quality assurance (QA) requirements of Part 75, but that the monitor was never certified under Part 75 and provided emissions data with a statistically significant low bias. Under these circumstances and in light of the purposes of Part 75 and Section 412 of the Clean Air Act, EPA determined that 4% upward adjustment of the SO₂ concentration data was warranted. Moreover, based on EPA's analysis of the uncertainty in stack gas flow rates derived under EKPC's mass balance methodology and in light of the purposes of Part 75 and Section 412 of the Clean Air Act, EPA determined that a 6% upward adjustment of the stack gas volumetric flow derived from EKPC's mass balance method was warranted. On August 25, 2006, EPA issued a response to EKPC's petition, approving the request to use an alternative data substitution method for SO₂ and providing the Agency's recalculated annual SO₂ mass emissions estimates for Dale Units 1 and 2 for 2000 through 2005. In the petition response, EPA stated that a follow-up letter would be issued to address emissions reporting for 2006.

Part 75 CEMS Certification Status and Emissions Reporting for 2006

EKPC has successfully completed the initial certification testing of all required Part 75 CEMS on CS1 at Dale Units 1 and 2. Certification of the SO₂ and CO₂ concentration monitoring systems and the NO_x emission rate monitoring system was completed on March 6, 2006, hour 14. The certification of the stack gas flow monitor was completed on August 21, 2006, hour 19.

- (1) In light of the certification status of the Part 75 CEMS at Dale Units 1 and 2, EPA views calendar year 2006 as comprising four distinct time periods, each of which is addressed below. The four time periods are:
 - (a) January 1, 2006, hour 00 through March 6, 2006, hour 14. In this past period, none of the required Part 75 CEMS were certified;
 - (b) March 6, 2006, hour 15 through August 21, 2006, hour 19. In this past period, the SO₂, NO_x, and CO₂ monitoring systems were certified and reporting quality-assured emissions data, while the flow monitor remained uncertified;
 - (c) August 21, 2006, hour 20 through September 30, 2006, hour 23. In this past period, all required Part 75 monitoring systems, i.e., the gas monitors and the flow monitor, were certified and reporting quality-assured emissions data; and
 - (d) October 1, 2006, hour 00 through December 31, 2006, hour 23. In this ongoing period, all required Part 75 monitoring systems were certified and reporting quality-assured emissions data as of the beginning of the period and their status will be determined on an ongoing basis in accordance with Part 75.
- (2) For each unit operating hour in the first period, from January 1, 2006, hour 00 through March 6, 2006, hour 14:
 - (a) For the reasons set forth in EPA's August 25, 2006 petition approval, EPA approves reporting of hourly SO₂ concentrations using the EPA-approved calculation methodology described in that petition approval. For each operating hour in which a quality-assured SO₂ concentration is measured by the Part 60 SO₂ monitor installed on CS1, EKPC will report 1.04 times the measured SO₂ concentration. Consistent with the approach used in EPA's August 25, 2006 petition approval, for each hour of missing SO₂ emission rate data from the Part 60 monitors during this time period, EKPC shall report substitute data as follows:
 - (i) If the missing data period is ≤ 24 hours, report the arithmetic average of the SO₂ emission rates recorded in the hour before and the hour after the missing data period; and
 - (ii) If the missing data period is > 24 hours in length, report the maximum potential SO₂ concentration (MPC), determined according to Part 75, Appendix A, section 2.1.1.1.

- (b) The Part 75 regulations require, in light of the absence of any EPA approval to use any alternative approach, that EKPC report the maximum potential NO_x emission rate (MER), determined according to Part 75, Appendix A, section 2.1.2.1.
 - (c) The Part 75 regulations require, in light of the absence of any EPA approval to use any alternative approach, that EKPC report the maximum potential CO₂ concentration (MPC), determined according to Part 75, Appendix A, section 2.1.3.1.
 - (d) For the reasons set forth in EPA's August 25, 2006 petition approval, EPA approves reporting of hourly stack gas flow rates using the EPA-approved calculation methodology described in that petition approval. For each operating hour, EKPC will report 1.06 times the value determined using EKPC's mass balance methodology, as described in detail in the attachment to this letter.
 - (e) In addition to reporting SO₂ mass emissions, Dale Units 1 and 2 must report, under the Acid Rain Program and the NO_x Budget Trading Program, NO_x emission rate, NO_x mass emissions, CO₂ mass emissions, and heat input rates. Both hourly NO_x mass emissions and hourly CO₂ mass emissions can be calculated by multiplying the concentration of the respective gas by the hourly stack gas flow rate value. In order to ensure that the reported emissions data for the units for each hour are internally consistent, EPA is requiring, as a condition for approval of EKPC's petition with regard to 2006, that the hourly stack gas flow rate values used to determine the hourly SO₂ mass emissions also be used to determine the hourly NO_x mass emissions, CO₂ mass emissions, and heat input rates.
- (3) For each unit operating hour in the second period, from March 6, 2006, hour 15 through August 21, 2006, hour 19, because of the certification of the SO₂, NO_x, and CO₂ monitors on CS1, EKPC shall report quality-assured emission concentration data from these CEMS when such data are available. Otherwise, EKPC shall report the appropriate substitute data values for emission concentration from Subpart D of Part 75. The initial missing data routines in §75.31 shall be used for all parameters, starting with the first unit operating hour following CEMS certification, i.e., the first operating hour after March 6, 2006, hour 14 for SO₂ and CO₂ concentration and for NO_x emission rate. With regard to stack gas flow rate, the general approach approved by EPA in the August 25, 2006 petition approval is applicable. EKPC therefore shall continue to report stack gas flow rate and heat input rate as described in paragraphs (2)(d) and (e) above.

- (4) For each unit operating hour in the third period, from August 21, 2006, hour 20 through September 30, 2006, hour 24, EKPC shall report quality-assured data from all of the certified Part 75 CEMS, i.e., from the certified SO₂ and CO₂ concentration monitoring systems, the NO_x emission rate monitoring system, and the provisionally certified stack gas flow rate monitoring system, when such data are available. Otherwise, EKPC shall report the appropriate substitute data values from Subpart D of Part 75. The initial missing data routines in §75.31 shall be used for all parameters, starting with the first unit operating hour following CEMS provisional certification, i.e., the first operating hour after March 6, 2006, hour 14 for SO₂ and CO₂ concentration, and NO_x emission rate, and the first operating hour after August 21, 2006, hour 19 for stack gas flow rate. EPA is not approving any alternative to the Part 75 requirements for this period.
- (5) For each unit operating hour in the fourth period, from September 30, 2006, hour 24 through December 31, 2006, hour 24, EKPC shall report all emissions data required under the Acid Rain Program and the NO_x Budget Trading Program as set forth in Part 75. EPA is not approving any alternative to the Part 75 requirements for this period.
- (6) For the first three quarters of 2006, EKPC shall report to EPA the information in paragraphs (1) through (4) above, along with all other emissions, operating, and quality-assurance data required under §75.64(a) (for the Acid Rain Program) and under §75.73 (for the NO_x Budget Trading Program). All data shall be reported in EPA's standard electronic data reporting (EDR) format, no later than November 13, 2006.²
- (7) For the fourth quarter of 2006, EKPC shall submit EDRs for Units 1 and 2 in accordance with paragraph (5) above and §§75.64 and 75.73 no later than 30 days after the end of the quarter.
- (8) For each hour in which EKPC reports hourly SO₂ concentration or stack gas flow rate using the EPA-approved calculation methodology described in EPA's August 25, 2006 petition approval and discussed in paragraphs (2) and (3) above, EKPC shall report a method of determination code (MODC) value of "55", i.e., "Other Substitute Data Approved Through Petition by EPA" in column 35 of EDR record type 200 or in column 56 of record type 220 (as applicable).

² While the November 13, 2006 deadline is a condition of this supplement to EPA's August 25, 2006 petition approval, this does not affect or supersede the originally applicable deadline for submission of any quarterly report as set forth in Part 75.

This letter relies on the accuracy and completeness of the information provided by EKPC in the March 1, 2006 petition, as amended on March 22, 2006 and the supplemental information provided to EPA³, and can be appealed under Part 78. If you have any questions or concerns about this determination (including the deadline for submission of emissions data for the first three quarters of 2006), please contact Manuel J. Oliva, at (202) 343-9009. Thank you for your cooperation.

Sincerely,



Sam Napolitano, Director
Clean Air Markets Division

Attachment

cc: David McNeal, EPA Region IV
Jerry Slucher, Kentucky DEP
Manuel J. Oliva, EPA CAMD
Adam Kushner, EPA OECA
Meredith Miller, EPA OECA

³ EKPC provided the following supplemental information at EPA's request: emissions data, stack test data, fuel information, missing Part 60 CEMS data, and information on the Part 60 CEMS (4/18/06), coal analysis data (4/28/06), coal usage data (5/01/06), coal analysis reports (5/04/06), coal feed rate data (5/25/06), Part 60 CEMS QA test data and coal analysis data (5/26/06), stack characteristics and information on the Part 60 CEMS (6/08/06), coal feed system information (6/13/06), information on the Part 60 CEMS and Part 60 CEMS test data (6/14/06), coal sampling methods information (6/15/06), information on the boilers and the Part 60 CEMS (6/23/06), and stack characteristics (6/28/06).

**Attachment: Estimation of Stack Gas Flow Rates
Using Mass Balance Methods**

Consistent with this letter and EPA's August 25, 2006 petition approval, EPA is approving estimation of total stack gas volumetric flow rates for Dale Units 1 and 2, prior to the August 21, 2006 certification of the stack gas flow monitor on CS1, by using a mass balance method. In its March 1, 2006 petition, EKPC used coal feed rates and gross calorific value (GCV) data to estimate the heat input to Units 1 and 2. In the August 25, 2006 petition approval, EPA determined that reasonable estimates of stack gas flow rate can be obtained using EKPC's mass balance method if each value estimated using this method is multiplied by 1.06.

For each operating hour of Dale Units 1 and 2 in 2006, beginning at January 1, 2006, hour 00 and extending through August 21, 2006, hour 19 (the date and hour on which the stack gas flow monitor was certified), EPA is approving the reporting of hourly stack gas flow rates for Dale Units 1 and 2 determined as follows:

- (1) Using coal feed rates and GCV data, calculate HI_{total} the total heat input (in mmBtu) to Units 1 and 2 for the time period from January 1, 2006, hour 00 through August 21, 2006, hour 19;
- (2) Apportion the total heat input from paragraph (1) above to each operating hour on the basis of electrical load, using the following equation:

$$HI_{hr} = HI_{total} (MW_{hr} / MW_{total})$$

Where: HI_{hr} = Total heat input to Units 1 and 2 for the operating hour (mmBtu)
 HI_{total} = Total heat input to Units 1 and 2 for all operating hours from 1/1/06, hour 00 through 8/21/06, hour 19 (mmBtu)
 MW_{hr} = Sum of the electrical loads for Units 1 and 2 for the operating hour (megawatts)
 MW_{total} = Sum of all electrical loads for Units 1 and 2, for all operating hours from 1/1/06, hour 00 through 8/21/06, hour 19 (megawatts)

- (3) Estimate each hourly stack gas volumetric flow rate using the following equation:

$$Q_{hr} = \frac{(HI_{hr})(F_c) 100}{\%CO_2}$$

Where: Q_{hr} = Estimated stack gas volumetric flow rate through CS1 for the operating hour (scfh)
 HI_{hr} = Total heat input to Units 1 and 2 for the operating hour (mmBtu)
 F_c = 1800 scf CO₂ /mmBtu
 $\%CO_2$ = CO₂ concentration in the stack gas. Use the maximum potential CO₂ concentration from 1/1/06, hour 00 through 3/6/06, hour 14. From 3/6/06, hour 15 through 8/21/06, hour 19, use either the quality-assured CO₂ concentration from the Part 75 CEMS or appropriate substitute data value from Subpart D of Part 75.

- (4) Multiply each estimated hourly flow rate from paragraph (3) above by 1.06. Report each adjusted hourly flow rate in column 39 of EDR record type 220.
- (5) Report a method of determination code of "55" in column 56 of EDR record type 220 for each flow rate estimated by this method.