

February 2, 2009

Jon Blanchard  
Alternate Designated Representative  
AES Greenidge, LLC  
590 Plant Road, P.O. Box 187  
Dresden, NY 14441

Re: Petition to Use a Unit-Specific Moisture Value for Unit 6 at AES Greenidge  
(Facility ID (ORISPL) 2527)

Dear Mr. Blanchard:

The United States Environmental Protection Agency (EPA) has reviewed the September 9, 2008 petition submitted by AES Greenidge, LLC (AES) under 40 CFR 75.66, in which AES requested to use a unit-specific moisture value to calculate the emissions from Unit 6 at the AES Greenidge facility. AES also requested to apply the unit-specific moisture value retrospectively, starting on January 1, 2008, for data reporting purposes. EPA approves the petition, in part, as discussed below.

### Background

Unit 6 at the AES Greenidge facility in Dresden, New York is a 132 MW coal-fired boiler that combusts bituminous coal. According to AES, the unit is subject to the Acid Rain Program and the NO<sub>x</sub> Budget Trading Program. Therefore, AES is required to continuously monitor and report sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and carbon dioxide (CO<sub>2</sub>) emissions and heat input for Unit 4, in accordance with 40 CFR Part 75.

To meet the Part 75 monitoring requirements, AES has installed and certified dry-extractive continuous emission monitoring systems (CEMS) for SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub>, and an ultrasonic flow monitor. Because the gas monitors measure on a dry basis and the flow monitor measures on a wet basis, corrections for the stack gas moisture content must be applied when Unit 6's emissions and heat input rates are calculated. AES uses Equations F-2, F-16, and F-24 from Appendix F of Part 75 to calculate SO<sub>2</sub>, CO<sub>2</sub>, and NO<sub>x</sub> mass emissions and heat input rate for Unit 6. The term (100 - %H<sub>2</sub>O) appears in the numerator of all of these equations. Therefore, as the moisture content decreases, the calculated mass emissions and heat input rates increase.

In 2001, AES formed a partnership with CONSOL Energy Inc. (CONSOL) to participate in the Department of Energy's Power Plant Improvement Initiative (PPII). This partnership,

known as the Greenidge Multi-Pollutant Control (MPC) Project, involved the installation and operation of an environmentally beneficial emission reduction system on Unit 6. The emission controls include a hybrid selective catalytic/non-catalytic reduction system for NO<sub>x</sub> control and a circulating fluidized bed dry scrubber system with activated carbon injection and baghouse ash recycling to control SO<sub>2</sub>, mercury, sulfur trioxide, hydrochloric acid, hydrofluoric acid, and particulate matter emissions.

The MPC Project was completed at the end of the first calendar quarter 2007. At that time, AES plant personnel did not realize that installation of the emissions control system had caused the stack gas moisture content to increase significantly. In previous years, and continuing into 2008, AES used the option, under 40 CFR 75.11(b)(1), 75.12(b), and 75.13(c), of applying a default moisture value of 6.0% H<sub>2</sub>O for bituminous coal to calculate Unit 6's emissions and heat input rates instead of installing and operating a continuous moisture monitoring system. Before the MPC project's completion, this default value provided reasonable estimates of the stack gas moisture content. For example, just before the project's completion, moisture measurements made during a January 2007 relative accuracy test audit (RATA) of the CEMS showed an average moisture content of 5.8% H<sub>2</sub>O at normal load. However, during two subsequent RATAs conducted in August 2007 and July 2008, well after the MPC project in-service date, average moisture content values of 13.0% H<sub>2</sub>O and 14.3%, respectively, were measured at normal load. This significant increase in stack gas moisture is attributed to the fluidized bed absorber, which is essentially an evaporative dry scrubber. Water that is added to the lime hydrator evaporates and mixes with the stack gas.

Further evidence of the substantive change in the stack gas moisture content was obtained in a series of 59 emission tests of Unit 6 performed between March 2007 and June 2008 by CONSOL. The purpose of the tests was to assess the performance of the new emissions control system. Auxiliary measurements of the stack gas moisture content were made during each of these tests. The average moisture percentage for the 59 tests was 12.6% H<sub>2</sub>O.

In the September 9, 2008 petition, AES requested to use a unit-specific default moisture value of 12% H<sub>2</sub>O to calculate emissions and heat input for AES Greenidge Unit 6, in lieu of the options under the regulations of using the "generic" 6.0% H<sub>2</sub>O default value specified in § 75.11(b)(1) for bituminous coal or installing a continuous moisture monitoring system. Further, because use of the generic default moisture value causes Unit 6's emissions to be overreported by as much as 6 to 8 percent, AES requested to apply the 12% H<sub>2</sub>O value retrospectively, beginning on January 1, 2008.

#### EPA's Determination

EPA approves AES' petition to use a unit-specific default moisture value to quantify emissions and heat input for AES Greenidge Unit 6. However, the approved unit-specific default value is 11.0% H<sub>2</sub>O, rather than the 12.0% H<sub>2</sub>O value proposed by AES. The basis for this approval is presented in the following paragraphs.

In response to comments received on the May 21, 1998 proposed revisions to the Part 75

continuous emissions monitoring (CEM) rule, EPA amended the CEM rule on May 26, 1999 to allow the use of a default moisture value in lieu of the requirements for moisture monitoring. EPA only assessed and adopted fuel specific moisture defaults into the rule. EPA did not adopt specific moisture defaults for units with installed add-on controls that result in additional moisture in the flue gases at the point of emissions measurement, as these specific situations can only be addressed on a case-by-case basis based upon real unit-specific measurements of moisture using EPA reference method 4. Therefore, for sources where the installed add-on controls result in increased moisture content, a petition under the general provisions of § 75.66(a) may be considered after substantial site-specific data using the EPA reference method for moisture has been collected so that a conservative default can be determined.

EPA has approved a number of such petitions since adding the provision for using moisture defaults in the May 26, 1999 amendments. Also, the Electronic Data Reporting (EDR) Instructions provide specific codes and instructions for how a site-specific default moisture value that has been approved by petition under §75.66 is to be reported in Record Type 531 (RT531) of the monitoring plan. Similar instructions can be found in section 10.0 of the ECMPS Reporting Instructions for the Monitoring Plan, which supports the new extensible markup language (XML) format that will be required starting in 2009.

EPA reviewed the moisture data from the January 2007, August 2007, and July 2008 RATAs of the Unit 6 CEMS and evaluated the results of the moisture measurements made during the 59 emission test runs of Unit 6 performed by CONSOL. From these data, the Agency concludes that installation of emission controls on Unit 6 has definitely caused a sharp increase in the stack gas moisture content, at all unit operating loads. The 6.0% default moisture value from §75.11(b)(1) is based solely on the products of combustion and does not account for additional stack gas moisture from add-on controls. Therefore, use of 6.0% default moisture value results in a calculated overstatement of mass emissions, i.e., mass emissions data that are about 7% higher than the likely actual emissions for Unit 6.<sup>1</sup>

In view of these findings, EPA analyzed all available post-MPC project moisture data (i.e., data from the August 2007 and July 2008 RATAs and from the CONSOL tests) to determine a suitable default moisture value for Unit 6. From this data set, EPA selected the 10<sup>th</sup> percentile value rounded to the nearest whole number (i.e., 11.0% H<sub>2</sub>O) as a reasonable default moisture value for Unit 6 as operated since installing the controls. This is consistent with the manner in which EPA determined the fuel-specific default moisture values for coal and wood fired units without add-on controls in §75.11(b)(1) as part of the May 26, 1999 revisions to Part 75.<sup>2</sup> The 10<sup>th</sup> percentile value was selected because in Equations F-2 and F-16, as the percent moisture decreases, the SO<sub>2</sub> mass emissions and heat input rate both increase. Furthermore, when Equation F-24 is used to calculate NO<sub>x</sub> mass emission rates using the heat input calculated from Equation F-16, the resulting NO<sub>x</sub> mass also increases as the default percent moisture value

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<sup>1</sup> Note that the 7% estimation of the emissions overstatement is based on the difference between the 6% moisture default from 40 CFR 75.11(b)(1) and the 13% average moisture calculated from the test data submitted as part of the AES petition.

<sup>2</sup> See 64 FR 28564, 28568 (May 26, 1999)

is decreased. Therefore, using a conservatively low moisture value in these calculations greatly reduces the possibility of underestimating the mass emissions for SO<sub>2</sub> and NO<sub>x</sub>, while avoiding a gross overstatement of emissions. The approved unit-specific default value of 11.0% H<sub>2</sub>O is estimated to reduce the overstatement of mass emissions by about 5%.

Finally, EPA approves AES' request to apply a unit-specific default moisture value retrospectively, starting on January 1, 2008, since a significant portion of the test data on which the approved default value of 11.0% H<sub>2</sub>O is based was collected prior to January 1, 2008 and that data is consistent with the data collected after January 1, 2008. Consequently, AES shall use the approved value of 11.0% H<sub>2</sub>O starting January 1, 2008, provided that the unit continues to operate with multi-pollutant controls in a manner consistent with how the unit was operated when the data for this petition was collected. If any modifications are made to the manner in which Unit 6 or the controls for Unit 6 are operated, or if the unit begins combusting any fuel other than bituminous coal, AES shall collect additional moisture data (at least 9 runs) using EPA reference method 4. If the resulting average moisture value from these runs is less than the approved value of 11.0 % H<sub>2</sub>O, AES shall either petition the Administrator for a revised unit-specific moisture default, use an appropriate fuel based moisture factor under 40 CFR 75.11(b)(1), or install, certify, and operate a continuous moisture monitoring system.

Please contact Craig Hillock of my staff, at (202) 343-9105, or at [hillock.craig@epa.gov](mailto:hillock.craig@epa.gov), for assistance in resubmitting the first, second, and third quarter 2008 electronic data reports (EDRs) for Unit 6. Also, please contact Kenon Smith of my staff, at (202) 343-9164, or at [smith.kenon@epa.gov](mailto:smith.kenon@epa.gov), to resolve any 2008 ozone season NO<sub>x</sub> allowance accounting issues under the NO<sub>x</sub> Budget Trading Program.

EPA's determination relies on the accuracy and completeness of the information provided by AES in the September 9, 2008 petition and is appealable under Part 78. If you have any questions regarding this correspondence, please contact Matthew Boze at (202) 343-9211, or at [boze.matthew@epa.gov](mailto:boze.matthew@epa.gov).

Sincerely,

/s/

Sam Napolitano, Director  
Clean Air Markets Division

cc: Esther Nelson , EPA Region II  
Don Spencer, NYDEC  
Matthew Boze, CAMD  
Craig Hillock, CAMD  
Kenon Smith, CAMD