March 1, 2007

Mr. William Eastman
Director, Environmental Services
Westar Energy
122 SW 2nd Street
P.O. Box 889
Topeka, KS 66601-0889

Re: Petition to Resolve a Data Quality Issue for Unit 10 at the Tecumseh Energy Center (Facility ID (ORISPL) 01252)

Dear Mr. Eastman:

The United States Environmental Protection Agency (EPA) has reviewed the January 16, 2007 petition under §75.66 in which Westar Energy (Westar) requested relief from using standard missing data substitution for Unit 10 at the Tecumseh Energy Center, in order to resolve an issue concerning the quality of Unit 10's 2006 emissions data. EPA approves the petition, with conditions, as discussed below.

Background

Unit 10 at Westar's Tecumseh Energy Center is a coal-fired 1,911 mmBtu/hr tangential-fired boiler. Unit 10 is subject to the Acid Rain Program, and Westar is required to monitor and report sulfur dioxide (SO_2), nitrogen oxides (NO_x), and carbon dioxide (CO_2) emissions and heat input data for the unit in accordance with 40 CFR Part 75. To meet the SO_2, NO_x, and CO_2 monitoring requirements of Part 75, Westar uses out-of-stack dilution extractive continuous emissions monitoring systems (CEMS).

In the January 16, 2007 petition, Westar states that in October, 2006, through an internal audit of the 2006 emissions data for Unit 10, it was discovered that for several months the hourly heat rates for Unit 10 (calculated from the CEMS data) were significantly lower than expected. Since the heat rate is directly proportional to the CO_2 concentration, Westar suspected that the unusually low heat rates might be traceable to a low bias in the CO_2 concentrations measured by the CEMS.

Upon investigation, it was found that except for a few brief intervals following CEMS probe maintenance, the CO_2 concentrations measured by the CEMS were, in fact, consistently lower than expected, beginning on April 19, 2006 and continuing up to the time of the audit in late October. A probe leak was believed to be the most likely cause of the problem. In view of this, Westar immediately initiated a comprehensive maintenance program on the CEMS probe. The maintenance included, among other

things, replacing the Teflon tape on various fittings and tightening all of the fittings. A problem with the solenoid valve on the back flush line was also remedied. The probe maintenance was concluded on November 6, 2006. According to Westar, these corrective actions appear to have solved the problem. There have been no recurrences of unexpectedly low CO_2 concentration data since the comprehensive maintenance was performed, and the concentrations of the other gaseous pollutants (SO_2 and NO_x) have also remained at expected levels.

Although the probe leak has been eliminated, this does not change the fact that the SO_2, NO_x, and CO_2 emissions data recorded in the time period from April 19 through November 6, 2006 are biased low and need to be adjusted. Under Part 75, the data should be declared invalid and replaced with substitute data based on the standard Part 75 missing data procedures. However, Part 75 also allows submission of a petition under §75.66 requesting use of an alternative approach to use of the standard missing data routines. Believing that the Part 75 missing data substitution procedures would grossly overstate Unit 10's emissions during the time period in question, Westar petitioned EPA for approval of an alternative substitute data methodology.

In the January 16, 2007 petition, Westar proposed to apply an adjustment factor of 1.21 to all of the SO_2, NO_x, and CO_2 emissions data recorded during the time period in question. Westar further requested that EPA consider the adjusted CEMS data set to be valid, in order to avoid reducing the percent monitor data availability (PMA) below 80.0%, which would require maximum potential values to be reported during missing data hours.

The proposed correction factor for the CEMS was obtained by thoroughly analyzing Unit 10's 2006 CO_2 data. Before initiating the data analysis, Westar examined fuel usage data and was able to confirm that the unit was operated in a consistent manner before, during, and after the probe leak incident. This provided a sound basis for comparing the pre- and post-leak CO_2 data to the data recorded while the leak was present.

Westar separated the quality-assured pre- and post-leak CO_2 data into two load ranges (mid and high load), which are the load levels at which Unit 10 typically operates. Unrepresentative data from startup and shutdown periods were excluded. The CO_2 data recorded during the probe leak period were grouped in two separate data sets, i.e., data recorded prior to a relative accuracy test audit (RATA) performed on August 15, 2006 and data recorded after the RATA. The CO_2 concentrations in each data set were then sorted according to unit load. Next, the average of the pre- and post-leak CO_2 concentrations at mid load was compared against the average of the pre-RATA mid load CO_2 concentrations recorded while the leak was present. An adjustment factor was calculated by taking the ratio of these two average values (i.e., quality-assured value/suspect value). This comparison and calculation procedure was repeated for the post-RATA mid load data set and for the pre- and post- RATA high load data sets.

The adjustment factors obtained from these comparisons ranged from 1.10 to 1.21. Westar proposed to apply the highest adjustment factor, i.e., 1.21, to all of the SO_2, NO_x, and CO_2 emissions data recorded in the time period from April 19 to November 6, 2006. According to Westar, applying this adjustment factor would raise the suspect data to expected levels and make it consistent with the quality-assured pre- and post-leak data.

EPA's Determination

EPA conditionally approves Westar's petition to use an alternative substitute data methodology to adjust Tecumseh Unit 10's reported SO_2, NO_x, and CO_2 emissions data during the identified probe leak period, April 19 – November 6, 2006. Further, the Agency approves Westar's request to report the adjusted emissions data as valid and to use it for missing data lookbacks. The basis for these approvals and the conditions of approval are presented below.

After reviewing Westar's proposed substitute data methodology, EPA has concluded that it is technically sound and provides reasonable estimates of Tecumseh Unit 10's SO_2, NO_x, and CO_2 emissions during the period of time in which the probe leak was present. However, the correction factor proposed by Westar is not sufficiently conservative to ensure that emissions will not be under-reported. The pre- and post-leak mid-load CO_2 data provided by Westar ranged from 7.6 to 10.6% CO_2, averaging 8.7% CO_2, with a 90^{th} percentile value of 9.2% CO_2. The corresponding high-load data ranged from 7.8 to 11.6% CO_2, averaging 10.9% CO_2, with a 90^{th} percentile value of 11.3% CO_2. The mid-load CO_2 data recorded during the probe leak period ranged from 6.8 to 9.3% CO_2, averaging 7.8% CO_2, with a 10^{th} percentile value of 7.5% CO_2. The corresponding high-load data ranged from 7.8 to 11.4% CO_2, averaging 9.3% CO_2, with a 10^{th} percentile value of 8.8% CO_2.

In view of the fairly wide range of variability in the data at each load level, EPA believes that an adjustment factor derived from the 90^{th} percentile value of the quality-assured data set and the 10^{th} percentile value of the suspect data is more appropriate than the adjustment factor proposed by Westar, which is based on average values. For the mid load data, the adjustment factor derived from the 90^{th} and 10^{th} percentile values is 1.23. For the high load data, the adjustment factor is 1.28. Therefore, to ensure that the 2006 SO_2, NO_x, and CO_2 emissions from Unit 10 will not be under-reported, EPA approves the higher of these two adjustment factors, i.e., 1.28.

The Agency is allowing Westar to use this alternative data correction methodology, in lieu of applying the standard missing data procedures in §75.33, because using substitute data based on the standard missing data procedures would result in reported emissions for the probe leak period that are likely to overstate the actual emissions far more than is appropriate in this case. Reported SO_2 emissions using standard substitute data (2,950 tons) would be about 2.6 times the currently reported amount of emissions (1,140 tons) for the period. The approved data correction methodology will require approximately 1,460 tons of SO_2 to be reported, which is 1.28 times the reported emissions. This emissions estimate is still conservatively high, but is

believed to be much closer to Tecumseh Unit 10's actual emissions. Further, the probe leak at Tecumseh Unit 10 could not be detected through performance of the quality assurance (QA) tests required for that period. In fact, the gas monitoring systems installed on Tecumseh Unit 10 consistently passed their required QA tests during the time period in question.[1] Under these circumstances, EPA concludes that substitute data based on the alternative data correction methodology is sufficiently conservative to ensure that emissions are not understated and to provide a strong incentive for compliance with Part 75 requirements.

The conditions of this approval are as follows:

(1) Westar shall resubmit the second, third, and fourth quarter, 2006 electronic data reports (EDRs) for Tecumseh Unit 10;

(2) For time period extending from April 19 to November 6, 2006, Westar shall apply the approved correction factor of 1.28 to each hour of data recorded by Unit 10's SO_2, NO_x, and CO_2 CEMS;

(3) Westar shall report a Method of Determination Code (MODC) of "01" for each hour of adjusted SO_2, NO_x, and CO_2 emissions data;

(4) Westar shall include EDR record type (RT) 910 in each of the three resubmitted EDRs for Tecumseh Unit 10. Each RT 910 shall indicate the period(s) of time for which the SO_2, NO_x, and CO_2 emissions data have been adjusted in accordance with this approval; and

(5) Westar shall coordinate resubmission of the EDRs with Mr. Craig Hillock, who may be reached at (202) 343-9105, or by e-mail at hillock.craig@epa.gov.

EPA's determination relies on the accuracy and completeness of the information provided by Westar in the January 16, 2007 petition and is appealable under Part 78.

[1] Ordinarily, the type of probe leak at Tecumseh Unit 10 is detectable only by a RATA, not by daily calibrations and quarterly linearity checks. In fact, prior to the August 15, 2006 RATA, the test team did notice significant discrepancies between the gas concentrations read by their instruments and Unit 10's CEMS. At that time, Westar performed probe maintenance, which appeared to resolve the problem and the RATA was performed and passed. However, Westar's October 2006 review of Unit 10's historical data showed that, soon after the RATA, the probe leak reappeared. This was not detected by the post-RATA daily calibrations and linearity checks.

If you have any questions or concerns about this determination, please contact Robert Vollaro, at (202) 343-9116. Thank you for your continued cooperation.

Sincerely,

/s/
Sam Napolitano, Director
Clean Air Markets Division

cc: Jon Knodel, EPA Region VII
Mindy Bowman, Kansas DHE
Robert Vollaro, CAMD