

May 17, 2005

Gary Titus  
Alternate Designated Representative  
City of Ames  
P.O. Box 811  
502 Carroll  
Ames, IA 50010

Re: Petition to Use an Alternative SO<sub>2</sub> Emission Factor for Unit GT2 at the Dayton Avenue Substation (Facility ID (ORISPL) 6463)

Dear Mr. Titus:

This is in response to your March 15, 2005 petition under §75.66, in which the City of Ames, Iowa (City of Ames) requested to use an alternative sulfur dioxide (SO<sub>2</sub>) emission factor for a combustion turbine at its Dayton Avenue Substation. EPA approves the petition, with conditions, as discussed below.

#### Background

City of Ames is presently constructing, and will own and operate, a simple-cycle combustion turbine, Unit GT2, at its Dayton Avenue Substation. Unit GT2 has a rated capacity of 27 megawatts and will combust distillate oil. The projected date of first operation (first-fire) of Unit GT2 is May 23, 2005. The unit is subject to the Acid Rain Program. Therefore, City of Ames 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 GT2, in accordance with 40 CFR Part 75.

On January 26, 2005, City of Ames submitted a certification application to EPA under §75.19, to demonstrate that Unit GT2 will qualify to use the excepted low mass emissions (LME) methodology, in lieu of installing continuous monitoring systems on Unit GT2. In order to qualify for LME status, the projected annual SO<sub>2</sub> emissions from Unit GT2 must not exceed 25 tons and the annual NO<sub>x</sub> emissions must be less than 100 tons. Using enforceable permit limits for SO<sub>2</sub>, NO<sub>x</sub>, and annual unit heat input, City of Ames projected that the annual SO<sub>2</sub> and NO<sub>x</sub> emissions from Unit GT2 will be 8.7 tons and 30.2 tons, respectively.

However, the SO<sub>2</sub> emission factor used by City of Ames to estimate the annual SO<sub>2</sub> emissions from Unit GT2 was 0.0505 lb/mmBtu, which is much lower than the default SO<sub>2</sub> emission rate of 0.5 lb/mmBtu prescribed in Table LM-1 of §75.19 for distillate oil combustion. According to City of Ames, using the default SO<sub>2</sub> emission rate from Table LM-1 would result in the SO<sub>2</sub> emissions from Unit GT2 being over-reported by a factor of ten.

In view of this, in the March 15, 2005 petition, City of Ames requested to use a default SO<sub>2</sub> emission rate of 0.0505 lb/mmBtu to report Part 75 SO<sub>2</sub> emissions data for Unit GT2. This emission rate is based on 0.05 weight percent sulfur, which is the maximum sulfur content allowed by the unit's operating permit for the distillate oil combusted in the unit<sup>1</sup>.

#### EPA's Determination

EPA conditionally approves City of Ames' March 15, 2005 petition to use an alternative SO<sub>2</sub> emission factor of 0.0505 lb/mmBtu when diesel fuel is combusted in Unit GT2, in lieu of reporting the 0.5 lb/mmBtu default SO<sub>2</sub> emission rate from §75.19(c)(4)(i). City of Ames may use the approved alternative SO<sub>2</sub> emission factor for Part 75 reporting purposes beginning with the first hour that emissions data for Unit GT2 are required to be reported under §75.64(a). The basis for this approval is that there is an enforceable permit condition in place for Unit GT2, limiting the sulfur content of the diesel oil combusted in the unit to 0.05 percent sulfur by weight. When this limit is met, the SO<sub>2</sub> emission rate from the turbines will not exceed 0.0505 lb/mmBtu<sup>2</sup>.

The conditions of approval are as follows:

- (1) City of Ames shall implement the fuel sampling methodology described in section 2.2.4.3 of Appendix D to Part 75 ("sampling from each delivery") for the diesel fuel combusted in Unit GT2. The total sulfur content of the oil shall be determined using one of the analytical methods listed in section 2.2.5 of Appendix D. Oil sampling may be performed either by City of Ames, an independent laboratory, or by the supplier of the fuel;
- (2) For the purposes of Part 75 emissions reporting, City of Ames shall use an assumed value of 0.05 weight percent sulfur for the diesel fuel combusted in Unit GT2, which equates to an SO<sub>2</sub> emission rate 0.0505 lb/mmBtu when the equation from AP-42 is used. This SO<sub>2</sub> emission rate shall be substituted into Equation LM-9 in §75.19 for each hour of oil combustion in Unit GT2;
- (3) If the results of a required fuel sample show that the sulfur content of a particular oil shipment exceeds the assumed value of 0.05 weight percent, City of Ames shall not burn the oil in Unit GT2.
- (4) In each of the quarterly electronic data reports (EDRs) required under §75.64, City of Ames shall represent the approved SO<sub>2</sub> emission rate of 0.0505 lb/mmBtu in EDR record type 531 of the electronic monitoring plan. In column 10 of RT

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<sup>1</sup> According to AP-42, the following equation is used to convert weight percent sulfur in fuel oil to an emission rate (E) in lb/mmBtu:  $E = 1.01 (\text{weight \% sulfur})$ .

<sup>2</sup> See footnote 1

531, a parameter value of “SO2U” shall be reported<sup>3</sup>. In column 41 of RT 531, a “source of value code” of “APP” shall be reported, indicating that the SO<sub>2</sub> emission rate has been approved by petition.

EPA’s approval relies on the completeness and accuracy of the information provided by City of Ames in the March 15, 2005 petition and is appealable under Part 78. If you have any questions 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  
Christopher Kjellmark, INDR  
Robert Vollaro, CAMD

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<sup>3</sup> The MDC software has recently been modified to accept code “SO2U” for oil in column 10 of RT 531, provided that it is coupled with code “APP” in column 41.