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Via Overnight Mail

February 22, 2008

Mr. John Vial, Permit Engineer
Michigan Department of Environmental Quality, Air Quality Division
Constitution Hall
525 West Allegan Street
3rd Floor, North Tower
Lansing, MI 48933

Re: Permit to Install Application Number 297-07
Mid-Michigan Energy Station
Midland, Michigan

Dear Mr. Vial:

Pursuant to a recent request by the Michigan Department of Environmental Quality, Air Quality Division (MDEQ), the dispersion modeling for particulate matter (PM_{10}) emissions from the Mid-Michigan Energy Station (MMES) has been updated. Specifically, the modeling analysis has been updated to reflect guidance provided by the MDEQ subsequent to the submission of the subject Permit to Install (PTI) application regarding the modeling parameters for PM_{10} emissions from vehicle traffic on paved and unpaved roads.

As described in the recently provided guidance[1], PM_{10} emissions from the roads on the site were modeled as volume sources with the following parameters:

Side Length of Volume = Truck Width + 4 meters
Height of Volume = Vehicle Height x 1.7
Release Height = Volume Height / 2.0
Initial Horizontal Dimension (σ_y) = Center to Center Distance/2.15 (separated volumes)
Initial Vertical Dimension (σ_z) = Height of Volume / 2.15

Vehicle dimensions were based on the specifications of a common commercial truck. For modeling purposes, the roadways were divided into several sections and input as multiple

[1] Michigan Department of Environmental Quality, air Quality Division, 2007. Dispersion Modeling Guidance Document. Last revised Dec, 2007.

volume sources with the distance between each source dependent on the distance from the road to the nearest receptor, in accordance with accepted guidance.

The results of the updated PM_{10} modeling show negligible change (less than -0.5%) to the maximum impact concentrations respective to the National Ambient Air Quality Standards (NAAQS), Prevention of Significant Deterioration (PSD) thresholds, and the MDEQ increment compared to the originally submitted dispersion modeling analysis. The results of the updated PM_{10} dispersion modeling are presented in the revised tables in Section 6 of the updated PTI (see attached)[2]. Revised Appendix F modeling input tables, respective to the updated parameters, are also attached. The updated modeling runstream files are included on the enclosed compact disk.

In addition to updating the parameters respective to emissions from plant roadways, the MDEQ recently requested that impact concentrations of toxic air contaminants (TACs) from the combustion of diesel fuel in the emergency generator and emergency fire pump be included in the dispersion modeling analysis. Therefore, the modeling analysis for TACs has also been updated. Hazardous air pollutant (HAPs) emission estimates for the emergency generator and emergency fire pump are attached. These should be included in Attachment C of the PTI application submitted in September 2007.

As described in the attached revised Section 5.4 of the PTI[3], the impact concentrations determined by AERMOD are directly proportional to the emission rates used in the model. Therefore, it is possible to predict impact concentrations of several pollutants with only one dispersion model using a total non-pollutant specific emission rate of 1 lb/hr. The impact concentrations calculated using the 1 lb/hr emission rate can then be scaled based on the maximum potential emissions of individual pollutants. This procedure was followed in the original PTI application, which addressed impacts from combustion of coal and natural gas. The original analysis employed one model for TACs which are emitted only from the coal fired boiler, and one for TACs emitted only from natural gas combustion (auxiliary and back-up steam generating boilers).

For those pollutants that are emitted from *both* the coal fired boiler and natural gas fired boilers, a conservative approach was used in the original analysis. Rather than completing individual models for each of these TACs, the maximum impact concentration of these TACs from the coal fired boiler, and the maximum impact concentration from the natural gas fired sources, were added together. This approach is conservative because while the maximum impact concentrations of each pollutant from the respective sources do not likely occur at both the same receptor during the same 24 hour period, this method assumes that they do.

For the requested update to the TAC dispersion modeling analysis, this approach was expanded to include the emissions and resultant impact concentrations from the combustion of diesel fuel in the emergency back-up generator and emergency fire pump. Separate dispersion models for each of these two sources were completed utilizing a non-pollutant specific 1 lb/hr emission rate. The impacts from these models were scaled based upon the maximum emission rates of TACs

[2] Updated PM_{10} numbers are presented in Tables 6.1, 6.2, 6.3, and 6.7 of Section 6. Additionally, an error in the radius of impact column for the PM_{10} row was updated in Table 6.5.
[3] The Emission Rates subheading under Section 5.4 has been revised.

from each source. The maximum impacts of each pollutant were then conservatively added to the maximum impacts from either coal combustion, natural gas combustion, or both, as applicable.

The inclusion of TAC emissions and impacts from the combustion of diesel fuel has a negligible effect on the impacts from the MMES. The revised Table 6.11 in Section 6 of the PTI (see attached) presents the impact concentrations of TACs from the combustion of coal, natural gas, and diesel fuel at the MMES. As shown in the table, the emissions of TACs from the MMES, including the emissions due to diesel combustion, result in acceptable ambient air impact concentrations. The updated TAC modeling runstream files are included on the enclosed compact disk and the non-pollutant specific impact concentrations are presented as a note in Table 6-11.

Please contact me at (636) 532-2200 or via email at dmulvey@lspower.com if you have questions on this submittal.

Very truly yours,

Douglas Mulvey

Douglas Mulvey, P.E.
Environmental Engineer

Enclosure: as noted