



Mr. David Riddle
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Michigan Department of Environmental Quality
Air Quality Division
4th Floor Constitution Hall
Lansing, Michigan 48933

August 8, 2008
NTH Project 16-1601026

**RE: Response to Comments and Questions – 112(g) Case-by-Case MACT Analysis
Permit to Install Application No. 341-07
Consumers Energy Company – Bay County**

Dear Mr. Riddle:

On behalf of Consumers Energy Company (Consumers), NTH Consultants, Ltd. (NTH) is providing this response to comments and questions from MDEQ regarding the case-by-case MACT analysis for the proposed ASCPC boiler. The MACT analysis and determination has previously been submitted on July 21, 2008 in response to MDEQ's letter requesting that Consumers provide a more detailed case-by-case MACT analysis pursuant to the provisions of Section 112(g) of the Clean Air Act.

Halogenated Powdered Activated Carbon (PAC)

During our meeting with you and other staff from MDEQ, it was questioned whether the use of halides (halogenated PAC) was researched to determine if additional control beyond non-halogenated PAC could be achieved. As mentioned in the previously submitted MACT analysis, the proposed PAC injection system will be capable of using brominated PAC. The determining factor regarding the use of halogenated PAC is the chlorine content of the coal and the proposed optimization study would determine the need for halide addition, and the rate of the PAC feed. See paragraph 6.1.3 on page 21 of the July 21, 2008 submittal.

There is a range of chlorine contents for both bituminous and sub-bituminous coal. The low chlorine content typical of PRB coal makes mercury removal more difficult. When exclusively firing PRB coal, halide addition to the process will likely be necessary. This can be done by using brominated PAC, or adding chloride to the boiler, which can be used as a dust suppressant for the coal. However, excessive chlorine addition to coal will cause corrosion problems in the boiler and will need to be closely monitored.

It is recognized that fabric filter control with PAC injection has been shown in some small test cases to achieve 90 percent removal of mercury from selected PRB coals (e.g., We Energies Presque Isle Power Plant Demonstration Project). It is also known that air quality control systems which include an SCR, a fabric filter and a wet FGD system will remove a substantial amount of mercury from bituminous coal-fired boilers; although co-benefits for sub-bituminous coals are comparatively low and variable. Combining all of these technologies, as Consumers has proposed for the ASCPC unit, provides some potential to go beyond 90 percent control, but there has been no long-term demonstration of that level of performance and no assurance that it can be achieved over the life of the plant.



The best long-term performance information for control of mercury emissions from a utility boiler firing only PRB coals is the We Energies Presque Isle Demonstration Project. The information provided for this effort clearly supports the position that approximately 90 percent removal is the demonstrated, long-term removal achieved in practice for control of mercury from PRB coals. The Presque Isle data shows that the unit was able to maintain an average reduction of 90 percent when using brominated PAC for a relatively long period of time. There were periods of time where the removal was greater than 90 percent; however, there were also perturbations in the process, sorbent, and unit that resulted in periods of lower removal. The average removal reported over a period of greater than one year was 90 percent. It should also be noted that there are other demonstration tests that have been published that report test results over much shorter testing periods. Even though some of these tests have reported that greater than 90 percent mercury removal was achieved, it was for shorter duration tests and, similar to the Presque Isle information, there were also periods when the tested removal efficiency was lower than 90 percent. The average removal efficiency attained for these tests is 90 percent or lower.

Other individual tests, such as at the DTE Energy St. Clair plant show emission reductions near 93 percent based on a blend of PRB and bituminous coals of 85:15 at an injection rate of 3 pounds of brominated PAC injected per million cubic foot of flue gas, according to the paper presented by Andrew P. Jones of SAIC. Consumers has reviewed this and other study data, but has not changed its conclusion regarding the expected long-term capability of PAC injection (whether halogenated or non-halogenated) to control mercury emissions. It must be remembered that a MACT limit under 112(g) has to be achievable in practice; which means a MACT limit that is able to be met continuously under reasonably foreseeable worst-case conditions (*Sierra Club v. EPA*, 167 F.3d 658, 665, D.C. Cir. 1999). It does not mean the lowest HAP emission rate or removal rate ever measured from a similar source, which primarily, if not exclusively, are the result of short-term stack tests conducted under ideal conditions.

Mercury MACT Limit

In the MACT analysis submitted on July 21, 2008, Consumers concluded that the mercury MACT limit for this proposed project is 0.008 lb/GWh, or 90 percent removal. This conclusion was reached based upon the original analysis presented in the PSD application submitted on October 17, 2007 and was based upon actual analytical data as discussed above. See Section 3.1.10 of the PSD application for further details.

Definition of Similar Source for Acid Gas Emissions

At the time the application was submitted, USEPA had promulgated emission limits for utility boilers under the New Source Performance Standard (NSPS) program in lieu of emission standards under the originally proposed National Emission Standard for Hazardous Air Pollutants (NESHAP). Further, USEPA had determined that it was neither necessary nor appropriate to regulate emissions from utility boilers under Section 112 of the CAA. Consequently, the control system selected for emissions of acid gases (primarily sulfur-based compounds) was selected based upon employment of best available control technology (BACT) for criteria pollutants. In the case of the proposed ASCPC boiler and selected fuel blend, wet flue gas desulfurization (FGD) was determined to provide the greatest control of emissions of SO₂ and H₂SO₄.

While it is likely that a dry FGD system could provide greater control of HF and HCl emissions, this type of technology would not represent BACT for SO₂ for the proposed boiler and blend of



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coals. Therefore, a trade-off is realized in selecting a dry system over a wet system. For this reason, a similar source for acid gases is defined as the entire system (i.e., boiler plus air quality control system), not just the boiler.

The proposed limits for the ASCPC boiler are 0.0003 lb/MMBtu for HF and 0.004 lb/MMBtu for HCl. As shown in the beyond-the-floor (BTF) analysis in the July 21, 2008 MACT submittal, the only permit issued to a similar facility with a more stringent permitted HF limit (0.0024 lb/MMBtu) is the one issued by USEPA to the Desert Rock Energy Company just over one week ago on July 31, 2008. This limit is based on 100 percent sub-bituminous coal. All other limits listed for the BTF analysis (including all HCl limits) are higher than that being proposed for the ASCPC. As such, the proposed HF and HCl limits represent the limits that can be achieved by the best similar source.

It is our conclusion that the MACT limits originally proposed are appropriately determined and are supportable by the available data. Furthermore, the analysis has been done with strict adherence to Section 112(g) and the methodology prescribed by 40 CFR §63.40 through §63.44 and recent court decisions, as described in Sections 2.0 and 5.0 of the July 21, 2008 submittal.

If you have any questions concerning this amendment, please feel free to contact me at (517) 484-6900.

Sincerely

NTH Consultants, Ltd.

Jeffrey P. Jaros
Project Manager

Delbert Rector, P.E.
Sr. Vice President

Attachment

JPJ/DR/mjb

cc: Ms. Linda Hilbert, Consumers Energy Company