



August 1, 2006

Mr. Brendan McCahill  
United States Environmental Protection Agency Region 1  
1 Congress Street, Suite 1100  
Boston, MA 02114-2023

*Re: Air Quality Monitoring, Recordkeeping, and Reporting – Northeast Gateway Energy Bridge, LLC*

Dear Mr. McCahill:

The purpose of this letter is to provide information with regard to emissions monitoring, recordkeeping, and reporting for the Northeast Gateway Energy Bridge™ project, as you requested in our June 7, 2006 teleconference.

As you are aware, Excelerate Energy's existing Gulf Gateway Energy Bridge™ (Gulf Gateway) facility located in the Gulf of Mexico is operating under an existing air permit R6DPA-GM2, issued by EPA Region VI on April 29, 2004. Based on extensive consultation with the EPA regarding the applicability of existing U.S. Stationary Source Standards on vessels designed and certified to operate in International trade, the existing permit was written to recognize the limitations of full applicability of the Standards. As an example, NO<sub>x</sub> and O<sub>2</sub> concentrations in the boiler stacks of all vessels mooring at the Gulf Gateway facility are tested using handheld (electrochemical) emissions analyzers rather than the testing procedures describe in the regulations. For Excelerate Energy's Northeast Gateway Port (Northeast Port), a commitment has been made to reduce the NO<sub>x</sub> emissions generated at the Northeast Port through the installation of Selective Catalytic Reduction (SCR) technology on each of its Energy Bridge Regasification Vessels (EBRVs) that call on the Port and provide for more comprehensive emissions data by specifying for the installation of Continuous Emissions Monitoring Systems (CEMS) for NO<sub>x</sub>, CO, and O<sub>2</sub> on each of its vessels. The CEMS will record EBRV emissions during all periods of regasification activities at the Northeast Port. Monitoring data will not be collected when the vessel is not in regasification mode, but the probes for these CEMS will remain installed in the stacks and the instruments will be left powered on so that their auto-calibration functions continue to operate.

The following discussion of specific type of technology proposed to be installed is limited to that equipment Excelerate Energy has committed to install on vessels it owns and operates. Because the Northeast Port is designed to accept vessels that may be developed by other owners in the future, Excelerate cannot prescribe specific type, model



and vendor for the vessels not owned by Excelerate. Other vessels not owned by Excelerate will be made aware of the emissions restrictions for the Port and must ensure that they will utilize vessels that can operate within the constraints of the Port's permit.

Each boiler on each EBRV mooring at Northeast Gateway will be equipped with SCR technology for reducing NO<sub>x</sub> emissions, and the SCR vendor (Argillon GmbH) has specified the use of a Siemens Ultramat 23 CEMS (the CEMS output is also used for purposes of SCR control); Argillon has dozens of marine SCR installations, all of which use the Ultramat 23 for NO<sub>x</sub> detection. Argillon has also proposed that two CEMS be installed for measuring emissions from three boilers: i.e., one CEMS will normally be shared among a main boiler and the auxiliary boiler (which will not operate nearly as often).

The Ultramat 23 detects NO<sub>x</sub> and CO with a non-dispersive infrared (NDIR) detector. The Declaration of Conformity enclosed with the letter from Siemens shows that the Ultramat 23 NO detector<sup>1</sup> has met the European accuracy standard for Automated Measuring Systems (EN 14956), which is similar to the EPA requirements in 40 CFR 60, Appendix B, Performance Specification 2, but also requires testing for cross-interferences. The German reference method described (VDI 2456) is very similar to US EPA Reference Method 7A, which also uses hydrogen peroxide solution to absorb NO<sub>x</sub> and ion chromatography to quantify it.

Siemens identifies a key advantage of the Ultramat 23 as being the proven ability to have quality-assured measurements using calibration gases only twice per year, as long as the instrument is automatically recalibrated (using an internal reference cell and ambient air) every 12 hours. Siemens has stated in the past that the long-term stability of the instrument has been checked very intensely and certified by authorities like the German Physikalisch Technische Bundesanstalt (PTB, translates to "Federal Physical/Technical Agency") and Technischer Überwachungsverein (TÜV; translates to "Technical Inspection Association").

The planned use the Ultramat 23 is much more practical in several ways for marine vessels than the standard EPA requirements for stationary source CEMS (40 CFR 60, Appendix F) such as power plant or compressor station applications. First, each individual EBRV will be moored approximately 13 miles offshore, and will only operate in the regasification mode for approximately one week before departing. Depending upon the delivery schedules for the facility and the fleet of EBRVs, the next date in port for that particular EBRV is not always known well in advance, and the management of

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<sup>1</sup> As with the chemiluminescent detectors used more frequently in the US, the NDIR detector only detects NO; a separate device is used to convert NO<sub>2</sub> in the emissions sample to NO. In our case we are using the Gas Converter Series CG that is manufactured by M&C Products, as recommended by Argillon and Siemens.



calibration gas supply (as well as the expiration of calibration gas certifications) would be problematic if strict adherence to the Appendix F requirements needed to be followed. Secondly, conducting relative accuracy test audits (RATAs) by third-party stack testing crews typically requires significant advanced scheduling and logistics, which again is not practical due to the varied schedules the vessels operate on. While the relative size of an LNG tanker is large, every area is designed for maximum efficiency and function and substantial areas are part of the cargo handling area and not available for temporary installations. The need to transport air-conditioned trailers for analyzers onto the EBRV is not practical when the vessel is moored at the Northeast Port. Transfers of personnel and supplies from supply vessels to the EBRV are very weather dependent, as well as size and weight restricted. We are confident that the semiannual calibration protocols recommended by Siemens will be sufficient to ensure accurate operation of the CEMS.

The focus of this letter is on the proposed monitoring plan since you stated in our teleconference that your initial impression of our plan for recordkeeping and reporting is that it appears straightforward and reasonable. To summarize these aspects, we propose recordkeeping and reporting meeting the general intent of that required under the standards of performance for new stationary boilers (40 CFR Part 60, Subpart Db) while operating in the regasification mode, unless variances to any standards are made, including the following:

- Record the amount of fuel combusted each day in the boilers while operating in the regasification mode; 12-month rolling average capacity factor.<sup>2</sup>
- Record the occurrence and duration of any startup, shutdown, or malfunction in regasification operations; any malfunction of air pollution control equipment; any periods during which a CEMS is inoperative.<sup>3</sup>
- While in regasification mode, record all CEMS calibration checks and audits; 1-hour average CEMS data for NO<sub>x</sub> and O<sub>2</sub> (converted to units of lb NO<sub>x</sub>/MMBtu)<sup>4</sup>; identification of the “F” factor used to calculate CEM readings to lb NO<sub>x</sub>/MMBtu;<sup>5</sup> average NO<sub>x</sub> over the preceding 30 days, .<sup>6</sup>
- Record explanations for any calibration problems, and/or modifications to the CEMS.

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<sup>2</sup> §60.49b(d).

<sup>3</sup> §60.7(a)(7).

<sup>4</sup> §60.48b(d).

<sup>5</sup> §60.49b(g)(7).

<sup>6</sup> §60.49b(g)(3).



- Provide semiannual reports containing recorded emissions information while in regasification mode and identification of any times when emissions are above the emissions standard.

Please feel free to contact either Keith Kennedy of Tetra Tech EC, Inc. at (617) 457-8407 or me at (832) 813-7629 if you have any questions with regard to our monitoring, recordkeeping, and reporting plans. If you have additional technical questions regarding the CEMS, please do not hesitate to contact Todd Tamura of Tetra Tech EC, Inc. directly at (707) 773-3737.

Sincerely,

A handwritten signature in black ink that reads "Mike Trammel".

Mike Trammel  
Director – Environmental  
Excelerate Energy, L.L.C

Enclosures