

April 5, 2006

Ronald Tabroff  
Authorized Account Representative  
Peabody Municipal Light Plant  
Warren Street Extension  
Peabody, Massachusetts 01960

Re: Petition to Use an Alternative Emission Test Method to Determine Unit Default NO<sub>x</sub> Emission Rates for Units 1 and 2 at the Water Rivers Station (Facility ID (ORISPL) 1678)

Dear Mr. Tabroff:

This is in response to your February 10, 2006 petition under '75.66, in which Peabody Municipal Light Plant (PMLP) requested, among other things, to use alternative emission test procedures to determine default nitrogen oxides (NO<sub>x</sub>) emission rates for Units 1 and 2 at the Water Rivers Station. EPA approves the petition in part, with conditions, as discussed below.

### Background

PMLP owns and operates the Water River Station (Waters River) in Peabody, Massachusetts. The facility consists of two simple cycle combustion turbines, Units 1 and 2, which are subject to the NO<sub>x</sub> Budget Program, under Massachusetts Department of Environmental Protection (MADEP) regulations 310 CMR 7.27 and 7.28. These regulations require PMLP to continuously monitor and report NO<sub>x</sub> mass emissions and heat input for Waters River Units 1 and 2, in accordance with Subpart H of 40 CFR Part 75.

Unit 1 is a nominal 21 megawatt Pratt Whitney FT4A-9 combustion turbine. It exhausts into a rectangular stack with cross-sectional dimensions of 12.2 feet x 8.8 feet, and a stack exit height of 31 feet above grade. The stack contains silencer baffles that extend through the entire length of the flue and essentially divide the stack interior into three sections. The stack is not equipped with test ports or a test platform and has no emission controls.

Unit 2 is a nominal 50 megawatt BE-LM5000 combustion turbine. It exhausts into a rectangular stack with cross-sectional dimensions of 14.5 feet x 11.6 feet, and a stack exit height of 60.4 feet above grade. Five test ports are spaced across the east side of the stack at an elevation of approximately 53 feet above grade. However, there is no direct access to these test ports. There is a silencer in the stack that extends through the bottom portion of the flue. The stack is open at the test port elevation. This unit is equipped with water injection for NO<sub>x</sub> emissions control and an oxidizer for carbon monoxide (CO) emissions control.

PMLP uses the low mass emissions (LME) methodology in ' 75.19 to satisfy the Part 75 monitoring requirements for Units 1 and 2. For Unit 1, the fuel-specific LME generic default NO<sub>x</sub> emission rates specified in Table LM-2 of ' 75.19 are used to estimate NO<sub>x</sub> mass emissions. For Unit 2, fuel- and unit-specific default NO<sub>x</sub> emissions rates that were established through emission testing in 2002 are used. The 2002 emission tests were performed using EPA Method 20, as required by ' 75.19(c)(1)(iv)(A).

In the February 10, 2006 petition, PMLP stated its intention to conduct emission testing in April 2006 to establish fuel- and unit-specific default NO<sub>x</sub> emission rates for Unit 1 and to perform a retest to update the fuel- and unit-specific default NO<sub>x</sub> emissions rates for Unit 2. However, PMLP is proposing to use alternative stack testing procedures instead of following Method 20. The proposed test protocol consists of the following procedures:

1. EPA Method 7E would be used instead of Method 20 to measure the NO<sub>x</sub> concentration. PMLP bases this request on the fact that Method 7E is currently allowed as an alternative NO<sub>x</sub> compliance method for combustion turbines under Subpart GG of the New Source Performance Standards (NSPS) regulations in 40 CFR Part 60 (see ' 60.335(a)(3)).
2. Stratification tests would be performed by measuring the NO<sub>x</sub> concentration, corrected to 15% oxygen (O<sub>2</sub>), at 12 points and 15 points, respectively, for Units 1 and 2, in accordance with the procedures and acceptance criteria of Part 75, Appendix A, sections 6.5.6.1 and 6.5.6.3. Subpart GG allows the use of these stratification test procedures to determine the number of required sampling points (see ' ' 60.335(a)(4) and (a)(5)).
3. Depending on the results of the stratification testing, the NO<sub>x</sub> emission rate for each unit would be determined by performing sample traverses either: (a) along the measurement line that showed the highest average NO<sub>x</sub> concentration at 15% O<sub>2</sub> during the stratification test, if stratification is absent; or (b) at the 12 (or 15) stratification test points, if significant stratification is present.

§ The sampling points would be evenly spaced across the stack, and centered in the open spaces between the silencers;

§ Stack testing would consist of three 1-hour test runs at each applicable load condition, conducted in accordance with Method 7E procedures;

§ For 3-point test runs, samples would be collected for 20 minutes at each traverse point during the run. The sampling time at each point would be 4 minutes for a 15-point test run and 5 minutes for a 12-point run; and

§ An automated 3-probe bundle would be used to perform the sampling. The lengths of the three probe tubes in the bundle would be constructed so that when the bundle is placed for sampling, each tube would extend into the stack a distance corresponding to one of the three traverse point locations. The bundle would be inserted into the Unit 2 test ports.

However, since Unit 1 has no test ports, the bundle would be positioned atop the stack and the end of each sampling tube in the bundle would extend downward 2.5 feet into the stack.

PMLP also requested that EPA allow the stratification test data for each unit to be used as the first sample run. Finally, for future LME emission tests of Units 1 and 2, PMLP asked the Agency to consider allowing the abbreviated 3-point stratification check described in Part 75, Appendix A, section 6.5.6.2 to be performed instead of a full 12 or 15-point traverse, if the results of the April 2006 stratification tests show that no significant stratification is present.

#### EPA=s Determination

EPA approves PMLP=s request to use EPA Method 7E instead of Method 20 to conduct NO<sub>x</sub> emission rate testing at Waters River Units 1 and 2. The Agency also approves PMLP=s request to perform a 12-point (for Unit 1) and a 15-point (for Unit 2) stratification test in accordance with sections 6.5.6.1 and 6.5.6.3 of Part 75, Appendix A, to determine the appropriate number of sampling points. The proposed stratification test and sampling point locations described in the February 10, 2006 petition are acceptable. These approvals are based on the July 8, 2004 revisions to ' 60.335(a) of NSPS Subpart GG (see 69 FR p. 41363, July 8, 2004), which allow the use of Method 7E as an alternative to Method 20 for determining NO<sub>x</sub> emissions from combustion turbines and allow the Part 75 stratification test procedures to be used to determine the number of sampling points.

As a condition of approval, EPA is requiring Method 3A to be used concurrently with Method 7E, to measure the O<sub>2</sub> concentration during all stratification tests and all emission test runs. In addition, the stratification test data at each point shall be expressed as a NO<sub>x</sub> emission rate in lb/mmBtu, rather than as a NO<sub>x</sub> concentration corrected to 15% O<sub>2</sub>, and, since Unit 1 is uncontrolled, the NO<sub>x</sub> concentration measured at each Unit 1 test point shall be corrected to test conditions, using Equation LM-1a in ' 75.19(c)(1)(iv)(A). If, on a lb/mmBtu basis, the acceptance criteria in section 6.5.6.3 of Part 75, Appendix A are met and stratification is not significant, PMLP may sample along the 3-point measurement line that exhibited the highest average NO<sub>x</sub> emission rate during the stratification testing. Otherwise, PMLP must sample at all of the stratification test points during each test run.

EPA approves the proposed test run time of 1 hour, with an equal amount of sampling time at each traverse point. The Agency also approves the use of the 3-probe bundle, provided that sampling is done sequentially, i.e., one point at a time, in accordance with Question 8.39 in the APart 75 Emissions Monitoring Policy Manual@. For Unit 2, the sampling shall be done at the East wall test ports. For Unit 1, which has no test ports, the probe bundle may be positioned atop the stack, provided that the end of each probe extends at least 2.5 feet downward into the stack. Data from the stratification test of each unit may be used as the first test run, at the discretion of PMLP.

Finally, EPA denies PMLP=s request to perform abbreviated stratification tests at Units 1 and 2 in future LME retests of the units. The time interval between the successive LME retests (20 calendar quarters) is too long to ensure that there has been no change in the concentration

profiles of the effluent gases.

EPA=s determination in this letter relies on the accuracy and completeness of the information provided by PMLP in the February 10, 2006 petition and is appealable under Part 78. If you have any questions about this determination, please contact Theresa Alexander, at (202) 343-9747. Thank you for your continued cooperation.

Sincerely,

/s/

Sam Napolitano, Director  
Clean Air Markets Division

cc: Ian Cohen, EPA Region I  
Patricio Silva, Massachusetts DEP, Division of Air Quality  
Theresa Alexander, CAMD