UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 18 2001

OFFICE OF
AIR AND RADIATION

Om Chawla
Lamar Power Partners, LP
P.O.. Box 520
Paris, TX 75461

Re: Petition for alternative method of monitoring NO_x at Lamar Power Partners' Paris units

Dear Mr. Chawla:

EPA has reviewed your May 26, 2000 petition under 40 CFR 75.66(a) requesting to use an alternative method of monitoring nitrogen oxide (NO_x) emissions at four units (each including a combustion turbine and heat recovery steam generator with supplemental firing) operated at Paris, Texas by Lamar Power Partners, LP (Lamar Power Partners). Specifically, Lamar Power Partners requests to use at each unit a continuous emission monitoring system with single, low-range NO_x analyzer. A default high-range value will be used when the full scale of the low-range analyzer is exceeded. Further, Lamar Power Partners requests to use the Texas state permit limit as the maximum expected concentration (MEC) in order to set the spans and ranges for the low-range NO_x analyzer. Finally, Lamar Power Partners requests to use 50 ppm as the maximum potential concentration (MPC) for NO_x and a default high-range value of twice the requested MPC value (i.e., 100 ppm). The default value would be reported in lieu of installing, certifying, and maintaining a high-range NO_x analyzer. For the reasons discussed below, EPA approves the petition in part with certain conditions.

EPA Determinations

With regard to Lamar Power Partners' request to use a low-range NO_x analyzer and a default high-range value to monitor NO_x emissions, EPA agrees that this monitoring approach should be allowed for the units at the Paris facility, in lieu of monitoring with both low-range and high-range NO_x analyzers. Part 75 limits the use of this approach to units with add-on controls (e.g., selective catalytic reduction or selective noncatalytic reduction). See 40 CFR part 75, appendix A, section 2.1.2.4(e). However, while dry low-NO_x control is included in (rather than being added after) the combustion process at the units, such control is a potentially highly effective, continuous method of controlling NO_x. There is no technical or other basis for not

allowing the Paris units to monitor using the same general approach as units with add-on controls.

Further, with regard to establishing the MEC for purposes of setting spans and ranges for the low-range NO_x analyzers, EPA agrees that the enforceable NO_x emission limit in the state permit is a reasonable value to use as the MEC for NO_x for the Paris units. Because the units have potentially highly effective, continuous NO_x controls, the permit limit is not expected to be exceeded during normal operation of the units.

Finally, with regard to establishing the default high-range value, EPA agrees that this value should be 200% of the MPC. This is the approach provided for units with add-on controls under 40 CFR part 75, appendix A, section 2.1.2.4(e).

However, EPA denies Lamar Power Partners' request to use an MPC value of 50 ppm, which is included in Table 2-2 in Appendix A. That table lists MPC values for various types of gas- and oil-fired units, including an MPC of 50 ppm for a "[n]ew stationary gas turbine/combustion turbine" (40 CFR part 75, appendix A, Table 2-2). EPA is concerned that NO_x emissions during startup or malfunction of new combustion turbines and new combined cycle turbines can significantly exceed 50 ppm. For this reason, EPA recently analyzed emission data from these types of units that had installed high-range NO_x analyzers. EPA found that the units' NO_x emissions can significantly exceed 50 ppm in some hours and can be as high as 200 ppm or more. (See attached memorandum analyzing these emission data.) As a result, a default high-range value of 100 ppm, based on an MPC of 50 ppm, for the units at the Paris facility may result in under-reporting of emissions during start-up or malfunction.

Consequently, if the default high-range option is used for the units at the Paris facility, a more conservative MPC value than 50 ppm must be used for calculating the default high-range value. Based on EPA's recent analysis, EPA maintains that a MPC value of at least 150 ppm and a resulting default high-range value of at least 300 ppm must be used for the Paris units. Further, if EPA revises Table 2-2 in Appendix A to change the MPC for new combustion turbines, Lamar Power Partners must use the revised MPC value (and the resulting default high-range value), starting on the effective date of any such revision.

EPA notes that the delay in the Agency's response to Lamar Power Partners' May 26, 2000 petition left Lamar Power Partners without clear guidance as to how to report emissions for the Paris units for calendar quarters in 2000 since the units' commencement of commercial operation. Although the Paris units must report NO_x emissions, the units are not currently subject to an emission limit for NO_x. Since, in addition, the units report emissions for most hours using their low-range NO_x analyzers, rather than the high-range default value, there would be little benefit from requiring Lamar Power Partners to resubmit the emission reports for 2000. Instead, EPA is requiring that, starting with the report for first quarter 2001, Lamar Power Partners use an MPC value of 150 ppm and a default high-range value of 300 ppm, which are subject to revision as discussed above.

EPA's determinations in this letter rely on the accuracy and completeness of the

information in the May 26, 2000 petition and are appealable under 40 CFR part 78. If you have any questions about the above determinations, please contact Ruben Deza of my staff, at (202) 564-3956. Thank you for your continued cooperation.

Sincerely,

Brian J. McLean, Director
Clean Air Markets Division

Attachments

cc: Joe Winkler, EPA Region VI
John Smith, Texas NRCC
Ruben Deza, Clean Air Markets Division

4/9/01

Justification for Proposed NO_x MPC Values for New Turbines

Based on discussions with vendors, consultants and sources over several years, EPA believes that the 50 ppm value found in Table 2-2 of Appendix A for the maximum potential NO_x concentration (MPC) of a new combustion turbine is inappropriately low. To substantiate this, a review was conducted of hourly NO_x concentration data from new turbines reported in the Emission Tracking System (ETS). Most of the data were from the 4th quarter of 2000, but several data points were from other calendar quarters. The selection criteria for each hour of retrieved data were as follows:

- The data were from a unit identified in its monitoring plan as a combustion turbine or combined cycle unit; and
- The unit commenced operation after 1990; and
- The fuel combusted in the unit during the hour was either natural gas or oil; and
- The hourly average NO_x concentration was generated by a certified monitor; and
- The hourly average NO_x concentration was $\geq$100 ppm (a level assumed to represent uncontrolled emissions).

A total of 50 hourly records from 17 different units for natural gas combustion were retrieved and 40 hourly records from 10 different units for oil combustion. Before proceeding with the data analysis, each of these records was examined for quality assurance. As a result of this further examination of the data, 26 of the data points for natural gas combustion and 14 of the data points for oil combustion were rejected and excluded from the data analysis. The excluded data points were rejected as suspect or questionable for one or more of the following reasons:

(1) The reported hourly average NO_x concentration exceeded the full-scale of the NO_x analyzer indicated in the electronic monitoring plan; or

(2) The reported hourly average NO_x concentration exactly equaled the full-scale range of the analyzer for several consecutive hours. This indicates either that the analyzer was "pegged" (i.e., an extended full-scale exceedance occurred) or that the source was (improperly) reporting a default NO_x concentration value as quality-assured data from a certified monitor; or

(3) The NO_x analyzer range on which the data were recorded either failed the last calibration error test that preceded the hour(s) in which the reported NO_x

concentration was ≥100 ppm, or failed the first calibration error test following the hour(s) of high NO_x concentration.

After excluding all of the questionable data, the remaining 24 hourly records for natural gas combustion, representing 11 different units, and the remaining 26 records for oil combustion, representing 8 different units (see attached Tables 1 and 2) were analyzed as two separate data sets. The mean value and average deviation (absolute value) were calculated for each data set. The distribution of the data within each data set and the distribution of the mean values for the individual units was also assessed. The results are as follows:

- For natural gas combustion, the mean value was 137 ppm and the average deviation was 28 ppm

- For oil combustion, the mean value was 144 ppm and the average deviation was 32 ppm

- For natural gas combustion, the data ranged from a minimum value of 100.5 ppm to a maximum value of 222.5 ppm. Approximately 42% of the data exceeded the mean value of 137 ppm and 29% of the data were above 150 ppm. Two of the eleven mean values for the individual units exceeded 150 ppm.

- For oil combustion, the data ranged from a minimum value of 101.0 ppm to a maximum value of 213.6 ppm. Half (50%) of the data exceeded the mean value of 144 ppm and 46% of the data were above 150 ppm. Three of the eight mean values for the individual units exceeded 150 ppm and two of eight mean values exceeded 175 ppm.

These results clearly demonstrate that for new combustion turbines, the NO_x MPC value of 50 ppm in Table 2-2 of Appendix A is too low. Rather, MPC values of at least 137 ppm (for natural gas combustion) and 144 ppm (for oil combustion) would appear to be more reasonable for new turbines. In view of this, MPC values of 150 ppm (for natural gas combustion) and 200 ppm (for oil combustion) are proposed. The rationale for these proposed values is as follows.

(1) The proposed MPC value of 150 ppm for matural gas combustion is believed to be reasonable because a sizable portion (42%) of the data exceeded the mean value of 137 ppm. Higher MPC values of 175 ppm and 200 ppm were also considered but were judged to be less representative than the selected value of 150 ppm, since 21 of the 24 individual data points were below 175 ppm and only two of the eleven mean values for the units exceeded 150 ppm.

(2) For oil combustion, an MPC value of 150 ppm was considered but was rejected, since nearly half (46%) of the data exceeded 150 ppm and three of the eight mean values for the individual units exceeded 150 ppm. MPC values of 175 ppm and 200 ppm were then considered. The more conservative value of 200 ppm was selected, because nearly one fifth (19%) of the individual data points and 25% of the mean values for the units exceeded 175 ppm.

Table 1: Measured NO_x Concentrations from New Combustion Turbines (Natural Gas Combustion)

ORIS CODE	UNIT ID	DATE	HOUR	NO_x CONCENTRATION (ppm)
2399	124	11/17/00	12	100.5
2399	124	11/19/00	19	137.7
7345	1	10/27/00	15	101.2
50966	1	11/24/00	15	180.0
55091	STK1	11/26/00	14	113.8
55091	STK1	11/27/00	17	171.7
55091	STK1	11/27/00	18	222.5
55091	STK1	11/27/00	19	217.2
55091	STK1	11/27/00	20	166.2
55091	STK2	10/02/00	12	164.1
55091	STK2	12/21/00	09	125.1
55091	STK2	12/21/00	10	105.2
55228	G1CT1	10/06/00	10	159.6
55228	G1CT1	10/31/00	18	129.9
55228	G1CT1	11/22/00	07	102.2
55228	G1CT1	12/19/00	17	103.8
55228	G1CT2	10/06/00	10	142.1
55228	G1CT2	10/31/00	18	127.3
55228	G2CT1	12/19/00	18	114.0
55228	G2CT2	12/19/00	18	147.1
55228	G4CT1	11/21/00	08	123.3
55228	G4CT1	11/27/00	19	101.1
3113	5	01/07/00	11	120.5
3113	5	09/24/00	19	110.7

Table2: Measured NO_x Concentrations from New Combustion Turbines (Fuel Oil Combustion)

ORIS CODE	UNIT ID	DATE	HOUR	NO_x CONCENTRATION (ppm)
1240	E1CT	10/18/00	15	101.6
1240	E1CT	11/27/00	12	101.8
1240	E1CT	12/11/00	18	102.4
1240	E1CT	12/18/00	07	101.0
2398	1201	12/13/00	08	103.7
2398	1201	12/20/00	09	110.0
2398	1401	12/06/00	16	133.3
2398	1401	12/07/00	10	137.7
2406	8	12/26/00	18	101.8
3113	5	01/22/97	11	150.8
3113	5	01/28/97	15	139.4
3113	5	01/30/00	18	203.3
1556	**51	01/10/97	05	102.2
1556	**51	01/15/97	08	152.2
1556	**51	08/27/97	12	114.7
1556	**51	01/18/99	09	198.8
1556	**51	12/04/00	09	172.2
1556	**51	12/12/00	12	149.9
1556	**51	12/19/00	07	106.0
50966	1	12/26/00	04	179.1
50966	1	01/18/00	05	172.5
50966	1	01/27/00	15	162.3
50966	1	12/30/99	08	155.3
50966	1	12/30/99	10	213.6
50966	2	01/18/00	04	204.5
50966	2	01/27/00	19	172.5

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