UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
ALLIED BANK TOWER AT FOUNTAIN PLACE
1445 ROSS AVENUE
DALLAS, TEXAS 75202

February 8, 1988

REPLY TO: 6T-AN

MEMORANDUM

SUBJECT: Nitrogen Dioxide SIP Air Quality Analysis Protocol for the Four Corners Power Plant

FROM: Gerald W. Fontenot
Chief
Air Programs Branch (6T-A)

TO: Joseph Tikvart
Chief
Source Receptor Analysis Branch (MD-14)

SUMMARY

The New Mexico Air Quality Control Regulation 603.B specifies an emission limitation for nitrogen oxides (NO_x) of 0.7 pounds per million BTU of heat input. The NO_x regulation was adopted by New Mexico in 1972. Arizona Public Service has not yet brought units 3, 4, and 5 at the Four Corners Power Plant into compliance with the NO_x regulation. The attachment describes in detail the history of efforts to achieve compliance including the variance record.

The proposed air quality analysis involves attainment demonstration for both EPA's annual NO_2 NAAQS and New Mexico's 24-hour standard. This analysis is being submitted to support a variance to the State Implementation Plan requirements. Since there is no short-term NO_2 NAAQS and, therefore, no directly applicable modeling guidance, a case-by-case approach to this attainment demonstration is appropriate. The State's first attempt at this case-by-case approach as set forth in the document by Gutfreund et al., 1983, was unacceptable primarily because alternative modeling approaches (using the Complex I and Reactive Plume Model codes) were applied without the level of evaluation required by EPA's modeling guideline. We believe that the latest proposal, as set forth in the attached modeling protocol dated November 6, 1987, should be accepted.

The following points summarize the proposed approach:

1. The attainment demonstrations will be based on NO_2 screening analysis guidance (section 6.2.3 of the Guideline).

2. The MPTER and Complex I models are appropriate Gaussian models from Appendix A for these applications as required under Section 6.2.3. Both models will be applied in accordance with the Guideline, including the use of specified model options.

3. The initial screen assuming total conversion of NO_x to NO_2 will be used in the demonstration of attainment for the annual NO_2 NAAQS.

4. An approach using the ozone limiting method (OLM) that is more sophisticated than the second level screen discussed on page 6.5 of EPA's 1986 modeling guideline will be used to estimate NO_2 concentrations in the attainment demonstration for New Mexico's 24-hour NO_2 standard. The characterization and support documentation concerning the ozone concentrations used in the OLM are adequate.

5. The proposed analysis will incorporate the results of past studies in the consideration of source data. The protocol document describes the various percent load conditions and emission scenarios that were previously examined. In both the annual and short-term attainment demonstrations, the 95th percentile NO_x emission rate will be used. This emission rate estimates the annual average in a conservative way and is acceptable for use in the modeling for the 24-hour State standard, for which there is no national counterpart.

6. The proposed meteorological data base is the same as the one used in 1981 in the approved SIP revision for SO_2 (New Mexico Regulation 602). As in the previous effort, the wind speeds used to determine stability class were adjusted by the power law to develop ten meter winds.

7. The NO_x air quality analyses included other sources of NO_x in the vicinity of the Four Corners Power Plant. Adequate consideration was given to background concentration.

8. The selection of receptor locations for both the Complex I and MPTER analyses was adequate for the demonstrations of attainment.

ACTION

Region VI requests that you review the SIP modeling approach for Four Corners and provide comments and concurrence. If you can not meet a February 29, 1988, due date, please let me know. Joe Winkler is the Region VI contact person for this task at FTS 255-7214.

BACKGROUND

Letter of October 1, 1987, from Mr. Jack Divita, former Chief of the Air Programs Branch to Mr. Cubia Clayton, Chief of the New Mexico Air Quality Bureau, requesting a modeling protocol document.

Attachments (2)