United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

IN REPLY REFER TO:

February 14, 1994

Mr. Clair H. Fancy
Chief, Bureau of Air Regulation
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Dear Mr. Fancy:

We have reviewed the Prevention of Significant Deterioration (PSD) permit application and the Technical Evaluation and Preliminary Determination for Tampa Electric Company's (TECO) proposed 260 MW Integrated Coal Gasification Combined Cycle Unit. This is the first phase of a project at TECO's Polk Station that would eventually have a generating capacity of 1150 MW. The facility would be located in Polk County, Florida, approximately 120 km southeast of Chassahowitzka Wilderness Area (WA), a Class I air quality area, administered by the Fish and Wildlife Service (Service). The proposed project would be a significant emitter of nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter (PM/PM_{10}), carbon monoxide (CO), volatile organic compounds (VOC), and sulfuric acid mist (H_2SO_4). The facility is also subject to PSD regulations for lead, beryllium, and mercury.

Best Available Control Technology Analysis

The proposed acid gas removal and sulfur recovery processes are estimated to achieve an overall sulfur removal efficiency of 95.6 percent. Nitrogen oxide (NO_x) emissions from the future combined cycle and simple cycle combustion turbines will be controlled by dry low-NO_x combustion technology, resulting in NO_x concentrations of 9 and 42 parts per million (ppm) for gas and oil firing, respectively. We agree that the proposed sulfur removal systems and dry-low NO_x technology represent best available control technology to minimize sulfur dioxide and NO_x emissions from the TECO facility.

Air Quality Modeling Analysis

Although this PSD permit is for the first phase of the project, a 260 MW facility, the modeling was performed for the entire project, which will eventually have a generating capacity of 1150 MW.

The Class I increment modeling was first performed with the EPA ISCST2 and ISCLT2 dispersion models. The modeling was performed for 5 years, using surface meteorological data from Tampa, Florida, and upper air data from Ruskin, Florida. The ISC modeling was performed for both the proposed Polk Station, and for all increment consuming or expanding sources. The cumulative ISCST2 analysis did indicate that the 3-hour and 24-hour Class I increments for SO_2 would be exceeded.

Therefore, the EPA MESOPUFF II model was run to determine whether the proposed Polk Station would significantly contribute to the 3-hour and 24-hour Class I SO_2 increment exceedances. In the earlier analysis for the Environmental Impact Statement (EIS), the MESOPUFF II modeling indicated that the entire 1150 MW proposed Polk Project would not significantly contribute to a 3-hour or 24-hour increment violation. The cumulative high second-high 24-hour SO_2 concentration in that report was stated to be 5.0 $\mu g/m^3$. In the PSD modeling analysis for the Phase I application, the applicant has erroneously used the option in the MESOPUFF II model to uniformly distribute SO_2 concentrations within the puffs, instead of using the option of a gaussian distribution within the puffs. This error incorrectly produced a high second-high 24-hour SO_2 concentration of 3.8 $\mu g/m^3$. This requirement for gaussian distribution within the puffs is found in the EPA document "Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 1 Report" and contains the methodology that must be used in a Class I analysis.

We accept the results from the modeling analysis contained in the EIS that indicate the 24-hour SO_2 increment may be exceeded but not violated. However, the modeling represents the impact from the full Polk Station project of 1150 MW. While one could argue that this represents a conservative assumption, it could be construed as "increment banking," which would put future applicants in the area at risk of not having sufficient increment available for their proposed sources. It is our understanding that the State of Florida also does not accept this "increment banking" effort, and we support the State's position. For future applicants performing Class I increment analyses for Chassahowitzka WA, the emissions from the proposed TECO Polk Phase I 260 MW facility should be modeled and not the emissions from the future 1150 MW project.

The visibility analysis performed with the EPA VISCREEN model indicates that there should be no impact of a coherent visible plume at Chassahowitzka WA.

Air Quality Related Values Analysis

In our letter to EPA of July 1993 regarding the Site Certification Application for this project, we asked that TECO perform a cumulative analysis, using the revised MESOPUFF II model, to predict deposition and concentration of sulfate, nitrate, mercury, and beryllium at the Chassahowitzka WA. We asked that TECO perform an Air Quality Related Values Analysis based on the results of the deposition modeling.

EPA replied to our request in a December 1993 letter that MESOPUFF was not conducted for the requested parameters. Instead, the ISC dispersion model was used to predict deposition at Chassahowitzka WA. While we agree that TECO's contribution of sulfate and nitrate at the wilderness area is small (5.7×10^{-5} and 6.7×10^{-4} g/sq m/year, respectively), the modeling did not predict cumulative deposition. As we have stated in numerous letters to your Department, we are concerned not only with an individual source's impact to AQRVs, but with the cumulative impact of all sources in an area. EPA states that TECO's small sulfate contribution will be assimilated by the ecosystem. We are concerned that the organic soils of Chassahowitzka WA may have reached their capacity to assimilate sulfate, and that additional sulfate may oxidize the soils, resulting in their erosion.

The analysis of nitrogen deposition similarly concluded that TECO's contribution was small, and thus impacts to Chassahowitzka WA would be small. Again, we are concerned with cumulative impacts. While TECO's contribution to nitrogen deposition may only change the level of nitrogen in near shore waters by 1 percent, 20 such sources will have a much more significant impact. The analyses for mercury and beryllium deposition were not cumulative, either. We need to know: (1) the cumulative deposition of pollutants, and (2) the ecological consequences of this deposition. We ask that TECO be required to perform these analyses when they apply for permits for future phases of their Polk Power Station.

Thank you for providing us the opportunity to comment on the proposed project. If you have questions, please call Ms. Ellen Porter of our Air Quality Branch in Denver at 303/969-2071.

Sincerely yours,

James W. Pulliam, Jr.
Regional Director

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TELECOPY COVERSHEET

TO: Syed Arif

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FROM: Tom Davis

DATE: 02/01/94 CHARGE NO.: 90263-0502

WE ARE TRANSMITTING 3 PAGES, INCLUDING COVERSHEET. IF THE TRANSMISSION WAS NOT COMPLETE OR IF THE MESSAGE WAS NOT LEGIBLE, PLEASE CALL US IMMEDIATELY.

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COMMENTS: Syed, responses to EPA questions were included with sufficiency submittal in December, 1992. Copies of pertinent pages are attached. Please call me if there are any questions.

The original of the transmitted document will be sent by:

( ) Regular mail (X) Overnight Mail

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TAMPA ELECTRIC COMPANY
POLK POWER STATION

Responses to U.S. Environmental Protection Agency
Sufficiency Responses

EPA-1

In the modeling analysis, a composite five year meteorological period was used for annual SO_2, PM, and NO_x modeling, as well as for the quarterly lead modeling. It is suggested that the applicant review the "Guideline on Air Quality Models" which recommends annual modeling for SO_2, PM, and NO_x using five individual years of meteorological data, and quarterly modeling for lead using twenty quarters of meteorological data. Composite meteorological data sets can not be used for regulatory analysis. We suggest the source perform the annual and quarterly analyses using the individual years/quarters of meteorological data. As an alternative, the annual values for SO_2, PM, and NO_x may be taken directly from the short term modeling which has already been prepared.

Response

The modeling analyses for sulfur dioxide (SO_2) particulate matter (PM), and nitrogen oxides (NO_x) have been revised using five individual years of meteorological data, and the modeling analysis for lead has been revised using twenty quarters of meteorological data. The results of these modeling analyses are provided in the revised Section 7.0 of the PSD permit application in Appendix 11.1.3 of the Site Certification Application (SCA).

EPA-2

The ISCST2 modeling using the 1982 to 1986 meteorological data set shows modeled exceedances of the Class I 3-hour and 24-hour increments in all five years. Our review shows that only the predicted exceedances in 1986 were remodeled with the MESOPUFF II long range transport model. We recommend that the MESOPUFF II model be used to model the exceedances that were predicted with the 1982 to 1985 meteorological data. The application was not clear as to what steps would be taken to resolve any exceedance issues.

Response

The MESOPUFF II long-range transport modeling analysis has been revised using the 1982 through 1986 meteorological data. The results of this analysis are presented in the revised Section 9.0 of the PSD permit application in Appendix 11.1.3 of the SCA which is provided in conjunction with the sufficiency response documents.