



June 24, 1994

John C. Brown, Jr. P.E.
Air Permitting and Standards
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED

JUN 27 1994

Bureau of
Air Regulation

Subject: **Key West, City Electric System
Proposed Relocation of 23-MW Combustion Turbine
Permit File No. AC44-245399, PSD-FL-210**

Dear Mr. Brown:

On behalf of City Electric System, we responded to your letter dated March 10, 1994 in a letter dated June 10. At that time, we were not able to provide the dispersion modeling referenced in Comment 11. We have just completed that analysis as follows.

Comment 11: The Department has attempted to verify your modeling results by using ISC2 which is the current guideline model, but has been unable to do so. Please redo your modeling analysis using the current guideline model ISC2 and compare your results with all applicable standards, PSD Class II increments, significant impact levels, and de minimus levels. In addition, please use downwash parameters in your screening analysis to determine the worst-case operating load conditions.

Response: We have identified significant flaws in the meteorological data originally used (zeroes in mixing height) which explains why FDEP was unable to verify the original results. Another set of Miami 1981-1985 data was used with the ISC2 model and we were able to reproduce FDEP's analysis. Cleve Holladay has provided Key West meteorological data for 1985-1989 which we have used to produce this analysis.

With regard to downwash in the SCREEN model, we have conducted an analysis to compare that originally done with consideration of the residual oil tank located to the south of the proposed combustion turbine location. The dimensions of the tank are 28m diameter and 12m high. As expected the downwash impact is substantially higher than that presented in Table 5-7 (see attached printouts). However, reviewing EPA's screening procedures manual, we note that downwash occurs within a distance of 5L (lesser of height or width) and that wake calculations are conducted out to 10L. Given the residual oil tank height and the dimensions of the Stock Island site in the downwash



direction (see annotated Figure 2-2), we believe that the only possible effected location is to the northeast of the proposed combustion turbine location. Considering the dispersion climatology over the area (Table 5-3) we believe that downwash-inducing meteorology occurs only a few hours per year (SW winds greater than 9m/sec occur less than 0.1% of time). Thus we have not given further consideration to downwash, but run ISC2 with the indicated meteorology and receptors at the property boundary and the original polar grid.

We have conducted refined modeling with ISC2 using the Key West 1985-1989 meteorology (see attached printout for 1985). We have concentrated on the 59F, 50% load condition for source parameters as that was usually the maximum case in Table 5-7. The results from 5 years of meteorology are presented in revised Table 5-9. We note that the values are generally higher by about a factor of 2 than the results in the application. Table 5-13 has been prepared to identify responsible meteorology. We note that neutral conditions with high windspeeds or unstable conditions with low wind speeds produce similar results somewhat downwind from the site, not at the site boundary.

Table 5-14 has been prepared to compare the impact calculations with significance levels. We note that the refined impacts are somewhat less than those from screening and insignificant from both modeling and monitoring aspects.

We have conducted refined modeling for the Everglades Class I area with the Key West meteorology and compared the Key West and Stock Island locations in revised Table 5-11. We note that the impacts and differences are similar to the results in the application and that the differences are insignificant relative to levels considered significant by both the National Park Service and EPA.

PSD Class II impacts need to consider the two 10MW diesels at Stock Island permitted in June 1989 and the combustion turbine. In addition, the retirement of the Key West steam units concurrent with permitting of the diesels expanded the increment. Table 5-14 has been prepared to compare these impacts with the increments and indicates the total impacts are well within the increment. The diesel impacts have been taken from the original diesel application (Table 10 of the June 1988 document) and do not include downwash impacts as the Stock Island steam building is expected to cause downwash only on site.

Mr. John Brown
June 24, 1994
Page 3



We believe this response should provide adequate information on which FDEP can base the permit review. We would appreciate a completeness letter in due course. Should you have any questions or comments, please call me at 303/299-5234.

Sincerely,

R. W. BECK

A handwritten signature in black ink that reads 'Michael D. Henderson'.

Michael D. Henderson
Associate

MDH:lef

Attachments

cc: Jim Greenshields (w/attach.)
Nick Guarriello (w/o attach.)
Robert Padron (w/o attach.)
Skip Jansen (w/o attach.)

A. Arif
C. Holladay
D. Knowlton, S. Dist.
G. Harper, EPA
G. Demyak