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Resource Recovery Office
Room 406, Governmental Center
115 S. Andrews Avenue
Fort Lauderdale, FL 33301
(305) 357-6458

July 24, 1990

via Federal Express

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BAQM

Hamilton S. Oven, Jr.
Power Plant Siting
Florida Department of Environmental Regulation
2600 Blair Stone Road, Room 309L
Tallahassee, Florida 32399-2400

Re: Lauderdale Repowering Project AC06-179848

Dear Buck,

I am forwarding to you a copy of the comments received from the consultant the County has had reviewing the Lauderdale Repowering Project Application and modeling, RTP Environmental Associates Inc. (RTP). We will be submitting to Florida Power and Light Company (FPL) a set of formal interrogatories within the next few days based largely on RTP's comments and observations. I thought some of the general observations particularly regarding its modeling analysis would be of interest to you and the reviewers in the Air Bureau.

We will also be exploring in our interrogatories a major regional concern we have which results from fuel switching at existing units. During the proceeding before the Public Service Commission (PSC) we were able to discover that between the Repowered Lauderdale units and proposed new Martin units, FPL will be using most of the natural gas available to it (and more than is available to it during the winter months). This will result in not only the Repowered Lauderdale units routinely burning fuel oil but significantly also forcing existing units to switch from natural gas back to high sulfur oil.

FPL submitted to the PSC an exhibit which showed on a systemwide basis it will be burn **29%** more oil in 1995 than in 1990. The numbers are more dramatic when only looking at Southeast Florida (Dade, Broward and Palm Beach Counties) where the increase is **107%** and in Broward County where the increase is **139%**. The impact of burning this much additional high sulfur oil on the local and regional environment is significant.

In Broward County at Port Everglades, FPL is projecting in 1995 to burn 7,192,000 barrels of 1% sulfur fuel oil. This is an increase over 1990 of **4,181,000 barrels**. This will result in 14,076 tons per year of additional SO_2 emissions in Broward. These projections are based on FPL's optimistic assumptions of

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To (Recipient's Name) Patricia Adams | **Recipient's Phone Number (Very Important)** (904) 488-4807

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the amount of natural gas which will be available including no fuel oil usage in the Repowered Lauderdale units. If less gas is available, even more oil will have to be burned. We believe some restrictions on the amount of sulfur in the oil burned by FPL is warranted and will be seeking such restrictions during the September hearings.

I will be on vacation for the next few week. If you have any questions concerning the RTP comments during this time, please call Don Elias directly at (201) 968-9600).

Sincerely yours,

Thomas M. Henderson

Thomas M. Henderson
Project Director

cc: Don Elias
Ron Mills
Noel Pfeffer
A.A. Linero
Patrica Adams
Clair Fancy
Bruce Miller
Wayne Arnson
Ahmed Amanulah

COMMENTS ON FP&L
SITE CERTIFICATION APPLICATION
LAUDERDALE REPOWERING PROJECT
July 18, 1990

1.0 GENERAL COMMENTS

As noted in the July 16, 1990 letter from the Broward County Environmental Quality Control Board, we feel that the overall issue of the project's impact on ozone has not been adequately addressed by the current application. Significant potential increases in ozone precursor emissions (VOCs and NO_x) are requested in the application over the levels currently being emitted. Complex permit conditions are proposed for maintaining VOCs below 100 tons per year (tpy). These will be difficult to track and enforce. Additionally, as noted in the Environmental Quality Control Board response, emission limits should be based on actual stack tests and not AP-42 emission factors, especially since the applicant is requesting conditions that would be within 1/10 of a tpy of the requirement for nonattainment review.

The impact on SO_2 emission rates for the regional area has not been addressed in the application. It has come to the attention of Broward County that, due to pipeline limitations, this project could increase consumption of #6 fuel oil by 136% within Broward County alone. Substantial increases would also occur throughout the region. Although this particular project as proposed will fire the cheapest available fuel (assumed to be natural gas), the impact of the increased utilization of sulfur containing fuel oil throughout the region should be addressed through a modeling study to ensure that no new instances of nonattainment occur through these increases. It is recognized that the increases are likely within the permitted levels for the other facilities; however, many of these sources have older permits. This study should be addressed either directly by FDER as part of their implementation plan updates, or by the applicant as a demonstration of the overall environmental impact of the project.

The calculation of the net emissions increase due to the proposed modification does not follow current USEPA or FDER guidance for PSD and nonattainment New Source Review (NSR) applicability. The application used the previous 20-year period (1969-1988) of boiler operations for determining "contemporaneous emissions decreases" (see Table 2-10, pp. 2-15, Appendix 10.1.5 of PPSA Application). In reviewing the 20-year operations for Units 4 and 5 (which appear to include an anomalous value for Unit 4 in 1981), emissions dropped considerably for both units in 1982 and remained low through 1988. It has been EPA's determination that actual emissions would be represented during a 2-year period prior to the application. 40 CFR 51.24 (b)(21)(ii) defines actual emissions for an existing source as "in general actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two year period which proceeds the particular date and which is representative of normal source operation."

While some leeway is provided with respect to the definition of "representative," contemporaneous emissions are generally limited to emission reductions which occurred within the five years prior to the proposed construction under those same regulations. Since 1982, usage of these units has remained consistently low and fairly consistent at approximately 40% of the 20-year average total heat input. Besides applicability requirements, this issue could also affect the air quality modeling. It is not possible at this time to determine how the use of 20-year averaged emissions decreases would affect the air quality modeling analyses.

Contemporaneous VOC emission decreases from storage tanks #3 and #4 were again calculated using a 20-year average. This approach does not follow current USEPA guidance. Further, on page 3-15, it is stated that VOC emissions of the revised facility will be limited to 99.9 tpy. It is difficult to understand how switching from No. 6 fuel oil used for the boilers to No. 2 fuel oil for the proposed turbines would cause a decrease in project VOC emissions, yet the application states that such a permit condition would reduce facility VOC emissions by 65%. It is our contention that a permit applicant must define a method of source operation that will achieve an emission rate such that emissions would be less than a defined regulatory cut-off level. The applicant requests the agency to do this for them. We believe that this is inappropriate as well as extremely difficult to implement and enforce. It is the applicant's responsibility to specify specific methods and monitoring equipment proposed in order to insure that the facility emissions would remain below the nonattainment NSR value of 100 tpy. Finally, typical determinations require emissions to be less than 99.5 tpy to avoid the nonattainment applicability.

2.0 CONTROL TECHNOLOGY REVIEW

2.1 NO_x BACT

1) p. 4-8 - The first paragraph states that "about 35 operating and permitted...However, none of these installations employ advanced combustion turbines..." Please define inherent differences in the design of the advanced combustion turbine planned for the Lauderdale Repowering project, that SCR would not operate with, since SCR has operated on other combined cycle systems?

   Also, the statement "Almost all of these...located" has no relevance. The only NO_2 nonattainment area in the U.S. is southern California; yet, SCR is being installed in other parts of California as well as New Jersey, Rhode Island, and others. Also, the theory that ozone precursors produce NO_x gives more credence for SCR systems in ozone nonattainment areas as well as NO_2 nonattainment areas.

2) p. 4-8 - In reference to the statement "As noted...BACT," subsection 3.2.3 contains no discussion of the differences between LAER and BACT. In addition, new guidance concerning BACT determination draws

no distinct barriers between BACT and LAER. In the May., 1989 draft memo "Top-Down Best Available Control Technology: A Summary," by the USEPA Office of Air Quality Planning and Standards, it is stated on page 3 that:

> "The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams, and innovative control technologies. Technologies required under lowest achievable emission rate (LAER) determinations are available for BACT purposes and should also be included as control alternatives."

Furthermore, in EPA's most recent March 15, 1990 draft "Top-Down Best Available Control Technology Guidance Document," the difference between LAER and BACT is reduced further with this statement:

> "Technologies required under lowest achievable emission rate (LAER) determinations are available for BACT purposes and must also be included as control alternatives and usually represent the top alternative."

Hence, stating that SCR and wet injection represents LAER control provides no relief from full examination and subsequent examination of this control option of BACT.

3) p. 4-9, Last Paragraph - Though the NO_x nonattainment situation in southern California has prompted the installation of more SCR systems in that part of the country than in other parts, SCR systems are planned or operating in New Jersey and Rhode Island as well as areas of California that are in attainment of the NO_x standard.

4) p. 4-10, First Paragraph - What information/experience justifies the conclusion that cycling of the combustion turbines will potentially result in SCR catalyst damage? What data from recent SCR applications verify this conclusion? The facility modification as specified in Section 2.1 will consist of four combined cycle units consisting of four combustion turbines (CT), each with its own Heat Recovery Steam Generator (HRSG). Also, Section 2.1 states the following:

> "There will be no bypass stacks on the CTs for simple cycle operation; simple cycle operation will be accomplished by passing the exhaust gases through the HRSGs and diverting steam from the HRSGs directly to the condenser."

The primary obstacle in applying SCR to simple cycle systems is cost effectively cooling the exhaust gases (normally 1000-1100°F) to the nominal operating temperature of the catalyst (550-800°F). As

described in Section 2.1, the HRSG will operate in both the combined and simple cycle modes, hence potentially providing the necessary cooling for SCR operation.

Furthermore, current experience in the U.S. with catalyst systems at combined cycle plants in the U.S., whether baseload or load following facilities, has shown SCR systems to be achieving design specifications and removal efficiencies (Radian, 1989).

5) p. 4-10, Second Paragraph - Has FP&L reviewed newer applications of SCR systems to determine the effect on the catalyst material of utilizing sulfur-containing fuels? The United Airlines cogeneration facility is the first application of an SCR system in the U.S. (having operated since 1986) and should not be considered representative of newer SCR systems and catalyst formulations. Some initial problems would be expected with the startup of an innovative technology. USEPA currently considers SCR with oil-firing as technically feasible ("Top-Down Best Available Control Technology Guidance Document," March 15, 1990). In addition, some catalyst vendors (for example, Steuler GmbH) claims to have numerous SCR systems installed on sources firing distillate oil in Europe with no effective degradation in catalyst activity.

6) p. 4-10, Third Paragraph - Has it been shown in any application that installing corrosion inhibiting materials in the HRSGs would be cost prohibitive for this or any other project?

7) p. 4-13, First Paragraph - Has the applicant investigated newer catalyst formulations and vendor claims for enhanced resistance to sulfur poisoning? Some vendors are offering catalyst life guarantees of 1-2 years for oil fired applications (Radian, 1989).

8) Table 4-3 - What SCR vendors specify such a narrow operable temperature range (i.e., about 100°F)? Experience has shown that most quote a range two to three times higher.

9) p. 4-16, Table 4-4
   a) What bases were used for the engineering estimates for the capital cost components? Were these vendor quotes or literature values?
   b) What does the escalation cost specifically refer to?
   c) What does the contingency cost specifically refer to?
   d) At what percentage of the catalyst beds does the catalyst replacement cost refer to?
   e) At what labor rate is the operating personnel and catalyst changeout estimated at?
   f) At what ammonia to NO_x ratio is ammonia cost estimated from?
   g) What is the cost per Kw-hr and number of Kw-hrs used to estimate startup penalty costs?
   h) What does the pressure drop costs directly refer to and is 4" water gauge across the bed a vendor spec or estimate?
   i) What does the heat rate cost refer to?

j) What calculation was used to levelize annual costs of $4,579,952 and $3,840,389 over 30 years to achieve values of $7,218,479 and $6,119,659, respectively?

10) p. 4-17, Third Paragraph - Please explain the mechanism of pressure drop over the catalyst causing potential lost generation. What is the component breakdown of the energy requirements for the SCR system (i.e., what requires 4,380,000 Kw-hrs/yr)? Also, if the facility will not be baseloaded and will cycle with load, what are the bases for estimating annual lost generation? Finally, what is the basis for the seemingly excessive penalties quoted? Also, see Question #7 concerning the "infeasibility" of SCR with oil-fired applications.

11) p. 4-18, First Paragraph - What is cost breakdown for wet injection? Do the costs for SCR include wet injection (as stated previously)? What control efficiency is used to determine $6,224 per ton of NO_x removed for SCR? What basis is used to determine that $6,424/ton of NO_x removed is an infeasible cost to bear in this project? What is the estimated tons NO_x removed annually for SCR and wet injection? The BACT decision should be based on total as well as incremental costs. Basis for incremental costs (i.e., incremental over what base cost) should be defined.

12) p. 4-19, Third Paragraph - What basis exists to assume that SCR would operate differently, or less efficiently, on the largest model of CT versus the smallest model of CT? Experience has shown that the economy of scale makes SCR more cost-effective on larger units than smaller ones.

13) Table 4-2 shows that some turbines have utilized scrubbers for NO_x control. Why were scrubbers not considered for the BACT analysis if it is shown to be a proven technology?

14) Is water injection an integral part of the design of the proposed combustors and, if so, does water injection constitute a control technology in this case?

2.2 CO BACT

1) p. 4-19, First Paragraph - Has catalytic oxidation for post-combustion CO control been applied only to sources located in CO nonattainment areas? Are there no examples of catalytic oxidation applied as BACT?

2) p. 4-19, Last Paragraph - Oxidation catalysts have been installed on gas turbines firing natural gas as primary fuel and distillate oil as secondary fuel (Radian, 1989). Section 1.0 states "the combined cycle power plant will burn natural gas as the primary fuel and No. 2 fuel oil as an alternate fuel." How does this facility

differ from those presently utilizing a CO catalyst with similar fuel usages? Also, what basis does the applicant have for the statement "oxidation catalysts have not been used on fuel-oil-fired CTs or combined cycle facilities?" Please cite references searched.

3) Table 4-5
   a) What bases were used for the engineering estimates for the capital cost components? Were these vendor quotes for literature values?
   b) What does the escalation cost specifically refer to?
   c) What does the contingency cost specifically refer to?
   d) What percentage of the catalyst beds does the catalyst replacement cost refer to?
   e) At what labor rate is the operating personnel and catalyst changeout estimated at?
   f) What is the cost per Kw-hr and number of Kw-hrs used to estimate startup penalty costs?
   g) What does the pressure drop costs directly refer to and is 2" across the bed a vendor spec or estimate?
   h) What does the heat rate cost refer to?

4) p. 4-22, Energy - Please explain the effect of the pressure drop of 2" water gauge and the resulting energy penalty of 16,004,500 Kw-hr/yr. What is the basis for these seemingly excessive levels?

5) p. 4-22, Environmental - Comment - Air quality impact data has little relevance to BACT determination (see "Top-Down BACT Control Technology Guidance Document," March 15, 1990). However, application of a CO catalyst will remove approximately 750 tpy of CO. An oxidation catalyst will also reduce the amount of VOCs emitted, providing an additional environmental benefit.

2.3 SO_2 BACT

1) p. 4-22, Last Paragraph - Why does Table 4-2 list a scrubber as control for some of the CTs? Do these refer to a flue gas desulfurization system and, if so, how does this effect the BACT determination?

2) p. 4-23, Second Paragraph - Comment - A sulfur limit of 0.2% does not relate to a LAER level in New Jersey. Allowable sulfur percentages are specified in NJAC 27:7-9 and range from 0.2% to 0.3% for all areas within the state. No restriction on operation with fuel oil is required with the specified fuel sulfur contents. Has the applicant identified a cogeneration installation in New Jersey specifying 0.2% sulfur fuel as LAER?

3) p. 4-23, Third Paragraph - A review of the BACT/LAER Clearinghouse (EPA, July, 1989) for natural gas turbines presented values for allowable fuel sulfur contents ranging from 0.05% to 0.37%. The

majority ranged from 0.05% to 0.12%. Given this information, what basis does the applicant cite for stating that "a sulfur content of 0.2 percent was selected as the top-down BACT level since it is near the lowest of sulfur contents contained in the BACT Clearinghouse documents?"

4) p. 4-24, Second paragraph - What is the correct maximum SO_2 emission when utilizing No. 2 fuel oil, 15,082.8 tpy or 12,337.7 as presented on Table 2-6? Also, what is the basis for either estimate?

5) p. 4-23 - Economic Analysis for SO_2 Control
   a) What is the differential cost of purchasing fuel oil with the maximum fuel sulfur contents of 0.05%, 0.1%, 0.15%, and 0.2%?
   b) Is it more cost-effective to blend fuels onsite to achieve 0.2% sulfur fuel as proposed in the SCA rather than simply buy it?
   c) Why is fuel blending necessary? Is it possible to purchase both fuels separately in proportion to achieve an average sulfur content of 0.2%?
   d) What are annual SO_2 emissions based on 0.3% sulfur oil or 0.5% sulfur oil?
   e) Are the capital cost components presented in Table 4-6 based on vendor estimates, literature sources, etc.?
   f) What do the capital escalation and contingency costs relate to in Table 4-6 and why does the contingency cost represent approximately 34% of the capital equipment cost?
   g) In Table 4-6, what basis is used for the estimated fuel cost of $28,646,967? What percentage of annual operation is estimated for this cost? Does the differential price of $0.07 per gallon refer to 0.2% versus 0.5%, or 0.2% versus 0.3%, or 0.2% oil versus kerosene?
   h) What do the operating and maintenance escalation and contingency costs relate to?
   i) What calculation was utilized to produce a 30-year levelized annual cost of $46,479,242 from a total annual cost of $29,168,021?

6) p. 4-24, Third Paragraph - Comment - Cost effectiveness values for control options are based on the maximum allowed sulfur content of the fuel. Therefore, the comparison should be between the 0.2% sulfur and 0.5% sulfur fuels, or the $5,136/ton of SO_2 removed rather than $15,408/ton removed.

7) p. 4-24, Fourth Paragraph - What is basis for stating "significant air quality benefits will not occur by reducing fuel sulfur content below that in No. 2 fuel oil?" The difference in SO_2 emissions utilizing 0.5% fuel versus utilizing 0.2% fuel is approximately 9050 tpy of SO_2. A fuel sulfur limitation of 0.1% would reduce total emissions even more. How can this be considered insignificant?

2.4 PARTICULATE EMISSION/PM_{10} BACT

1) p. 4-26 - Particulate Emission/PM_{10} Section
   a) Why was a top-down BACT analysis not completed for TSP/PM_{10} when Section 4.1 states that the modified source is significant for these pollutants?
   b) What is the proposed emission rate of TSP/PM_{10} from the source based on the percentage of oil use versus natural gas usage?
   c) What alternate control options were considered?

2.5 OTHER POLLUTANT BACT

1) p. 4-27, Section 4.3.5
   a) Why was a top-down BACT analysis not completed for sulfuric acid mist, mercury, beryllium, and arsenic when Section 4.1 states that the modified source is significant for these pollutants?
   b) What is meant by the statement "In addition, the inherent efficiency of the combined cycle configuration of the repowered units minimizes the quality of fuel used relative to steam cycle plants, i.e., by about 20 percent?"
   c) What are the proposed emission rates of the significant pollutants?

3.0 MODELING ANALYSES

A review of the modeling runs for FP&L shows three major areas of potential deficiencies. These deficiencies are the modeled locations of the proposed and existing FP&L Lauderdale sources, the handling of building wake, and the PSD Class I inventory.

3.1 FP&L MODELED SOURCE LOCATIONS

In the modeling assessment, the existing boilers were modeled as a single point source, the four proposed HRSG stacks as a single point source, and the twelve turbine stacks as two point sources. The modeled locations of the existing boilers and proposed HRSG stacks were on an east-west line 50 meters apart. However, the HRSG stacks are oriented north-south with a separation of approximately 100 meters between the outermost stacks. The two existing boiler stacks, separated by approximately 25 meters, are located about 50 meters nearly due east of the southernmost HRSG stack and about 100 meters from the northernmost stack. By modeling these six emission points as two single point sources located only 50 meters apart, it is possible that the offsets created by the boiler shutdown may be overestimated since coincidence

of boiler and HRSG impacts will be enhanced by the modeled stack configuration. (Emissions from the existing boilers were input to ISCST as negative numbers to simulate the offsets created by the boiler shutdown when modeling the proposed modification and PSD increments.)

The existing turbines were modeled at two locations (x,y coordinates in meters): 123,112 and 168,540. Based on information contained in the application, the correct source locations would appear to be approximately 90,100 and 150,100 if these twelve stacks were modeled as two point sources. Thus, it appears that one-half of the existing turbines were incorrectly modeled at a location approximately 400 meters due north of their actual location. This could cause AAQS impacts in the application to be underestimated. Since the twelve existing turbine stacks are located in a rectangular area approximately 60 meters by 90 meters, it would be better to model these stacks individually or to group stacks into a single stack only if they are located in close proximity.

3.2 BUILDING WAKE EFFECTS

With respect to building wakes, it appears that GEP stack heights were evaluated only for the existing boiler building and the proposed CT environmental enclosure. It appears that no GEP analysis of the existing turbines and auxiliary equipment was performed when evaluating the existing 45' turbine stacks. In our experience, for sources of this type, the turbine itself generally causes turbine stacks to be below GEP stack height. This analysis should be factored into the modeling.

GEP stacks for the existing boiler building and proposed CT environmental enclosure, according to information in the application, are about 225' and 186', respectively. However, the proposed HRSG stacks were modeled with building dimensions appropriate for the proposed CT environmental enclosure only. Due to the proximity of the existing boiler building to the proposed HRSG units and its taller GEP stack height, building dimensions for this existing boiler structure should be modeled for the proposed HRSG stacks as well. Thus, it is assumed that the existing boiler structure would be removed prior to HRSG operation. Otherwise, a modeling assessment of the existing structure is necessary.

On page 6-20, it is stated that "for sources subject to Schulman-Scire downwash algorithms, then direction-specific building dimensions are input to the models." However, a review of the model inputs shows that the maximum projected building width for all directions was input to ISCST for any direction assumed to be affected by downwash. This is particularly troublesome in that impacts for the offset sources (i.e., the existing boilers), are subject to Schulman-Scire downwash from the existing boiler building. Modeled as a tall building, the direction-specific building widths are required by ISCST when calculating downwash effects. Thus, offset impacts (i.e., impacts which are SUBTRACTED from other estimated facility and PSD increment impacts) for many directions may be overestimated. This could lead to a serious underestimate

of PSD increment consumption and facility impacts. In addition, it does not appear that the boiler building was properly evaluated as a multi-level structure.

The proposed CT environmental enclosure is stated to cause downwash for two existing gas turbines. A review of the modeling inputs shows that downwash was considered for these two sources only when determining AAQS compliance. However, in our opinion, since these two existing sources are "supposedly" not currently subject to downwash, then the difference in modeled impacts with and without downwash due to the proposed CT environmental enclosure should also be considered when establishing significant impact areas and calculating PSD increment consumption. Also, a review of the modeling inputs shows that building downwash was considered only for the proposed FP&L Lauderdale modifications. Current USEPA guidance is that building downwash must be considered for all "nearby" sources in the inventory, not just for the proposed source only. What steps were taken to consider downwash at nearby facilities?

3.3 CLASS I IMPACTS

A review of the modeling shows numerous violations of the 3-hour and 24-hour PSD Class I SO_2 increments in Everglades National Park when modeling the proposed HRSG stacks only. Only when including offset impacts do these impacts fall below PSD significant impact levels. Many times this offset information is not readily available to persons applying for PSD permits. We therefore would like to formally request that the creditable offset source characteristics be formalized in the Florida emissions inventory system to enable reasonable future growth with respect to the Class I increments.

Also, a review of the modeling shows that the PSD Class I modeling multisource inventory is identical to the inventory used to assess compliance in the vicinity of the proposed source. Based on recent USEPA guidance, Class I increments are to be assessed based on all applicable sources near the Class I area, as well as sources in the vicinity of the proposed source. Hence, we recommend that the Class I increment analysis be redone with an expanded inventory including those PSD sources located near the Class I area.

3.4 OTHER MODELING ISSUES

Other areas of concern related to the modeling involved primarily with the multisource inventories, the definition of onsite areas, and the modeling approach and results for SO_2 AAQS compliance. On page 6-12, the North Carolina Screening Method (used to delete nonsignificant sources from the multisource AAQS/PSD inventories) is given as Q=20D where D is the distance (km) from the particular source to the proposed FP&L source. It must be stressed that this equation is valid only for sources OUTSIDE the proposed FP&L significant impact area and D, for annual averages, is the distance from the particular source to the proposed source's significant impact area rather than the proposed source itself.

Also, a large area of natural habitat, about 0.5 km^2 or more, was excluded from the modeled receptor grid as being onsite. USEPA guidance requires that all areas excluded from modeling be fenced or otherwise made inaccessible to public access. Fencing or the presence of other physical barriers around the entire area excluded from modeling was not described in the application and should be verified.

The modeling presented in the PPSC application is based on a two phase approach. First, the five-year meteorology data set is used with a coarse grid to determine maximum long-term and highest second-high short-term impacts and averaging times. Second, the appropriate single coarse grid receptor was remodeled with a finer receptor grid for only the highest and maximum second-highest meteorological periods for short-term averaging times. Throughout most of the application, modeled concentrations are generally presented based on the screening results rather than the fine grid results. Fine grids were generally not employed to determine the proposed HRSG or modification maxima (i.e, Table 7-1). Rather, fine grids were used only for the short-term AAQS compliance and PSD increment consumption analyses. Fine grids were not employed when determining annual AAQS compliance or PSD Class II increment consumption. Also, the SO_2 fine grid analysis failed to include the high meteorology and receptor for the 24-hour PSD Class II increment consumption. Finally, the 24-hour SO_2 AAQS highest second-high value occurred on the edge of the fine grid.

While the PSC approach may be appropriate for projects with impacts much less that the AAQS and PSD increments, we feel that a more detailed and inclusive receptor grid should be modeled in the second step with all five years of meteorology for this project. Specifically, we are concerned with the AAQS analysis which shows that 3-hour and 24-hour SO_2 and annual NO_2 concentrations will be 79%, 97%, and 81% of the applicable standards. We believe that more detail may show predicted violations of the 24-hour SO_4 standard, which may not be addressed until some future PSD application is submitted. Remodeling with the screening receptor grid and only the days of high and highest second-high SO_2 AAQS impacts, when separating individual stacks and correcting the existing turbine stack locations, gave a predicted 24-hour SO_2 highest second-high impact of 102% of standard after adding background. Due to a lack of appropriate data, we were unable to determine the direction-specific building dimensions appropriate for each stack. Therefore, we feel that the modeling analyses should be performed with all five years of meteorological data for both screening and fine receptor grids with corrected direction-specific building dimensions (and source locations).

3.5 OTHER MODELING COMMENTS

A check of the air quality modeling results provided by FP&L against the tables contained in Section 7 of the PPSA application, revision 1, showed the following typographical errors:

1) p. 7-5 - Table 7-3 distance for 1984 should be 2.0 km rather than 2.5 km.

2) p. 7-7 - Annual average SO_2 and NO_2 PSD increments were based on the "Screening" receptor results. No refined (i.e., "fine") receptor grid was analyzed as indicated in the text for NO_2.

3) p. 7-8 - Table 7-5 3-hour SO_2 impacts due to modeled sources were 442, 459, and 447 for 1982, 1983 and 1984, respectively, rather than 459, 447, and 410. Also on Table 7-5, the distance for the annual 1986 SO_2 maximum should be 4.0 km rather than 7.0 km.

4) p. 7-11 - The discussion for the 24-hour SO_2 AAQS impact which was 97% of standard indicated that the repowering project contributes less than 20% of this concentration. However, the text fails to state that the downwash due to the proposed CT environmental enclosure on an existing FP&L Lauderdale turbine contributes an additional 68% of this concentration. The final breakdown of the 253 ug/m^3 impact is:

FP&L-Lauderdale	= 78%
FP&L-Post Everglades	= 5%
Background	= 17%

It should be therefore noted that the total modeled impact was caused only by FP&L sources.

5) p. 7-14 - The annual Class I SO_2 increment consumed by all PSD sources was 0.7 ug/m^3 (see Table 7-8), not <0.15 ug/m^3 as indicated in the text.

4.0 ADDITIONAL DATA REQUEST

1) Please describe what analyses were performed to address the potential for facility impacts under fumigation conditions as described in the Guideline on Air Quality Models (GAQM).

2) Based on a review of aerial photographs presented in the PPSC application, a potentially significant portion of the project vicinity could be considered to be compact residential or commercial/industrial properties. Therefore, please describe the actual steps used in the Auer land use classification and the specific percentages of urban versus rural areas thus determined. Also, please describe how the potential for future growth was addressed in this land use analysis since the project will probably have a projected lifetime in excess of 20 or 30 years.

3) Please describe how quarterly averages of Pb were calculated since ISCST normally only provides short-term (1-hour through 24-hour) or annual averages.

4) Please describe what analyses were performed to determine mobile source consumption of the NO_2 increment.

5) For the proposed turbine modeling analyses, it appears that only the 100% load factor was considered. Please describe what screening analyses were performed for the proposed turbines to insure that the 100% load condition represented the worst-case air dispersion condition. If excess load conditions (i.e., greater than 100%) are not considered in these modeling analyses, permit restrictions will be required to limit the maximum load of the proposed repowering project.

5.0 TECHNICAL RESPONSE TO USEPA COMMENTS DATED 4/18/90

1) p. EPA-2, First Paragraph - What basis does the applicant have for assuming that zeolite catalyst would be less effective on its large gas turbines than on smaller gas turbines? Also, EPA defines a demonstrated technology as one that has been applied to full scale operations and can be readily purchased or constructed (EPA, March, 1990). What basis does the applicant have for determining that zeolite catalysts are an "undemonstrated technology?"

2) p. EPA-2, Second Paragraph - What data does the applicant cite, utilize, or reference indicating that ammonium bisulfate formation is particularly problematic and costly at facilities utilizing SCR?

3) p. EPA-3, First paragraph - If emissions and environmental impacts will be minimized when burning natural gas as fuel, under what conditions will distillate oil be used as fuel; regardless of whether natural gas is available? Furthermore, what criteria will be used in determining whether the increased environmental impacts from burning distillate oil will be offset by whatever benefit will be gained from choosing to burn distillate oil instead of available natural gas?

4) p. EPA-3, Third Paragraph - Is the cost/ton value for SCR presented in the BACT a total cost effectiveness (TCE) value related to a base (the NSPS), or an Incremental Cost Effectiveness (ICE) relative to a base (water injection)? The BACT analysis claims water injection as the proposed control method (Appendix 10, p. 4-17); thus, the costs for SCR presented should be incremental as well as total costs.

5) p. EPA-4, Second Paragraph - Table 2-6 of Appendix 10 of the FP&L application states that the total emissions of NO_x from the facility will be 6,050.6 tons per year. Using Table 2-2 to calculate annual NO_x emissions based on stated maximum emissions of 1972.1 tpy yields annual maximum NO_x emissions of 7888.4 tpy. Finally, Section 4.3.1.3 of Appendix 10 (page 4-15) states that annual NO_x emissions will be 3329 tpy utilizing the proposed control of wet injection. What are

the actual estimated NO_x emissions from the new sources and how do these compare with emissions from Units 4 and 5 (6640 tpy)? Regarding the estimated emissions from Units 4 and 5 (6640 tpy), is this an artificially high permitted level, or an average value based on actual past operations?

6) p. EPA-5, Third Paragraph - What is the basis for the energy impact cost estimates? Are these applicable to a load following facility, as this is described? Are the energy penalty estimates based on percentage of gross heat input or net electrical output? Finally, 325,900,000 cubic feet of natural gas equates to approximately 100.2 x 10^6 Kw-hrs. This does not appear to equate to the 32,009,004 Kw-hr value presented.

7) p. EPA-5, Fourth Paragraph - Will the repowered units annually emit almost an equivalent amount of NO_x or more NO_x than the existing units? It is stated that "the repowered units will emit almost 4 times less [NO_x] than the existing units for each MW produced."

8) p. EPA-7, Second Paragraph - What data from existing facilities utilizing SCR systems has indicated that ammonium bisulfate formation and emissions are particularly problematic?

9) p. EPA-8, Third Paragraph - Given that formation of ammonium bisulfate and sulfate is a complex function of gas composition and temperature, what competing reactions were considered by Exxon's model? Is it feasible to assume that all unreacted NH_3 forms ammonium bisulfate or ammonium sulfate? Could a compound be added to interfere with the formation of these sulfates? What data does Exxon provide validating the model's predictions?

10) p. EPA-9, Second Paragraph - What is the incremental cost difference of installing corrosion inhibiting compounds?

11) p. EPA-9, Third Paragraph - What is the incremental cost difference of utilizing very low sulfur fuel, such as sulfur percent less than 0.1%?

12) p. EPA-9, Fourth Paragraph - What is the environmental tradeoff of reducing NO_x emissions at the price of increasing TSP/PM_{10} emissions?

13) p. EPA-13, First Paragraph - Did the applicant review the operating experience of more recent, as well as more relevant, facilities than the United Airlines facility, which was one of the first SCR installation in the U.S.?

14) p. EPA-14, First Paragraph - What is the incremental cost difference of firing kerosene rather than No. 2 fuel oil?

15) p. EPA-14, Second Paragraph - What data, literature, references, etc. did the applicant utilize to make the assumptions that:

a) The Japanese JNR system is subject to "entirely" different regulatory and economic conditions than the Lauderdale Repowering Project Facility (LRPF)?
b) The JNR facility is not required to limit ammonia slip?
c) The JNR facility is not required to limit CO or particulate emissions?
d) The JNR facility is likely subject to much lower economic constraints than the LRPF?
e) That JNR operating experience is not applicable to the LRPF?

16) p. EPA-15, Third Paragraph - What extra precautions would be necessary at the facility to handle/dispose of catalyst material considered hazardous above those necessary for other hazardous compounds utilized at the facility such as lubricating oils, transformer fluids, or machine solvents?

6.0 TECHNICAL RESPONSE TO BCEQC DATED 4/18/90

7.1 BCEQCB-6

What is the significance of the BACT limitations for Tampa Electric Company's Big Bend 41, Jacksonville Electric's St. John's River Power Park, and Orlando Utilities' Stanton Energy Center, when more recent facilities such as the Alaska Electrical Generation and Transmission Project, the American Cogeneration Project, or the Cogeneration Technologies' New Jersey Joint Venture have been permitted to fire fuels containing 0.06%, 0.05%, and 0.15% sulfur, respectively, as presented in the EPA BACT/LAER Clearinghouse (EPA, July, 1988)?

PM
7/16/90
Ft. Lauderdale, FL

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BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD
500 S.W. 14th Court
Fort Lauderdale, FL 33315
(305) 765-4900

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DER - BAQM

July 16, 1990

Hamilton S. Oven Jr., P.E.
Administrator, Siting Coordination Section
Florida Department of Environmental Regulation
2600 Blair Stone Road, Room 309L
Tallahassee, Florida 32399-2400

Re: FPL Lauderdale Repowering Project
Site Certification Application (SCA) AC 06-179848

Dear Sir:

We just received the revisions to the SCA for the referenced project along with the "Responses to Agency Comments". Herewith are some further comments regarding Air Quality matters related to the referenced project.

Please add to the record of our comments the attached letters which were previously sent to the DER (and copied to your office). These letters addressed a separate Air Construction Permit Application at the same site which may have an important bearing on the referenced project. The result is that it will allow FPL's Lauderdale Plant to be redesignated as a Minor Source of Volatile Organic Compounds (VOC's) prior to the Repowering Project. FPL already avoided a Prevention of Significant Deterioration (PSD) Review and a Best Available Control Technology (BACT) Determination due to our existing marginal Ozone Non-Attainment (NA) status. The Minor Source designation would open the way for avoidance of a New Source Review (NSR) and a Lowest Achievable Emission Rate (LAER) Determination normally applicable in NA situations.

We again request an NSR for ozone. If LAER is impractical or there is no way to find Offsets it should be documented in the SCA and economic and environmental arguments made for waiving the requirements. Maybe environmental projects to improve the Port Everglades Plant (the most visible air pollution source in Broward County) can be considered in lieu of NSR/LAER at the Lauderdale Plant. We are only marginally in NA for Ozone (e.g. no exceedances in the past year) and the Vehicle I/M program may even bring Southeast Florida back into Attainment. Perhaps FPL can look at PSD/BACT analysis and apply for a waiver on the increment which, if their arguments are correct, might be small.

As mentioned in our most recent letters, NOx influences ozone formation so the ozone matter should not be looked at solely from the standpoint of VOC emissions. Even though the Repowered facility apparently will emit less NOx per unit of Heat Input, it will have a higher capacity and operate at a much higher level than has the existing facility in recent years. Thus the project must have some impact on ozone levels.

As a final comment we wish to point out that the historical VOC emissions estimates derived from Document AP-42 supporting the arguments for small source designation are not accurate to better than a single significant figure. Thus there will be similar uncertainties in controlling those factors designed to keep the Repowered Plant below 200 TPY of VOC's and enforcing the conditions of the referenced permit(s).

We may also have a few further comments on some of the other SCA sections which we will send you in about a week. If you have any questions regarding this matter please call me at Suncom 497-4436 or (305) 765-4436.

Sincerely,

A A Linero 7/16

A.A. Linero, P.E.
Chief, Air Section

cc: Ahmad Amanulah, EPA, Atlanta
Clair Fancy, DER, Tallahassee
Isidore Goldman, DER, W. Palm Beach
Victor Howard, EQCB
Gary Carlson, EQCB
Tom Henderson, BC Resource Recovery

William Hanks
BA/CMF 7/24/90

KBN

July 1, 1990

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JUL 5 1990
DER-BAQM

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: AC06-179848, FPL Lauderdale Plant Modification

Dear Mr. Fancy:

It has come to our attention that there was a minor error in Table 1 contained in my letter of June 20, 1990, regarding the above-referenced permit application. The error was in the calculation of VOC emissions for the unleaded gasoline tank at Lauderdale. An incorrect vapor pressure was used in the table and associated calculation of VOC emissions. This caused an underestimation of VOC emissions from this tank.

A corrected Table 1 is attached, which shows the revised VOC emissions. Since the unleaded gasoline tank is located underground, the average diurnal temperature change experienced by the tank was assumed to be zero. This eliminates breathing losses from the tank. The revised working loss, and total VOC emissions, from the tank is 0.106 tons per year (TPY). This revises the total VOC emissions due to all the miscellaneous tanks shown in Table 1 to 0.121 TPY.

All other VOC emission calculations presented in the June 20 letter remain unchanged. However, the above change again necessitates a slight revision in the proposed VOC permit limitation equation for the Lauderdale facility. The revised permit limitation for existing Units 4 and 5 and GTs 1 to 24 becomes 89.1 TPY (99.9 - 9.8 - 0.121 - 0.893).

The permit limitation in equation form thus becomes:

$$(HI_{U4\&5NG} \times EF_{U4\&5NG}) + (HI_{U4\&5OIL} \times EF_{U4\&5OIL}) + (HI_{GTNG} \times EF_{GTNG}) + (HI_{GTOIL} \times EF_{GTOIL}) \leq 89.1 \text{ TPY}$$

where:
$HI_{4\&5NG}$ = Heat Input to Units 4 and 5 due to natural gas firing,
$HI_{U4\&5OIL}$ = Heat Input to Units 4 and 5 due to No. 6 oil firing,
HI_{GTNG} = Heat Input to GT's 1-24 due to natural gas firing,
HI_{GTOIL} = Heat Input to GT's 1-24 due to No. 2 oil firing,
$EF_{U4\&5NG}$ = VOC emission factor for Units 4 & 5 for natural gas firing,
$EF_{U4\&5OIL}$ = VOC emission factor for Units 4 & 5 for No. 6 oil firing,
EF_{GTNG} = VOC emission factor for GT's 1-24 for natural gas firing,
EF_{GTOIL} = VOC emission factor for GT's 1-24 for No. 2 oil firing.

82813A1/7 KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

KBN

I apologize for any inconvenience this may have caused you. Please call if you have any questions.

Sincerely,

David A. Buff

David A. Buff, M.E., P.E.
Principal Engineer

DAB/mah

cc: M.A. Smith
C.D. Henderson
P.C. Cunningham
G. Harder
J. Goldman, SE Dist,
A. Zenero, BCEQCB
CHF/BA

Table 1. Maximum Potential Emissions of VOCs from Miscellaneous Storage Tanks, FPL Lauderdale

Parameter	Gas Turbine Dump Tanks[a] (2)	Fuel Oil Metering Tanks (3)	Unleaded Gasoline[a] (1)	Diesel Fuel[a] (1)
Type of Liquid Stored	No. 2 Fuel Oil	No. 6 Fuel Oil	Unleaded Gas	No. 2 Oil
Tank Volume (gallons)	1,500	252,000	4,000	1,000
Total Annual Throughput (gallons)	300,000	192,642,943	10,000	5,000
Turnovers Per Year	200.0	764.5	2.5	5.0
Molecular Weight of Vapor	130	190	130	130
Storage Temperature (°F)	75	75	75	75
Vapor Pressure at Storage Temperature (psia)	0.0105	0.000075	6.8	0.0105
Tank Diameter (ft)	5.3	30.0	8.0	4.0
Average Vapor Space Hgt. (ft)	2.0	6.0	2.0	1.5
Average Diurnal Temperature Change (°F)	20	20	20	20
Paint Factor	1.30	1.40	1.33	1.33
Product Factor	1.0	1.0	1.0	1.0
Turnover Factor	0.30	0.23	1.0	1.0
Breathing Losses (lb/yr)	3.2	6.1	0.0	1.7
(TPY)	0.002	0.003	0.000	0.001
Working Losses (lb/yr)	2.9	15.2	212.2	0.2
(TPY)	0.001	0.008	0.106	0.000
Total Emissions (TPY)	0.003	0.011	0.106	0.001

[a]Underground tanks.

KBN

June 20, 1990

Mr. C.H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: AC06-179848, FPL Lauderdale Plant Modification

Dear Mr. Fancy:

FPL has received the Department's completeness letter dated May 15, 1990, concerning the above-referenced permit application. FPL's responses to these questions are contained herein. Before responding to the Department's specific questions, a few points of clarification are first offered.

The first point of clarification is that FPL is not requesting an increase of 99.9 tons per year (TPY), as stated by the Department in the letter. The application only requests a 5.41 TPY increase in VOC emissions (page 2 of Attachment A). This increase is the result of comparing present actual to future potential emissions for only the tanks which are being "modified" (Tank No. 3 and Tank No. 4). "Modified" in this sense refers to the definition of modification in F.A.C. 17-2.100: a physical change or change in the method of operation which increases emissions. Increases in the hours of operation or in the production rate of a source are excluded from the term modification. This is why Tank No. 2 and Tank No. 5 were not included in the calculation of the increase in emissions; these tanks are not undergoing a physical change or change in the method of operation, they are only potentially changing production rate. Currently, the tanks have no federally enforceable restrictions on operating hours or production rate.

It is further noted that the approach of comparing present actual to future potential emissions is currently mandated by EPA, and therefore this approach was used. However, the courts have recently ruled that this approach may not be appropriate (WEPCO decision).

The 5.41 TPY increase in VOC emissions is well below the nonattainment new source review thresholds of 40 TPY if the modification is to an existing major source or 100 TPY if the modification is to an existing minor source.

The second point of clarification is that the primary reason for submitting the permit application is to impose a federally enforceable permit limit of 99.9 TPY VOC on the facility. This will render the existing facility as a "minor" source. The Lauderdale facility has always been a minor VOC source, as documented in the application; however, there are no federally enforceable

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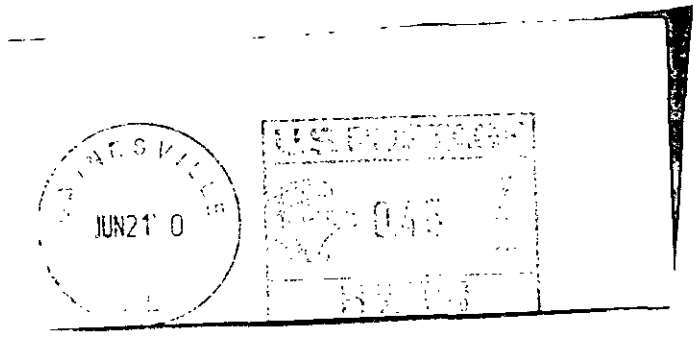

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1034 NW 57th Street
GAINESVILLE, FLORIDA 32605

Mr. C.H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

permit limitations to limit emissions to this level. The 99.9 TPY rate stated in the application does not represent an "increase" but merely limits future emissions to this level.

Responses to FDER's specific questions are provided below:

1. A listing of auxiliary storage tanks at Lauderdale is presented in Table 1. The additional tanks consist of the existing gas turbine dump tanks, the fuel oil metering tanks for Units 4 and 5, and two underground storage tanks for vehicle fuel. None of these tanks is being modified (i.e., no physical change or change in the method of operation) at this time; therefore, there is no increase in VOC emissions from these tanks. (Note: the two underground tanks will be removed and replaced with similar tanks at another on-site location). However, VOC emissions from the auxiliary tanks would be included in determining if the existing facility is a minor source (i.e., less than 100 TPY). To this end, maximum potential VOC emissions from these tanks are quantified in Table 1. As shown, the potential VOC emission rate from these sources is 0.018 TPY.

2. As described in the comments above, Tank No. 5 at Lauderdale is not being modified; therefore, this tank is not considered in determining the net emissions increase. This is also explained on Page 2 of Attachment A in the application.

3. FPL uses mineral spirits and Penetone 58 at several locations within the Lauderdale facility. All uses are for parts cleaning. A list of these areas and maximum solvent usage for each is provided below:

a.	GT machine shop (mineral spirits)	10 gal	65 lb	0.033 TPY
b.	Filter cleaning station (mineral spirits)	20 gal	129 lb	0.065 TPY
c.	Burner cleaning area (Penetone 58)	50 gal	495 lb	0.248 TPY
d.	R/R track area (mineral spirits)	90 gal	581 lb	0.290 TPY
e.	Fuel Blowback- plant (mineral sprts)	15 gal	97 lb	0.048 TPY
f.	Fuel blowback- site 2 (mineral sprts)	65 gal	419 lb	0.210 TPY
	TOTALS	250 gal	1786 lb	0.893 TPY

It can be conservatively assumed that all solvent used escapes to the atmosphere. As a result, the maximum VOC emission rate from the solvent cleaning operations is 0.893 TPY.

The solvent cleaning operations are not being modified and, therefore, do not enter into the calculations of net VOC emission increase.

4. All known VOC sources at the Lauderdale site are described above and in the application. There are no other known VOC sources at the site.

5. Based upon the above discussion, the VOC emission increase of 5.41 TPY documented in the permit application remains correct. However, the permit

limitation for the Lauderdale facility does change based on the additional VOC emissions from the miscellaneous operations. Since future potential VOC emissions from the fuel storage tanks (Nos. 2, 3, and 5) have been calculated to be 9.8 TPY (see permit application Table 1) and potential VOC emissions from the miscellaneous tanks and solvent cleaning operations have been calculated to be 0.018 TPY and 0.893 TPY, respectively, the permit limitation requested by FPL for existing Units 4 and 5 and GTs 1-24 is 89.2 TPY (99.9 - 9.8 - 0.018 - 0.893). The permit limitation thus becomes:

$$(HI_{U4\&5NG} \times EF_{U4\&5NG}) + (HI_{U4\&5OIL} \times EF_{U4\&5OIL}) + (HI_{GTNG} \times EF_{GTNG}) + (HI_{GTOIL} \times EF_{GTOIL}) \leq 89.2 \text{ TPY}$$

where:

$HI_{4\&5NG}$ = Heat Input to Units 4 and 5 due to natural gas firing,
$HI_{U4\&5OIL}$ = Heat Input to Units 4 and 5 due to No. 6 oil firing,
HI_{GTNG} = Heat Input to GT's 1-24 due to natural gas firing,
HI_{GTOIL} = Heat Input to GT's 1-24 due to No. 2 oil firing,
$EF_{U4\&5NG}$ = VOC emission factor for Units 4 & 5 for natural gas firing,
$EF_{U4\&5OIL}$ = VOC emission factor for Units 4 & 5 for No. 6 oil firing,
EF_{GTNG} = VOC emission factor for GT's 1-24 for natural gas firing,
EF_{GTOIL} = VOC emission factor for GT's 1-24 for No. 2 oil firing.

Please call if you have any questions concerning this additional information.

Sincerely,

David A. Buff

David A. Buff, P.E.
Principal Engineer

DAB/tyf

cc: M.A. Smith, Ph.D. (FPL)
C.D. Henderson, P.E. (FPL)
P. Cunningham, Esq. (HBG&S)
M. Hanks
D. Goldman, SE Dist
A. Linero, BCEOEB
CHF/BA

82813A1/6/6

Table 1. Maximum Potential Emissions of VOCs from Miscellaneous Storage Tanks, FPL Lauderdale

Parameter	Gas Turbine Dump Tanks[a] (2)	Fuel Oil Metering Tanks (3)	Unleaded Gasoline[a] (1)	Diesel Fuel[a] (1)
Type of Liquid Stored	No. 2 Fuel Oil	No. 6 Fuel Oil	No. 2 Oil	No. 2 Oil
Tank Volume (gallons)	1,500	252,000	4,000	1,000
Total Annual Throughput (gallons)	300,000	192,642,943	10,000	5,000
Turnovers Per Year	200.0	764.5	2.5	5.0
Molecular Weight of Vapor	130	190	130	130
Storage Temperature (°F)	75	75	75	75
Vapor Pressure at Storage Temperature (psia)	0.0105	0.000075	0.0105	0.0105
Tank Diameter (ft)	5.3	30.0	8.0	4.0
Average Vapor Space Hgt. (ft)	2.0	6.0	2.0	1.5
Average Diurnal Temperature Change (°F)	20	20	20	20
Paint Factor	1.30	1.40	1.33	1.33
Product Factor	1.0	1.0	1.0	1.0
Turnover Factor	0.30	0.23	1.0	1.0
Breathing Losses (lb/yr)	3.2	6.1	6.6	1.7
(TPY)	0.002	0.003	0.003	0.001
Working Losses (lb/yr)	2.9	15.2	0.3	0.2
(TPY)	0.001	0.008	0.000	0.000
Total Emissions (TPY)	0.003	0.011	0.003	0.001

[a]Underground tanks.

BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD

500 S.W. 14th Court
Fort Lauderdale, FL 33315
(305) 765-4900

June 4, 1990

Mr. Clair Fancy, P.E.
Chief, Bureau of Air Regulation
Division of Air Resources Management
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Application to Construct and SCA
Repowering Project, FPL
S.W. 42nd Street, Ft. Lauderdale

Dear Mr. Fancy:

Further to our previous letter and conversations on the subject, we wish to add the following observations:

1) In both the SCA for the Repowering at Ft. Lauderdale, and the referenced Application to Construct, all attention has been paid to VOC's with respect to ozone. We note that NO_x is clearly a precursor to ozone (reference S.E. Regional Oxidant Network Report, March 1990).

2) Whereas the amount of VOC issued from the present and future facility may be small, the amount of NO_x is large and might well be controlling in ozone formation.

3) The "low" VOC emissions is insufficient reason to avoid doing the Nonattainment Review for ozone.

4) Our ozone nonattainment status is marginal and we have had no exceedances this year. Our worst period (April) has passed. The motor vehicle I/M program may even bring us back into attainment. The nonattainment situation was used by FPL as the rationale for not doing a PSD review in the SCA. Since our ozone situation is in the balance, the subject deserves more attention.

Issuance of the Construction Permit on the Tank Dismantling has an impact on the SCA. The effects of FPL's future operations upon ozone should be

addressed in either the Construction Permit or the SCA. We do not insist that the subject be addressed in the context of a PSD or Nonattainment Review -- just that it be addressed in a professional manner.

If you have any questions regarding this matter, please call me at (305) 765-4436.

Sincerely,

A. A. Linero, P.E.
Chief, Air Program

AAL/mr

cc: Steve Smallwood
Hamilton Oven
Isidore Goldman
Daniela Banu
M. Hanks
CHF/BT

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400
Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

May 15, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Martin A. Smith
Environmental Manager
Florida Power & Light Company
P. O. Box 078768
West Palm Beach, Florida 33407-0768

Dear Mr. Smith:

Re: File No. AC 06-179848, FP&L Ft. Lauderdale Plant Modification

The Department has made a preliminary review of your application for permits to construct fossil-fuel-fired steam units Nos. 4 and 5, 24 gas turbines, and 3 fuel storage tanks at FP&L Ft. Lauderdale Plant. Although we agree in principal with your request to obtain construction permits for a minor modification to a minor facility, the Department does not have reasonable assurance the the increase in facility emissions will be less than 100 TPY VOC. As presently proposed, an additional 0.1 TPY VOC emission increase would make the project a major modification and subject it to additional regulations. Therefore, we request you address the VOC emissions from the following sources.

1. Please provide a list of the auxiliary tanks at this facility and estimate the maximum VOC emissions from the tanks before and after the proposed project by the procedures described in the AP-42 manual, Section 4.3.

2. The VOC emissions for the 75,000 bbl. No. 5 storage tank listed in the application are based on 109.1 turnovers per year. Based on the fuel usage listed in Table 3, the actual number of turnovers were less. Please calculate what the actual emissions have been for the No. 5 storage tank and the increase in VOC emissions from this tank for this project.

3. Are there any VOC emissions from the maintenance building? If solvents are used in the repair of the equipment, we would expect some VOC emissions.

4. Are there any other sources of VOC emissions at this facility? If so, please quantify their emissions.

5. Based on the answers to the questions above, please recalculate the VOC emissions increase for the project.

We will resume processing the application after we receive the requested information. If you have any questions on this matter, please write to me or call Willard Hanks at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/plm

c: Isidore Goldman, SE District
Daniela Banu, Broward Co.
David Buff, P.E.

P 052 482 258

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED

NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Martin Smith	
Street and No. Fla. Power & Light	
P.O. State and ZIP Code P.O. BOX 078768 - WPB	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 5-15-90 AC06-179848	

PS Form 3800, June 1985

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:

Martin A. Smith
Env. Mgr.
Fla. Power & Light Co.
P.O. BOX 078768
West Palm Beach, Fl
33407-0768

4. Article Number
P 052 482 258

Type of Service:
- ☐ Registered
- ☐ Insured
- ☒ Certified
- ☐ COD
- ☐ Express Mail
- ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X L. Hopkins

7. Date of Delivery
5/18/90

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1988 * U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD
500 S.W. 14th Court
Fort Lauderdale, FL 33315
(305) 765-4900

May 10, 1990

Clair Fancy, P.E.
Chief, Bureau of Air Regulation
Division of Air Resources Management
Florida Dept. of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Application to Contruct at
S.W. 42nd Street, Ft. Lauderdale

Dear Sir:

We have reviewed the subject application which you sent us and have the following comments:

1) The application is to Construct. There is a dismantling of existing Tank #3 which should not require a permit.

2) Tank #4 will in the future store Fuel Oil #2 instead of Fuel Oil #6. We see nothing however, indicating any modifications (e.g. drawings, vapor recovery, etc.) indicative of a construction project.

3) Neither Tanks 3 nor 4 have any permits anyway, perhaps due to their storage of relatively heavy fuel. Perhaps they and all such storage tanks should be permitted.

4) The fuel burned by all the power generating units will apparently remain the same and within the terms of their existing permits.

5) This construction permit does not appear to us to be the proper place to limit (at FPL's request) their VOC emissions to 99.9 TPY resulting in a "Synthetic Minor Source."

6) Our opinions regarding the limiting of their VOC emissions were previously provided under our comments on the SCA. A copy of the relevant comments is attached.

If you have any questions regarding this matter, please call me at (305) 765-4436.

Sincerely,

A A Linero 5/10/90

A. A. Linero, P.E.
Chief, Air Section

AAL/mgs

cc: I. Goldman, DER, W. Palm Beach
S. Smallwood, DER, Tallahassee
H. Oven, DER, Tallahassee
D. Banu, Air Section
A. Hanks
B. Andrews/C. Fancy