



ENVIRONMENTAL PROTECTION DIVISION

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BUREAU OF AIR REGULATION

August 22, 2006

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Mr. A. A. Linero, P.E.
Professional Engineer Administrator, Air Permitting South
Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road MS 5500
Tallahassee, Florida 32399-2400

**Subject: Stanton Energy Center, Facility ID 0950137, IGCC Unit B
Technical Evaluation and Preliminary Determination, and Draft
Construction Permit dated June 16, 2006
Technical Evaluation and Preliminary Determination, with
Addendum, and Revised Draft Construction Permit dated July 26,
2006
DEP File No. 0950137-010-AC (PSD-FL-373, PA 81-14SA3)
DOAH Case No. 06-0735EPP
DEP OGC No. 06-049**

Dear Mr. Linero:

Orange County Environmental Protection Division (EPD) submits the following comments regarding the subject documents as authorized by the Public Notice of Intent to Issue PSD Permit published July 28, 2006 in the Orlando Sentinel.

1. FDEP intends to issue a permit to construct Stanton Unit B, but will reduce some of the emission limits proposed in the PSD Application. EPD was concerned about some of the application's proposed limits, because the proposed limits appeared to be higher than performance achievable using the Best Available Control Technology (BACT). We also questioned the NO_x control technology proposed by OUC given the application's questions about effectiveness of this equipment. OUC decided to net out of PSD for NO_x, in effect removing some of these NO_x concerns from review. FDEP analyzed the effectiveness of the proposed NO_x control equipment and was reasonably assured that the equipment would work as proposed, but FDEP modified other limits in the draft permit relative to the application. The net result is that NO_x emissions from Stanton will be no greater than at present, and emissions of the other criteria pollutants from Unit B will generally be lower than proposed in the application.
2. The revised draft permit to construct Stanton Unit B will allow OUC additional operational flexibility and increased pollutant emissions compared to the draft permit, as discussed in the addendum to the technical evaluation. The changes slightly increase mercury, SO₂ and NO_x emissions limits, and reduce the time the oxidation catalyst is installed, relative to the draft permit. The oxidation catalyst reduces CO and VOC emissions. EPD encourages OUC to strive for the lowest

possible pollutant emissions, and encourages FDEP to review emission results closely to achieve the lowest possible emissions.

3. EPD's primary concern is NO_x emissions due to their contributions to ozone as a precursor, and the number of recent ozone exceedances recorded by our ambient monitors. FDEP also questioned OUC about NO_x emissions, and especially about reducing the fuel-bound nitrogen and ammonia. Eventually, OUC committed to reducing NO_x emissions from existing Units 1 and 2, such that net emissions from the facility with Unit B operating would be lower than current levels to net out of PSD for NO_x. That commitment became part of the permit application and technical evaluation, and it allowed OUC to avoid using the BACT for NO_x, and to avoid air quality modeling for NO_x. The amount of NO_x reduction that OUC has committed to is 1025 TPY from Units 1 and 2. OUC is still reviewing control technology options to accomplish this reduction, as they discussed in their letter to FDEP dated May 10, 2006. One NO_x control technology option that OUC has not mentioned in their application is steam injection. FDEP required OUC to use burners in the combustion turbine (CT) that allow steam injection to reduce NO_x when fired with natural gas. EPD recognizes the importance of requiring NO_x controls in the CT in this technology demonstration project.
4. Page 12 of the revised draft permit allows 15 ppm NO_x at 15% O₂ while burning natural gas. The corresponding number in the draft permit was 5 ppm NO_x. This change was not addressed in the addendum. I talked to you about this change in a phone conversation on July 31, 2006. You said that the 15 ppm NO_x number is the limit in NSPS Subpart KKKK for stationary gas turbines. The 5 ppm NO_x number was in the permit application. It is our understanding that when OUC netted out of PSD for NO_x, they felt no longer constrained to meet a low number required for NO_x when firing natural gas. OUC requested that FDEP allow the 15 ppm number in Subpart KKKK. FDEP, no longer having a rule justification for requiring the lower number, allowed the request. Unit B will still be equipped with a selective catalytic reduction system (SCR) and a steam injection system to reduce NO_x emissions when firing natural gas, and should then be able to emit less than 15 ppm NO_x. EPD's view is that OUC should demonstrate good corporate citizenship and strive for the lowest achievable NO_x emissions under all circumstances, not the maximum NO_x emissions allowed by the rule. EPD is disappointed in OUC's retreat from the commitment it made in its permit application.
5. OUC stated in the PSD application that ammonia injected in the SCR to control NO_x from Unit B may react with SO₂ in the flue gas to create ammonia salts that may foul the heat recovery steam generator (HRSG). OUC predicted that such fouling may cause frequent plant shut-downs to clean the HRSG. FDEP reviewed this concern in detail, but concluded that it would not likely cause the number of shut-downs predicted in the application. This conclusion was based in part on your experience with similar SCRs and HRSGs in the field. But to ensure that the risk of HRSG fouling was minimized, FDEP in the draft permit lowered the SO₂ concentration allowed in the flue gas, relative to the application. This action also addressed EPD's concern about SCR effectiveness.

6. SO₂ emissions in the revised draft permit were allowed to rise by about 1 ppm relative to the draft permit. This change was requested by OUC. The increase in SO₂ concentrations may result in an increased possibility of ammonia salt fouling. FDEP reviewed OUC comments that the sulfur removal system will likely not meet 98% removal at all times due to catalyst degradation in the carbonyl sulfide removal system. The minimum sulfur removal efficiency was reduced somewhat from 98% to 97%, which corresponds to an exhaust sulfur concentration of 2.7 ppm. This level of SO₂ emissions is still very low. One of the prime goals of the project is demonstration of an SCR with this gasifier, and HRSG fouling appeared to be the primary technical risk factor. However, given that HRSG fouling may be mostly an operational inconvenience, and somewhat lower HRSG availability may be acceptable, FDEP has apparently concluded that the somewhat higher SO₂ concentration is acceptable. The technology demonstration phase of this project is intended to more clearly define such risks. EPD wants to review the results of this phase of the project and comment on related conditions in the operating permit. The increased SO₂ concentration must only be permitted if OUC demonstrates that it is required due to technical risks of operation. This condition should be reevaluated during the technology demonstration phase of the project.
7. EPD was concerned that the application's proposed BACT for CO and VOC resulted in higher emissions of those pollutants than at other units in the field. FDEP required OUC to add an oxidation catalyst downstream of the SCR in the draft permit. This catalyst will cost less than a million dollars, but will significantly reduce both CO and VOC emissions from Unit B. The resultant CO and VOC emissions then appear to be at worst as low as existing BACT. In the draft permit, the oxidation catalyst was not required for the first year of Unit B operation to allow the facility to solve anticipated commissioning issues and gather data without the catalyst.
8. OUC expressed technical concerns about several aspects of the oxidation catalyst proposed by the draft permit. First was the potential for oxidation of SO₂ to SO₃, which may cause corrosion. Second, if the oxidation catalyst were placed upstream of the SCR catalyst, the oxidation catalyst may convert some of the NO to NO₂, requiring more ammonia to reduce NO_x in the SCR. Third, contaminants from the syngas may poison the oxidation catalyst. Also, OUC does not want to have to optimize the SCR system while simultaneously meeting goals for an oxidation catalyst. However, FDEP considers the demonstration of an oxidation catalyst an important part of this technology demonstration project. FDEP also considers the oxidation catalyst cost effective for CO and VOC removal. Consequently, FDEP still requires the oxidation catalyst but has increased the time the oxidation catalyst need not be installed from one year to two years, out of the four-year demonstration period. When the oxidation catalyst is not installed, Unit B must meet the CO limits of the draft permit without the catalyst. At the end of the 4-year demonstration period, the revised draft permit allows the catalyst to be removed entirely. There appears to be no basis for allowing removal of the catalyst if the catalyst is proven effective. EPD prefers to have the oxidation catalyst installed for operation after the demonstration period, and for

the remainder of the life of Unit B, assuming the demonstration period proves that the oxidation catalyst performs as FDEP expected for the draft permit.

9. EPD expressed concerns that the application's proposed BACT for PM/PM10 resulted in higher emissions than at other units in the field. FDEP believes that actual PM/PM10 emissions from Unit B will be less than proposed in the application. This conclusion is based on FDEP's review of data from the CT manufacturer. Rather than set an emission rate limit, FDEP sets an opacity limit of 10%, and requires OUC to use clean-burning fuels and high temperature/high excess air combustion. These conditions typically yield acceptable PM/PM10 emissions. The opacity limit is typical for gas fired CTs, and this approach appears acceptable.
10. FDEP believes the proposed mercury emission limit originally set forth in OUC's application is easily achievable, and actual emissions may be less than proposed. FDEP then set the mercury reduction level in the draft permit at 98%, compared to the 90% mercury removal rate of the application. The mercury emission limit in the draft permit was based on FDEP's evaluation of current technology as if a BACT analysis were required for mercury. Orange County supports this approach, as mercury is bio-accumulative and any mercury emissions should be avoided if possible. However, the anticipated mercury emissions from Unit B fall below the PSD significance level for mercury, so a formal BACT analysis was not required by rule. Nevertheless, OUC wanted to demonstrate mercury removal as part of the gasification train technology demonstrated by this DOE-funded portion of the project. The question then was the appropriate level of mercury removal. FDEP decided upon 90% mercury removal for the revised draft permit after discussing removal technology and potential fuel variability with OUC. EPD is comfortable with FDEP's conclusion that 90% mercury removal is adequate for the technology demonstration phase of the project, and well below NSPS requirements and PSD significance levels. However, we encourage OUC to strive to demonstrate the best available mercury removal technology given the unknowns of this project, so that mercury removal levels in the operating permit may be even greater than the 90% level of the technology demonstration phase.
11. Revisions of the draft permit reflect allowances for the unknowns in fuel variability, operational capability and emission control technology of this technology demonstration project. The revisions will result in higher emissions from the facility. This general trend was expected and EPD has been concerned about this aspect of this technology demonstration project. We urge OUC to not only demonstrate coal gasification technology for combined cycle applications, but to investigate thoroughly the capabilities of the gasification train, CT, HRSG and pollution control equipment, and operational procedures, used in this project. After OUC has developed a substantial data set for all aspects of Unit B, Orange County wants the best equipment and procedures technology used in Unit B for the remainder of its operational life. We urge FDEP to do additional BACT review after the demonstration phase is complete, to provide reasonable assurance that the equipment and procedures are in fact BACT based on the latest information. EPD recommends a condition in the permit requiring such a review.

EPD wants to review performance and operational data from the technology demonstration phase of this project, to comment on equipment and operational performance prior to FDEP issuing the operating permit for Unit B.

12. The technical evaluation discusses the ambient ozone, NO_x and SO₂ data for 1995 through 2004. However, as EPD pointed out earlier, the data for 2005 show that ozone levels were higher than for the prior few years, and appear counter to the downward trend of the earlier data. We will continue to monitor ambient data to determine if there is truly a change in trend.
13. EPD's concerns about increased CO₂ and other greenhouse gas emissions were addressed directly through our discussions with OUC, and we requested that they provide funds for conservation and renewable energy projects. We believe that increased CO₂ emissions are a significant concern for Orange County and the State of Florida. OUC should strive to achieve the lowest CO₂ emissions using the best available technology.
14. We just received the draft Environmental Impact Statement and have not time to review it.

We look forward to working with FDEP and OUC. If you have any questions or comments, please call me at (407) 836-1443 or e-mail me at John.Kasper@ocfl.net.

Sincerely,



John M. Kasper, P.E.
Engineer III


(4) JK/JD/HP/TC/LC:na

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