KBN

February 28, 1992

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

Subject: Manatee County - A.P.
Tropicana Products, Inc.
AC41-157745 Gas Turbine and HRSG and
AC41-159485 Auxiliary Boiler; PSD-FL-136

Dear Clair:

Pursuant to the Department correspondence dated January 29, 1992, an increase in sulfur dioxide emissions for the subject sources will be handled as an amendment to the original construction permit. As Engineer-of-Record for these sources, I am requesting on behalf of Tropicana Products Inc. a minor increase in sulfur dioxide emission rates. The request is as follows:

Gas Turbine and HRSG (AC41-157745): change SO_2 emissions in Specific Condition 3 to 1.2 lb/hr and 2.63 tons/year for the gas turbine and 0.29 lb/hr and 0.6 tons/year for the HRSG duct burner.

Auxiliary Boiler (AC41-159485): change SO_2 emissions in Specific Condition 4 to 0.44 lb/hr and 0.97 tons/year for gas firing.

The requested permit change increases SO_2 emissions by 2.47 tons/year and would not affect PSD applicability for the facility. My letters dated July 24, 1991 and March 13, 1991, which are attached, provide further background information.

The processing fee according to Rule 17-4.050(4)(o), Florida Administrative Code, is $250 and is enclosed.

Please call if you have any questions.

Sincerely,

001031

Kennard F. Kosky, P.E. (Florida Registration Number 14996)
President and Principal Engineer

cc: Gordan Hartman, Tropicana
John Web, Tropicana
Jeff Johns, Tropicana
Richard Garrity, P.E. FDER Southwest District Office

90009A1/13

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Tropicana Products, Inc.
AC41-157745 Gas Turbine

2727031991

Dear Clai

Pursuant
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Extremely Urgent:
Recipient Please Hand Deliver to Addressee

Gas Turl
2.63 ton

Auxiliary
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Sincerely,

Kennard F
President

cc: Gorda
John \
Jeff Jc
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90009 K.Kosky TLA

(904) 488-1334 (a.m.)

Mr. C.H. Fancy
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

FEDEX® LE

EQUAL OPPORTUNITY / AN AFFIRMATIVE ACTION EMPLOYER

March 13, 1991

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

Subject: Tropicana Products, Inc.--Request for Modification of Construction Permits: Permit Number AC 41-157745 for the Gas Turbine (GT) and Heat Recovery Steam Generator (HRSG) and Permit Number AC 41-159485 for the Auxiliary Boiler

Dear Clair:

This correspondence presents a request on behalf of Tropicana Products, Inc., to change several conditions of the construction permits. These changes are a result of initial compliance tests performed for the GT/HRSG and auxiliary boiler. In addition, a clarification of FDER's policy of testing GTs is requested. The construction permits are valid through December 1, 1991.

For your information, the test results for the GT/HRSG duct burners and auxiliary boiler compared to the permitted amounts are presented in Tables 1 and 2, respectively. The results of the tests for each source as they relate to the permitted values are discussed in the following sections.

GAS TURBINE/HEAT RECOVERY STEAM GENERATOR

Clarification of Heat Input Testing Requirements for GT--Because a combustion turbine has air as its principal working fluid, ambient temperature affects the amount of heat input that can be achieved. The heat input for the GT during the test was 373.4 million British thermal units per hour (10^6 Btu/hr) compared to the permitted value of 425.5 10^6 Btu/hr. As noted in Table 2-2 of the prevention of significant deterioration (PSD) permit application, the maximum heat input will range from 425.5 10^6 Btu/hr for ISO design conditions, i.e., representative of winter conditions, to 373.7 10^6 Btu/hr during the summer. The compliance test was performed on September 6, 1990, under conditions representative of summer. Therefore, the heat input during the test was the maximum rate for the test conditions.

However, the performance is not within the 90 percent of the maximum heat input of 425.5 million Btu/hour. To achieve testing under a heat input of up to 90 percent of the maximum will require testing to be performed during the winter. This appears impractical since such conditions will be difficult to schedule due to changing meteorology and would likely create additional cost for tying up a testing team. Because the Tropicana GT/HRSG fires only natural gas and NO_x is

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controlled at a specific ratio of steam to fuel, it appears pragmatic that testing be required at 90 percent of the maximum heat input for the specific temperature conditions during the test, i.e., summer, winter, or spring/fall. Therefore, Tropicana requests that specific condition be modified to include the following:

> "Testing to determine compliance must be performed within 90 percent of the maximum heat input for the temperature conditions experienced during the compliance test."

Particulate Matter-- The particulate matter reported during the test of the GT alone exceeded the permitted emission rate of 1.5 pounds per hour (lb/hr). As stated in the test report, this was a result of oily material in the probe wash. Further communications with the testing firm suggest that the apparent particulate is likely due to impurities in the acetone used to wash the probe. The amount seems to vary with the acetone used and can account for all the reported particulate. The high flow rate and small particulate catch coupled with the potential contribution from the acetone make the results of this test questionable. In contrast, the tests performed with both the GT and HRSG duct burners operating met the permitted particulate emission rate of 1.75 lb/hr. Indeed, the reported emission rate of 1.34 lb/hr for both the GT and duct burners was less than the permitted particulate emission rate for the GT alone.

These results suggest uncertainties in the test method due to sampling large volumes of air with small amounts of particulate matter. To assure that the retest does not have any uncertainty associated with the test method, it is requested that the following modifications be made to Specific Conditions 3 and 5:

1. Change allowable PM/PM10 emissions of Specific Condition 3 to 2 lb/hr (8.8 TPY) for the GT. This will increase PM/PM10 emissions by 2.2 TPY which would increase total emissions of the project to 15.5 TPY for PM and 12.7 TPY for PM10. Both are below the significant emission rates.

2. Change Specific Condition 5a to allow both EPA Method 5 and EPA Method 17 to be performed for determining compliance with PM and PM10 conditions.

Sulfur Dioxide (SO_2)--The calculated SO_2 emissions exceed the permitted limit of 0.24 lb/hr. The construction permit application was prepared using AP-42 emission factors to estimate SO_2 emissions when burning natural gas (see Appendix C in the PSD application for calculations). This emission factor, 0.6 $lb/10^6$ ft^3 of gas, is lower than actual estimates of SO_2 emissions using data

obtained from Florida Gas Transmission Company (FGT). Several months of data from FGT have been summarized in Table 3. Since Tropicana Products, Inc., has no control of the sulfur in the natural gas and the amount is still relatively small, it is requested that Specific Condition 5 be adjusted as follows:

Gas Turbine

Maximum SO_2 emissions--1.2 lb/hr
(425.5 10^6 Btu/hr x ft^3/1,024 Btu x 1 gr/100 ft^3 x 1 lb/7,000 gr x 2 lb SO_2/lb S)

Average annual SO_2 emissions--2.63 TPY
(425.5 10^6 Btu/hr x 1/1,024 Btu x 0.5 gr/100 ft^3 x 1 lb/7,000 gr x 2 lb SO_2/lb S x 4.38 TPY/lb/hr)

HRSG Duct Burner

Maximum SO_2 emissions--0.29 lb/hr
(104 10^6 Btu/hr x 0.0028 lb SO_2/10^6 Btu; emission factor from above)

Average annual SO_2 emissions--0.60 TPY
[97 10^6 Btu/hr x 0.0014 lb SO_2/10^6 Btu (emission factor from above) x 4.38 TPY/lb/hr]

Maximum and average sulfur contents of 1 gr/100 ft^3 and 0.5 gr/100 ft^3 were used to provide an adequate margin for the project.

AUXILIARY BOILER

Heat Input--The calculated heat input of the auxiliary boiler on natural gas firing was only slightly above (i.e., 0.8 percent) the permitted rate. This calculation was based on the higher heating value of natural gas (i.e., dry conditions), which was consistent with those presented in the permit application. However, at the actual (i.e., lower) heating value of natural gas (i.e., 1,010 Btu/ft^3), the heat input would be calculated as 156.5 10^6 Btu/hr, or within the permitted value. To assure that future calculations demonstrate compliance, it is requested that the heat input for the auxiliary boiler be rounded up to 160 10^6 Btu/hr. As noted from the test report, the emissions for all pollutants except SO_2 were less than the permitted limits.

SO_2--As discussed previously, the actual sulfur in the natural gas is greater than the AP-42 emission factor. As a consequence, it is requested that the permit limits when firing natural gas be adjusted to the following:

Maximum SO_2 emissions--0.44 lb/hr
(157.4 10^6 Btu/hr x 0.0028 lb $SO_2/10^6$ Btu)

Average annual SO_2 emissions--0.97 TPY
(157.4 10^6 Btu/hr x 0.0014 lb $SO_2/10^6$ Btu x 4.38 TPY/lb/hr)

Increasing the operating permit limits for SO_2 for the GT/HRSG and auxiliary boiler will not affect PSD applicability. The new potential emissions from the GT/HRSG and auxiliary boiler will be 38.2 TPY, which is less than the PSD significant emission rate of 40 TPY.

If there are any questions, please call.

Sincerely,

Kennard F. Kosky, P.E.
Principal Engineer

cc: John Webb, Tropicana
Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Keins, P.E., FDER Tampa District

Table 1. Comparison of Tested and Permitted Emissions for Tropicana Gas Turbine and Heat Recovery Steam Generator (AC 41-157745)

Parameter	Units	Test Results	Permitted
COMBUSTION TURBINE:			
Capacity	kW	39.76	45.4[a]
Heat Input	10^6 Btu/hr	373.4[b]	425.5[a]
Nitrogen Oxides	lb/hr	37.20	62.6
Carbon Monoxide	lb/hr	2.93	9.1
Volatile Organic Compounds	lb/hr	0.00	3.6
Particulate	lb/hr	1.84	1.5
Visible Emissions	%	0.00	10
Sulfur Dioxide	lb/hr	0.45[c]	0.24
COMBUSTION TURBINE WITH DUCT BURNERS:			
Capacity	kW	37.69	45.4[a]
Heat Input - CT	10^6 Btu/hr	356.92[b]	425.5[a]
- DB	10^6 Btu/hr	95.97[b]	104
Nitrogen Oxides - Total	lb/hr	40.69	73
- CT	lb/hr	35.49[d]	62.6
- DB	lb/hr	5.20	10.4
Carbon Monoxide - Total	lb/hr	13.50	23.66
- CT	lb/hr	2.80[d]	9.1
- DB	lb/hr	10.70	14.56
VOCs - Total	lb/hr	1.24	7.76
- CT	lb/hr	0.00	3.6
- DB	lb/hr	1.24	4.16
Particulate - Total	lb/hr	1.34	1.75
- CT	lb/hr	1.76[d]	1.5
- DB	lb/hr	-0.42	0.25
Visible Emissions	%	0.00	10
Sulfur Dioxide - Total	lb/hr	0.54[c]	0.30
- CT	lb/hr	0.43[c]	0.24
- DB	lb/hr	0.11[c]	0.06

[a] Summer design conditions are 37.9 MW and 373.7 10^6 Btu/hr and autumn design conditions are 41.7 MW and 408.9 10^6 Btu/hr.
[b] Based on the average high heating value (HHV) of gas; 1,024 Btu/ft^3.
[c] SO_2 calculated based on fuel input and an average sulfur content in gas of 0.43 gr/100 ft^3.
[d] Calculated based on heat input for GT and emissions from CT only test.

Table 2. Comparison of Tested and Permitted Emissions for Tropicana Auxiliary Boiler (AC 41-159485)

Parameter	Units	Test Results	Permitted
AUXILIARY BOILER WITH NATURAL GAS FIRING:			
Heat Input	10^6 Btu/hr	158.7[a]	157.4
Nitrogen Oxides	lb/hr	8.61	15.7
Carbon Monoxide	lb/hr	15.6	19.75
Volatile Organic Compounds	lb/hr	0.14	1.88
Particulate	lb/hr	--	0.23
Visible Emissions	%	0	10
Sulfur Dioxide	lb/hr	0.17[b]	0.09
AUXILIARY BOILER WITH OIL FIRING:			
Heat Input	10^6 Btu/hr	141.7[c]	157.4
Nitrogen Oxides	lb/hr	15.4	31.4
Carbon Monoxide	lb/hr	0.62	20.28
Volatile Organic Compounds	lb/hr	0	1.93
Particulate	lb/hr	1.95	4.7
Visible Emissions	%	0	0
Sulfur Dioxide	lb/hr	13.0[d]	47.2

[a]Based on the average high heating value (HHV) of gas; 1,024 Btu/ft^3.
[b]SO_2 calculated based on fuel input and an average sulfur content in gas of 0.43 gr/100 ft^3.
[c]Based on HHV of oil of 141,700 Btu/gallon.
[d]SO_2 calculated based on fuel input and 0.09% sulfur.

Table 3. Sulfur Content, Heat Content, and SO_2 Emission Factors for Natural Gas

Date	Sulfur Content (gr/100 cf)	Heat Content (Btu)	SO_2 Emission Factor (lb/10^6 Btu)	SO_2 Emission Factor (lb/10^6 cf)
2/6/90	0.30	1,031	0.00083	0.857
2/13/90	0.05	1,028	0.00014	0.143
2/20/90	0.35	1,025	0.00098	1.000
2/27/90	0.45	1,024	0.00126	1.286
3/6/90	0.45	1,025	0.00125	1.286
3/13/90	0.30	1,026	0.00084	0.857
3/20/90	0.35	1,026	0.00097	1.000
3/27/90	0.35	1,025	0.00098	1.000
4/3/90	0.60	1,026	0.00167	1.714
4/10/90	0.25	1,022	0.00070	0.714
4/17/90	0.40	1,026	0.00111	1.143
4/24/90	0.30	1,022	0.00084	0.857
5/1/90	0.40	1,020	0.00112	1.143
5/8/90	0.25	1,034	0.00069	0.714
5/15/90	0.20	1,023	0.00056	0.571
6/5/90	0.45	1,020	0.00126	1.286
6/12/90	0.40	1,018	0.00112	1.143
6/19/90	0.70	1,017	0.00197	2.000
6/26/90	0.45	1,019	0.00126	1.286
7/3/90	0.55	1,022	0.00154	1.571
7/10/90	0.35	1,022	0.00098	1.000
7/17/90	0.45	1,021	0.00126	1.286
7/30/90	0.30	1,021	0.00084	0.857
8/7/90	0.50	1,024	0.00140	1.429
8/14/90	0.45	1,022	0.00126	1.286
8/21/90	0.40	1,022	0.00112	1.143
8/28/90	0.70	1,022	0.00196	2.000
9/4/90	0.55	1,029	0.00153	1.571
9/11/90	0.40	1,025	0.00111	1.143
9/18/90	0.45	1,026	0.00125	1.286
9/25/90	0.40	1,026	0.00111	1.143
10/2/90	0.45	1,029	0.00125	1.286
10/9/90	0.45	1,025	0.00125	1.286
10/16/90	0.70	1,028	0.00195	2.000
10/28/90	0.80	1,024	0.00223	2.286
Average:	0.43	1,024	0.00119	1.216
Maximum:	0.80	1,034	0.00223	2.286
Minimum:	0.05	1,017	0.00014	0.143
Std. Dev.	0.15	4	0.00042	0.427

Source: Florida Gas Transmission Company, 1990.

KBN

July 24, 1991

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

Subject: Manatee County A.P. - Tropicana Products Inc.
AC 41-157745; Gas Turbine & HRSG and
AC 41-159485; Auxiliary Boiler

Dear Clair:

This correspondence provides clarifications requested in your letter dated June 12, 1991, regarding the subject sources. I met with Mr. Harley on July 15, 1991, to discuss the points he raised. The clarifications are provided in the order of Mr. Harley's memorandum of June 4, 1991.

1. *Heat input in gas turbine (GT) during compliance testing* - My letter dated March 13, 1991, requested an addition to the permit to allow a comparison of the heat input rate during testing with the rated capacity of the GT based on ambient temperature. While appropriate for most sources, the Department's policy to test between 90 and 100 percent of permitted capacity is not appropriate for GTs, due to the constraints placed by ambient temperature on maximum heat input that can be achieved. It should be noted that the construction permit did not specifically address the need to test between 90 and 100 percent of maximum heat input, nor do the Department's regulations address this requirement.

For the testing performed last September, the GT was 99.9 and 95.5 percent of the rated summer heat input with and without duct firing, respectively.

For GTs, there is a practical reason for allowing the comparison of heat rate during testing with ambient conditions. In order to obtain maximum heat input, GTs would have to be tested during the coldest time of the year which usually occur for short durations, i.e., about one week's time. If all GTs in the state were required to test during this period, there would be insufficient stack test teams to provide this service. Coupled with the uncertainty of when cold periods may occur in Florida, the requirement to test at 90 to 100 percent of rated capacity is impractical.

For these reasons, it is requested that the wording on page 2 of my March 13th letter be added to Specific Condition 2.

2. *Requested emission changes* - The requested emission changes in my letter of March 13, 1991 were specific to PM/PM10 for emissions from the GT and sulfur dioxide emissions from the GT and auxiliary boiler; both requested changes were applicable to firing natural gas firing only. This request would not

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

affect the NSPS requirements of the duct burner and auxiliary boiler which are specified in 40 CFR Part 60, Subpart Db. These NSPS, as applicable for natural gas firing, only require specific limitations for NOx emissions. No change in the NOx emission requirements is requested.

The emission changes requested for PM/PM10 and SO_2 would not affect the PSD applicability for these pollutants as discussed in my March 13th letter. Table 1 summarizes the emissions authorized in the construction permit and those requested. As can be noted, emissions of PM/PM10 or SO_2 will not significantly increase. The proposed changes would be incorporated into the construction permit which is federally enforceable.

3. *Particulate matter retest* - Tropicana Products Inc. will perform another "initial" PM compliance test for the GT when firing natural gas. As indicated in my letter of March 13th, a change in Specific Condition 5a to allow either EPA Method 5 or 17 was requested.

4. *Heat input for the auxiliary boiler* - As discussed in my March 13th letter, there was only a slight difference between the heat input using higher heating value of natural gas and the permitted heat input (i.e., 0.8 percent). Because calculated heat input can vary, a maximum heat input of 160 million Btu/hr was requested. It should be noted that the emissions, in either lb/hr or tons/yr, would remain as permitted except as provided in Table 1.

5. *PM/PM10 testing methods* - This comment confirms the request for using either EPA Method 5 or 17 for PM. For determining compliance with PM10, the results from the PM tests would conservatively be assumed to be PM10.

I hope this information clarifies the requested changes. Please call if there are any questions concerning this response.

Sincerely,

Kennard F. Kosky

Kennard F. Kosky, P.E.
President and Principal Engineer

cc: Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Kerns, P.E. FDER Southwest District Office

Table 1. Tropicana Products Inc.: Comparison of Permitted and Requested Changes

Pollutant and Source	Permitted Emissions (tons/yr)	Requested Emissions (tons/yr)
Particulate Matter (PM):		
Gas Turbine	6.6	8.76[a]
HRSG	0.95	0.95
Auxiliary Boiler	7.03	7.03
Total:	14.58	16.74
Emissions Offsets	-1.2	-1.2
Net Emissions Increase	13.38	15.54
Significant Emission Rate	25	25
PM10		
Gas Turbine	6.6	8.76[a]
HRSG	0.95	0.95
Auxiliary Boiler	4.2	4.2
Total:	11.75	13.91
Emissions Offsets	-1.2	-1.2
Net Emissions Increase	10.55	12.71
Significant Emission Rate	15	15
SO_2		
Gas Turbine	1.07	2.63[b]
HRSG	0.23	0.66[c]
Auxiliary Boiler	34.33	34.81[d]
Total:	35.63	38.1
Emissions Offsets	-0.1	-0.1
Net Emissions Increase	35.53	38
Significant Emission Rate	40	40

[a] See page 2 of March 13, 1991, letter, i.e., 2 lb/hr and 8.76 tons/yr maximum.

[b] See page 3 of March 13, 1991, letter, i.e., 1.2 lb/hr maximum and 0.6 lb/yr average (2.63 tons/yr).

[c] See page 3 of March 13, 1991, letter, i.e., 0.29 lb/hr maximum and 0.15 lb/yr average (0.66 tons/yr).

[d] No change in oil firing (47.2 lb/hr and 34 tons/yr); See page 3 of March 13, 1991, letter, i.e., 0.44 lb/hr maximum and 0.22 lb/yr average (0.97 tons/yr at 8,760 hours per year or 0.81 tons/yr for 7,320 hours/yr).

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

January 29, 1992

Mr. Kenard F. Kosky, President
KBN Engineering & Applied Sciences, Inc.
1034 NW 57th Street
Gainesville, Florida 32605

Re: Manatee County - A.P.
Tropicana Products, Inc.
AC 41-157745, Gas Turbines & HRSG
AC 41-159485, Auxiliary Boiler
PSD-FL-136

Dear Mr. Kosky:

The Department has reviewed your November 27, 1991, letter concerning the above referenced projects. Regarding your request to increase the SO_2 emissions from both the Gas Turbine and Auxiliary Boiler, when firing only natural gas, our comments are as follows:

a) It is the Engineer-of-Record's responsibility to base emission data in the permit application on the characteristics of the actual fuels to be burned and the actual equipment to be installed. The generalized emission factors in AP-42 should not be used when actual data is available.

b) It is the owner's responsibility to negotiate a contract with the supplier that generates characteristics (maximum sulfur content) consistent with the conditions of the construction permit.

However, the Department agrees that the increase in SO_2 emissions when firing natural gas are minor and can be handled as an amendment. In the future, the engineer will be required to handle this type of request as a modification. This amendment request is to be submitted in the form of a letter that is signed, sealed, and dated by the Engineer-of-Record. The letter is to be accompanied by the appropriate processing fee.

Your letter of March 13, 1991, states that the request for an increase in permitted PM/PM_{10} emissions from the Gas Turbine is the result of a stack test failure and the company's desire for an increased margin of safety. The Department does not consider this to be a valid reason to simply amend the construction permit. This request cannot be handled through an amendment. Requests for relaxations of federally enforceable restrictions such as operation

rates and (PM/PM_{10}) emissions require submission of permit modification applications along with the appropriate processing fee.

Chapter 17-2 of the Florida Administrative Code requires that the permittee demonstrate compliance with the applicable emission standards. The emission standards in construction permits are based on operating the regulated sources at the maximum permitted rate. Since it is difficult to maintain a source at exactly 100% capacity for the duration of the compliance tests, compliance tests conducted at 90 to 100 percent of the maximum permitted capacity are acceptable. With regards to your request concerning source testing of gas turbines, the compliance tests should be conducted between 90 to 100% of the maximum permitted capacity.

If you have any questions, please contact Mirza Baig at (904) 488-1344 or write me at the above address.

Sincerely,

Barry D. Andrews

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

CHF/MB/plm

c: Bill Thomas, SWD
Gordon Hartman, Tropicana
Jim Pennington, FDER
R. Baum, Manatee Co.
Jewell Harper, EPA

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PS Form 3800, June 1990

November 27, 1991

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

Re: Manatee County - A.P.
Tropicana Products, Inc.
AC41-157745 Gas Turbine & HRSG and
AC41-159485 Auxiliary Boiler; PSD-FL-136

Dear Clair:

The Department's letter dated October 17, 1991 signed by Ms. Carol Browner indicates that any changes of the PM/PM10, SO_2 and auxiliary boiler heat input would require the formal modification process including a public notice. For the requested insignificant emission increases (i.e., PM/PM10 and SO_2), this decision appears to be in conflict with the Department's recent decision (May 29, 1991) which amended the permit for the Reedy Creek Improvement District gas turbine and HRSG to allow insignificant increases in SO_2 and CO emissions. Indeed, the SO_2 emission request for Reedy Creek and Tropicana use the same data. In addition, the gas turbines for both facilities are identical.

Given that the emission increases will not change the PSD status of the facility, it appears appropriate to approve the requested emission increases as an amendment which was done in the case of Reedy Creek. I have attached the appropriate letters from the Reedy Creek change. Tropicana has decided not to pursue a change in the heat input for the auxiliary boiler at this time; such a request may be considered a change requiring a modification. I have discussed this with Barry Andrews of your staff and he concurred that if the Department took this position with Reedy Creek than it should be taken with Tropicana.

Regarding the stack testing at 90 percent of maximum capacity. The October 17, 1991 letter addresses the definition of full capacity in New Source Performance Standards (NSPS) 40 Code of Federal Regulations Subpart Db which is applicable to the HRSG duct burners. During testing, the duct burners were operated at greater than 90 percent capacity. The request in my previous letters was related to the combustion turbine which has heat input limits dependent upon ambient temperature. It should be noted that the applicable NSPS for the CT is Subpart GG

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

FEDERAL EXPRESS

[redacted]

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[redacted]

Date 11-26-91

From (Your Name) Please Print: Connard F. Kosky

Your Phone Number (Very Important): (904) 331-9000

Company: ENV ENG & APPLIED SCIENCES

Department/Floor No.

Street Address: 1034 NW 57TH ST

City: GAINESVILLE State: FL ZIP Required: 3 2 6 0 5

To (Recipient's Name) Please Print: C.H. Fancy

Recipient's Phone Number (Very Important): (904) 488 1344

Company: Bureau of Air Regulation

Department/Floor No: FDER

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2600 Blair Stone Road, Twin Towers Bldg

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REVISION DATE 4/91
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082

which requires emissions to adjusted back to ISO conditions. Furthermore, neither the permit nor FDER Rules specifically require the CT to be tested within 90 percent of its capacity. The Department is respectfully requested to reconsider the original request.

Please call if you have any questions.

Sincerely,

Kennard F. Kosky

Kennard F. Kosky, P.E.
President and Principal Engineer

cc: Gordan Hartman, Tropicana
John Web, Tropicana
Jeff Johns, Tropicana
Rick Garrity, P.E. FDER Southwest District Office
B. Andrews / P. Lewis

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2034

March 1, 1991

Mr. Clair H. Fancy, P.E.
Central Air Permitting
Division of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Orange County--AC 48-137740 (AO 48-170280)
Reedy Creek Improvement District
Gas Turbine and Heat Recovery Steam Generator with Duct Burner

Dear Mr. Fancy:

The purpose of this correspondence is to request a change in the sulfur dioxide emission limit for the above-referenced source when firing natural gas. The construction permit issued for the gas turbine plant has permitted SO_2 limits of 0.2 lb/hr and 0.8 ton per year (TPY) when firing natural gas. The operating permit has included these limits. This maximum SO_2 emission limit (i.e., 0.2 lb/hr) was based on the emission factor contained in the U.S. Environmental Protection Agency (EPA) document AP-42 (Compilation of Air Pollutant Emission Factors). The emission factor is based on an average sulfur content of natural gas of 0.2 grain/100 cubic feet (cf) of natural gas.

Initial compliance determinations using fuel analyses suggested that this limit was appropriate. However, recent fuel analyses provided by Florida Gas Transmission Company (FGT) during our compliance test period indicated a sulfur content of 0.35 gr/100 cf, which numerically exceeds the permitted amount. After further investigation and discussions with FGT, it is apparent that the sulfur content of pipeline natural gas in Florida is higher than the AP-42 emission factor and is somewhat variable. The main source of sulfur in pipeline natural gas is odorants (dimethyl sulfide and mercaptan) placed in the natural gas for safety reasons and small amounts of hydrogen sulfide. An evaluation of 8 months of data provided by FGT indicates an average sulfur content of 0.43 gr/100 cf with a maximum of 0.8 gr/100 cf (see Table 1).

Since Reedy Creek Improvement District has no control over the sulfur content in the pipeline natural gas (and neither does any other user), a permit modification is respectfully requested. In order to assure that future compliance determinations do not exceed a revised permit limit, we request an emission limit based on 1.2 gr/100 cf or 1.2 lb SO_2/hr ($345x10_6$ Btu/hr x cf/1,024 Btu x 1.2 gr sulfur (S)/100 cf x lb/7,000 gr x 2 lb SO_2/lb S). The annual SO_2 emissions would be calculated as 5.1 TPY for 8,760 hours/yr operation which was authorized in the construction permit. The total SO_2 emissions from both natural gas and oil firing would be 25.1 TPY with this requested permit change. It should be noted that oil firing is limited to no more than 14 days per year. The annual permit limit for SO_2 is less than the Prevention of Significant Deterioration (PSD) significant emission rate of 40 TPY.

Please call if you have any questions or comments.

Sincerely,

Thomas M. Moses
District Administrator

EG/TMM/fjw

cc: Alex Alexander, P.E., FDER Central District
Charles Collins, P.E., FDER Central District
Edward Godwin, P.E., RCES
Kennard F. Kosky, P.E., KBN

TABLE I

Sulfur Content, Heat Content, and SO_2 Emission Factors for Natural Gas

Date	Sulfur Content (gr/100 cf)	Heat Content (Btu)	SO_2 Emission Factor (lb/10^6 Btu)	SO_2 Emission Factor (lb/10^6 cf)
2/6/90	0.30	1,031	0.00083	0.857
2/13/90	0.05	1,028	0.00014	0.143
2/20/90	0.35	1,025	0.00098	1.000
2/27/90	0.45	1,024	0.00126	1.286
3/6/90	0.45	1,025	0.00125	1.286
3/13/90	0.30	1,026	0.00084	0.857
3/20/90	0.35	1,026	0.00097	1.000
3/27/90	0.35	1,025	0.00098	1.000
4/3/90	0.60	1,026	0.00167	1.714
4/10/90	0.25	1,022	0.00070	0.714
4/17/90	0.40	1,026	0.00111	1.143
4/24/90	0.30	1,022	0.00084	0.857
5/1/90	0.40	1,020	0.00112	1.143
5/8/90	0.25	1,034	0.00069	0.714
5/15/90	0.20	1,023	0.00056	0.571
6/5/90	0.45	1,020	0.00126	1.286
6/12/90	0.40	1,018	0.00112	1.143
6/19/90	0.70	1,017	0.00197	2.000
6/26/90	0.45	1,019	0.00126	1.286
7/3/90	0.55	1,022	0.00154	1.571
7/10/90	0.35	1,022	0.00098	1.000
7/17/90	0.45	1,021	0.00126	1.286
7/30/90	0.30	1,021	0.00084	0.857
8/7/90	0.50	1,024	0.00140	1.429
8/14/90	0.45	1,022	0.00126	1.286
8/21/90	0.40	1,022	0.00112	1.143
8/28/90	0.70	1,022	0.00196	2.000
9/4/90	0.55	1,029	0.00153	1.571
9/11/90	0.40	1,025	0.00111	1.143
9/18/90	0.45	1,026	0.00125	1.286
9/25/90	0.40	1,026	0.00111	1.143
10/2/90	0.45	1,029	0.00125	1.286
10/9/90	0.45	1,025	0.00125	1.286
10/16/90	0.70	1,028	0.00195	2.000
10/28/90	0.80	1,024	0.00223	2.286
Average:	0.43	1,024	0.00119	1.216
Maximum:	0.80	1,034	0.00223	2.286
Minimum:	0.05	1,017	0.00014	0.143
Std. Dev.	0.15	4	0.00042	0.427

Source: Florida Gas Transmission Company, 1990.

KBN

FACSIMILE COVER SHEET

DATE: 11-23-91

TO: Clair Fancy

ORGANIZATION: FDER Bureau of Air Regulation

FAX NUMBER: 904 922 6979 TELEPHONE NUMBER: 904 488 1344

FROM: Ken Kosky

TOTAL NUMBER OF PAGES: 8 (including cover page)

MESSAGE/INSTRUCTIONS:

PROJECT NUMBER: [illegible] FAX OPERATOR: ______

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Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

October 17, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Kennard F. Kosky, President
KBN Engineering and Applied Sciences, Inc.
1034 NW 57 Street
Gainesville, FL 32605

Re: Manatee County - A.P.
Tropicana Products, Inc.
AC41-157745-Gas Turbine & HRSG
AC41-159485-Auxiliary Boiler; PSD-FL-136

Dear Mr. Kosky:

The Department has received your September 20, 1991 letter along with previous correspondence regarding the above referenced projects. The following is our response:

PM/PM_{10} Stack Testing Methods

The Department concurs with your request to use either EPA Method 5, 5B or 17 to measure the particulate emissions. Either EPA Method 201 or 201A is recommended for the measurement of PM_{10} emissions.

Stack Testing at 90% of Maximum Capacity Requirement

According to the New Source Performance Standards (NSPS), Subpart Db (40 CFR 60), "full capacity means operation of the steam generating unit at 90 percent or more of the maximum steady-state design heat input capacity." Since both projects referenced above are subject to the NSPS, Subpart Db, a stack test must be conducted while each source is operating at a minimum of 90 percent of the maximum design/permitted capacity.

PM/PM_{10}, SO_2, Heat Input Allowable Increases

The request for an allowable emissions increase above the current allowable emissions for PM/PM_{10}, SO_2 and heat input cannot be handled through an amendment process. These type request can only be handled through a modification process which requires an application be submitted along with the appropriate processing fee. A modification process establishes federal enforceability through the public notice.

Extension of Expiration Dates

The Department grants your request for an extension of the expiration dates to allow for retesting. Upon demonstration of compliance, you may apply for an operation permit.

Expiration Date Change

Gas Turbine with HRSG (AC 41-157745)
PSD-FL-136

and Auxiliary Boiler (AC 41-159485)
PSD-FL-136

From: December 1, 1991
To: May 31, 1992

All other conditions remain as issued for both projects referenced above. This letter must be attached to the construction permits and shall become a part of these permits.

Sincerely,

Carol M. Browner
Secretary

CMB/MB:cjh

cc: Bill Thomas
Gordon Hartman - Tropicana
Mike Harley - FDER
R. Baum, Manatee Co.
Jewell Harper, EPA

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

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2. ☐ Restricted Delivery

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3. Article Addressed to:
Mr. Kennard F. Kosky, President
KBN Engineering and Applied Sci.
1034 N.W. 57th Street
Gainesville, FL 32605

4a. Article Number
P 832 538 738

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
10-24-91

5. Signature (Addressee)
Denise Atkinson

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, October 1990 ☆U.S. GPO: 1990—273-861 **DOMESTIC RETURN RECEIPT**

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PS Form 3800, June 1990

KBN

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SEP 24 1991

Division of Air
Resources Management

September 20, 1991

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

Subject: Manatee County A.P. - Tropicana Products Inc.
AC 41-157745; Gas Turbine & HRSG and
AC 41-159485; Auxiliary Boiler

Dear Clair:

This correspondence is submitted on behalf of Tropicana Products Inc. for the purpose of requesting a response to my letter dated July 24, 1991, and an extension of the expiration date of the above referenced permits.

It may be appropriate to review the history of these permits to better understand my request. On May 30, 1989 the Department issued permits for the gas turbine/HRSG and auxiliary boiler. Testing as required by the specific conditions of the permit was done in August and September of 1990. These results were submitted to the Southwest District Office. Applications for operating permits were submitted to the District Office in January 1991 along with a request to modify, in a minor way, the operating permit conditions. The District notified us that any changes in the permit conditions would have to be requested from Tallahassee. As a result, the operating permit applications were withdrawn on February 2, 1991 and comments dated February 6, 1991 were obtained from the District. A request to modify the permits, which was dated March 13, 1991, was submitted to your office. After several inquiries regarding the status of my request, correspondence identifying concerns was finally transmitted by your office (i.e., your letter dated June 12, 1991). I met with Mr. Mike Harley, the Compliance Section staff member who raised the concerns, during the week of July 8, 1991 to clarify my request and make sure I understood his concerns. My letter dated July 24, 1991 responded to the Department's concerns. To this date we have not received any response.

As a result, I respectfully request that permit changes, which are relatively minor, be incorporated into the construction permits. Also, I request an extension of the expiration date of the permit to March 1, 1992. This request is consistent with Specific Conditions 8 and 11, of permits AC 41-157745 and AC 41-159485, respectively. This will allow us time to retest the units and submit the appropriate information for an operating permit.

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

KBN

If there are any questions on this request please call. Your expeditious attention to this request is appreciated.

Sincerely,

Kennard F. Kosky

Kennard F. Kosky, P.E.
President and Principle Engineer

cc: Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Kerns, P.E. FDER Southwest District Office

KBN

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JUL 26 1991

Division of Air
Resources Management

July 24, 1991

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

Subject: Manatee County A.P. - Tropicana Products Inc.
AC 41-157745; Gas Turbine & HRSG and
AC 41-159485; Auxiliary Boiler

Dear Clair:

This correspondence provides clarifications requested in your letter dated June 12, 1991, regarding the subject sources. I met with Mr. Harley on July 15, 1991, to discuss the points he raised. The clarifications are provided in the order of Mr. Harley's memorandum of June 4, 1991.

1. *Heat input in gas turbine (GT) during compliance testing* - My letter dated March 13, 1991, requested an addition to the permit to allow a comparison of the heat input rate during testing with the rated capacity of the GT based on ambient temperature. While appropriate for most sources, the Department's policy to test between 90 and 100 percent of permitted capacity is not appropriate for GTs, due to the constraints placed by ambient temperature on maximum heat input that can be achieved. It should be noted that the construction permit did not specifically address the need to test between 90 and 100 percent of maximum heat input, nor do the Department's regulations address this requirement.

For the testing performed last September, the GT was 99.9 and 95.5 percent of the rated summer heat input with and without duct firing, respectively.

For GTs, there is a practical reason for allowing the comparison of heat rate during testing with ambient conditions. In order to obtain maximum heat input, GTs would have to be tested during the coldest time of the year which usually occur for short durations, i.e., about one week's time. If all GTs in the state were required to test during this period, there would be insufficient stack test teams to provide this service. Coupled with the uncertainty of when cold periods may occur in Florida, the requirement to test at 90 to 100 percent of rated capacity is impractical.

For these reasons, it is requested that the wording on page 2 of my March 13th letter be added to Specific Condition 2.

2. *Requested emission changes* - The requested emission changes in my letter of March 13, 1991 were specific to PM/PM10 for emissions from the GT and sulfur dioxide emissions from the GT and auxiliary boiler; both requested changes were applicable to firing natural gas firing only. This request would not

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

affect the NSPS requirements of the duct burner and auxiliary boiler which are specified in 40 CFR Part 60, Subpart Db. These NSPS, as applicable for natural gas firing, only require specific limitations for NOx emissions. No change in the NOx emission requirements is requested.

The emission changes requested for PM/PM10 and SO_2 would not affect the PSD applicability for these pollutants as discussed in my March 13th letter. Table 1 summarizes the emissions authorized in the construction permit and those requested. As can be noted, emissions of PM/PM10 or SO_2 will not significantly increase. The proposed changes would be incorporated into the construction permit which is federally enforceable.

3. *Particulate matter retest* - Tropicana Products Inc. will perform another "initial" PM compliance test for the GT when firing natural gas. As indicated in my letter of March 13th, a change in Specific Condition 5a to allow either EPA Method 5 or 17 was requested.

4. *Heat input for the auxiliary boiler* - As discussed in my March 13th letter, there was only a slight difference between the heat input using higher heating value of natural gas and the permitted heat input (i.e., 0.8 percent). Because calculated heat input can vary, a maximum heat input of 160 million Btu/hr was requested. It should be noted that the emissions, in either lb/hr or tons/yr, would remain as permitted except as provided in Table 1.

5. *PM/PM10 testing methods* - This comment confirms the request for using either EPA Method 5 or 17 for PM. For determining compliance with PM10, the results from the PM tests would conservatively be assumed to be PM10.

I hope this information clarifies the requested changes. Please call if there are any questions concerning this response.

Sincerely,

Kennard F. Kosky

Kennard F. Kosky, P.E.
President and Principal Engineer

cc: Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Kerns, P.E. FDER Southwest District Office

Table 1. Tropicana Products Inc.: Comparison of Permitted and Requested Changes

Pollutant and Source	Permitted Emissions (tons/yr)	Requested Emissions (tons/yr)
Particulate Matter (PM):		
Gas Turbine	6.6	8.76[a]
HRSG	0.95	0.95
Auxiliary Boiler	7.03	7.03
Total:	14.58	16.74
Emissions Offsets	-1.2	-1.2
Net Emissions Increase	13.38	15.54
Significant Emission Rate	25	25
PM10		
Gas Turbine	6.6	8.76[a]
HRSG	0.95	0.95
Auxiliary Boiler	4.2	4.2
Total:	11.75	13.91
Emissions Offsets	-1.2	-1.2
Net Emissions Increase	10.55	12.71
Significant Emission Rate	15	15
SO_2		
Gas Turbine	1.07	2.63[b]
HRSG	0.23	0.66[c]
Auxiliary Boiler	34.33	34.81[d]
Total:	35.63	38.1
Emissions Offsets	-0.1	-0.1
Net Emissions Increase	35.53	38
Significant Emission Rate	40	40

[a] See page 2 of March 13, 1991, letter, i.e., 2 lb/hr and 8.76 tons/yr maximum.

[b] See page 3 of March 13, 1991, letter, i.e., 1.2 lb/hr maximum and 0.6 lb/yr average (2.63 tons/yr).

[c] See page 3 of March 13, 1991, letter, i.e., 0.29 lb/hr maximum and 0.15 lb/yr average (0.66 tons/yr).

[d] No change in oil firing (47.2 lb/hr and 34 tons/yr); See page 3 of March 13, 1991, letter, i.e., 0.44 lb/hr maximum and 0.22 lb/yr average (0.97 tons/yr at 8,760 hours per year or 0.81 tons/yr for 7,320 hours/yr).

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

June 12, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Kennard F. Kosky, P.E.
KBN Engineering & Applied Sciences, Inc.
1034 NW 57th Street
Gainesville, Florida 32605

Re: Manatee County - A.P.
Tropicana Products, Inc.
AC 41-157745 - Gas Turbine & HRSG
AC 41-159485 - Auxiliary Boiler

Dear Mr. Kosky:

The Department is in receipt of your letter dated March 13 requesting modification to the specific conditions of the above referenced projects to allow an increase in the PM/PM_{10} and SO_2 emissions, along with a request to allow both EPA Method 5 and 17 for determining compliance with PM/PM_{10} emissions and to modify the heat input testing requirements.

Before the Department can make a final decision on your requests, please clarify/satisfy some of the concerns raised by our Compliance Section staff (a copy of the memo is attached).

This letter must be attached to each permit and shall become a part of the permits.

Sincerely,

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

CHF/MB/plm

Attachment

c: Gordan Hartman, TPI
J. Harry Kerns, P.E., SWD

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee
To Mirza B Location
To Location
To Location
From Date

Interoffice Memorandum

TO: Barry Andrews
Mirza Baig

THRU: Jim Pennington

FROM: Mike Harley

DATE: June 4, 1991

SUBJ: Tropicana Products, Inc.--Combined Cycle Unit (AC 41-157745) and Auxiliary Boiler

---

On March 18, 1991, KBN asked the Department to amend the above referenced permits. The company's request has been reviewed and the following suggestions are offered.

1. The actual operation rate of a gas turbine is limited by the volume flow rate of gas rather than the mass flow rate of gas. In other words, the volume of gas passing through a turbine at the maximum operation rate is reasonably constant, but the mass of the gas varies in proportion to the ambient temperature. The mass emissions of the regulated pollutants are a function of the mass quantity of gas passing through the gas turbine and the mass quantity of fuel burned. Since a gas turbine most nearly approaches the maximum design operation rate as the weather becomes cooler and the ambient air becomes more dense, the emissions from the combined cycle unit should be tested during the coolest portion of the year. If the combined cycle unit is tested at a rate that is less than 90-100% of the maximum permitted operation rate, then the combined cycle unit should be restricted to the tested rate until it is retested and passes at a higher rate.

2. The requested emission changes should be reviewed to determine whether any of the applicable provisions of 40 CFR 60 Subpart Db would be violated. The permittee's projected increases in annual emissions are not acceptable. The Department usually evaluates the projected annual emission increases on the basis of maximum hourly emissions. If the permittee is willing to accept a set of federally enforceable restrictions to avoid PSD then some other value may be used. It appears that the requested emission increases would trigger PSD.

3. The reported problems with the particulate emission test make it appropriate to ask the permittee to perform additional compliance testing. In addition, the requested increases in PM and PM_{10} emissions provide the justification to request individual emission tests for both pollutants.

4. It is the permittee's responsibility to ensure that the heating value and contents of the fuel are maintained at levels that will result in compliance with the conditions of the affected permits. The requested increase in fuel sulfur content may be permissible providing the permittee is subject to the appropriate permit review procedure and measures are implemented to prevent a repeat. It is my understanding that this was the initial compliance test, so enforcement is not recommended at this time.

5. The company may elect to use either EPA Method 5, 5B, or 17 to measure particulate emissions. Either EPA Method 201 or 201A is recommended for the measurement of PM_{10} emissions.

If you have any questions, please contact either me or Jim Pennington.

MDH/mdh

March 13, 1991

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

Subject: Tropicana Products, Inc.--Request for Modification of Construction Permits: Permit Number AC 41-157745 for the Gas Turbine (GT) and Heat Recovery Steam Generator (HRSG) and Permit Number AC 41-159485 for the Auxiliary Boiler

Dear Clair:

This correspondence presents a request on behalf of Tropicana Products, Inc., to change several conditions of the construction permits. These changes are a result of initial compliance tests performed for the GT/HRSG and auxiliary boiler. In addition, a clarification of FDER's policy of testing GTs is requested. The construction permits are valid through December 1, 1991.

For your information, the test results for the GT/HRSG duct burners and auxiliary boiler compared to the permitted amounts are presented in Tables 1 and 2, respectively. The results of the tests for each source as they relate to the permitted values are discussed in the following sections.

GAS TURBINE/HEAT RECOVERY STEAM GENERATOR

Clarification of Heat Input Testing Requirements for GT--Because a combustion turbine has air as its principal working fluid, ambient temperature affects the amount of heat input that can be achieved. The heat input for the GT during the test was 373.4 million British thermal units per hour (10^6 Btu/hr) compared to the permitted value of 425.5 10^6 Btu/hr. As noted in Table 2-2 of the prevention of significant deterioration (PSD) permit application, the maximum heat input will range from 425.5 10^6 Btu/hr for ISO design conditions, i.e., representative of winter conditions, to 373.7 10^6 Btu/hr during the summer. The compliance test was performed on September 6, 1990, under conditions representative of summer. Therefore, the heat input during the test was the maximum rate for the test conditions.

However, the performance is not within the 90 percent of the maximum heat input of 425.5 million Btu/hour. To achieve testing under a heat input of up to 90 percent of the maximum will require testing to be performed during the winter. This appears impractical since such conditions will be difficult to schedule due to changing meteorology and would likely create additional cost for tying up a testing team. Because the Tropicana GT/HRSG fires only natural gas and NO_x is

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controlled at a specific ratio of steam to fuel, it appears pragmatic that testing be required at 90 percent of the maximum heat input for the specific temperature conditions during the test, i.e., summer, winter, or spring/fall. Therefore, Tropicana requests that specific condition be modified to include the following:

> "Testing to determine compliance must be performed within 90 percent of the maximum heat input for the temperature conditions experienced during the compliance test."

Particulate Matter-- The particulate matter reported during the test of the GT alone exceeded the permitted emission rate of 1.5 pounds per hour (lb/hr). As stated in the test report, this was a result of oily material in the probe wash. Further communications with the testing firm suggest that the apparent particulate is likely due to impurities in the acetone used to wash the probe. The amount seems to vary with the acetone used and can account for all the reported particulate. The high flow rate and small particulate catch coupled with the potential contribution from the acetone make the results of this test questionable. In contrast, the tests performed with both the GT and HRSG duct burners operating met the permitted particulate emission rate of 1.75 lb/hr. Indeed, the reported emission rate of 1.34 lb/hr for both the GT and duct burners was less than the permitted particulate emission rate for the GT alone.

These results suggest uncertainties in the test method due to sampling large volumes of air with small amounts of particulate matter. To assure that the retest does not have any uncertainty associated with the test method, it is requested that the following modifications be made to Specific Conditions 3 and 5:

1. Change allowable PM/PM10 emissions of Specific Condition 3 to 2 lb/hr (8.8 TPY) for the GT. This will increase PM/PM10 emissions by 2.2 TPY which would increase total emissions of the project to 15.5 TPY for PM and 12.7 TPY for PM10. Both are below the significant emission rates.

2. Change Specific Condition 5a to allow both EPA Method 5 and EPA Method 17 to be performed for determining compliance with PM and PM10 conditions.

Sulfur Dioxide (SO_2)--The calculated SO_2 emissions exceed the permitted limit of 0.24 lb/hr. The construction permit application was prepared using AP-42 emission factors to estimate SO_2 emissions when burning natural gas (see Appendix C in the PSD application for calculations). This emission factor, 0.6 $lb/10^6$ ft^3 of gas, is lower than actual estimates of SO_2 emissions using data

obtained from Florida Gas Transmission Company (FGT). Several months of data from FGT have been summarized in Table 3. Since Tropicana Products, Inc., has no control of the sulfur in the natural gas and the amount is still relatively small, it is requested that Specific Condition 5 be adjusted as follows:

Gas Turbine

Maximum SO_2 emissions--1.2 lb/hr
(425.5 10^6 Btu/hr x ft^3/1,024 Btu x 1 gr/100 ft^3 x 1 lb/7,000 gr x 2 lb SO_2/lb S)

Average annual SO_2 emissions--2.63 TPY
(425.5 10^6 Btu/hr x 1/1,024 Btu x 0.5 gr/100 ft^3 x 1 lb/7,000 gr x 2 lb SO_2/lb S x 4.38 TPY/lb/hr)

HRSG Duct Burner

Maximum SO_2 emissions--0.29 lb/hr
(104 10^6 Btu/hr x 0.0028 lb SO_2/10^6 Btu; emission factor from above)

Average annual SO_2 emissions--0.60 TPY
[97 10^6 Btu/hr x 0.0014 lb SO_2/10^6 Btu (emission factor from above) x 4.38 TPY/lb/hr]

Maximum and average sulfur contents of 1 gr/100 ft^3 and 0.5 gr/100 ft^3 were used to provide an adequate margin for the project.

AUXILIARY BOILER

Heat Input--The calculated heat input of the auxiliary boiler on natural gas firing was only slightly above (i.e., 0.8 percent) the permitted rate. This calculation was based on the higher heating value of natural gas (i.e., dry conditions), which was consistent with those presented in the permit application. However, at the actual (i.e., lower) heating value of natural gas (i.e., 1,010 Btu/ft^3), the heat input would be calculated as 156.5 10^6 Btu/hr, or within the permitted value. To assure that future calculations demonstrate compliance, it is requested that the heat input for the auxiliary boiler be rounded up to 160 10^6 Btu/hr. As noted from the test report, the emissions for all pollutants except SO_2 were less than the permitted limits.

SO_2--As discussed previously, the actual sulfur in the natural gas is greater than the AP-42 emission factor. As a consequence, it is requested that the permit limits when firing natural gas be adjusted to the following:

Maximum SO_2 emissions--0.44 lb/hr
(157.4 10^6 Btu/hr x 0.0028 lb $SO_2/10^6$ Btu)

Average annual SO_2 emissions--0.97 TPY
(157.4 10^6 Btu/hr x 0.0014 lb $SO_2/10^6$ Btu x 4.38 TPY/lb/hr)

Increasing the operating permit limits for SO_2 for the GT/HRSG and auxiliary boiler will not affect PSD applicability. The new potential emissions from the GT/HRSG and auxiliary boiler will be 38.2 TPY, which is less than the PSD significant emission rate of 40 TPY.

If there are any questions, please call.

Sincerely,

Kennard F. Kosky

Kennard F. Kosky, P.E.
Principal Engineer

cc: John Webb, Tropicana
Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Keins, P.E., FDER Tampa District
B. Andrews
R. Baum, Manatee Co.

Table 2. Comparison of Tested and Permitted Emissions for Tropicana Auxiliary Boiler (AC 41-159485)

Parameter	Units	Test Results	Permitted
AUXILIARY BOILER WITH NATURAL GAS FIRING:			
Heat Input	10^6 Btu/hr	158.7[a]	157.4
Nitrogen Oxides	lb/hr	8.61	15.7
Carbon Monoxide	lb/hr	15.6	19.75
Volatile Organic Compounds	lb/hr	0.14	1.88
Particulate	lb/hr	--	0.23
Visible Emissions	%	0	10
Sulfur Dioxide	lb/hr	0.17[b]	0.09
AUXILIARY BOILER WITH OIL FIRING:			
Heat Input	10^6 Btu/hr	141.7[c]	157.4
Nitrogen Oxides	lb/hr	15.4	31.4
Carbon Monoxide	lb/hr	0.62	20.28
Volatile Organic Compounds	lb/hr	0	1.93
Particulate	lb/hr	1.95	4.7
Visible Emissions	%	0	0
Sulfur Dioxide	lb/hr	13.0[d]	47.2

[a]Based on the average high heating value (HHV) of gas; 1,024 Btu/ft^3.
[b]SO_2 calculated based on fuel input and an average sulfur content in gas of 0.43 gr/100 ft^3.
[c]Based on HHV of oil of 141,700 Btu/gallon.
[d]SO_2 calculated based on fuel input and 0.09% sulfur.

Table 1. Comparison of Tested and Permitted Emissions for Tropicana Gas Turbine and Heat Recovery Steam Generator (AC 41-157745)

Parameter	Units	Test Results	Permitted
COMBUSTION TURBINE:			
Capacity	kW	39.76	45.4[a]
Heat Input	10^6 Btu/hr	373.4[b]	425.5[a]
Nitrogen Oxides	lb/hr	37.20	62.6
Carbon Monoxide	lb/hr	2.93	9.1
Volatile Organic Compounds	lb/hr	0.00	3.6
Particulate	lb/hr	1.84	1.5
Visible Emissions	%	0.00	10
Sulfur Dioxide	lb/hr	0.45[c]	0.24
COMBUSTION TURBINE WITH DUCT BURNERS:			
Capacity	kW	37.69	45.4[a]
Heat Input - CT	10^6 Btu/hr	356.92[b]	425.5[a]
- DB	10^6 Btu/hr	95.97[b]	104
Nitrogen Oxides - Total	lb/hr	40.69	73
- CT	lb/hr	35.49[d]	62.6
- DB	lb/hr	5.20	10.4
Carbon Monoxide - Total	lb/hr	13.50	23.66
- CT	lb/hr	2.80[d]	9.1
- DB	lb/hr	10.70	14.56
VOCs - Total	lb/hr	1.24	7.76
- CT	lb/hr	0.00	3.6
- DB	lb/hr	1.24	4.16
Particulate - Total	lb/hr	1.34	1.75
- CT	lb/hr	1.76[d]	1.5
- DB	lb/hr	-0.42	0.25
Visible Emissions	%	0.00	10
Sulfur Dioxide - Total	lb/hr	0.54[c]	0.30
- CT	lb/hr	0.43[c]	0.24
- DB	lb/hr	0.11[c]	0.06

[a] Summer design conditions are 37.9 MW and 373.7 10^6 Btu/hr and autumn design conditions are 41.7 MW and 408.9 10^6 Btu/hr.
[b] Based on the average high heating value (HHV) of gas; 1,024 Btu/ft^3.
[c] SO_2 calculated based on fuel input and an average sulfur content in gas of 0.43 gr/100 ft^3.
[d] Calculated based on heat input for GT and emissions from CT only test.

Table 3. Sulfur Content, Heat Content, and SO_2 Emission Factors for Natural Gas

Date	Sulfur Content (gr/100 cf)	Heat Content (Btu)	SO_2 Emission Factor (lb/10^6 Btu)	SO_2 Emission Factor (lb/10^6 cf)
2/6/90	0.30	1,031	0.00083	0.857
2/13/90	0.05	1,028	0.00014	0.143
2/20/90	0.35	1,025	0.00098	1.000
2/27/90	0.45	1,024	0.00126	1.286
3/6/90	0.45	1,025	0.00125	1.286
3/13/90	0.30	1,026	0.00084	0.857
3/20/90	0.35	1,026	0.00097	1.000
3/27/90	0.35	1,025	0.00098	1.000
4/3/90	0.60	1,026	0.00167	1.714
4/10/90	0.25	1,022	0.00070	0.714
4/17/90	0.40	1,026	0.00111	1.143
4/24/90	0.30	1,022	0.00084	0.857
5/1/90	0.40	1,020	0.00112	1.143
5/8/90	0.25	1,034	0.00069	0.714
5/15/90	0.20	1,023	0.00056	0.571
6/5/90	0.45	1,020	0.00126	1.286
6/12/90	0.40	1,018	0.00112	1.143
6/19/90	0.70	1,017	0.00197	2.000
6/26/90	0.45	1,019	0.00126	1.286
7/3/90	0.55	1,022	0.00154	1.571
7/10/90	0.35	1,022	0.00098	1.000
7/17/90	0.45	1,021	0.00126	1.286
7/30/90	0.30	1,021	0.00084	0.857
8/7/90	0.50	1,024	0.00140	1.429
8/14/90	0.45	1,022	0.00126	1.286
8/21/90	0.40	1,022	0.00112	1.143
8/28/90	0.70	1,022	0.00196	2.000
9/4/90	0.55	1,029	0.00153	1.571
9/11/90	0.40	1,025	0.00111	1.143
9/18/90	0.45	1,026	0.00125	1.286
9/25/90	0.40	1,026	0.00111	1.143
10/2/90	0.45	1,029	0.00125	1.286
10/9/90	0.45	1,025	0.00125	1.286
10/16/90	0.70	1,028	0.00195	2.000
10/28/90	0.80	1,024	0.00223	2.286
Average:	0.43	1,024	0.00119	1.216
Maximum:	0.80	1,034	0.00223	2.286
Minimum:	0.05	1,017	0.00014	0.143
Std. Dev.	0.15	4	0.00042	0.427

Source: Florida Gas Transmission Company, 1990.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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To:	Location:
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Interoffice Memorandum

TO: Carol M. Browner

FROM: Steve Smallwood

DATE: October 17, 1991

SUBJ: Amendment to Construction Permits
AC 41-155745 and AC 41-159485
PSD-FL-136

Attached for your approval and signature is a letter allowing the use of alternative sampling methods, maximum capacity stack testing and permit modification process requirements, along with extension of expiration dates for the above referenced projects.

I recommend your approval and signature.

SS/MB/plm

Attachment

KBN

RECEIVED

SEP 24 1991

Division of Air
Resources Management

September 20, 1991

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

Subject: Manatee County A.P. - Tropicana Products Inc.
AC 41-157745; Gas Turbine & HRSG and
AC 41-159485; Auxiliary Boiler

Dear Clair:

This correspondence is submitted on behalf of Tropicana Products Inc. for the purpose of requesting a response to my letter dated July 24, 1991, and an extension of the expiration date of the above referenced permits.

It may be appropriate to review the history of these permits to better understand my request. On May 30, 1989 the Department issued permits for the gas turbine/HRSG and auxiliary boiler. Testing as required by the specific conditions of the permit was done in August and September of 1990. These results were submitted to the Southwest District Office. Applications for operating permits were submitted to the District Office in January 1991 along with a request to modify, in a minor way, the operating permit conditions. The District notified us that any changes in the permit conditions would have to be requested from Tallahassee. As a result, the operating permit applications were withdrawn on February 2, 1991 and comments dated February 6, 1991 were obtained from the District. A request to modify the permits, which was dated March 13, 1991, was submitted to your office. After several inquiries regarding the status of my request, correspondence identifying concerns was finally transmitted by your office (i.e., your letter dated June 12, 1991). I met with Mr. Mike Harley, the Compliance Section staff member who raised the concerns, during the week of July 8, 1991 to clarify my request and make sure I understood his concerns. My letter dated July 24, 1991 responded to the Department's concerns. To this date we have not received any response.

As a result, I respectfully request that permit changes, which are relatively minor, be incorporated into the construction permits. Also, I request an extension of the expiration date of the permit to March 1, 1992. This request is consistent with Specific Conditions 8 and 11, of permits AC 41-157745 and AC 41-159485, respectively. This will allow us time to retest the units and submit the appropriate information for an operating permit.

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

If there are any questions on this request please call. Your expeditious attention to this request is appreciated.

Sincerely,

Kennard F. Kosky, P.E.
President and Principle Engineer

cc: Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Kerns, P.E. FDER Southwest District Office

FACSIMILE COVER SHEET

4/9/91

ORGANIZATION: FDEP

1-972-6979

3

Mr. Fama

Ken Wanted to Legalize this letter by signing it. He is also sending you the original by Regular Mail

Thanks

Sl Bonnie

Proj. # 90009

Return Original to KFK

KBN

FACSIMILE COVERSHEET

DATE: 9/20/91

TO: Clair Fancy

ORGANIZATION: FDER

FAX NUMBER: 1-922-6979 TELEPHONE NUMBER: _____

FROM: Ken Kosky

TOTAL NUMBER OF PAGES: 3 (including cover page)

MESSAGE/INSTRUCTIONS:

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KBN Engineering and Applied Sciences, Inc.
1034 NW 57th Street, Gainesville, FL 32605
Phone (904) 331-9000 FAX (904) 332-4169

KBN

FACSIMILE COVER SHEET

DATE: July 24, 1991

TO: C. H. Fancy

ORGANIZATION: FDER

FAX NUMBER: 1-922-6979 TELEPHONE NUMBER: _____

FROM: K. Kosky

TOTAL NUMBER OF PAGES: 4 (including cover page)

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cc: M. Baig
M. Harley
CHF/BA

KBN Engineering and Applied Sciences, Inc.
1034 NW 57th Street, Gainesville, FL 32605
Phone (904) 331-9000 FAX (904) 332-4189

MAS/FAX

KBN

July 24, 1991

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

Subject: Manatee County A.P. - Tropicana Products Inc.
AC 41-157745; Gas Turbine & HRSG and
AC 41-159485; Auxiliary Boiler

Dear Clair:

This correspondence provides clarifications requested in your letter dated June 12, 1991, regarding the subject sources. I met with Mr. Harley on July 15, 1991, to discuss the points he raised. The clarifications are provided in the order of Mr. Harley's memorandum of June 4, 1991.

1. *Heat input in gas turbine (GT) during compliance testing* - My letter dated March 13, 1991, requested an addition to the permit to allow a comparison of the heat input rate during testing with the rated capacity of the GT based on ambient temperature. While appropriate for most sources, the Department's policy to test between 90 and 100 percent of permitted capacity is not appropriate for GTs, due to the constraints placed by ambient temperature on maximum heat input that can be achieved. It should be noted that the construction permit did not specifically address the need to test between 90 and 100 percent of maximum heat input, nor do the Department's regulations address this requirement.

For the testing performed last September, the GT was 99.9 and 95.5 percent of the rated summer heat input with and without duct firing, respectively.

For GTs, there is a practical reason for allowing the comparison of heat rate during testing with ambient conditions. In order to obtain maximum heat input, GTs would have to be tested during the coldest time of the year which usually occur for short durations, i.e., about one week's time. If all GTs in the state were required to test during this period, there would be insufficient stack test teams to provide this service. Coupled with the uncertainty of when cold periods may occur in Florida, the requirement to test at 90 to 100 percent of rated capacity is impractical.

For these reasons, it is requested that the wording on page 2 of my March 13th letter be added to Specific Condition 2.

2. *Requested emission changes* - The requested emission changes in my letter of March 13, 1991 were specific to PM/PM10 for emissions from the GT and sulfur dioxide emissions from the GT and auxiliary boiler; both requested changes were applicable to firing natural gas firing only. This request would not

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1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

affect the NSPS requirements of the duct burner and auxiliary boiler which are specified in 40 CFR Part 60, Subpart Db. These NSPS, as applicable for natural gas firing, only require specific limitations for NOx emissions. No change in the NOx emission requirements is requested.

The emission changes requested for PM/PM10 and SO_2 would not affect the PSD applicability for these pollutants as discussed in my March 13th letter. Table 1 summarizes the emissions authorized in the construction permit and those requested. As can be noted, emissions of PM/PM10 or SO_2 will not significantly increase. The proposed changes would be incorporated into the construction permit which is federally enforceable.

3. *Particulate matter retest* - Tropicana Products Inc. will perform another "initial" PM compliance test for the GT when firing natural gas. As indicated in my letter of March 13th, a change in Specific Condition 5a to allow either EPA Method 5 or 17 was requested.

4. *Heat input for the auxiliary boiler* - As discussed in my March 13th letter, there was only a slight difference between the heat input using higher heating value of natural gas and the permitted heat input (i.e., 0.8 percent). Because calculated heat input can vary, a maximum heat input of 160 million Btu/hr was requested. It should be noted that the emissions, in either lb/hr or tons/yr, would remain as permitted except as provided in Table 1.

5. *PM/PM10 testing methods* - This comment confirms the request for using either EPA Method 5 or 17 for PM. For determining compliance with PM10, the results from the PM tests would conservatively be assumed to be PM10.

I hope this information clarifies the requested changes. Please call if there are any questions concerning this response.

Sincerely,

Kennard F. Kosky

Kennard F. Kosky, P.E.
President and Principal Engineer

cc: Jeff Johns, Tropicana
Gordan Hartman, Tropicana
J. Harry Kerns, P.E. FDER Southwest District Office

Table 1. Tropicana Products Inc.: Comparison of Permitted and Requested Changes

Pollutant and Source	Permitted Emissions (tons/yr)	Requested Emissions (tons/yr)
Particulate Matter (PM):		
Gas Turbine	6.6 ✓	8.76[a] 2.16
HRSG	0.95	0.95 ∅
Auxiliary Boiler	7.03 ✓	7.03 ∅
Total:	14.58	16.74 2.16
Emissions Offsets	-1.2	-1.2
Net Emissions Increase	13.38	15.54
Significant Emission Rate	25	25
PM10		
Gas Turbine	6.6 ✓	8.76[a]
HRSG	0.95	0.95 ∅
Auxiliary Boiler	4.2 ✓	4.2 ∅
Total:	11.75	13.91 2.16
Emissions Offsets	-1.2	-1.2
Net Emissions Increase	10.55	12.71
Significant Emission Rate	15	15
SO_2		
Gas Turbine	1.07 ✓	2.63[b]
HRSG	0.23	0.66[c]
Auxiliary Boiler	34.33 ✓	34.81[d]
Total:	35.63	38.1
Emissions Offsets	-0.1	-0.1
Net Emissions Increase	35.53	38
Significant Emission Rate	40	40

[a] See page 2 of March 13, 1991, letter, i.e., 2 lb/hr and 8.76 tons/yr maximum.

[b] See page 3 of March 13, 1991, letter, i.e., 1.2 lb/hr maximum and 0.6 lb/yr average (2.63 tons/yr).

[c] See page 3 of March 13, 1991, letter, i.e., 0.29 lb/hr maximum and 0.15 lb/yr average (0.66 tons/yr).

[d] No change in oil firing (47.2 lb/hr and 34 tons/yr); See page 3 of March 13, 1991, letter, i.e., 0.44 lb/hr maximum and 0.22 lb/yr average (0.97 tons/yr at 8,760 hours per year or 0.81 tons/yr for 7,320 hours/yr).