

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Mr. Nick Emanuel, C.O.O.
Citrosuco North America, Inc.
P.O. Box 3950
Lake Wales, Florida 33898-3950

DEP File No. 1050001-006-AC
Peel Dryer Capacity
Polk County

Enclosed is Final Permit Number 1050001-006-AC. This permit authorizes Citrosuco North America, Inc. to account for the higher moisture content of the peel currently entering the dryers. The allowable total tons per year of wet peel input to the dryers are eliminated and replaced by the total allowable boxes of citrus fruit processed in any consecutive 12-month period. This limit, 32,000,000 boxes per year, does not result in a production increase at its citrus juice processing plant located at 5937 Highway 60, East, Lake Wales, Polk County. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.



Trina Vielhauer, Chief
Bureau of Air Regulation

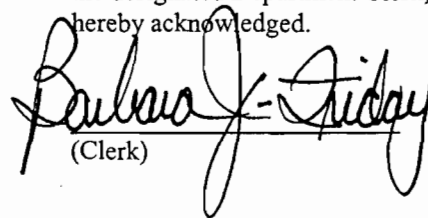
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 1/15/03 to the person(s) listed:

Mr. Nick Emanuel, C.O.O., Citrosuco, North America *
Mr. Wayne Griffin, P.E., G2 Services Ltd.
Mr. Eric Peterson, P.E., DEP SWD

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

 1/15/03
(Clerk) (Date)

1 APPLICANT NAME AND ADDRESS

Citrosuco North America, Inc.
5937 Highway 60, East
Lake Wales, Florida 33898

Authorized Representative: Nick Emanuel, C.O.O.

2 FACILITY DESCRIPTION, PROJECT DETAILS AND RULE APPLICABILITY

The facility is an existing citrus juice processing facility. The applicant applied for a permit on September 11, 2002, to voluntarily subject the facility to the citrus oil recovery requirements of Section 403.0875, F.S. After receiving the draft permit package, the applicant amended their request to change the total citrus peel input limit to the existing dryers rather than address citrus oil recovery. This request was received on November 5, 2002. The project is a request to change the input limits for the existing citrus peel dryers to account for the higher moisture content of the peel currently entering the dryers. To accomplish this, the currently allowable total tons per year of wet input to the dryers will be replaced by the total allowable boxes of citrus fruit processed in any consecutive 12-month period. This limit, 32,000,000 boxes per year, will not result in a production increase. The applicant did not seek any relaxation in currently enforceable conditions for its other existing emissions units.

The emissions units addressed by this permit are Citrus Peel Dryer No. 2, I.D. 006, and Citrus Peel Dryer No. 3, I.D. 007.

No emissions increases are associated with this project.

The proposed project is subject to preconstruction review requirements under the provisions of Chapter 403, F.S., and Chapters 62-4, 62-204, 62-210, 62-212 and 62-297, F.A.C. The existing facility is located in an area designated, in accordance with Rule 62-204.340, F.A.C., as attainment or unclassifiable for the criteria pollutants ozone, PM₁₀, carbon monoxide, SO₂, nitrogen dioxide and lead. This facility is classified as a Major or Title V Source of air pollution because emissions, of at least one regulated air pollutant, exceed 100 tons per year (TPY). The Department has previously found that citrus juice processing facilities such as this facility have potential emissions of VOC exceeding 250 TPY.

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 212.400-1 of Chapter 62-212, F.A.C. Because emissions are greater than 250 TPY for at least one criteria pollutant (VOC), the facility is also an existing Major Facility with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). The net increase in emissions of PM/PM₁₀, NO_x, SO₂, CO and VOC do not exceed the PSD significance levels of Table 212.400-2 of Chapter 62-212, F.A.C. Therefore the project is not subject to PSD requirements of Rule 62-212.400, F.A.C., for these pollutants.

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs). This project is not subject to a case-by-case MACT determination, per Rule 62-204.800(10)(d)2, F.A.C., because it does not result in the construction or reconstruction of a major source of HAP emissions. This project is not subject to any requirements under the National Emissions Standards for Hazardous Air Pollutants, 40 CFR 61 or 63.

3 SOURCE IMPACT ANALYSIS

An impact analysis was not required for this project because it is not subject to the requirements of PSD.

4 EXCESS EMISSIONS

Excess emissions for this emissions unit are specified in Section II of the permit. This permitting action does not change any authorization for excess emissions provided by other Department permits for other emissions units.

5 LIMITS AND COMPLIANCE REQUIREMENTS

The permit limits the total fruit processed by the plant in a consecutive 12-month period as the method of limiting emissions. Additional specific emission limits were not imposed because the potential emissions are well below the PSD significance criteria. The operating limits and the compliance requirements are detailed in Section III of the permit.

6 PRELIMINARY DETERMINATION

Based on the foregoing technical evaluation of the application and additional information submitted by the applicant and other available information, the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department's preliminary determination is to issue the draft permit to allow the processing of 32.0 million boxes of citrus fruit in any consecutive 12-month period, subject to the terms and conditions of the draft permit.

7 FINAL DETERMINATION

An "INTENT TO ISSUE AIR CONSTRUCTION PERMIT" to Citrusuco North America for their existing citrus juice processing plant located at 5937 Highway 60, East, Lake Wales, Polk County was clerked on December 11, 2002. The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT" was published in the Winter Haven News Chief on December 20, 2002. The Draft Air Construction Permit was available for public inspection at the Southwest District office in Tampa and the permitting authority's office in Tallahassee. Proof of publication of the "PUBLIC NOTICE OF INTENT TO ISSUE TITLE V AIR OPERATION PERMIT" was received on December 26, 2002.

No comments were received during the fourteen (14) day public comment period. As a result, the Final Air Construction permit will be issued, as noticed.

DETAILS OF THIS ANALYSIS MAY BE OBTAINED BY CONTACTING:

Edward J. Svec, Engineer IV
Department of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Telephone: 850/488-0114



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE

Citrosuco North America, Inc.
Post Office Box 3950
Lake Wales, Florida 33859-3950

| | |
|-------------------|---------------------|
| Permit No. | 1050001-006-AC |
| Project | Peel Dryer Capacity |
| SIC No. | 2037 |
| Expires: | December 31, 2003 |

Authorized Representative:

Nicholas Emanuel, COO

PROJECT AND LOCATION

This permit authorizes Citrosuco North America, Inc., Lake Wales Plant to process 32,000,000 boxes of citrus fruit in any 12-consecutive month period.

This facility is located on Highway 60 – East of Lake Wales, Lake Wales, Polk County. The UTM coordinates are: Zone 17; 452.4 km E and 3085.5 km N.

STATEMENT OF BASIS

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to construct the emissions units in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

APPENDICES

The attached appendix is a part of this permit:

Appendix GC General Permit Conditions

Howard L. Rhodes, Director
Division of Air Resource
Management

AIR CONSTRUCTION PERMIT
SECTION I. FACILITY INFORMATION

FACILITY AND PROJECT DESCRIPTION

This facility consists of an existing citrus processing facility that extracts juice from whole citrus fruit to produce single-strength and frozen concentrated juices and by-products of juice production such as citrus oils, citrus molasses and animal feed.

The applicant is requesting the substitution of a processing limit of 32,000,000 boxes of citrus fruit in any 12-consecutive month period for the current requirement of total combined input of pressed peel cake through both citrus peel dryers not to exceed 285,700 tons for any consecutive 12-month period (daily average basis). The applicant did not seek any relaxation in currently enforceable conditions in its other existing emissions units.

No emissions increases are associated with this project.

The facility information, project scope, emissions and rule applicability are described in detail in the Department's Technical Evaluation and Determination.

REVIEWING AND PROCESS SCHEDULE

| | |
|--------------------|---|
| September 11, 2002 | Received permit application (no application fee required) |
| September 11, 2002 | Application complete |
| November 5, 2002 | Received revised permit application (no application fee required) |
| November 5, 2002 | Application complete |
| December 11, 2002 | Distributed Notice of Intent to Issue and supporting documents |
| December 20, 2002 | Notice of Intent published in the Winter Haven News Chief |

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Permit application
- Department's Technical Evaluation and Determination
- Department's Intent to Issue

AIR CONSTRUCTION PERMIT
SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District office at 3804 Coconut Palm Drive, Tampa, Florida 33619-8218, and phone number 813/744-6100.
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403, F.S. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S.; Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297, F.A.C.; and, the Code of Federal Regulations Title 40, Part 60, adopted by reference in the F.A.C. regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Expiration: This air construction permit shall expire on December 31, 2003. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C.]
7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A revision to the Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for a Title V operation permit at least ninety days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test

AIR CONSTRUCTION PERMIT

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Southwest District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

OPERATIONAL REQUIREMENTS

9. Fruit Throughput Limited: The owner or operator shall not process more than 32,000,000 boxes of citrus fruit in any consecutive 12-month period. For purposes of this permit, a box of citrus fruit shall be defined to contain 90 pounds of oranges or 85 pounds of grapefruit. The owner or operator shall make and maintain monthly and rolling 12-month records of fruit processing rates to demonstrate compliance with this limitation. Such records shall be made from daily processing records and shall be completed no later than the 10th day of each following month. [Rule 62-4.070(3), F.A.C.; and, Request by applicant on November 5, 2002]

10. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's Southwest District office. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]

11. Circumvention: No person shall circumvent any air pollution control device or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]

12. Excess Emissions: This permit does not change any authorization for excess emissions provided by other Department permits for other emissions units. The following excess emissions provisions of state rule apply to these emissions units (emissions units I.D. 006 and 007) as specified below.
 - (a) Excess emissions resulting from start-up and shutdown are permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24-hour period.
 - (b) Excess emissions resulting from malfunction of this emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for longer duration.
 - (c) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited.

[Rules 62-210.700(1), (4) and (5), F.A.C.]

AIR CONSTRUCTION PERMIT

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

13. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]

- (a) **Required Equipment.** The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- (b) **Accuracy of Equipment.** Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Duration of Record Keeping: Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b) and 62-213.440(1)(b)2.b., F.A.C.]
15. Excess Emissions Report: In case of excess emissions resulting from malfunction, the owner or operator shall notify the Department's Southwest District office within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rules 62-4.130 and 62-210.700(6), F.A.C.]
16. Annual Operating Report for Air Pollutant Emitting Facility: The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Southwest District office and, if applicable, the appropriate local program by March 1 of the following year. [Rule 62-210.370(3), F.A.C.]

AIR CONSTRUCTION PERMIT
SECTION III. SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction.

E.U. ID

| <u>No.</u> | <u>Brief Description</u> |
|-------------------|---------------------------------|
| -006 | Citrus Peel Dryer No. 2 |
| -007 | Citrus Peel Dryer No. 3 |

Two (2) 60,000 pound/hour (water removal rate) pressed citrus peel dryers (Citrus Peel Dryers Nos. 2 and 3) have a maximum pressed peel input rate of 50.0 tons/hour of pressed peel (including water) each. The peel dryers are each fired with natural gas at a maximum fuel usage rate of 90,000 cu ft/hour (corresponds to 93.6 MMBtu/hr at a natural gas heat content of 1040 Btu/cu ft). Standby fuel, used when natural gas supply is curtailed, is No. 4 fuel oil, with a maximum sulfur content of 0.5%, at maximum fuel usage rate of 620 gallons/hour. The exhaust gas from the peel dryers are sent to 100,000 pounds/hour (water removal capacity) waste heat evaporators which function as indirect heat exchangers to drive moisture from the press liquor (from the vertical peel press), and also act as particulate scrubber control devices (and to a limited extent an SO₂ control device).

{Permitting note(s): These emissions units are regulated under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD); and, Rule 62-296.320, F.A.C., General Pollutant Emission Limiting Standards.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

1. Capacity.

- a. The maximum total natural gas usage in both of the peel dryers shall not exceed 692.3 MMcf in any consecutive 12-month period (monthly average basis);
- b. The maximum process input rate into each of the peel dryers shall not exceed 50.0 tons/hour of total input including water (daily average basis);
- c. Maximum total No. 4 oil usage in both of the peel dryers shall not exceed 297,600 gallons in any 12 consecutive month period (monthly average basis).

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; and, 1050001-003-AC]

2. Methods of Operation - (i.e., Fuels).

The permittee is authorized to burn only the following fuels in each of the peel dryers:

- a. Primary fuel: Natural gas.
- b. Standby fuel, No. 4 fuel oil with a maximum sulfur content of 0.5% S by weight or better grade. Standby fuel, No. 4 fuel oil, may only be used during periods of natural gas supply curtailment.

[Rules 62-210.200(PTE), 62-4.160(2), and 62-213.440(1), F.A.C.; and, 1050001-003-AC]

Emission Limitations and Standards

3. Particulate matter emissions from the peel dryers shall not exceed the following:

- a. a maximum total emission rate of 30.7 pounds per hour from both dryers together, or the maximum allowable rate as set by the Process Weight Table equations contained within Rule 62-296.320(4)(a)2., F.A.C., whichever is lower;

(Note: For lower process rates, i.e. those below 36.0 tons per hour, the process weight rule equation limitation will be the more stringent limitation.)

- b. a total of 61.4 tons per any consecutive 12-month period from both peel dryers.

AIR CONSTRUCTION PERMIT
SECTION III. SPECIFIC CONDITIONS

(PSD Note: The above limitation is required to insure that this modification does not exceed the PSD significant increase level for this pollutant and thereby trigger PSD review under Rule 62-212.400, F.A.C.)

[Air Construction Permit 1050001-003-AC; and, Rules 62-212.400 and 62-296.320(4)(a)2., F.A.C.]

{PSD Note: VOC emissions in excess of 603.6 tons per any consecutive 12-month period from both peel dryers would exceed the PSD significant increase level for this pollutant and thereby trigger PSD review under Rule 62-212.400, F.A.C. [1050001-003-AC]}

4. Visible emissions from the peel dryers/waste heat evaporators (WHE) exhaust stacks shall be less than 20% opacity. [Rule 62-296.320(4)(b)(1), F.A.C.]
5. The permittee shall not circumvent any air pollution control device or allow the emissions of air pollutants without the applicable air pollution control device (i.e. waste heat evaporator (WHE) which is process equipment which also acts as a control device) operating properly (*see Condition 10.*). [Rule 62-210.650, F.A.C.]

Test Methods and Procedures

6. The exhaust stack for each of the two peel dryers shall be tested for particulate matter (PM), and visible emissions (VE) within 60 days of initial startup, and annually thereafter during the citrus processing season. Emission testing shall be conducted while operating the dryer within 90 - 100% of the maximum process input rate of 50 tons/hr for each dryer, when practical. If it is not practical to test at the maximum process input rate, then the source may be tested at a lower rate. A compliance test submitted at a rate less than 90% of the maximum permitted rate shown above will automatically constitute an amended permit at 110% of the test rate. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. (Clarification: When a unit is limited to an operating rate of 110% of the test rate, the permittee may provide a 15-day notice of its intent to conduct an additional test. The notice may specify a 15-day period during which the unit will be allowed to operate at a higher rate for the purpose of additional testing. For example, the first five days of the 15-day period may be used to bring the unit up to a higher production level; the next five days may be used for the testing itself; and the remainder of the period may be used to return the unit to the permitted capacity that existed before the most recent test. Upon written approval by the department of the most recent test results, the unit may then operate at a 110% of the most recent test load, not to exceed the maximum permitted rate.) The test results shall be submitted to the Air Compliance Section of this office within 45 days of testing. Acceptance of the test by this office will automatically constitute an amended permit at the higher tested rate plus 10%, but in no case shall the maximum permitted rate shown above be exceeded. Failure to submit the following records with the test report may invalidate the test and fail to provide reasonable assurance of compliance:

- The pressed wet peel input rate to the dryer during the test.
- The natural gas or fuel oil usage rate to the dryer during the test.
- If applicable, documentation of the fuel oil's type and sulfur content that was used during the test.
- The WHE's scrubber operating parameters shall be recorded during the particulate emission compliance test. These WHE operating parameters could include water spray rate (gallons/minute), water feed pump/spray operating pressure, pressure drop across the WHE scrubber section or other parameters that are used to control and monitor the operation of the WHE. (Note: The parameter(s) and their operating levels during the compliance test will be used

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SECTION III. SPECIFIC CONDITIONS

to provide reasonable assurance on an ongoing basis that the unit is being operated normally and in compliance with the standards - See Condition 16.) At least one reading shall be taken and recorded during each run of the particulate emission compliance test and the readings shall be included with any peel dryer test report.

[Rules 62-297.310(2) and 62-4.070(3), F.A.C.]

7. Compliance with the emission limitations of Condition 3 shall be determined using EPA Method 5 (*Particulate Matter*) contained in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. The minimum requirements for stationary point source emission test procedures and reporting shall be in accordance with Chapter 62-297, F.A.C. [Rule 62-297.401, F.A.C.]
8. Compliance with the visible emission limitation of Condition 4. shall be determined using EPA Method 9 contained in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. The visible emissions tests shall be conducted by a certified observer and be a minimum of thirty (30) minutes in duration. The test observation period shall be during one of the runs of the particulate test and shall include the period during which the highest opacity emissions can reasonably be expected to occur. [Rule 62-297.310(4)(a)(2) and Chapter 62-401, F.A.C.]
9. Waste heat evaporator (WHE) scrubber operating parameters shall be recorded during any compliance stack test. These WHE operating parameters could include water spray rate (gallons/minute), water feed pump/spray operating pressure, pressure drop across the WHE scrubber section or other parameters that are used to control and monitor the operation of the WHE. (*Note: The parameter(s) and their operating levels during the compliance test will be used to provide reasonable assurance on an ongoing basis that the unit is being operated normally and in compliance with the standards - See Condition 14. and 15.*). At least one reading shall be taken and recorded during each run of a compliance stack test, and the readings shall be included with any peel dryer compliance test report. [Rule 62-4.070(3), F.A.C.]
10. Compliance with the annual (tons per consecutive 12-month period) PM limitation of Condition 3. shall be determined (calculated) based upon the results of the annual PM compliance stack test (lbs PM/ton of material input) and the monthly process input rate (tons/month) records. [Rule 62-213.440(1)(b), F.A.C.]

Monitoring, Record keeping and Reporting Requirements

11. In order to document compliance with the process rate limitations of Condition 1., the permittee shall maintain a daily record of operating hours and material input rate (tons/hour) for each peel dryer. [Rule 62-213.440(1)(b), F.A.C.]
12. In order to document compliance with the fuel usage limitations of Condition 1., the permittee shall maintain monthly records of the total quantity of natural gas (MMcf/month) and No. 4 fuel oil (gallons/month) used in the peel dryers for that month, and for the most recent 12 consecutive month period. [Rule 62-213.440(1)(b), F.A.C.]
13. The permittee shall keep a daily log of the waste heat evaporator (WHE) scrubber operating parameters for each peel dryer/WHE. These WHE operating parameters could include water spray rate (gallons/minute), water feed pump/spray operating pressure, pressure drop across the WHE scrubber section or other parameters that are used to control and monitor the operation of the WHE. A copy of the WHE operating log for a recent two-week period shall be submitted to the Department, along with any peel dryer compliance test report (*see Condition 9.*). [Rule 62-4.070(3), F.A.C.]

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14. The WHE operating parameter(s) (*see Condition 9.*) shall be maintained at a minimum of 90% of the flow rate/pressure measured and recorded during the most recent PM stack test. The WHE parameter(s) to be used (i.e. spray rate, water pressure, and/or pressure drop - see Condition 13. above) and recorded will be established by the facility during the initial compliance test. [Rules 62-4.070(3) and 62-210.650, F.A.C.]
15. Peel oil content shall be determined and records shall be maintained for each type or variety of fruit, with a determination and record entry made at least once a month at a minimum. These records shall be used to make adjustments for peel oil content variability in calculating annual VOC emissions for the annual operating report. [Rule 62-213.440(1)(b), F.A.C.]
16. Waste Heat Evaporator (WHE) operating parameters shall be maintained at a minimum of 90% of the values measured and recorded during the most recent particulate matter emission compliance test. WHE parameters shall be recorded at least once during each 8-hour shift. [Rules 62-210.650 and 62-213.440(1), F.A.C.]

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.


The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (X);
 - (b) Determination of Prevention of Significant Deterioration (); and
 - (c) Compliance with New Source Performance Standards (X).
- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information, required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Florida Department of
Environmental Protection

Memorandum

TO: Howard Rhodes
FROM: Trina Vielhauer 
DATE: January 13, 2003
SUBJECT: Citrosuco, North America, Inc.
Peel Dryer Capacity

Attached for approval and signature is a final air construction permit. The project is a request to change the input limits for the existing citrus peel dryers to account for the higher moisture content of the peel currently entering the dryers. The allowable total tons per year of wet peel input to the dryers are eliminated and replaced by the total allowable boxes of citrus fruit processed in any consecutive 12-month period. This limit, 32,000,000 boxes per year, does not result in a production increase. The applicant did not seek any relaxation in currently enforceable conditions for its other existing emissions units.

This project is not subject to PSD because there are no emissions increases associated with this project.

No comments were received during the public comment period.

I recommend your approval and signature.

March 6, 2003 is day 90.

Attachments

/es

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Nick Emanuel, C.O.O.
Citrosuco North America, Inc.
P.O. Box 3950
Lake Wales, Florida 33898-3950

2. Article Number

(Transfer from service label) 7000 0600 0021 6524 2342

PS Form 3811, August 2001

Domestic Return Receipt

102595-02-M-1540

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X *Nick Emanuel*

- Agent
 Addressee

B. Received by (Printed Name)

Nick Emanuel

C. Date of Delivery

1/17/03

- D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- Certified Mail Express Mail
 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (Extra Fee) Yes

7000 0600 0021 6524 2342

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

Article Sent To:

Mr. Nick Emanuel, C.O.O.

| | |
|---|-----------|
| Postage | \$ |
| Certified Fee | |
| Return Receipt Fee (Endorsement Required) | |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | \$ |

Postmark
Here

Name (Please Print Clearly) (to be completed by mailer)

Mr. Nick Emanuel, C.O.O.

Street, Apt. No., or PO Box No.

P.O. Box 3950

City, State, ZIP+4

Lake Wales, Florida 33898-3950

PS Form 3800, July 1999

See Reverse for Instructions

Citrosuco North America Inc.

December 24, 2002

Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Mail Station #5505
Tallahassee, FL. 32399-2400

RECEIVED
DEC 26 2002
BUREAU OF AIR REGULATION

Re: Proof of publication – DEP File # 1050001-006-AC

Dear Sirs,

Please find enclosed the Proof of Publication as required by our permit application.

Should you have questions regarding this notification please contact me at my office or by cell phone, (863)-696-7400 ext. 251 and (863) 528-4749 respectively.

Best Regards,



Ken Miller
Safety and Compliance Director
Citrosuco North America, Inc.

Fischer
Group

AFFIDAVIT OF PUBLICATION

News Chief

Published Daily

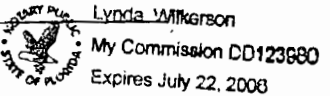
STATE OF FLORIDA
COUNTY OF POLK

Before the undersigned personally appeared Jacqueline Unger-Poole who on oath says that she is Classified Manager of the News Chief, a newspaper published at Winter Haven, in Polk County, Florida; that the attached copy of advertisement Public Notice of Intent to Issue Air Construction Permit in the matter of Citrusuco North America, Inc. in the Circuit Court, was published in said newspaper in the issue of December 20th, 2002.

Affiant further says that the News Chief is a newspaper published at Winter Haven, in said Polk County, Florida, and that said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Winter Haven, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission, or refund for the purpose of securing this advertisement for publication in said newspaper.

Signed Jacqueline Unger-Poole
Sworn to and subscribed before me this 20th day of December, A.D. 2002 by Jacqueline Unger-Poole who is personally known to me or who has produced () as identification.

Lyndia Wilkerson
Notary Public



My Commission Expires: _____

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 1050001-006-AC
Citrusuco North America, Inc.
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue air construction permit to Citrusuco North America, Inc., for its existing citrus juice processing facility located at 5937 Highway 60, East, Lake Wales, Polk County. The applicant's mailing address is: P.O. Box 3950, Lake Wales, Florida 33898-3950. The permit will impose a limit on the total annual boxes of citrus fruit processed at the facility. This limit will replace the current limit on the total wet citrus peel input to the citrus peel dryers, allowing for a higher moisture content of the peel input into the dryers.

The Department will issue the final permit with the attached conditions unless a respondent received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, Florida Statute (F.S.), before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitioner filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code (F.A.C.).

A petition that disputes the material facts upon which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency action; (c) A statement of how and when petitioner received notice of the agency action; (d) A statement of all disputed issues of material fact. If there are none, the petitioner must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

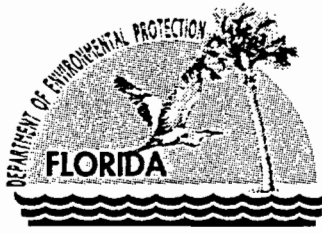
Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida 32301 Tampa, Florida 33619-8218 Telephone: 850/488-0114 Fax: 850/922-6979
Dept. of Environmental Protection Southwest District 3804 Coconut Palm Drive Tallahassee, Florida 33619-8218 Telephone: 813/744-6100

The complete project file includes the application, technical evaluation, draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, Title V Section, or the Department's reviewing engineer for this project, Edward J. Svec, Engineer IV, at the Bureau of Air Regulation in Tallahassee, Florida, or call 850/488-0114, for additional information. Written comments directed to the Department's reviewing engineer should be sent to the following mailing address: Dept. of Environmental Protection, Bureau of Air Regulation, Mail Station #5505, Tallahassee, Florida 32399-2400.

Published: December 20, 2002; Ad# 10779



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

P.E. Certification Statement

Permittee:
Citrosuco North America, Inc.

Permit No.: 1050001-006-AC

Project type: Peel Dryer Capacity

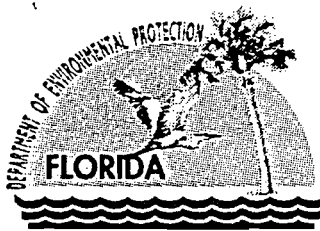
I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

Scott M. Sheplak 12/09/02
Scott M. Sheplak, P.E. date
Registration Number: 48866

Permitting Authority:
Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Telephone: 850/921-9532
Fax: 850/922-6979

"More Protection, Less Process"

Printed on recycled paper.



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

December 10, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Nick Emanuel, C.O.O.
Citrosuco North America, Inc.
P.O. Box 3950
Lake Wales, Florida 33898-3950

Re: DEP File No. 1050001-006-AC
Peel Dryer Capacity

Dear Mr. Emanuel:

The permitting authority issued an Intent to Issue Air Construction Permit on October 10, 2002 for the Citrosuco North America, Inc. Citrus Oil Recovery project. The Department hereby withdraws this Intent to Issue Air Construction Permit and the draft air construction permit dated October 10, 2002.

Enclosed is one copy of the draft air construction permit for Citrosuco North America, Inc., addressing the annual limit on boxes of citrus fruit processed at its citrus juice processing plant located at 5937 Highway 60, East, Lake Wales, Polk County. The Technical Evaluation and Preliminary Determination, the Department's Intent to Issue Air Construction Permit and the Public Notice of Intent to Issue Air Construction Permit are also included.

The Public Notice of Intent to Issue Air Construction Permit must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. Failure to publish the notice and provide proof of publication may result in the denial of the permit, pursuant to Rule 62-110.106(11), F.A.C.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Scott M. Sheplak, P.E., Administrator, Title V Section at the above letterhead address. If you have any other questions, please contact Edward J. Svec at 850/921-8985.

Sincerely,

Trina Vielhauer, Chief
Bureau of Air Regulation

TV/es

Enclosures

"More Protection, Less Process"

Printed on recycled paper.

In the Matter of an
Application for Permit by:

Mr. Nick Emanuel, C.O.O.
Citrusco North America, Inc.
P.O. Box 3950
Lake Wales, Florida 33898-3950

DEP File No. 1050001-006-AC
Peel Dryer Capacity
Polk County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of draft permit attached) for the proposed project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Citrusco North America, Inc., applied on September 11, 2002, and later amended the request on November 5, 2002, to the Department for an air construction permit to limit the total boxes of citrus fruit processed at its existing citrus juice processing facility located at 5937 Highway 60, East, Lake Wales, Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to perform the proposed work.

The Department intends to issue this air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Section 403.08725, F.S. and Chapters 62-4, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in Section 50.051, F.S., to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of Public Notice of Intent to Issue Air Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit

applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542, F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

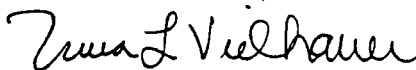
The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2), F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally

delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.



Trina Vielhauer, Chief
Bureau of Air Regulation

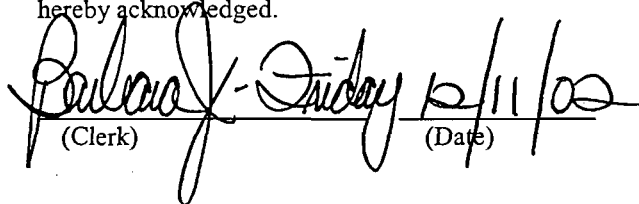
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit (including the Public Notice of Intent to Issue Air Construction Permit, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12/11/02 to the person(s) listed:

- Mr. Nick Emanuel, C.O.O., Citrosuco North America, Inc.*
- Mr. Wayne Griffin, P.E., G2 Services Ltd.
- Mr. Gerald Kissel, P.E., DEP SWD

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


(Clerk) Friday 12/11/02
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 1050001-006-AC

Citrosuco North America, Inc.
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Citrosuco North America, Inc., for its existing citrus juice processing facility located at 5937 Highway 60, East, Lake Wales, Polk County. The applicant's mailing address is: P.O. Box 3950, Lake Wales, Florida 33898-3950. The permit will impose a limit to the total annual boxes of citrus fruit processed at the facility. This limit will replace the current limit on the total wet citrus peel input to the citrus peel dryers, allowing for a higher moisture content of the peel input into the dryers.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, Florida Statutes (F.S.), before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code (F.A.C.).

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection
Bureau of Air Regulation
Suite 4, 111 S. Magnolia Drive
Tallahassee, Florida 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Dept. of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218
Telephone: 813/744-6100

The complete project file includes the application, technical evaluation, draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, Title V Section, or the Department's reviewing engineer for this project, Edward J. Svec, Engineer IV, at the Bureau of Air Regulation in Tallahassee, Florida, or call 850/488-0114, for additional information. Written comments directed to the Department's reviewing engineer should be sent to the following mailing address: Dept. of Environmental Protection, Bureau of Air Regulation, Mail Station #5505, Tallahassee, Florida 32399-2400.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

1 APPLICANT NAME AND ADDRESS

Citrosuco North America, Inc.
5937 Highway 60, East
Lake Wales, Florida 33898

Authorized Representative: Nick Emanuel, C.O.O.

2 FACILITY DESCRIPTION, PROJECT DETAILS AND RULE APPLICABILITY

The facility is an existing citrus juice processing facility. The applicant applied for a permit on September 11, 2002, to voluntarily subject the facility to the citrus oil recovery requirements of Section 403.0875, F.S. After receiving the draft permit package, the applicant amended their request to change the total citrus peel input limit to the existing dryers rather than address citrus oil recovery. This request was received on November 5, 2002. The project is a request to change the input limits for the existing citrus peel dryers to account for the higher moisture content of the peel currently entering the dryers. To accomplish this, the currently allowable total tons per year of wet input to the dryers will be replaced by the total allowable boxes of citrus fruit processed in any consecutive 12-month period. This limit, 32,000,000 boxes per year, will not result in a production increase. The applicant did not seek any relaxation in currently enforceable conditions for its other existing emissions units.

The emissions units addressed by this permit are Citrus Peel Dryer No. 2, I.D. 006, and Citrus Peel Dryer No. 3, I.D. 007.

No emissions increases are associated with this project.

The proposed project is subject to preconstruction review requirements under the provisions of Chapter 403, F.S., and Chapters 62-4, 62-204, 62-210, 62-212 and 62-297, F.A.C. The existing facility is located in an area designated, in accordance with Rule 62-204.340, F.A.C., as attainment or unclassifiable for the criteria pollutants ozone, PM₁₀, carbon monoxide, SO₂, nitrogen dioxide and lead. This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant exceeds 100 tons per year (TPY). The Department has previously found that citrus juice processing facilities such as this facility have potential emissions of VOC exceeding 250 TPY.

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 212.400-1 of Chapter 62-212, F.A.C. Because emissions are greater than 250 TPY for at least one criteria pollutant (VOC), the facility is also an existing Major Facility with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). The net increase in emissions of PM/PM₁₀, NO_x, SO₂, CO and VOC do not exceed the PSD significance levels of Table 212.400-2 of Chapter 62-212, F.A.C. Therefore the project is not subject to PSD requirements of Rule 62-212.400, F.A.C., for these pollutants.

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs). This project is not subject to a case-by-case MACT determination, per Rule 62-204.800(10)(d)2, F.A.C., because it does not result in the construction or reconstruction of a major source of HAP emissions. This project is not subject to any requirements under the National Emissions Standards for Hazardous Air Pollutants, 40 CFR 61 or 63.

3 SOURCE IMPACT ANALYSIS

An impact analysis was not required for this project because it is not subject to the requirements of PSD.

4 EXCESS EMISSIONS

Excess emissions for this emissions unit are specified in Section II of the permit. This permitting action does not change any authorization for excess emissions provided by other Department permits for other emissions units.

5 LIMITS AND COMPLIANCE REQUIREMENTS

The permit limits the total fruit processed by the plant in a consecutive 12-month period as the method of limiting emissions. Additional specific emission limits were not imposed because the potential emissions are well below the PSD significance criteria. The operating limits and the compliance requirements are detailed in Section III of the permit.

6 PRELIMINARY DETERMINATION

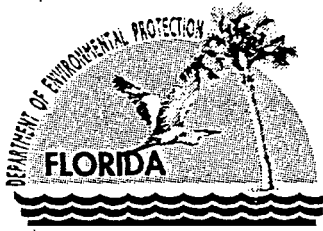
Based on the foregoing technical evaluation of the application and additional information submitted by the applicant and other available information, the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department's preliminary determination is to issue the draft permit to allow the processing of 32.0 million boxes of citrus fruit in any consecutive 12-month period, subject to the terms and conditions of the draft permit.

7 FINAL DETERMINATION

^DRAFT (This section will be revised when a final permit is issued for this project.)

DETAILS OF THIS ANALYSIS MAY BE OBTAINED BY CONTACTING:

Edward J. Svec, Engineer IV
Department of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Telephone: 850/488-0114



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE

Citrusuco North America, Inc.
Post Office Box 3950
Lake Wales, Florida 33859-3950

| | |
|-------------------|---------------------|
| Permit No. | 1050001-006-AC |
| Project | Peel Dryer Capacity |
| SIC No. | 2037 |
| Expires: | ^DRAFT |

Authorized Representative:

Nicholas Emanuel, COO

PROJECT AND LOCATION

This permit authorizes Citrusuco North America, Inc., Lake Wales Plant to process 32,000,000 boxes of citrus fruit in any 12-consecutive month period.

This facility is located on Highway 60 – East of Lake Wales, Lake Wales, Polk County. The UTM coordinates are: Zone 17; 452.4 km E and 3085.5 km N.

STATEMENT OF BASIS

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to construct the emissions units in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

APPENDICES

The attached appendix is a part of this permit:

Appendix GC General Permit Conditions

DRAFT

Howard L. Rhodes, Director
Division of Air Resource
Management

"More Protection, Less Process"

Printed on recycled paper.

AIR CONSTRUCTION PERMIT
SECTION I. FACILITY INFORMATION

FACILITY AND PROJECT DESCRIPTION

This facility consists of an existing citrus processing facility that extracts juice from whole citrus fruit to produce single-strength and frozen concentrated juices and by-products of juice production such as citrus oils, citrus molasses and animal feed.

The applicant is requesting the substitution of a processing limit of 32,000,000 boxes of citrus fruit in any 12-consecutive month period for the current requirement of total combined input of pressed peel cake through both citrus peel dryers not to exceed 285,700 tons for any consecutive 12-month period (daily average basis). The applicant did not seek any relaxation in currently enforceable conditions in its other existing emissions units.

No emissions increases are associated with this project.

The facility information, project scope, emissions and rule applicability are described in detail in the Department's Technical Evaluation and Determination.

REVIEWING AND PROCESS SCHEDULE

| | |
|--------------------|---|
| September 11, 2002 | Received permit application (no application fee required) |
| September 11, 2002 | Application complete |
| November 5, 2002 | Received revised permit application (no application fee required) |
| November 5, 2002 | Application complete |
| ^DRAFT | Distributed Notice of Intent to Issue and supporting documents |
| ^DRAFT | Notice of Intent published in ^DRAFT |

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Permit application
- Department's Technical Evaluation and Determination
- Department's Intent to Issue

AIR CONSTRUCTION PERMIT

SECTION II: FACILITY-WIDE SPECIFIC CONDITIONS

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District office at 3804 Coconut Palm Drive, Tampa, Florida 33619-8218, and phone number 813/744-6100.
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403, F.S. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S.; Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297, F.A.C.; and, the Code of Federal Regulations Title 40, Part 60, adopted by reference in the F.A.C. regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Expiration: This air construction permit shall expire on ^DRAFT. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C.]
7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A revision to the Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for a Title V operation permit at least ninety days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test

AIR CONSTRUCTION PERMIT
SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Southwest District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

OPERATIONAL REQUIREMENTS

9. Fruit Throughput Limited: The owner or operator shall not process more than 32,000,000 boxes of citrus fruit in any consecutive 12-month period. For purposes of this permit, a box of citrus fruit shall be defined to contain 90 pounds of oranges or 85 pounds of grapefruit. The owner or operator shall make and maintain monthly and rolling 12-month records of fruit processing rates to demonstrate compliance with this limitation. Such records shall be made from daily processing records and shall be completed no later than the 10th day of each following month. [Rule 62-4.070(3), F.A.C.; and, Request by applicant on November 5, 2002]

10. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's Southwest District office. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]

11. Circumvention: No person shall circumvent any air pollution control device or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]

12. Excess Emissions: This permit does not change any authorization for excess emissions provided by other Department permits for other emissions units. The following excess emissions provisions of state rule apply to these emissions units (emissions units I.D. 006 and 007) as specified below.
 - (a) Excess emissions resulting from start-up and shutdown are permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24-hour period.
 - (b) Excess emissions resulting from malfunction of this emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for longer duration.
 - (c) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited.

[Rules 62-210.700(1), (4) and (5), F.A.C.]

AIR CONSTRUCTION PERMIT
SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

13. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]

- (a) Required Equipment. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- (b) Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Duration of Record Keeping: Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b) and 62-213.440(1)(b)2.b., F.A.C.]

15. Excess Emissions Report: In case of excess emissions resulting from malfunction, the owner or operator shall notify the Department's Southwest District office within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rules 62-4.130 and 62-210.700(6), F.A.C.]

16. Annual Operating Report for Air Pollutant Emitting Facility: The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Southwest District office and, if applicable, the appropriate local program by March 1 of the following year. [Rule 62-210.370(3), F.A.C.]

AIR CONSTRUCTION PERMIT
SECTION III. SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction.

E.U. ID

| <u>No.</u> | <u>Brief Description</u> |
|-------------------|---------------------------------|
| -006 | Citrus Peel Dryer No. 2 |
| -007 | Citrus Peel Dryer No. 3 |

Two (2) 60,000 pound/hour (water removal rate) pressed citrus peel dryers (Citrus Peel Dryers Nos. 2 and 3) have a maximum pressed peel input rate of 50.0 tons/hour of pressed peel (including water) each. The peel dryers are each fired with natural gas at a maximum fuel usage rate of 90,000 cu ft/hour (corresponds to 93.6 MMBtu/hr at a natural gas heat content of 1040 Btu/cu ft). Standby fuel, used when natural gas supply is curtailed, is No. 4 fuel oil, with a maximum sulfur content of 0.5%, at maximum fuel usage rate of 620 gallons/hour. The exhaust gas from the peel dryers are sent to 100,000 pounds/hour (water removal capacity) waste heat evaporators which function as indirect heat exchangers to drive moisture from the press liquor (from the vertical peel press), and also act as particulate scrubber control devices (and to a limited extent an SO₂ control device).

{Permitting note(s): These emissions units are regulated under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD); and, Rule 62-296.320, F.A.C., General Pollutant Emission Limiting Standards.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

1. Capacity.

- a. The maximum total natural gas usage in both of the peel dryers shall not exceed 692.3 MMcf in any consecutive 12-month period (monthly average basis);
- b. The maximum process input rate into each of the peel dryers shall not exceed 50.0 tons/hour of total input including water (daily average basis);
- c. Maximum total No. 4 oil usage in both of the peel dryers shall not exceed 297,600 gallons in any 12 consecutive month period (monthly average basis).

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; and, 1050001-003-AC]

2. Methods of Operation - (i.e., Fuels).

The permittee is authorized to burn only the following fuels in each of the peel dryers:

- a. Primary fuel: Natural gas.
- b. Standby fuel, No. 4 fuel oil with a maximum sulfur content of 0.5% S by weight or better grade. Standby fuel, No. 4 fuel oil, may only be used during periods of natural gas supply curtailment.

[Rules 62-210.200(PTE), 62-4.160(2), and 62-213.440(1), F.A.C.; and, 1050001-003-AC]

Emission Limitations and Standards

3. Particulate matter emissions from the peel dryers shall not exceed the following:

- a. a maximum total emission rate of 30.7 pounds per hour from both dryers together, or the maximum allowable rate as set by the Process Weight Table equations contained within Rule 62-296.320(4)(a)2., F.A.C., whichever is lower;

(Note: For lower process rates, i.e. those below 36.0 tons per hour, the process weight rule equation limitation will be the more stringent limitation.)

- b. a total of 61.4 tons per any consecutive 12-month period from both peel dryers.

Citrosuco North America, Inc.
Peel Dryer Capacity

1050001-006-AC

AIR CONSTRUCTION PERMIT
SECTION III. SPECIFIC CONDITIONS

(PSD Note: The above limitation is required to insure that this modification does not exceed the PSD significant increase level for this pollutant and thereby trigger PSD review under Rule 62-212.400, F.A.C.)

[Air Construction Permit 1050001-003-AC; and, Rules 62-212.400 and 62-296.320(4)(a)2., F.A.C.]

{PSD Note: VOC emissions in excess of 603.6 tons per any consecutive 12-month period from both peel dryers would exceed the PSD significant increase level for this pollutant and thereby trigger PSD review under Rule 62-212.400, F.A.C. [1050001-003-AC]}

4. **Visible emissions** from the peel dryers/waste heat evaporators (WHE) exhaust stacks shall be less than 20% opacity. [Rule 62-296.320(4)(b)(1), F.A.C.]
5. The permittee shall not circumvent any air pollution control device or allow the emissions of air pollutants without the applicable air pollution control device (i.e. waste heat evaporator (WHE) which is process equipment which also acts as a control device) operating properly (*see Condition 10.*). [Rule 62-210.650, F.A.C.]

Test Methods and Procedures

6. The exhaust stack for each of the two peel dryers shall be tested for **particulate matter (PM)**, and **visible emissions (VE)** within 60 days of initial startup, and **annually** thereafter during the citrus processing season. Emission testing shall be conducted while operating the dryer within 90 - 100% of the maximum process input rate of 50 tons/hr for each dryer, when practical. If it is not practical to test at the maximum process input rate, then the source may be tested at a lower rate. A compliance test submitted at a rate less than 90% of the maximum permitted rate shown above will automatically constitute an amended permit at 110% of the test rate. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. (Clarification: When a unit is limited to an operating rate of 110% of the test rate, the permittee may provide a 15-day notice of its intent to conduct an additional test. The notice may specify a 15-day period during which the unit will be allowed to operate at a higher rate for the purpose of additional testing. For example, the first five days of the 15-day period may be used to bring the unit up to a higher production level; the next five days may be used for the testing itself; and the remainder of the period may be used to return the unit to the permitted capacity that existed before the most recent test. Upon written approval by the department of the most recent test results, the unit may then operate at a 110% of the most recent test load, not to exceed the maximum permitted rate.) The test results shall be submitted to the Air Compliance Section of this office within 45 days of testing. Acceptance of the test by this office will automatically constitute an amended permit at the higher tested rate plus 10%, but in no case shall the maximum permitted rate shown above be exceeded. Failure to submit the following records with the test report may invalidate the test and fail to provide reasonable assurance of compliance:

- The pressed wet peel input rate to the dryer during the test.
- The natural gas or fuel oil usage rate to the dryer during the test.
- If applicable, documentation of the fuel oil's type and sulfur content that was used during the test.
- The WHE's scrubber operating parameters shall be recorded during the particulate emission compliance test. These WHE operating parameters could include water spray rate (gallons/minute), water feed pump/spray operating pressure, pressure drop across the WHE scrubber section or other parameters that are used to control and monitor the operation of the WHE. (Note: The parameter(s) and their operating levels during the compliance test will be used

Citrosuco North America, Inc.
Peel Dryer Capacity

1050001-006-AC

AIR CONSTRUCTION PERMIT
SECTION III. SPECIFIC CONDITIONS

to provide reasonable assurance on an ongoing basis that the unit is being operated normally and in compliance with the standards - See Condition 16.) At least one reading shall be taken and recorded during each run of the particulate emission compliance test and the readings shall be included with any peel dryer test report.

[Rules 62-297.310(2) and 62-4.070(3), F.A.C.]

7. Compliance with the emission limitations of Condition 3 shall be determined using EPA Method 5 (*Particulate Matter*) contained in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. The minimum requirements for stationary point source emission test procedures and reporting shall be in accordance with Chapter 62-297, F.A.C. [Rule 62-297.401, F.A.C.]
8. Compliance with the visible emission limitation of Condition 4. shall be determined using EPA Method 9 contained in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. The visible emissions tests shall be conducted by a certified observer and be a minimum of thirty (30) minutes in duration. The test observation period shall be during one of the runs of the particulate test and shall include the period during which the highest opacity emissions can reasonably be expected to occur. [Rule 62-297.310(4)(a)(2) and Chapter 62-401, F.A.C.]
9. Waste heat evaporator (WHE) scrubber operating parameters shall be recorded during any compliance stack test. These WHE operating parameters could include water spray rate (gallons/minute), water feed pump/spray operating pressure, pressure drop across the WHE scrubber section or other parameters that are used to control and monitor the operation of the WHE. (*Note: The parameter(s) and their operating levels during the compliance test will be used to provide reasonable assurance on an ongoing basis that the unit is being operated normally and in compliance with the standards - See Condition 14. and 15.*). At least one reading shall be taken and recorded during each run of a compliance stack test, and the readings shall be included with any peel dryer compliance test report. [Rule 62-4.070(3), F.A.C.]
10. Compliance with the annual (tons per consecutive 12-month period) PM limitation of Condition 3. shall be determined (calculated) based upon the results of the annual PM compliance stack test (lbs PM/ton of material input) and the monthly process input rate (tons/month) records. [Rule 62-213.440(1)(b), F.A.C.]

Monitoring, Record keeping and Reporting Requirements

11. In order to document compliance with the process rate limitations of Condition 1., the permittee shall maintain a daily record of operating hours and material input rate (tons/hour) for each peel dryer. [Rule 62-213.440(1)(b), F.A.C.]
13. In order to document compliance with the fuel usage limitations of Condition 1., the permittee shall maintain monthly records of the total quantity of natural gas (MMcf/month) and No. 4 fuel oil (gallons/month) used in the peel dryers for that month, and for the most recent 12 consecutive month period. [Rule 62-213.440(1)(b), F.A.C.]
14. The permittee shall keep a daily log of the waste heat evaporator (WHE) scrubber operating parameters for each peel dryer/WHE. These WHE operating parameters could include water spray rate (gallons/minute), water feed pump/spray operating pressure, pressure drop across the WHE scrubber section or other parameters that are used to control and monitor the operation of the WHE. A copy of the WHE operating log for a recent two-week period shall be submitted to the Department, along with any peel dryer compliance test report (*see Condition 9.*). [Rule 62-4.070(3), F.A.C.]

Citrosuco North America, Inc.
Peel Dryer Capacity

1050001-006-AC

AIR CONSTRUCTION PERMIT
SECTION III. SPECIFIC CONDITIONS

15. The WHE operating parameter(s) (*see Condition 9.*) shall be maintained at a minimum of 90% of the flow rate/pressure measured and recorded during the most recent PM stack test. The WHE parameter(s) to be used (i.e. spray rate, water pressure, and/or pressure drop - see Condition 13. above) and recorded will be established by the facility during the initial compliance test. [Rules 62-4.070(3) and 62-210.650, F.A.C.]
16. Peel oil content shall be determined and records shall be maintained for each type or variety of fruit, with a determination and record entry made at least once a month at a minimum. These records shall be used to make adjustments for peel oil content variability in calculating annual VOC emissions for the annual operating report. [Rule 62-213.440(1)(b), F.A.C.]
17. Waste Heat Evaporator (WHE) operating parameters shall be maintained at a minimum of 90% of the values measured and recorded during the most recent particulate matter emission compliance test. WHE parameters shall be recorded at least once during each 8-hour shift. [Rules 62-210.650 and 62-213.440(1), F.A.C.]

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.
- Reasonable time may depend on the nature of the concern being investigated.
- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (X);
 - (b) Determination of Prevention of Significant Deterioration (); and
 - (c) Compliance with New Source Performance Standards (X).
- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information, required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

G2 Services Ltd.

CONSULTING ENGINEERS

3119 Lithia Pinecrest Rd.
Valrico, Florida 33594

Phone (813) 685-9727
Fax (813) 684-1691
G2Services@aol.com

October 31, 2002

RECEIVED

NOV 05 2002

BUREAU OF AIR REGULATION

Florida Department of
Environmental Protection
Division of Air Resources Management, MS5500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

ATTN: Ed Svec

Re: Citrosuco North America, Inc.
#1050001

Gentlemen:

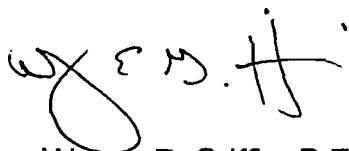
Enclosed herewith are the following items for your review:

1. Four (4) sets of revised construction permit sheets
2. Four (4) sets of revised supplemental documents

As discussed in our telephone conversation we would like to substitute the attached sheets in the permit request and delete the oil recovery requirements. The facility has been artificially limited due to the feed mill's inability to hit the target press cake moisture limit. The original design used a 62% press cake moisture rate to derive the 285,700 tpy press cake rate. The actual operating press cake moisture content is approximately 65%. The higher moisture adds 17,000,000 gallons of water to dryers annually. The current 50 tph limit on each dryer is satisfactory, but should be defined as a monthly or seasonal limit.

Should you have any questions please do not hesitate to contact me at my office.

Sincerely,



Wayne E. Griffin, P.E.
Managing Partner

cc: Nick Emanuel, C.O.O.

Weg: cms

ENGINEERING SUPPLEMENT

PREPARED FOR: Citrusuco North America, Inc.
5927 Highway 60 East
Lake Wales, Florida 33853


PREPARED BY: G2 Services
3119 Lithia Pinecrest Rd.
Valrico, Florida 33594

RECEIVED

NOV 05 2002

BUREAU OF AIR REGULATION

DATE: 9/4/02
Rev. 10/28/02


10/28/02

GENERAL

We are requesting replacement of the Section B.1.a of the existing permit with the equivalent box limit. The Citrusuco processes up to 32,000,000 boxes of citrus fruit per season. Products include concentrate, NFC, juice blends, animal feed, and essential citrus oils. The facility was expanded in 2000 to its present capacity.

The facility process approximately 150,000 boxes per day of oranges and/or grapefruit over a 220 day operating season. The primary product is single strength (not from concentrate) juice with a secondary product of concentrated juice. Cold storage facilities are used to store single strength, concentrate, pulp, and essential oils for year round use. Off season, normally July through October, processing includes blending of products for clients, bulk sales, and packaging.

EQUIVALENT BOX CALCULATION

Current limit= 285,700 tpy press cake.

Design moisture of press cake= 62%

38 # of peel/ box of fruit @ 82% moisture

#boxes= 285,000 tpy (1-0.62) X 2000 #/tn / 38# (1-0.82) = 31,666,666 boxes

EQUIPMENT

BOILERS

800 Hp Johnston Boiler #1

1000 Hp Johnston Boiler #2

2000 Hp Johnston Boiler #3

125 Hp Johnston Boiler #4

Boilers are natural gas fired with 0.5% S #4 oil as standby if the natural gas supply is interrupted. Steam is used, primarily, for the juice evaporators and pasteurization. During the fresh fruit season the boilers are cycled up as needed. During the off season the small (125 Hp) boiler is the primary boiler.

FEEDMILL

2 @ 50 tph (press cake rate) peel dryers

2 @ 24 tph pellet coolers

3 wasteheat evaporators (60,000 #/hr, 110,000 #/hr, and 120,000 #/hr)

Wet peel from the juice extractors is pumped to a reaction tank at the feedmill. After the addition of lime the peel is dewatered in presses prior to

drying. The pressed peel is distributed to either of the two (2) dryers. The dried peel is pelletized and cooled prior to storage. The two (2) coolers exhaust thru cyclones to roof vents. The hot exhaust from the dryers is distributed to three (3) wasteheat evaporators and is scrubbed prior to discharge.

RECEIVED

NOV 05 2002

Owner/Authorized Representative or Responsible Official

| | |
|---|---------------------------------|
| <p>1. Name and Title of Owner/Authorized Representative or Responsible Official: Nicholas A. Emanuel, COO</p> | <p>BUREAU OF AIR REGULATION</p> |
| <p>2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: Citrusco North America Street Address: Post Office Box 3950 City: Lake Wales State: Florida Zip Code: 33859-3950</p> | |
| <p>3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (863) 696-7400 Fax: (863) 696-1303</p> | |
| <p>4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i></p> <p><i>Nicholas A. Emanuel</i> _____ <u>10/31/02</u> _____ Signature Date</p> | |

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

| |
|---|
| <p>1. Professional Engineer Name: Wayne E. Griffin, P.E. Registration Number: 19974</p> |
| <p>2. Professional Engineer Mailing Address: Organization/Firm: G2 Services Street Address: 3119 Lithia Pinecrest Rd. City: Valrico State: FL Zip Code: 33594</p> |
| <p>3. Professional Engineer Telephone Numbers: Telephone: (813) 685-9727 Fax: (813) 684-1691</p> |

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

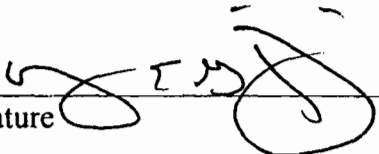
(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [X], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature 

Date 10/28/02

(seal)

* Attach any exception to certification statement.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

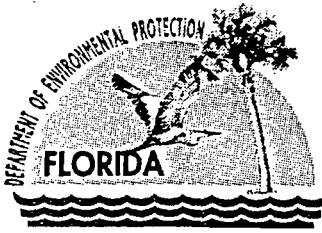
Revise permit to limit facility to 31,666,666 boxes fruit input per year in lieu of a feedmill press cake annual limit. No changes in emissions is anticipated.

2. Projected or Actual Date of Commencement of Construction: N/A

3. Projected Date of Completion of Construction: N/A

Application Comment

The facility will use, natural gas as a primary fuel source. Low sulfur #4 will be used as a backup fuel.



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

October 8, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Nick Emanuel, C.O.O.
Citrusuco North America, Inc.
P.O. Box 3950
Lake Wales, Florida 33898-3950

Re: DEP File No. 1050001-006-AC
Citrus Oil Recovery

Dear Mr. Emanuel:

Enclosed is one copy of the draft air construction permit for Citrusuco North America, Inc. addressing citrus oil recovery in compliance with the provisions of Section 403.08725, F.S. at its citrus juice processing plant located at 5937 Highway 60, East, Lake Wales, Polk County. The Technical Evaluation and Preliminary Determination, the Department's Intent to Issue Air Construction Permit and the Public Notice of Intent to Issue Air Construction Permit are also included.

The Public Notice of Intent to Issue Air Construction Permit must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. Failure to publish the notice and provide proof of publication may result in the denial of the permit, pursuant to Rule 62-110.106(11), F.A.C.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Scott M. Sheplak, P.E., Administrator, Title V Section at the above letterhead address. If you have any other questions, please contact Edward J. Svec at 850/921-8985.

Sincerely,

A. A. Linero, P.E.
Bureau of Air Regulation

AAL/es

Enclosures

"More Protection, Less Process"

Printed on recycled paper.

In the Matter of an
Application for Permit by:

Mr. Nick Emanuel, C.O.O.
Citrusuco North America, Inc.
P.O. Box 3950
Lake Wales, Florida 33898-3950

DEP File No. 1050001-006-AC
Citrus Oil Recovery
Polk County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of draft permit attached) for the proposed project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Citrusuco North America, Inc., applied on September 11, 2002, to the Department for an air construction permit for its existing citrus juice processing facility located at 5937 Highway 60, East, Lake Wales, Polk County. The permit addresses citrus oil recovery, in compliance with the provisions of Section 403.08725, F.S.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to perform the proposed work.

The Department intends to issue this air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Section 403.08725, F.S. and Chapters 62-4, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax: 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in Section 50.051, F.S., to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of Public Notice of Intent to Issue Air Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit

applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542, F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

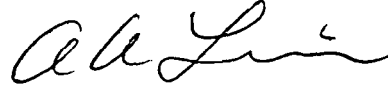
The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2), F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally

delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.



A. A. Linero, P.E.
Bureau of Air Regulation

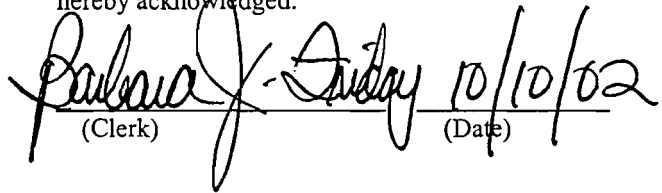
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit (including the Public Notice of Intent to Issue Air Construction Permit, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 10/10/02 to the person(s) listed:

- Mr. Nick Emanuel, C.O.O., Citrosuco, North America *
- Mr. Wayne Griffin, P.E., G2 Services Ltd.
- Mr. Gerald Kissel, P.E., DEP SWD

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


(Clerk) 10/10/02 (Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 1050001-006-AC

Citrosuco, North America, Inc.
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Citrosuco, North America, Inc., for its existing citrus juice processing facility located at 5937 Highway 60, East, Lake Wales, Polk County. The applicant's mailing address is: P.O. Box 3950, Lake Wales, Florida 33898-3950. The permit addresses citrus oil recovery, in compliance with the provisions of Section 403.08725, Florida Statutes (F.S.)

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code (F.A.C.).

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection
Bureau of Air Regulation
Suite 4, 111 S. Magnolia Drive
Tallahassee, Florida 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Dept. of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218
Telephone: 813/744-6100

The complete project file includes the application, technical evaluation, draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, Title V Section, or the Department's reviewing engineer for this project, Edward J. Svec, Engineer IV, at the Bureau of Air Regulation in Tallahassee, Florida, or call 850/488-0114, for additional information. Written comments directed to the Department's reviewing engineer should be sent to the following mailing address: Dept. of Environmental Protection, Bureau of Air Regulation, Mail Station #5505, Tallahassee, Florida, 32399-2400.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

1 APPLICANT NAME AND ADDRESS

Citrosuco North America, Inc.
5937 Highway 60, East
Lake Wales, Florida 33898

Authorized Representative: Nick Emanuel, C.O.O.

2 PROJECT

The project addresses citrus oil recovery, in compliance with the provisions of Section 403.08725, F.S., at Citrosuco North America, Inc.'s existing citrus processing facility in Lake Wales, Polk County. The project description, emissions, and rule applicability are described in detail in Section I of the permit.

3 SOURCE IMPACT ANALYSIS

An impact analysis was not required for this project.

4 EXCESS EMISSIONS

Excess emissions are specified in Section II of the permit. This permitting action does not change any authorization for excess emissions provided by other Department permits for other emissions units.

5 LIMITS AND COMPLIANCE REQUIREMENTS

The permit limits the minimum citrus oil recovery. The operational limits and the compliance requirements are detailed in Sections II and III of the permit.

6 PRELIMINARY DETERMINATION

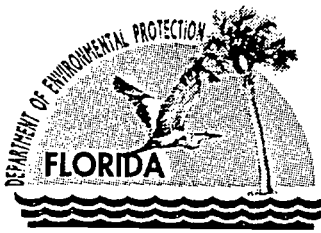
Based on the foregoing technical evaluation of the application and additional information submitted by the applicant and other available information, the Department has made a preliminary determination that the proposed project will comply with all applicable state air pollution regulations. The Department's preliminary determination is to issue the permit to address citrus oil recovery, in compliance with the provisions of Section 403.08725, F.S., subject to the terms and conditions of the draft permit.

7 FINAL DETERMINATION

^DRAFT (This section will be revised when a final permit is issued for this project.)

DETAILS OF THIS ANALYSIS MAY BE OBTAINED BY CONTACTING:

Edward J. Svec, Engineer IV
Department of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Telephone: 850/488-0114



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE

Citrusuco North America, Inc.
Post Office Box 3950
Lake Wales, Florida 33859-3950

| | |
|-------------------|---------------------|
| Permit No. | 1050001-006-AC |
| Project | Citrus Oil Recovery |
| SIC No. | 2037 |
| Expires: | ^DRAFT |

Authorized Representative:

Nicholas Emanuel, COO

PROJECT AND LOCATION

This permit authorizes Citrusuco North America, Inc., Lake Wales Plant, to address citrus oil recovery, in compliance with the provisions of Section 403.08725, F.S.

This facility is located on Highway 60 – East of Lake Wales, Lake Wales, Polk County. The UTM coordinates are: Zone 17; 452.4 km E and 3085.5 km N.

STATEMENT OF BASIS

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-296, and 62-297. The above named permittee is authorized to construct the emissions units in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

APPENDICES

The attached appendix is a part of this permit:

Appendix GC General Permit Conditions

DRAFT

Howard L. Rhodes, Director
Division of Air Resources
Management

"More Protection, Less Process"

Printed on recycled paper.

AIR CONSTRUCTION PERMIT
SECTION I. FACILITY INFORMATION

FACILITY AND PROJECT DESCRIPTION

This facility consists of an existing citrus processing facility that extracts juice from whole citrus fruit to produce single-strength and frozen concentrated juices and byproducts of juice production such as citrus oils, citrus molasses and animal feed.

The applicant proposed in this project to recover citrus oil in compliance with the provisions of Section 403.08725, F.S.

The proposed project is subject to preconstruction review requirements under the provisions of Chapter 403, F.S., and Chapters 62-4, 62-296, and 62-297, F.A.C. The existing facility is located in an area designated, in accordance with Rule 62-204.340, F.A.C., as attainment or unclassifiable for the criteria pollutants ozone, PM₁₀, carbon monoxide, SO₂, nitrogen dioxide and lead. This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, exceeds 100 tons per year (TPY). At this facility, potential emissions of PM/PM₁₀, SO₂, NO_x, CO and VOC exceed 100 TPY.

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs). This project is not subject to a case-by-case MACT determination, per Rule 62-204.800(10)(d)2, F.A.C., because it does not result in the construction or reconstruction of a major source of HAP emissions.

This project does not impose any requirements under the New Source Performance Standards, 40 CFR 60, or National Emissions Standards for Hazardous Air Pollutants, 40 CFR 61 or 63.

REVIEWING AND PROCESS SCHEDULE

| | |
|--------------------|--|
| September 11, 2002 | Received permit application |
| September 11, 2002 | Application complete |
| ^DRAFT | Distributed Notice of Intent to Issue and supporting documents |
| ^DRAFT | Notice of Intent published in ^DRAFT |

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Permit application filed September 11, 2002
- Department's Technical Evaluation and Determination
- Department's Intent to Issue

AIR CONSTRUCTION PERMIT

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District office at 3804 Coconut Palm Drive, Tampa, Florida 33619-8218, and phone number 813/744-6100.
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes (F.S.). [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S., and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the F.A.C. regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Expiration: This air construction permit shall expire on ^DRAFT. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C.]
7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A revision to the Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for a Title V operation permit at least ninety days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title

AIR CONSTRUCTION PERMIT

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Southwest District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

EMISSION LIMITING STANDARDS

9. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. [Rule 62-296.320(4)(b)1, F.A.C.]
10. Unconfined Emissions of Particulate Matter: [Rule 62-296.320(4)(c), F.A.C.]
- (a) No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.
 - (b) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.
 - (c) Reasonable precautions for this facility include the following:
 - Paving and maintenance of roads, parking areas and yards.
 - Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
 - Landscaping or planting of vegetation.
 - Limiting access to plant property by unnecessary vehicles.
 - (d) In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.
11. General Pollutant Emission Limiting Standards: [Rules 62-296.320(1)(a)&(2), F.A.C.]
- (a) No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.
 - (b) No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor.
- [Note: An objectionable odor is defined in Rule 62-210.200(198), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or

AIR CONSTRUCTION PERMIT
SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.]

12. Volatile Organic Compounds: Volatile organic compounds are limited to the level of emissions achievable by a 50 percent recovery of oil from citrus fruits processed as determined by the methodology described in Section 403.08725(4)(a)1., F.S. One year after EPA approval pursuant to Section 403.08725(9), F.S., for volatile organic compounds, the level of emissions achievable by a 65 percent recovery of oil from citrus fruits processed as determined by the methodology described in Section 403.08725(4)(a)1., F.S. [Section 403.08725(2)(c), F.S.]

OPERATIONAL REQUIREMENTS

13. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's Southwest District office. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]
14. A situation arising from sudden and unforeseeable events beyond the control of the source which causes a technology-based emissions limitation to be exceeded because of unavoidable increases in emissions attributable to the situation and which requires immediate corrective action to restore normal operation shall be an affirmative defense to an enforcement action in accordance with the provisions and requirements of 40 C.F.R. s. 70.6(g)(2) and (3), hereby adopted and incorporated by reference as the law of this state. It shall not be a defense for a permittee in an enforcement action that maintaining compliance with any permit condition would necessitate halting of or reduction of the source activity. [Section 403.08725(3)(k), F.S.]
15. Circumvention: No person shall circumvent any air pollution control device or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]
16. Excess Emissions: The following excess emissions provisions of state rule apply as specified below.
- (a) Excess emissions resulting from start-up and shutdown are permitted for the emissions unit 008 providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period.
 - (b) Excess emissions resulting from malfunction of this emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration.
 - (c) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited. [Rules 62-210.700(1), (4) and (5), F.A.C.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

17. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]

AIR CONSTRUCTION PERMIT

SECTION H. FACILITY-WIDE SPECIFIC CONDITIONS

- (a) **Required Equipment.** The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- (b) **Accuracy of Equipment.** Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.
18. **Required Stack Sampling Facilities:** Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. Sampling facilities shall also conform to the requirements of Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]
19. **Test Notification:** The owner or operator shall notify the Department's Southwest District office at least 15 days prior to the date on which each formal compliance test is to begin. Notification shall include the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9., F.A.C.]
20. **Compliance Test:** A single compliance test shall be required annually to ensure the emission units' compliance with permit conditions. The test shall be performed in the manner described in this permit as follows: EPA Method 7e shall be used to test NO_x for the initial compliance test as well as the annual compliance test. EPA Method 5 shall be used to test PM₁₀ for the initial compliance test as well as the annual compliance test. EPA Method 9 shall be used to test opacity for the initial compliance test as well as the annual compliance test.
21. All emissions for which the facility is limited by Section 403.08725(2)(b)-(f), F.S. shall be determined on a calendar-year basis and reported to the department by a responsible official of the facility no later than April 1 of the following year. Emissions shall be determined for each emissions unit by means of recordkeeping, test methods, units, averaging periods, or other statistical conventions, which yield reliable data; are consistent with the emissions limit being measured; are representative of the unit's actual performance; and are sufficient to show the actual emissions of the unit. [Section 403.08725(3)(d), F.S.]

AIR CONSTRUCTION PERMIT
SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

REPORTING AND RECORD KEEPING REQUIREMENTS

22. Duration of Record Keeping: Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b) and 62-213.440(1)(b)2.b., F.A.C.]
23. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. [Rule 62-297.310(8), F.A.C.]
24. Excess Emissions Report: In case of excess emissions resulting from malfunction, the owner or operator shall notify the Department within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rules 62-4.130 and 62-210.700(6), F.A.C.]
25. Annual Operating Report for Air Pollutant Emitting Facility: Each facility authorized to operate under this section shall submit annual operating reports in accordance with department rules. The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Southwest District office by March 1 of the following year. [Section 403.08725(3)(e), F.S. and Rule 62-210.370(3), F.A.C.]
26. All information submitted to the department by facilities authorized to operate under this section, shall be certified as true, accurate, and complete by a responsible official of the facility. For purposes of this section, "responsible official" means that person who would be allowed to certify information and take action under the department's Title V permitting rules. [Section 403.08725(3)(a), F.S.]
27. All emissions for which the facility is limited by any standard promulgated by the United States Environmental Protection Agency must be determined and reported by a responsible official of the facility in accordance with the promulgated requirement. Reports required by this section shall be certified and submitted to the department. [Section 403.08725(3)(b), F.S.]
28. All emissions units subject to any enhanced monitoring requirement under any regulation promulgated by the United States Environmental Protection Agency must comply with such requirement. [Section 403.08725(3)(c), F.S.]

AIR CONSTRUCTION PERMIT

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

29. Each facility shall have a responsible official provide and certify the annual and semiannual statements of compliance required under the department's Title V permitting rules. [Section 403.08725(3)(f), F.S.]
30. Each facility shall have a responsible official provide the department with sufficient information to determine compliance with all provisions of this section and all applicable department rules, upon request of the department. [Section 403.08725(3)(g), F.S.]
31. Records sufficient to demonstrate compliance with all provisions of this section and all applicable department rules shall be made available and maintained at the facility for a period of 5 years for inspection by the department during normal business hours. [Section 403.08725(3)(h), F.S.]
32. Emissions Trading: If the facility is limited by the emission limit listed in Section 403.08725(2)(c), F.S. for any such limit which the facility exceeded during the calendar year, the facility must obtain, no later than March 1 of the reporting year, sufficient allowances, generated in the same calendar year in which the limit was exceeded, to meet all limits exceeded. Any facility which fails to meet the limit and fails to secure sufficient allowances that equal or exceed the emissions resulting from such failure to meet the limit shall be subject to enforcement in the same manner and to the same extent as if the facility had violated a permit condition. For purposes of this section, an "allowance" means a credit equal to emissions of 1 ton per year of a pollutant listed in Section 403.08725(2)(c), F.S., subject to the particular limitations of paragraphs (a) and (b).
- (a) Emissions allowances may be obtained from any other facility authorized to operate under this section, provided such allowances are real, excess, and are not resulting from the shutdown of an emissions unit. Emissions allowances must be obtained for each pollutant the emissions limit of which was exceeded in the calendar year. Allowances can be applied on a pollutant-specific basis only. No cross-pollutant trading shall be allowed.
1. Real allowances are those created by the difference between the emissions limit imposed by this section and the lower emissions actually measured during the calendar year. Measurement of emissions for allowance purposes shall be determined in the manner described in this subparagraph. For purposes of measuring whether an allowance was created, a single stack test or use of emissions estimates cannot be used. Measurement of recovery of oil from citrus fruits processed shall be by material balance using the measured oil in the incoming fruit, divided into the sum of the oil remaining in juice, the cold press oil recovered, d-limonene recovered, and oil remaining in the dried pellets, expressed as a percentage. Alternatively, the material balance may use the measured oil in the incoming fruit divided into the oil measured remaining in the pressed peel prior to introduction into the feed mill dryers, in which case the decimal result shall be subtracted from the numeral 1, and added to the decimal result of the measured oil in the incoming fruit divided into the oil measured remaining in the dried pellets, with the resulting sum expressed as a percentage. Measurement of recovery of oil shall be made each operational day and averaged over the days of facility operation during each calendar year. Facilities may accept wet peel from offsite sources for drying, provided that the facility receives sufficient recorded information from the offsite source to measure available oil and oil recovery at the offsite source, and accounts for those values in determining compliance with the limitation of paragraph (2)(c) and the number of allowances that are required to be obtained, if any. Wet peel not processed through the peel dryer shall be excluded from the oil recovery calculations. Methodologies for determining oil contents shall be developed by the Institute of Food and Agricultural

AIR CONSTRUCTION PERMIT

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

Sciences and approved by rule of the department. Other methods of measuring oil recovery or determining oil content may be approved by rule of the department, for trading purposes, provided the methods yield results equivalent to the approved methodologies.

2. Excess allowances are those not used for any other regulatory purpose. [Section 403.08725(4)(a), F.S.]
33. No facility located in an area designated nonattainment for ozone shall be allowed to acquire allowances of volatile organic compounds. Nothing shall preclude such a facility from trading volatile organic compounds allowances that it might generate to facilities not located in a nonattainment area for ozone. [Section 403.08725(4)(b), F.S.]
34. Emissions Fees: All facilities authorized to operate under this section shall pay annual emissions fees in the same amount to which the facility would be subject under the department's Title V program. For purposes of determining fees until October 31, 2002, emission fees shall be based on the requirements of Section 403.0872, F.S. Commencing July 1, 2002, the allowable annual emissions for fee purposes shall be computed as the emissions limits established by this section multiplied by the actual operation rates, heat input, and hours of operation of each new and existing source for the previous calendar year. Actual operation rates, heat input, and hours of operation of each new and existing source shall be documented by making and maintaining records of operation of each source. Fees shall not be based on stack test results. In the event that adequate records of actual operation rates and heat input are not maintained, actual operation shall be assumed to occur at the source's maximum capacity during hours of actual operation, if adequately documented. In the event that adequate records of hours of operation are not maintained, the source shall be assumed to have operated from January 1 through May 31 and October 1 through December 31 of the previous calendar year. All such annual emissions fees shall be due and payable April 1 for the preceding calendar year. Failure to pay fees shall result in penalties and interest in the same manner and to the same extent as failure to pay fees under the department's Title V program. For purposes of determining actual emissions for fee purposes, any allowances traded away shall be deducted and any allowances acquired shall be included. All fees shall be deposited into the Air Pollution Control Trust Fund. [Section 403.08725(5), F.S.]
35. Modifications And New Construction: Any facility authorized to operate under Section 403.08725, F.S. that makes any physical change or any change to the method of operation of the facility shall comply with the requirements of this section at all times, except that any facility located in an area designated as a nonattainment area for any pollutant shall also comply with limits established by department rules for all changes which increase emissions of such pollutant, and except that any facility that becomes subject to the federal acid rain program is no longer authorized to construct or operate under this section and must obtain proper department permits. [Section 403.08725(6), F.S.]

AIR CONSTRUCTION PERMIT

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction.

| EMISSIONS UNIT NO. | EMISSIONS UNIT DESCRIPTION |
|--------------------|----------------------------|
| 006 | Peel Dryer No. 2 |
| 007 | Peel Dryer No. 3 |

Two (2) 60,000 pound/hour (water removal rate) pressed citrus peel dryers (Citrus Peel Dryer Nos. 2 and 3) have a maximum pressed peel input rate of 50.0 tons/hour of pressed peel (including water) each. The peel dryers are each fired with natural gas at a maximum fuel usage rate of 90,000 cu ft/hour (corresponds to 93.6 MMBtu/hr at a natural gas heat content of 1040 Btu/cu ft). Standby fuel, used when natural gas supply is curtailed, is No. 4 fuel oil, with a maximum sulfur content of 0.5%, at maximum fuel usage rate of 620 gallons/hour. The exhaust gas from the peel dryers are sent to 100,000 pound/hour (water removal capacity) waste heat evaporators which function as indirect heat exchangers to drive moisture from the press liquor (from the vertical peel press), and also act as particulate scrubber control devices (and to a limited extent an SO₂ control device).

STATE RULE REQUIREMENTS

OPERATIONAL REQUIREMENTS

1. Hours of Operation: This emissions unit may operate up to 8,760 hours/year. [Rules 62-4.070(3) and 62-210.200, F.A.C., and limitation on potential to emit]
2. Capacity. The total combined input of pressed peel cake through both citrus peel dryers shall not exceed 285,700 tons for any 12 consecutive months period (daily average basis). The maximum process input rate into each of the peel dryers shall not exceed 50.0 tons/hour of total input including water (daily average basis). The maximum total natural gas usage in both of the peel dryers shall not exceed 692.3 MMcf in any 12 consecutive month period (monthly average basis). Maximum total No. 4 oil usage in both of the peel dryers shall not exceed 297,600 gallons in any 12 consecutive month period (monthly average basis). [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; Air Construction Permit 1050001-003-AC]
3. Fuel Sulfur Limited: No facility shall fire fuel oil containing greater than 0.5 percent sulfur by weight. Those facilities without access to natural gas shall be limited to fuel oil containing no greater than 1 percent sulfur by weight. In addition, facilities may use fuel oil with no greater than 1.5 percent sulfur by weight for up to 400 hours per calendar year. The use of natural gas is not limited by this paragraph. The use of d-limonene as a fuel is not limited by this paragraph. [Section 403.08725(2)(d), F.S.]
4. Visible Emissions Limited: For visible emissions, the levels of visible emissions at all times during operation, expressed as a percent of opacity, are 20 percent. [Section 403.08725(2)(g)1., F.S.]
5. NOx Emissions Limited: For nitrogen oxides, the emissions levels, expressed in pounds of nitrogen dioxide per million British thermal units of heat produced, unless otherwise specified, are established for citrus peel dryers:
 - a. Sources that fire natural gas, propane, ethanol, biogas, or d-limonene: not limited.
 - b. Sources that fire fuel oil: 0.34 pounds per million British thermal units. [Section 403.08725(2)(f)1., F.S.]

AIR CONSTRUCTION PERMIT

SECTION III: EMISSIONS UNITS SPECIFIC CONDITIONS

6. Particulate Matter Emissions Limited: For particulate matter of 10 microns or less, the emissions levels, expressed in pounds per million British thermal units of heat input, unless otherwise specified, are established for new and existing sources, regardless of production capacity, 15 pounds per hour. [Section 403.08725(2)(e)1., F.S.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

7. Tests Required: Emission sources subject to limitations for particulate matter, nitrogen oxides, and visible emissions pursuant to Section 403.08725(2)(e)-(g), F.S. shall test emissions annually, except as provided in subparagraphs 1. - 4., in accordance with department rules using United States Environmental Protection Agency test methods or other test methods specified by department rule. [Section 403.08725(3)(i), F.S.]
8. Fuel Sulfur Content Tests: Measurement of the sulfur content of fuel oil shall be by latest American Society for Testing and Materials methods suitable for determining sulfur content. Sulfur dioxide emissions shall be determined by material balance using the sulfur content and amount of the fuel or fuels fired in each emission source, assuming that for each pound of sulfur in the fuel fired, 2 pounds of sulfur dioxide are emitted. [Section 403.08725(3)(j), F.S.]
9. Visible Emission Tests Required: Tests for visible emissions shall be conducted using United States Environmental Protection Agency Method 9. [Section 403.08725(3)(i)2., F.S.]
10. NOx Emissions Tests Required: Tests for nitrogen oxides shall be conducted using Environmental Protection Agency Method 7E. [Section 403.08725(3)(i)3., F.S.]
11. Particulate Matter Emissions Tests Required: Tests for particulate matter of 10 microns or less may be conducted using United States Environmental Protection Agency Method 5, provided that all measured particulate matter is assumed to be particulate matter of 10 microns or less. [Section 403.08725(3)(i)1., F.S.]
12. Emissions Tests Waived: Tests for particulate matter of 10 microns or less for process steam boilers, combustion turbines, and duct burners, and tests for nitrogen oxides for citrus peel dryers, process steam boilers, and duct burners, are not required while firing fuel oil in any calendar year in which these sources did not fire fuel oil for more than 400 hours. [Section 403.08725(3)(i)4., F.S.]

REPORTING AND RECORD KEEPING REQUIREMENTS

13. The following records shall be maintained:

DAILY

- ◆ Operating hours for each dryer.
- ◆ No. 6 fuel oil usage by each dryer.
- ◆ Total pressed wet peel to each dryer in tons/day.
- ◆ Natural gas usage by each dryer.

AIR CONSTRUCTION PERMIT

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

Monthly

- ◆ Operating hours for each dryer
- ◆ No. 6 fuel oil usage by the dryers.
- ◆ Total combined pressed wet peel to the dryers in tons.
- ◆ Natural gas usage by each dryer.

Daily records shall be completed by the end of the next business day; monthly logs shall be completed by the 10th day of the following month. [Rule 62-213.440(1), F.A.C.]

AIR CONSTRUCTION PERMIT

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction.

| EMISSIONS UNIT NO. | EMISSIONS UNIT DESCRIPTION |
|--------------------|----------------------------|
| 001 | Johnston 800 HP Boiler |
| 004 | 1000 HP Johnston Boiler |
| 008 | Boiler No. 3 (2000 HP) |
| 012 | New 1000 HP Boiler |

The Johnston Super 509, high efficiency 800 HP boiler (31.0 MMBtu/hr) supplies 27,000 pounds per hour of steam. The Johnston 1000 HP boiler has a maximum heat input of 42.0 MMBtu/hr. The 2000 HP Johnson steam boiler is fired with natural gas at a maximum fuel usage rate of 81,102 cu. ft./hour (corresponds to 84.35 MMBtu/hr at a natural gas heat content of 1040 Btu/cu. ft). The New 1000 HP boiler is limited to one of a physical capacity of 38.5 MMBtu/hour or less. The boilers are fired with natural gas, with a standby fuel used when natural gas is curtailed, of No. 4 fuel oil with a maximum sulfur content of 0.5 %. Emission Units 008 and 012 are also subject to Federal New Source Performance Standards Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).

A 125 HP, natural gas-fired Johnson boiler is considered insignificant.

STATE RULE REQUIREMENTS

OPERATIONAL REQUIREMENTS

1. **Hours of Operation:** These emissions units may operate up to 8,760 hours/year. [Rules 62-4.070(3) and 62-210.200, F.A.C., and limitation on potential to emit]
2. **Capacity.** The maximum total natural gas usage in all of the boilers (including insignificant boiler) shall not exceed 577.5 MMcf in any 12 consecutive month period. Maximum total No. 4 oil usage in all of the boilers shall not exceed 237,600 gallons in any 12 consecutive month period. [Rules 62-4.070(3), 62-210.200 and 62-296.406, F.A.C.; and, 1050001-004-AC]
3. **Fuel Sulfur Limited:** Except as otherwise provided herein, no facility shall fire fuel oil containing greater than 0.5 percent sulfur by weight. Those facilities without access to natural gas shall be limited to fuel oil containing no greater than 1 percent sulfur by weight. In addition, facilities may use fuel oil with no greater than 1.5 percent sulfur by weight for up to 400 hours per calendar year. The use of natural gas is not limited by this paragraph. The use of d-limonene as a fuel is not limited by this paragraph. [Section 403.08725(2)(d), F.S.]
4. **Particulate Matter Limited:** For particulate matter of 10 microns or less, the emissions levels, expressed in pounds per million British thermal units of heat input, unless otherwise specified, are established for the following types of new and existing sources:
 - a. Sources fired with natural gas, propane, ethanol, biogas, or d-limonene: not limited.
 - b. New sources fired with fuel oil: 0.10 pounds per million British thermal units.

No process steam boiler shall fire any fuel other than natural gas, propane, ethanol, biogas, d-limonene, or fuel oil. No process steam boiler shall fire used oil. [Section 403.08725(2)(e)3., F.S.]

AIR CONSTRUCTION PERMIT

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

5. Visible Emissions Limited: The levels of visible emissions at all times during operation, expressed as a percent of opacity, are established for process steam boilers is 20 percent. [Section 403.08725(2)(g)3., F.S.]
6. NOx Emissions Limited: The emissions levels, expressed in pounds of nitrogen dioxide per million British thermal units of heat produced, unless otherwise specified, are established for the following types of new and existing process steam boilers:
 - a. New sources with a heat input capacity of 67 million British thermal units per hour or less and existing sources regardless of heat input capacity: not limited.
 - b. New sources with a heat input capacity of more than 67 million British thermal units per hour: 0.10 pounds per million British thermal units. [Section 403.08725(2)(f)2., F.S.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

7. Tests Required: Emission sources subject to limitations for particulate matter, nitrogen oxides, and visible emissions pursuant to Section 403.08725(2)(e)-(g), F.S. shall test emissions annually, except as provided in subparagraphs 1. - 4., in accordance with department rules using United States Environmental Protection Agency test methods or other test methods specified by department rule. [Section 403.08725(3)(i), F.S.]
8. Fuel Sulfur Content Tests: Measurement of the sulfur content of fuel oil shall be by latest American Society for Testing and Materials methods suitable for determining sulfur content. Sulfur dioxide emissions shall be determined by material balance using the sulfur content and amount of the fuel or fuels fired in each emission source, assuming that for each pound of sulfur in the fuel fired, 2 pounds of sulfur dioxide are emitted. [Section 403.08725(3)(j), F.S.]
9. Visible Emission Tests Required: Tests for visible emissions shall be conducted using United States Environmental Protection Agency Method 9. [Section 403.08725(3)(i)2., F.S.]
10. Particulate Matter Emissions Tests Required: Tests for particulate matter of 10 microns or less may be conducted using United States Environmental Protection Agency Method 5, provided that all measured particulate matter is assumed to be particulate matter of 10 microns or less. [Section 403.08725(3)(i)1., F.S.]
11. Nitrogen Oxides Emissions Tests Required: Tests for nitrogen oxides shall be conducted using Environmental Protection Agency Method 7E. [Section 403.08725(3)(i)3., F.S.]
12. Emissions Tests Waived: Tests for particulate matter of 10 microns or less for process steam boilers, combustion turbines, and duct burners, and tests for nitrogen oxides for citrus peel dryers, process steam boilers, and duct burners, are not required while firing fuel oil in any calendar year in which these sources did not fire fuel oil for more than 400 hours. [Section 403.08725(3)(i)4., F.S.]

REPORTING AND RECORD KEEPING REQUIREMENTS

13. Fuel Sulfur Content Records: The owner or operator shall maintain records of sulfur content of each delivery of distillate fuel oil received for these emissions units. [Rule 62-4.070(3), F.A.C.]

AIR CONSTRUCTION PERMIT

SECTION III: EMISSIONS UNITS SPECIFIC CONDITIONS

14. Records of Design Heat Input Capacity: The owner or operator shall maintain monthly records of the heat input to each boiler to demonstrate compliance the heat input limits of this section. [Rule 62-4.070(3), F.A.C.]
15. Pursuant to 40 CFR 60.48c NSPS Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units), the permittee is required to maintain daily records of the amount of natural gas combusted. Since none of the emission limits in Subpart Dc are applicable to this boiler when firing natural gas (the primary fuel for this boiler), it has been determined by the Department that keeping records for natural gas usage on a monthly rather than daily basis is adequate for the purpose of verifying the periods that only natural gas is burned in this unit. This requirement is applicable to EU 008 and 012, only. [Rule 62-296.810, F.A.C.; 40 CFR 60.48c(g) and (i)]
16. The permittee shall maintain a (daily) record of the quantity of fuel oil used for each day of operation. [Rule 62-204.800(7)(b)4., F.A.C.; 40 CFR 60.48c(g) and 40 CFR 60.48c(i)]
17. The permittee shall submit quarterly reports of the fuel oil supplier sulfur content certification records for any calendar quarter during which fuel oil is fired in EU 008. In addition to the above, the quarterly report shall include a certified statement signed by the owner or operator of the facility that the records of the fuel supplier certifications submitted represent all of the fuel combusted during the quarter. The quarterly reports shall be submitted to the Air Compliance Section of the Southwest District Office of the Department within 30 days of the end of the quarter being reported. [Rule 62-204.800(7)(b)4., F.A.C.; 40 CFR 60.48c(e)(11)]

AIR CONSTRUCTION PERMIT

SECTION III: EMISSIONS UNITS SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction.

| EMISSIONS UNIT NO. | EMISSIONS UNIT DESCRIPTION |
|--------------------|----------------------------|
| 009 | Pellet Cooler No. 2 |
| 010 | Pellet Cooler No. 3 |

The two Citrus Peel Coolers Nos. 2 and 3 each has a design process output rate of 24.0 tons per hour of dried citrus. Dried citrus peel from the feed mill dryer is sent to the pellet mill where molasses is added and it is cooled and formed into pellets for use as an animal feed supplement. Particulate matter emissions, from the peel coolers, are controlled by cyclone dust collectors (8,000 acfm each).

STATE RULE REQUIREMENTS

OPERATIONAL REQUIREMENTS

1. Hours of Operation: This emissions unit may operate up to 8,760 hours/year. [Rules 62-4.070(3) and 62-210.200, F.A.C., and limitation on potential to emit]
2. Capacity. The maximum pellet cooler process output (production) rate shall not exceed 24.0 tons per hour of dried peel material for each of the two coolers. [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; Air Construction Permit 1050001-003-AC]
3. Particulate Matter Emissions Limited: For particulate matter of 10 microns or less, the emissions levels, expressed in pounds per million British thermal units of heat input, unless otherwise specified, are 5 pounds per hour for new and existing sources, regardless of production capacity. [Section 403.08725(2)(e)2., F.S.]
4. Visible Emissions Limited: The levels of visible emissions at all times during operation, expressed as a percent of opacity, are 5 percent. [Section 403.08725(2)(g)2., F.S.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

5. Tests Required: Emission sources subject to limitations for particulate matter, nitrogen oxides, and visible emissions pursuant to Section 403.08725(2)(e)-(g), F.S. shall test emissions annually, except as provided in subparagraphs 1. - 4., in accordance with department rules using United States Environmental Protection Agency test methods or other test methods specified by department rule. [Section 403.08725(3)(i), F.S.]
6. Visible Emission Tests Required: Tests for visible emissions shall be conducted using United States Environmental Protection Agency Method 9. [Section 403.08725(3)(i)2., F.S.]
7. Particulate Matter Tests Required: Tests for particulate matter of 10 microns or less may be conducted using United States Environmental Protection Agency Method 5, provided that all measured particulate matter is assumed to be particulate matter of 10 microns or less. Tests for compliance with the particulate matter emission limit of Section 403.08725(2)(e)2., F.S. for the pellet cooler or cooling reel are waived as long as the facility complies with the visible emissions limitation of Section 403.08725(2)(g)2., F.S. If any visible emissions test for the pellet cooler or cooling reel does not demonstrate compliance with the visible emissions limitation of Section 403.08725(2)(g)2., F.S., the emissions unit shall be tested for compliance with the particulate matter emission limit of

AIR CONSTRUCTION PERMIT

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

Section 403.08725(2)(e)2., F.S., within 30 days after the visible emissions test. [Section 403.08725(3)(i)1., F.S.]

REPORTING AND RECORD KEEPING REQUIREMENTS

8. The following records shall be maintained:

Daily

- ◆ Operating hours of the coolers.
- ◆ Average dry peel input rate to the coolers in tons/hour.

Monthly

- ◆ Total hours of operation.
- ◆ Total peel to the coolers in tons/month.

Daily records shall be completed by the end of the next business date; Monthly logs shall be completed by the 10th day of the following month. [Rule 62-213.440(1), F.A.C.]

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

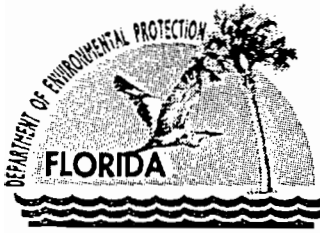
Reasonable time may depend on the nature of the concern being investigated.

- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (X);
 - (b) Determination of Prevention of Significant Deterioration (); and
 - (c) Compliance with New Source Performance Standards (X).
- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information, required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

P.E. Certification Statement

Permittee:
Citrosuco North America, Inc.

Permit No.: 1050001-006-AC

Project type: Citrus Oil Recovery

I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

This permit is issued under Section 403.08725, F.S.

Scott M. Sheplak 10/03/02
Scott M. Sheplak, P.E. date
Registration Number: 48866

Permitting Authority:
Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Telephone: 850/921-9532
Fax: 850/922-6979

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G2 Services Ltd.

CONSULTING ENGINEERS

3119 Lithia Pinecrest Rd.
Valrico, Florida 33594

Phone (813) 685-9727
Fax (813) 684-1691
G2Services@aol.com

September 4, 2002

RECEIVED

SEP 11 2002

BUREAU OF AIR REGULATION

Florida Department of
Environmental Protection
Division of Air Resources Management, MS5500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

ATTN: Ed Svec

Re: Citrosuco North America, Inc.
#1050001

Gentlemen:

Project No.: 1050001-006-AC

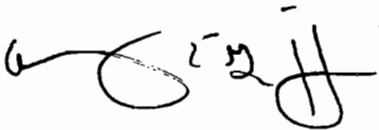
Enclosed herewith are the following items for your review:

1. Four (4) sets of construction permit applications
2. Four (4) sets of supplemental documents

The facility is electing to comply with the limitations set forth in 62-210.340
FAC.

Should you have any questions please do not hesitate to contact me at my
office.

Sincerely,



Wayne E. Griffin, P.E.
Managing Partner

cc: Nick Emanuel, C.O.O.

Weg: cms

ENGINEERING SUPPLEMENT

**PREPARED FOR: Citrosuco North America, Inc.
5927 Highway 60 East
Lake Wales, Florida 33853**

**PREPARED BY: G2 Services
3119 Lithia Pinecrest Rd.
Valrico, Florida 33594**

DATE: 9/4/02

A handwritten signature in black ink, appearing to be 'G2', is located in the bottom right corner of the page.

GENERAL

We are requesting replacement of the existing Title V Permit with one complying with 62-210.340 FAC. The Citrusuco processes up to 32,000,000 boxes of citrus fruit per season. Products include concentrate, NFC, juice blends, animal feed, and essential citrus oils. The facility was expanded in 2000 to its present capacity.

The facility process approximately 150,000 boxes per day of oranges and/or grapefruit over a 220 day operating season. The primary product is single strength (not from concentrate) juice with a secondary product of concentrated juice. Cold storage facilities are used to store single strength, concentrate, pulp, and essential oils for year round use. Off season, normally July through October, processing includes blending of products for clients, bulk sales, and packaging.

EQUIPMENT

BOILERS

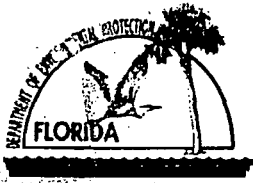
800 Hp Johnston Boiler #1
1000 Hp Johnston Boiler #2
2000 Hp Johnston Boiler #3
125 Hp Johnston Boiler #4

Boilers are natural gas fired with 0.5% S #4 oil as standby if the natural gas supply is interrupted. Steam is used, primarily, for the juice evaporators and pasteurization. During the fresh fruit season the boilers are cycled up as needed. During the off season the small (125 Hp) boiler is the primary boiler.

FEEDMILL

2 @ 50 tph (press cake rate) peel dryers
2 @ 24 tph pellet coolers
3 wasteheat evaporators (60,000 #/hr, 110,000 #/hr, and 120,000 #/hr)

Wet peel from the juice extractors is pumped to a reaction tank at the feedmill. After the addition of lime the peel is dewatered in presses prior to drying. The pressed peel is distributed to either of the two (2) dryers. The dried peel is pelletized and cooled prior to storage. The two (2) coolers exhaust thru cyclones to roof vents. The hot exhaust from the dryers is distributed to three (3) wasteheat evaporators and is scrubbed prior to discharge.



Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE SOURCE RECEIVED

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

SEP 11 2002

BUREAU OF AIR REGULATION

Identification of Facility

| | |
|---|---|
| 1. Facility Owner/Company Name: Citrusuco North America, Inc. | |
| 2. Site Name: Citrusuco North America, Inc. | |
| 3. Facility Identification Number: 1050001 [] Unknown | |
| 4. Facility Location: Indiantown Street Address or Other Locator: Highway 60 - East of Lake Wales City: Lake Wales County: Polk Zip Code: 33859 | |
| 5. Relocatable Facility? [] Yes [x] No | 6. Existing Permitted Facility? [x] Yes [] No |

Application Contact

| | |
|--|--|
| 1. Name and Title of Application Contact: Ken Miller, Safety and Compliance Director | |
| 2. Application Contact Mailing Address: Organization/Firm: Citrusuco Street Address: Post Office Box 3950 City: Lake Wales State: FL Zip Code: 33859-3950 | |
| 3. Application Contact Telephone Numbers: Telephone: (863)696-7400 Fax: (863)696-1303 | |

Application Processing Information (DEP Use)

| | |
|------------------------------------|----------------|
| 1. Date of Receipt of Application: | 9/11/02 |
| 2. Permit Number: | 1050001-006-AC |
| 3. PSD Number (if applicable): | |
| 4. Siting Number (if applicable): | |

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

- Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit number to be revised: _____

- Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: _____

- Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: _____

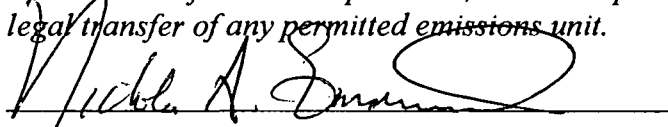
Reason for revision: _____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- Air construction permit to construct or modify one or more emissions units.
- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

| |
|---|
| 1. Name and Title of Owner/Authorized Representative or Responsible Official: Nicholas A. Emanuel, COO |
| 2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: Citrusuco North America Street Address: Post Office Box 3950 City: Lake Wales State: Florida Zip Code: 33859-3950 |
| 3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (863) 696-7400 Fax: (863) 696-1303 |
| 4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i>  <u>8/9/02</u> Signature Date |

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

| |
|---|
| 1. Professional Engineer Name: Wayne E. Griffin, P.E. Registration Number: 19974 |
| 2. Professional Engineer Mailing Address: Organization/Firm: G2 Services Street Address: 3119 Lithia Pinecrest Rd. City: Valrico State: FL Zip Code: 33594 |
| 3. Professional Engineer Telephone Numbers: Telephone: (813) 685-9727 Fax: (813) 684-1691 |

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

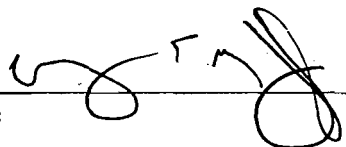
(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [X], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature 

Date 9/5/02

(seal)

* Attach any exception to certification statement.

Scope of Application

| Emissions Unit ID | Description of Emissions Unit | Permit Type | Processing Fee |
|--------------------------|--------------------------------------|--------------------|-----------------------|
| 001 | Johnston 800 Hp Boiler | ACM1 | 0 |
| 004 | Johnston 1,000 Hp Boiler | ACM1 | 0 |
| 008 | Johnston 2000 Hp Boiler | ACM1 | 0 |
| 006 | Citrus Peel Dryer #2 | ACM1 | 0 |
| 007 | Citrus Peel Dryer #3 | ACM1 | 0 |
| 009 | Pellet Cooler #2 | ACM1 | 0 |
| 010 | Pellet Cooler #3 | ACM1 | 0 |
| N/a | Johnston 125 Hp Boiler | ACM1 | 0 |
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Application Processing Fee

Check one: [] Attached - Amount: \$ _____ [X] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Revise permit to address citrus oil recovery to control VOC emissions.

2. Projected or Actual Date of Commencement of Construction: N/A

3. Projected Date of Completion of Construction: N/A

Application Comment

The facility will use, natural gas as a primary fuel source. Low sulfur #4 will be used as a backup fuel.

Facility Regulatory Classifications

Check all that apply:

| | |
|---|----------------------------------|
| 1. <input type="checkbox"/> Small Business Stationary Source? | <input type="checkbox"/> Unknown |
| 2. <input checked="" type="checkbox"/> Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? | |
| 3. <input type="checkbox"/> Synthetic Minor Source of Pollutants Other than HAPs? | |
| 4. <input type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)? | |
| 5. <input type="checkbox"/> Synthetic Minor Source of HAPs? | |
| 6. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS? | |
| 7. <input type="checkbox"/> One or More Emission Units Subject to NESHAP? | |
| 8. <input type="checkbox"/> Title V Source by EPA Designation? | |
| 9. Facility Regulatory Classifications Comment (limit to 200 characters): | |
| | |

List of Applicable Regulations

| | |
|---------|--|
| ON FILE | |
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FACILITY POLLUTANTS

List of Pollutants Emitted

| 1. Pollutant Emitted | 2. Pollutant Classif. | 3. Requested Emissions Cap | | 4. Basis for Emissions Cap | 5. Pollutant Comment |
|----------------------|-----------------------|----------------------------|-----------|----------------------------|----------------------|
| | | lb/hour | tons/year | | |
| VOC | | | | | |
| CO | | | | | |
| PM | | | | | |
| SO ₂ | | | | | |
| PM ₁₀ | | | | | |
| NO _x | | | | | |
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Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 8. List of Proposed Insignificant Activities: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. List of Equipment/Activities Regulated under Title VI: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities On site but Not Required to be Individually Listed <input checked="" type="checkbox"/> Not Applicable |
| 10. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 11. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Identification of Additional Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Risk Management Plan Verification: <input type="checkbox"/> Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____) <input type="checkbox"/> Plan to be submitted to CEPPO (Date required: _____) <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Report and Plan: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Compliance Certification (Hard-copy Required): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|--|--|---------------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>800 Hp Boiler #1</p> | | | |
| <p>4. Emissions Unit Identification Number:</p> <p>ID: 001</p> | | <p><input type="checkbox"/> No ID</p> <p><input type="checkbox"/> ID Unknown</p> | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 11/25/85</p> | <p>7. Emissions Unit Major Group SIC Code:</p> <p>51</p> | <p>8. Acid Rain Unit?</p> <p>[N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

None

2. Control Device or Method Code(s):

Emissions Unit Details

| | | |
|--------------------------------------|--------------------------------------|------------------------------|
| 1. Package Unit: | | |
| Manufacturer: Johnston 800 HP Boiler | | Model Number: PFTA800-4H-200 |
| 2. Generator Nameplate Rating: N/A | | MW |
| 3. Incinerator Information: N/A | | |
| | Dwell Temperature: | °F |
| | Dwell Time: | seconds |
| | Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | | |
|---|---------------|------------------|
| 1. Maximum Heat Input Rate: | 33.7 | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate: N/A | | |
| 4. Maximum Production Rate: N/A | | |
| 5. Requested Maximum Operating Schedule: | | |
| | 24 hours/day | 7 days/week |
| | 52 weeks/year | 8,760 hours/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): N/A | | |

**D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)**

Emission Point Description and Type

| | | | |
|---|---|---|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Boiler #1 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 70 feet | 7. Exit Diameter: 1.3 feet | |
| 8. Exit Temperature: 400 °F | 9. Actual Volumetric Flow Rate: 11,728 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | | 12. Nonstack Emission Point Height: N/A feet | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): | | | |

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 2

| | | |
|--|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): External Combustion Boilers - Industrial - Fired on natural gas Heat Input rate between 10 and 100 MMBTU/hr. | | |
| 2. Source Classification Code (SCC): 1-02-006-02 | 3. SCC Units: mmcf | |
| 4. Maximum Hourly Rate: 0.032 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2

| | | |
|---|---------------------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): External Combustion Boilers - Industrial - Fired on Waste Oil or #4 Heat Input rate between 10 and 100 MMBTU/hr. | | |
| 2. Source Classification Code (SCC): 1-02-005-01 | 3. SCC Units: 1,000 Gallons Burned | |
| 4. Maximum Hourly Rate: 0.21 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0.5 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 145 |
| 10. Segment Comment (limit to 200 characters): | | |

**F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)**

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|------------------------|--------------------------------|----------------------------------|------------------------------|
| PM | N/A | N/A | NS |
| SO₂ | N/A | N/A | NS |
| NO_x | N/A | N/A | NS |
| PM₁₀ | N/A | N/A | NS |
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G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

| | | | |
|---|--|--|--|
| 1. Pollutant Emitted: N/A | | 2. Total Percent Efficiency of Control: 0% | |
| 3. Potential Emissions: lb/hour | | 4. Synthetically Limited? [N] | |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | | | |
| 6. Emission Factor: Reference: | | 7. Emissions Method Code: 3 | |
| 8. Calculation of Emissions (limit to 600 characters): | | | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | | | |

Allowable Emissions Allowable Emissions 1 of 7

| | | | |
|---|--|---|--|
| 1. Basis for Allowable Emissions Code: | | 2. Future Effective Date of Allowable Emissions: Existing Operation | |
| 3. Requested Allowable Emissions and Units: | | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year | |
| 5. Method of Compliance (limit to 60 characters): | | | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | | | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|--|
| 1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested |
| 2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested |
| 5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 10. Supplemental Requirements Comment: |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|---|--|--------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>1,000 Hp Boiler #2</p> | | | |
| <p>4. Emissions Unit Identification Number:</p> <p>ID: 004 <input type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p> | | | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 3/14/89</p> | <p>7. Emissions Unit Major Group SIC Code:</p> <p>51</p> | <p>8. Acid Rain Unit? [N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

None

2. Control Device or Method Code(s):

Emissions Unit Details

| | | |
|------------------|--------------------------|---------------|
| 1. Package Unit: | | |
| Manufacturer: | Johnston 1,000 HP Boiler | Model Number: |
| | PFTA 1000-4h-200 | |

| | | |
|--------------------------------|-----|----|
| 2. Generator Nameplate Rating: | N/A | MW |
|--------------------------------|-----|----|

| | | |
|-----------------------------|--------------------------------------|---------|
| 3. Incinerator Information: | N/A | |
| | Dwell Temperature: | °F |
| | Dwell Time: | seconds |
| | Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | | |
|---|---------------|------------------|
| 1. Maximum Heat Input Rate: | 42.0 | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate: N/A | | |
| 4. Maximum Production Rate: N/A | | |
| 5. Requested Maximum Operating Schedule: | 24 hours/day | 7 days/week |
| | 52 weeks/year | 8,760 hours/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): N/A | | |

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

| | | | |
|---|--|--------------------------------|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Boiler #2 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 70 feet | 7. Exit Diameter: 2.3 feet | |
| 8. Exit Temperature: 400 °F | 9. Actual Volumetric Flow Rate: 13,000 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | 12. Nonstack Emission Point Height: N/A feet | | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): | | | |

**E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)**

Segment Description and Rate: Segment 1 of 2

| | | |
|--|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): External Combustion Boilers - Industrial - Fired on natural gas Heat Input rate between 10 and 100 MMBTU/hr. | | |
| 2. Source Classification Code (SCC): 1-02-006-02 | | 3. SCC Units: mmcf |
| 4. Maximum Hourly Rate: 0.040 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2

| | | |
|---|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): External Combustion Boilers - Industrial - Fired on Waste Oil or #4 Heat Input rate between 10 and 100 MMBTU/hr. | | |
| 2. Source Classification Code (SCC): 1-02-005-01 | | 3. SCC Units: 1,000 Gallons Burned |
| 4. Maximum Hourly Rate: 0.26 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0.5 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 150 |
| 10. Segment Comment (limit to 200 characters): | | |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

| | | | |
|---|--|---|--|
| 1. Pollutant Emitted: N/A | | 2. Total Percent Efficiency of Control: 0% | |
| 3. Potential Emissions: lb/hour | | 4. Synthetically Limited? [N] tons/year | |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | | | |
| 6. Emission Factor: Reference: | | 7. Emissions Method Code: 3 | |
| 8. Calculation of Emissions (limit to 600 characters): | | | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | | | |

Allowable Emissions Allowable Emissions 1 of 7

| | | | |
|---|--|---|--|
| 1. Basis for Allowable Emissions Code: | | 2. Future Effective Date of Allowable Emissions: Existing Operation | |
| 3. Requested Allowable Emissions and Units: | | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year | |
| 5. Method of Compliance (limit to 60 characters): | | | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | | | |

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

| | |
|--|---|
| 1. Visible Emissions Subtype: VE20 | 2. Basis for Allowable Opacity: [X] Rule [] Other |
| 3. Requested Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: 40% Maximum Period of Excess Opacity Allowed: 2min/hour | |
| 4. Method of Compliance: EPA Method 9 | |
| 5. Visible Emissions Comment (limit to 200 characters): Rule 62-296.406, F.A.C. | |

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____ N/A

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | [] Rule [] Other |
| 4. Monitor Information: Manufacturer: Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment (limit to 200 characters): | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|--|
| 1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested |
| 5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 10. Supplemental Requirements Comment: |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|---|--|---------------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p>2,000 Hp Boiler #3</p> | | | |
| <p>4. Emissions Unit Identification Number:</p> <p>ID: 008 <input type="checkbox"/> No ID</p> <p style="text-align: right;"><input type="checkbox"/> ID Unknown</p> | | | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 10/1/99</p> | <p>7. Emissions Unit Major Group SIC Code:</p> <p>51</p> | <p>8. Acid Rain Unit?</p> <p>[N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

None

2. Control Device or Method Code(s):

Emissions Unit Details

| | | |
|---------------------------------|--------------------------------------|---------------|
| 1. Package Unit: | | |
| Manufacturer: | Johnston 1,000 HP Boiler | Model Number: |
| 2. Generator Nameplate Rating: | N/A | MW |
| 3. Incinerator Information: N/A | | |
| | Dwell Temperature: | °F |
| | Dwell Time: | seconds |
| | Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | | |
|---|---------------|------------------|
| 1. Maximum Heat Input Rate: | 84.35 | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate: N/A | | |
| 4. Maximum Production Rate: N/A | | |
| 5. Requested Maximum Operating Schedule: | | |
| | 24 hours/day | 7 days/week |
| | 52 weeks/year | 8,760 hours/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): N/A | | |

**D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)**

Emission Point Description and Type

| | | | |
|---|---|---|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Boiler #3 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 40 feet | 7. Exit Diameter: 3.8 feet | |
| 8. Exit Temperature: 400 °F | 9. Actual Volumetric Flow Rate: 26,000 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | | 12. Nonstack Emission Point Height: N/A feet | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): | | | |

**E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)**

Segment Description and Rate: Segment 1 of 2

| | | |
|--|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): External Combustion Boilers - Industrial - Fired on natural gas Heat Input rate between 10 and 100 MMBTU/hr. | | |
| 2. Source Classification Code (SCC): 1-02-006-02 | | 3. SCC Units: mmcf |
| 4. Maximum Hourly Rate: 0.081 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2

| | | |
|---|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): External Combustion Boilers - Industrial - Fired on Waste Oil or #4 Heat Input rate between 10 and 100 MMBTU/hr. | | |
| 2. Source Classification Code (SCC): 1-02-005-01 | | 3. SCC Units: 1,000 Gallons Burned |
| 4. Maximum Hourly Rate: 0.58 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0.5 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 145 |
| 10. Segment Comment (limit to 200 characters): | | |

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

| | |
|---|---|
| 1. Pollutant Emitted: N/A | 2. Total Percent Efficiency of Control: 0% |
| 3. Potential Emissions: lb/hour | 4. Synthetically Limited? [N] tons/year |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | |
| 6. Emission Factor: Reference: | 7. Emissions Method Code: 3 |
| 8. Calculation of Emissions (limit to 600 characters): | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | |

Allowable Emissions Allowable Emissions 1 of 7

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: Existing Operation |
| 3. Requested Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year |
| 5. Method of Compliance (limit to 60 characters): | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | |

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

| | |
|--|---|
| 1. Visible Emissions Subtype: VE20 | 2. Basis for Allowable Opacity: [X] Rule [] Other |
| 3. Requested Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: 40% Maximum Period of Excess Opacity Allowed: 2min/hour | |
| 4. Method of Compliance: EPA Method 9 | |
| 5. Visible Emissions Comment (limit to 200 characters): Rule 62-296.406, F.A.C. | |

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____ N/A

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | [] Rule [] Other |
| 4. Monitor Information: Manufacturer: Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment (limit to 200 characters): | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|--|
| 1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested |
| 5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 10. Supplemental Requirements Comment: |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|---|---|------------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): Peel Dryer #2</p> | | | |
| <p>4. Emissions Unit Identification Number: ID: 006</p> <p style="text-align: right;"><input type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p> | | | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 10/1/99</p> | <p>7. Emissions Unit Major Group SIC Code: 20</p> | <p>8. Acid Rain Unit? [N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters):</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Wet Scrubbers wasteheat evaporators

2. Control Device or Method Code(s): 002

Emissions Unit Details

| | |
|--------------------------------------|---------------|
| 1. Package Unit: Manufacturer: | Model Number: |
| 2. Generator Nameplate Rating: N/A | MW |
| 3. Incinerator Information: N/A | |
| Dwell Temperature: | °F |
| Dwell Time: | seconds |
| Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | | |
|---|---|------------------|
| 1. Maximum Heat Input Rate: | 93.6 | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate: | 50 ton per hour of wet peel (pressed peel)* | |
| 4. Maximum Production Rate: | N/A | |
| 5. Requested Maximum Operating Schedule: | hours/day | days/week |
| | weeks/year | 8,760 hours/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): | | |
| * Seasonal average process throughput | | |

**D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)**

Emission Point Description and Type

| | | | |
|--|---|--|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Peel Dryer #2 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: N/A | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 90 feet | 7. Exit Diameter: 4.0 feet | |
| 8. Exit Temperature: 140 °F | 9. Actual Volumetric Flow Rate: 28,000 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | | 12. Nonstack Emission Point Height: N/A feet | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): Peel Dryer #2 exhausts hot gases to a common header which supplies three (3) wasteheat evaporators. | | | |

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 2

| | | |
|--|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): Fuel Fired Equipment - Fired on natural gas | | |
| 2. Source Classification Code (SCC): 3-02-006-02 | | 3. SCC Units: mmcf |
| 4. Maximum Hourly Rate: 0.09 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2

| | | |
|--|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): Fuel Fired Equipment - Fired on #4 | | |
| 2. Source Classification Code (SCC): 3-02-005-01 | | 3. SCC Units: 1,000 Gallons Burned |
| 4. Maximum Hourly Rate: 0.65 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0.5 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 145 |
| 10. Segment Comment (limit to 200 characters): | | |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

| | | | |
|---|--|---|--|
| 1. Pollutant Emitted: N/A | | 2. Total Percent Efficiency of Control: 99% | |
| 3. Potential Emissions: lb/hour | | 4. Synthetically Limited? [Y] | |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | | | |
| 6. Emission Factor: Reference: | | 7. Emissions Method Code: 0 | |
| 8. Calculation of Emissions (limit to 600 characters): | | | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | | | |

Allowable Emissions Allowable Emissions 1 of 7

| | | | |
|--|--|---|--|
| 1. Basis for Allowable Emissions Code: RULE | | 2. Future Effective Date of Allowable Emissions: 10/1/99 | |
| 3. Requested Allowable Emissions and Units: N/A | | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year | |
| 5. Method of Compliance (limit to 60 characters): Recordkeeping and annual stack testing | | | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | | | |

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

| | |
|---|---|
| 1. Visible Emissions Subtype: VE20 | 2. Basis for Allowable Opacity: [X] Rule [] Other |
| 3. Requested Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: 20% Maximum Period of Excess Opacity Allowed: 0 min/hour | |
| 4. Method of Compliance: EPA Method 9 | |
| 5. Visible Emissions Comment (limit to 200 characters): Rule 62-296.406, F.A.C. | |

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____ N/A

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | [] Rule [] Other |
| 4. Monitor Information: Manufacturer: Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment (limit to 200 characters): | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|--|
| 1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested |
| 4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested |
| 5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 10. Supplemental Requirements Comment: |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|---|---|------------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): Peel Dryer #3</p> | | | |
| <p>4. Emissions Unit Identification Number: ID: 007 <input type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p> | | | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 10/1/99</p> | <p>7. Emissions Unit Major Group SIC Code: 20</p> | <p>8. Acid Rain Unit? [N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters):</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Wet Scrubbers in wasteheat evaporators

2. Control Device or Method Code(s): 002

Emissions Unit Details

| | |
|--------------------------------------|---------------|
| 1. Package Unit: Manufacturer: | Model Number: |
| 2. Generator Nameplate Rating: N/A | MW |
| 3. Incinerator Information: N/A | |
| Dwell Temperature: | °F |
| Dwell Time: | seconds |
| Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | | |
|--|------------|------------------|
| 1. Maximum Heat Input Rate: | 93.6 | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate: 50 ton per hour of wet peel (pressed peel)* | | |
| 4. Maximum Production Rate: N/A | | |
| 5. Requested Maximum Operating Schedule: | | |
| | hours/day | days/week |
| | weeks/year | 8,760 hours/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): | | |
| * Seasonal average process throughput | | |

**D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)**

Emission Point Description and Type

| | | | |
|--|---|---|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Peel Dryer #3 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 90 feet | 7. Exit Diameter: 4.0 feet | |
| 8. Exit Temperature: 140 °F | 9. Actual Volumetric Flow Rate: 28,000 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | | 12. Nonstack Emission Point Height: N/A feet | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): Peel Dryer #3 exhausts hot gases to a common header with supplies three (3) wasteheat evaporators | | | |

**E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)**

Segment Description and Rate: Segment 1 of 2

| | | |
|---|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): Fuel Fired Equipment - Fired on natural gas. | | |
| 2. Source Classification Code (SCC): 3-02-006-02 | | 3. SCC Units: mmcf |
| 4. Maximum Hourly Rate: 0.09 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2

| | | |
|--|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): Fuel Fired Equipment - Fired on #4 | | |
| 2. Source Classification Code (SCC): 3-02-005-01 | | 3. SCC Units: 1,000 Gallons Burned |
| 4. Maximum Hourly Rate: 0.65 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: 0.5 | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 145 |
| 10. Segment Comment (limit to 200 characters): | | |

**F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)**

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|------------------------|--------------------------------|----------------------------------|------------------------------|
| PM | 002 | N/A | EL |
| PM₁₀ | 002 | N/A | NS |
| SO₂ | N/A | N/A | EL |
| NO_x | N/A | N/A | NS |
| CO | N/A | N/A | NS |
| VOC | N/A | N/A | NS |
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G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

(Regulated Emissions Units -

Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

| | | | |
|---|--|---|-------------------------------|
| 1. Pollutant Emitted: N/A | | 2. Total Percent Efficiency of Control: 99% | |
| 3. Potential Emissions: lb/hour | | tons/year | 4. Synthetically Limited? [Y] |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | | | |
| 6. Emission Factor: Process Weight Table Reference: | | 7. Emissions Method Code: 0 | |
| 8. Calculation of Emissions (limit to 600 characters): See exhibit H | | | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | | | |

Allowable Emissions Allowable Emissions 1 of 7

| | |
|---|--|
| 1. Basis for Allowable Emissions Code: | 2. Future Effective Date of Allowable Emissions: Existing Operation |
| 3. Requested Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year |
| 5. Method of Compliance (limit to 60 characters): | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | |

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

| | |
|---|---|
| 1. Visible Emissions Subtype: VE20 | 2. Basis for Allowable Opacity: [X] Rule [] Other |
| 3. Requested Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: 20% Maximum Period of Excess Opacity Allowed: 0 min/hour | |
| 4. Method of Compliance: EPA Method 9 | |
| 5. Visible Emissions Comment (limit to 200 characters): Rule 62-296.406, F.A.C. | |

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____ N/A

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | [] Rule [] Other |
| 4. Monitor Information: Manufacturer: Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment (limit to 200 characters): | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|---|
| <p>1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p> |
| <p>2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p> |
| <p>3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p> |
| <p>4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested</p> |
| <p>5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable</p> |
| <p>6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p> |
| <p>7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested</p> |
| <p>8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p> |
| <p>9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p> |
| <p>10. Supplemental Requirements Comment:</p> |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|---|---|------------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): Pellet Cooler #2</p> | | | |
| <p>4. Emissions Unit Identification Number: ID: 009 <input type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p> | | | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 10/1/99</p> | <p>7. Emissions Unit Major Group SIC Code: 20</p> | <p>8. Acid Rain Unit? [N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters): Operates in conjunction with Peel Dryer #2 and #3.</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Cyclone

2. Control Device or Method Code(s): 075

Emissions Unit Details

| | |
|---------------------------------------|---------------|
| 1. Package Unit: | |
| Manufacturer: | Model Number: |
| 2. Generator Nameplate Rating: N/A MW | |
| 3. Incinerator Information: N/A | |
| Dwell Temperature: | °F |
| Dwell Time: | seconds |
| Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | |
|---|-------------------------------------|
| 1. Maximum Heat Input Rate: N/A | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr tons/day |
| 3. Maximum Process or Throughput Rate: 24 ton per hour* | |
| 4. Maximum Production Rate: N/A | |
| 5. Requested Maximum Operating Schedule: | |
| hours/day | days/week |
| weeks/year | 8,760 hours/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): | |
| * Seasonal average process rate | |

**D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)**

Emission Point Description and Type

| | | | |
|---|--|--------------------------------|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Pellet Cooler #2 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 60 feet | 7. Exit Diameter: 2.0 feet | |
| 8. Exit Temperature: 130 °F | 9. Actual Volumetric Flow Rate: 18,600 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | 12. Nonstack Emission Point Height: N/A feet | | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): | | | |

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 2

| | | |
|---|-------------------------|--|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): Pellet Cooling | | |
| 2. Source Classification Code (SCC): 3-02-999-98 | | 3. SCC Units: Tons Processed (Input) |
| 4. Maximum Hourly Rate: 24 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: N/A |
| 7. Maximum % Sulfur: N/A | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2 N/A

| | | |
|--|-------------------------|--------------------------------------|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): | | |
| 2. Source Classification Code (SCC): | | 3. SCC Units: |
| 4. Maximum Hourly Rate: | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: |
| 10. Segment Comment (limit to 200 characters): | | |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

| | |
|--|--|
| 1. Pollutant Emitted: N/A | 2. Total Percent Efficiency of Control: Not used in calculations % |
| 3. Potential Emissions: 2.26 lb/hour 4.5 tons/year | 4. Synthetically Limited? [N] |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | |
| 6. Emission Factor: Process Weight Table Reference: | 7. Emissions Method Code: 0 |
| 8. Calculation of Emissions (limit to 600 characters): | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | |

Allowable Emissions Allowable Emissions 1 of 7

| | |
|---|--|
| 1. Basis for Allowable Emissions Code: RULE | 2. Future Effective Date of Allowable Emissions: 10/1/99 |
| 3. Requested Allowable Emissions and Units: | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year |
| 5. Method of Compliance (limit to 60 characters): Recordkeeping and Annual | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | |

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

| | |
|---|---|
| 1. Visible Emissions Subtype: VE20 | 2. Basis for Allowable Opacity: [X] Rule [] Other |
| 3. Requested Allowable Opacity: Normal Conditions: 20% Exceptional Conditions: 20% Maximum Period of Excess Opacity Allowed: 0 min/hour | |
| 4. Method of Compliance: EPA Method 9 | |
| 5. Visible Emissions Comment (limit to 200 characters): Rule 62-296.406, F.A.C. | |

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____ N/A

| | |
|---|---|
| 1. Parameter Code: | 2. Pollutant(s): |
| 3. CMS Requirement: | [] Rule [] Other |
| 4. Monitor Information: Manufacturer: Model Number: Serial Number: | |
| 5. Installation Date: | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment (limit to 200 characters): | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|--|
| 1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 10. Supplemental Requirements Comment: |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|--|
| 11. Alternative Methods of Operation [<input type="checkbox"/>] Attached, Document ID: _____ [X <input checked="" type="checkbox"/>] Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) [<input type="checkbox"/>] Attached, Document ID: _____ [X <input checked="" type="checkbox"/>] Not Applicable |
| 13. Identification of Additional Applicable Requirements [<input type="checkbox"/>] Attached, Document ID: _____ [X <input checked="" type="checkbox"/>] Not Applicable |
| 14. Compliance Assurance Monitoring Plan [<input type="checkbox"/>] Attached, Document ID: _____ [X <input checked="" type="checkbox"/>] Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) [<input type="checkbox"/>] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ [<input type="checkbox"/>] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ [<input type="checkbox"/>] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ [<input type="checkbox"/>] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ [<input type="checkbox"/>] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ [<input type="checkbox"/>] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ [X <input checked="" type="checkbox"/>] Not Applicable |

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

| | | | |
|---|---|---|-----------------------------------|
| <p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).</p> <p><input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.</p> <p><input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.</p> | | | |
| <p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p> | | | |
| <p>3. Description of Emissions Unit Addressed in This Section (limit to 60 characters): Pellet Cooler #3</p> | | | |
| <p>4. Emissions Unit Identification Number: ID: 010</p> <p style="text-align: right;"><input type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p> | | | |
| <p>5. Emissions Unit Status Code: A</p> | <p>6. Initial Startup Date: 10/1/99</p> | <p>7. Emissions Unit Major Group SIC Code: 20</p> | <p>8. Acid Rain Unit? [N]</p> |
| <p>9. Emissions Unit Comment: (Limit to 500 Characters): Operates in conjunctions with peel dryers #2 and #3</p> | | | |

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Cyclone

2. Control Device or Method Code(s): 075

Emissions Unit Details

| | |
|---|---------------|
| 1. Package Unit: Manufacturer: | Model Number: |
| 2. Generator Nameplate Rating: N/A | MW |
| 3. Incinerator Information: N/A Dwell Temperature: | °F |
| Dwell Time: | seconds |
| Incinerator Afterburner Temperature: | °F |

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

| | | |
|---|------------|----------------|
| 1. Maximum Heat Input Rate: | | mmBtu/hr |
| 2. Maximum Incineration Rate: N/A | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate: 24 tons per hour* | | |
| 4. Maximum Production Rate: N/A | | |
| 5. Requested Maximum Operating Schedule: | | |
| | hours/day | days/week |
| | weeks/year | 8,760 hrs/year |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters): | | |
| * Seasonal average process rate | | |

**D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)**

Emission Point Description and Type

| | | | |
|---|--|--------------------------------|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? Pellet Cooler #3 | | 2. Emission Point Type Code: 1 | |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): N/A | | | |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: | | | |
| 5. Discharge Type Code: V | 6. Stack Height: 65 feet | 7. Exit Diameter: 2.0 feet | |
| 8. Exit Temperature: 130 °F | 9. Actual Volumetric Flow Rate: 18,600 acfm | 10. Water Vapor: Varies % | |
| 11. Maximum Dry Standard Flow Rate: N/A dscfm | 12. Nonstack Emission Point Height: N/A feet | | |
| 13. Emission Point UTM Coordinates: Zone: 17 East (km): 452.4 North (km): 3085.5 | | | |
| 14. Emission Point Comment (limit to 200 characters): | | | |

**E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)**

Segment Description and Rate: Segment 1 of 2

| | | |
|---|-------------------------|--------------------------------------|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): Pellet Cooling | | |
| 2. Source Classification Code (SCC): 3-02-999-98 | | 3. SCC Units: Tons Processed (Input) |
| 4. Maximum Hourly Rate: 24 | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: 1040 |
| 10. Segment Comment (limit to 200 characters): | | |

Segment Description and Rate: Segment 2 of 2 N/A

| | | |
|--|-------------------------|--------------------------------------|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters): | | |
| 2. Source Classification Code (SCC): | | 3. SCC Units: |
| 4. Maximum Hourly Rate: | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: |
| 10. Segment Comment (limit to 200 characters): | | |

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

| | | | |
|---|--|--|--|
| 1. Pollutant Emitted: N/A | | 2. Total Percent Efficiency of Control: Not used in calculations % | |
| 3. Potential Emissions: 2.26 lb/hour | | 4. Synthetically Limited? [Y] 4.5 tons/year | |
| 5. Range of Estimated Fugitive Emissions: N/A [] 1 [] 2 [] 3 _____ to _____ tons/year | | | |
| 6. Emission Factor: Reference: | | 7. Emissions Method Code: 0 | |
| 8. Calculation of Emissions (limit to 600 characters): | | | |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): N/A | | | |

Allowable Emissions Allowable Emissions 1 of 7

| | | | |
|---|--|---|--|
| 1. Basis for Allowable Emissions Code: RULE | | 2. Future Effective Date of Allowable Emissions: 10/1/99 | |
| 3. Requested Allowable Emissions and Units: N/A | | 4. Equivalent Allowable Emissions: N/A lb/hour tons/year | |
| 5. Method of Compliance (limit to 60 characters): | | | |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): | | | |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

| |
|--|
| 1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 10. Supplemental Requirements Comment: |

Additional Supplemental Requirements for Title V Air Operation Permit Applications

| |
|---|
| 11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
| 15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |



May 3, 1991

RECEIVED

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

MAY 3 1991

Bureau of
Air Regulation

Subject: Air Construction and Prevention of Significant Deterioration (PSD)
Permit Applications--Lake and Pasco Counties Cogeneration Facilities

Dear Clair:

Please find enclosed two applications to construct air pollution sources and accompanying PSD permit applications for cogeneration facilities located in Lake and Pasco Counties. The applicants for these projects are Lake Cogen Limited and Pasco Cogen Limited, which are the entities that will own and control each facility. These entities have been formed by Peoples Cogeneration Company, a subsidiary of Peoples Gas Company. The electrical power that will be generated by these facilities will be purchased by Florida Power Corporation. The inherent efficiency of these new units will make them among the most efficient in the state.

The Lake County facility will be located on property leased from Golden Gem Growers; the Pasco County facility will be located on property leased from the Lykes-Pasco citrus processing plant. The cogeneration facilities will supply process steam, which is currently generated by existing boilers, for each citrus plant. While this will obviate the need to use the existing boilers when the cogeneration plant is operating, it is desired that the citrus and cogeneration plants be independent. Thus, while there will be an actual reduction in air pollutants generated at the citrus plants, this permit request does not take into account any emissions reductions, and the existing permitted emissions from these facilities would not be affected.

The technical information submitted on each facility is identical. Only the meteorological data used in the modeling analyses changed. Therefore, it may be appropriate to have the permit applications reviewed by one engineer.

I am submitting five copies of each application. As required, I have enclosed a \$5,000 check made out to the Florida Department of Environmental Regulation for each application. Although there will be two sources at each cogeneration facility, each source is identical and thus the Similar Source Fee is applicable.

90115A1/11

KBN ENGINEERING AND APPLIED SCIENCES, INC.

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



I would like to establish a meeting in the near future to review with your staff any initial comments they may have. I'll call Barry Andrews of your staff in about a week to set up a convenient time for a meeting.

Sincerely,

A handwritten signature in cursive script that reads "Kennard F. Kosky".

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

KFK/tyf

cc: E.L. Mize

P. Lemie

C. Walladay

B. Thomas

C. Collins

G. Harper, EPA

C. Shaver, NPS

DEPARTMENT OF ENVIRONMENTAL REGULATION

\$5,000 pd.
5-3-91
Receipt # 151264

RECEIVED

MAY 3 1991



AC 51-196460
PSD-FL-199

Bureau of
Air Regulation

Scott
DAVIS
(404) 347-5014

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Cogeneration Facility [X] New¹ [] Existing¹

APPLICATION TYPE: [X] Construction [] Operation [] Modification

COMPANY NAME: Pasco Cogen Limited COUNTY: Pasco

Identify the specific emission point source(s) addressed in this application (i.e., Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Cogen Units 1 and 2

SOURCE LOCATION: Street U.S. Highway 301 City Dade City

UTM: East 385.6 km North 3,139.0 km

Latitude 28 ° 22 ' 26 "N Longitude 82 ° 10 ' 02 "W

APPLICANT NAME AND TITLE: Ernest L. Mize, Vice President

APPLICANT ADDRESS: 535 North Ferncreek Avenue, Orlando, FL 32803

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Pasco Cogen Limited

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Ernest L. Mize

Ernest L. Mize, Vice President
Name and Title (Please Type)

Date: 5/1/91 Telephone No. (407) 843-2139

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.) This is to certify that the engineering features of this pollution control project have been ~~designed~~/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that

¹See Florida Administration Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed

Kennard F. Kosky

Kennard F. Kosky

Name (Please Type)

KBN Engineering and Applied Sciences, Inc.

Company Name (Please Type)

1034 NW 57th Street, Gainesville, FL 32605

Mailing Address (Please Type)

Florida Registration No. 14996 Date: 5/1/91 Telephone No. (904) 331-9000

SECTION II: GENERAL PROJECT INFORMATION

- A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Construction of two combustion turbines and heat recovery steam generators;

Section 2.0 in PSD Application

- B. Schedule of project covered in this application (Construction Permit Application Only)
Start of Construction October 1, 1991 Completion of Construction January 1, 1993
- C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

The cost of control is integral to the design of the project; low NO_x combustors and natural gas.

- D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None

E. Requested permitted equipment operating time: hrs/day 24; days/wk 7; wks/yr 52;
If power plant, hrs/yr 8,760; if seasonal, describe: _____
See Section 2.0

F. If this is a new source or major modification, answer the following questions.
(Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO
 - a. If yes, has "offset" been applied? _____
 - b. If yes, has "Lowest Achievable Emission Rate" been applied? _____
 - c. If yes, list non-attainment pollutants. _____
2. Does best available control technology (BACT) apply to this source?
If yes, see Section VI. YES
3. Does the State "Prevention of Significant Deterioration" (PSD)
requirement apply to this source? If yes, see Sections VI and VII. YES
4. Do "Standards of Performance for New Stationary Sources" (NSPS)
apply to this source? YES
5. Do "National Emission Standards for Hazardous Air Pollutants"
(NESHAP) apply to this source? NO

- H. Do "Reasonably Available Control Technology" (RACT) requirements apply
to this source? NO
- a. If yes, for what pollutants? _____
 - b. If yes, in addition to the information required in this form, any information
requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any
justification for any answer of "No" that might be considered questionable.

PSD Permit Application is attached.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: NOT APPLICABLE

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|-------------|--------------|------|---------------------------|------------------------|
| | Type | % Wt | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B. Process Rate, if applicable: (See Section V, Item 1) NOT APPLICABLE

1. Total Process Input Rate (lbs/hr): _____

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

SEE TABLE 2-1 IN PSD PERMIT APPLICATION

| Name of Contaminant | Emission ¹ | | Allowed ² Emission Rate per Rule 17-2 | Allowable ³ Emission lbs/hr | Potential ⁴ Emission | | Relate to Flow Diagram |
|---------------------|-----------------------|-------------|--|--|---------------------------------|-------|------------------------|
| | Maximum lbs/hr | Actual T/yr | | | lbs/hr | T/yr | |
| SO ₂ | 40 | 21.0 | 0.8% Sulfur | 320 | 40 | 21.0 | See |
| PM | 10 | 27.0 | NA | NA | 10 | 27.0 | Figure 2-1 |
| NO _x | 68.5 | 404.7 | 113 ppmvd | 184.3 | 68.5 | 404.7 | in PSD |
| CO | 75.5 | 466.5 | NA | NA | 75.5 | 466.5 | Application |
| VOC | 4.15 | 30.9 | NA | NA | 4.15 | 30.9 | |

¹See Section V, Item 2. Per unit; oil firing

²Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input); NSPS - 0.8% sulfur oil and 75 ppmvd NO_x corrected for heat rate; i.e., 113 ppmvd; FDER Rule 17-2.660.

³Calculated from operating rate and applicable standard.

⁴Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)
See Section 4.0 in PSD Application

| Name and Type (Model & Serial No.) | Contaminant | Efficiency | Range of Particles Size Collected (in microns) (If applicable) | Basis for Efficiency (Section V Item 5) |
|---------------------------------------|-------------|------------|---|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

E. Fuels
See Table A-1 in PSD Permit Application

| Type (Be Specific) | Consumption* | | Maximum Heat Input (MMBTU/hr) |
|--------------------|----------------------------|--------------|----------------------------------|
| | avg/hr | max./hr | |
| Natural Gas-CT | <403,268.3 CF ^a | 403,268.3 CF | 383.1 @ ISO Conditions |
| Natural Gas-DB | 63,085.8 CF ^b | 157,894.7 CF | 150 |
| Fuel Oil-CT | 576 lb ^c | 21,031.4 lb | 387.0 @ ISO Conditions |
| | | | |

CT = Combustion Turbine; DB = Duct Burner

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, others--lbs/hr.
^a8,760 hr/yr; ^b3,500 hr/yr; ^c240 hr/yr

Fuel Analysis:

Percent Sulfur: NG = 1 grain/100 CF; oil = 0.1% sulfur Percent Ash: <0.1

Density: ~7.2 for oil lbs/gal Typical Percent Nitrogen: <0.015

Heat Capacity: NG = 950 Btu/CF; Oil = 18,400 BTU/lb 132,480 (Oil) BTU/gal
(LHV)

Other Fuel Contaminants (which may cause air pollution): See Appendix A in PSD Permit

Application

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Separate construction permits to be applied for wastewater.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 100 ft. Stack Diameter: 11 ft.
 Gas Flow Rate: 324,249 ACFM 220,190 DSCFM Gas Exit Temperature: 232 °F.
 Water Vapor Content: 11 % Velocity: 56.9 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

| Type of Waste | Type 0 (Plastics) | Type II (Rubbish) | Type III (Refuse) | Type IV (Garbage) | Type IV (Pathological) | Type V (Liq. & Gas By-prod.) | Type VI (Solid By-prod.) |
|--------------------------|-------------------|-------------------|-------------------|-------------------|------------------------|------------------------------|--------------------------|
| Actual lb/hr Incinerated | | | | | | | |
| Uncontrolled (lbs/hr) | | | | | | | |

Description of Waste _____
 Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____
 Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____
 Manufacturer _____
 Date Constructed _____ Model No. _____

| | Volume (ft) ³ | Heat Release (BTU/hr) | Fuel | | Temperature (°F) |
|-------------------|--------------------------|-----------------------|------|--------|------------------|
| | | | Type | BTU/hr | |
| Primary Chamber | | | | | |
| Secondary Chamber | | | | | |

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp. _____
 Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control devices: Cyclone Wet Scrubber Afterburner
 Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
See Table A-1 in the PSD Application
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods, 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. See Appendix A in PSD Application
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
See Appendix A in the PSD Application
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
See Table A-1 in the PSD Application
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
See Appendix A in the PSD Application
6. An 8 ½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
See Figure 2-1 in the PSD Application
7. An 8 ½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Examples: Copy of relevant portion of USGS topographic map).
See Figure 1-1 in the PSD Application
8. An 8 ½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
See Figure 1-2 in the PSD Application

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation. Application fee attached
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

- A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source? See Section 4.2 in PSD Application

Yes No 40 CFR Part 60 Subpart GG; Subpart Db.

| Contaminant | Rate or Concentration |
|----------------------|--|
| NO _x - CT | 75 ppmvd corrected to 15% O ₂ and heat rate |
| SO ₂ - CT | 0.8% sulfur |
| NO _x - DB | 0.2 lb/10 ⁶ Btu heat input |

- B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

Yes No See Section 4.0 in PSD Application

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| | |
| | |
| | |

- C. What emission levels do you propose as best available control technology?

| Contaminant | Rate or Concentration |
|------------------------------------|-----------------------|
| See Section 4.0 in PSD Application | |
| | |
| | |

- D. Describe the existing control and treatment technology (if any).

- | | |
|---------------------------|--------------------------|
| 1. Control Device/System: | 2. Operating Principles: |
| 3. Efficiency:* | 4. Capital Costs: |

*Explain method of determining

See Section 4.0 in PSD Application

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant

Rate or Concentration

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| | |
| | |
| | |
| | |

10. Stack Parameters

a. Height: ft.

b. Diameter ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Devices:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency:¹
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:²
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency:¹
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:²
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

- 1. Control Device:
- 2. Efficiency:¹
- 3. Capital Cost:
- 4. Useful Life:
- 5. Operating Cost:
- 6. Energy:²
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:
 - a. (1) Company:
 - (2) Mailing Address:
 - (3) City:
 - (4) State:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

- (5) Environmental Manager:
- (6) Telephone No.:
- (7) Emissions:¹

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| | |
| | |
| | |

(8) Process Rate:¹

- b. (1) Company:
- (2) Mailing Address:
- (3) City: (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:
- (7) Emissions:¹

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| | |
| | |
| | |

(8) Process Rate:¹

10. Reason for selection and description of systems:

¹Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data Not Applicable; see Sections 3.4.2.2 and 5.2 in PSD Application

1. _____ no. sites _____ TSP _____ () SO²* _____ Wind spd/dir

Period of Monitoring _____ / _____ / _____ to _____ / _____ / _____
 month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

**PREVENTION OF SIGNIFICANT
DETERIORATION
PERMIT APPLICATION FOR
THE PROPOSED
PASCO COUNTY
COGENERATION FACILITY**

Prepared For:

Pasco Cogen Limited

Prepared By:

**KBN Engineering and Applied Sciences, Inc.
1034 NW 57th Street
Gainesville, FL 32605**

**May 1991
90115C1**

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ACRONYMS AND ABBREVIATIONS

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| | |
|--------------------------------|--|
| AAQS | Ambient Air Quality Standards |
| ABB | Asea Brown Boveri |
| acfm | actual cubic feet per minute |
| As | arsenic |
| BACT | best available control technology |
| Be | beryllium |
| 10 ⁶ Btu/hr | million British thermal units per hour |
| Btu/kWh | British thermal units per kilowatt hour |
| CAA | Clean Air Act |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| CT | combustion turbine |
| EPA | U.S. Environmental Protection Agency |
| EPRI | Electric Power Research Institute |
| °F | degrees Fahrenheit |
| F.A.C. | Florida Administrative Code |
| FBN | fuel-bound nitrogen |
| FDER | Florida Department of Environmental Regulation |
| FGD | flue gas desulfurization |
| FPC | Florida Power Corporation |
| FPL | Florida Power & Light Company |
| ft | foot/feet |
| GEP | good engineering practice |
| gr/scf | grains per standard cubic feet |
| H ₂ SO ₄ | sulfuric acid |
| Hg | mercury |
| HRSG | heat recovery steam generators |
| HSH | highest, second highest |
| ISC | Industrial Source Complex |
| ISCST | Industrial Source Complex Short-Term |
| KBN | KBN Engineering and Applied Sciences, Inc. |
| km | kilometer |
| LAER | lowest achievable emission rate |
| lb/hr | pounds per hour |
| m | meter |
| MW/hr | megawatts per hour |
| MW | monitor well |
| NH ₃ | ammonia |
| NO ₂ | nitrogen dioxide |
| NO _x | nitrogen oxides |
| NSCR | nonselective catalytic reduction |
| NSPS | New Source Performance Standards |
| NTL | No Threat Levels |
| NWS | National Weather Service |

ACRONYMS AND ABBREVIATIONS

(Page 2 of 2)

| | |
|-----------------|---|
| PM(TSP) | total suspended particulate matter |
| PM10 | particulate matter less than or equal to 10 micrometers |
| ppm | parts per million |
| ppmvd | parts per million volume, dry |
| PSD | prevention of significant deterioration |
| SCR | selective catalytic reduction |
| SIP | State Implementation Plan |
| SNCR | selective noncatalytic reduction |
| SO ₂ | sulfuric dioxide |
| SO ₃ | sulfuric trioxide |
| TPH | tons per hour |
| TPY | tons per year |
| UNAMAP | Users Network for Applied Modeling of Air Pollution |
| VOC | volatile organic compound |

1.0 INTRODUCTION

Pasco Cogen Limited is proposing to locate a 108-megawatt (MW) cogeneration facility at the existing Golden Gem Citrus Processing Plant. The proposed site, which is located in Pasco County (Figure 1-1), will be under the common control of Pasco Cogen Limited. The proposed cogeneration facility will consist of two combustion turbines (CTs) with a generating capability of 42 MW (Table 1-1). A steam turbine using the steam generated by heat recovery steam generators (HRSGs) will have a generating capability of about 24 MW. The HRSG also will supply steam requirements for the citrus processing facility. A plot plan for the facility is presented in Figure 1-2.

84
24

108
MW

KBN Engineering and Applied Sciences, Inc. (KBN), has been contracted by Pasco Cogen Limited to provide air permitting services for the facility. Initially, preliminary analyses were performed to determine compliance with prevention of significant deterioration (PSD) increments and preconstruction de minimis monitoring levels for the proposed plant only. A full PSD review was then performed to determine whether significant air quality deterioration will result from the proposed facility and other PSD increment-consuming sources and to determine compliance with ambient air quality standards (AAQS). The PSD review included control technology review, source impact analysis, air quality analysis (monitoring), and additional impact analyses.

The proposed project will be a major facility because emissions of at least one regulated pollutant exceeds 250 tons per year (TPY). PSD review is required for these emissions and for any pollutant for which the net increase in emissions exceeds the PSD significant emission rates. The potential emissions from the proposed project will exceed the PSD significant emission rates for nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter (PM), particulate matter with an aerodynamic diameter of 10 micrometers (PM₁₀), and arsenic (As). Therefore, the project is subject to PSD review for these pollutants.

Table 1-1. Characteristics of the Pasco County Cogeneration Facility

| Characteristic | Data |
|---|---------------------|
| <u>Capacity (kW)</u> | |
| Combustion Turbines (2) | 84,088 ^a |
| Steam Cycle | 23,611 |
| Total | 107,699 |
| <u>Equipment Characteristics</u> | |
| Type of CT | GE LM 6000 |
| Number of CTs | 2 |
| Number of HRSGs | 2 |
| Number of Steam Turbines | 1 |
| Process Steam (lb/hr) | 40,000 |
| <u>Fuels</u> | |
| Primary | Natural Gas |
| Emergency Backup (gas curtailment only) | Distillate Oil |

Note: CT = Combustion turbine
 GE = General Electric
 HRSG = heat recovery steam generator

^a Represents ISO conditions; actual performance expected to be 43,285 kW (gross) per machine at operating temperature of 51°F (see discussion in Section 2.2)

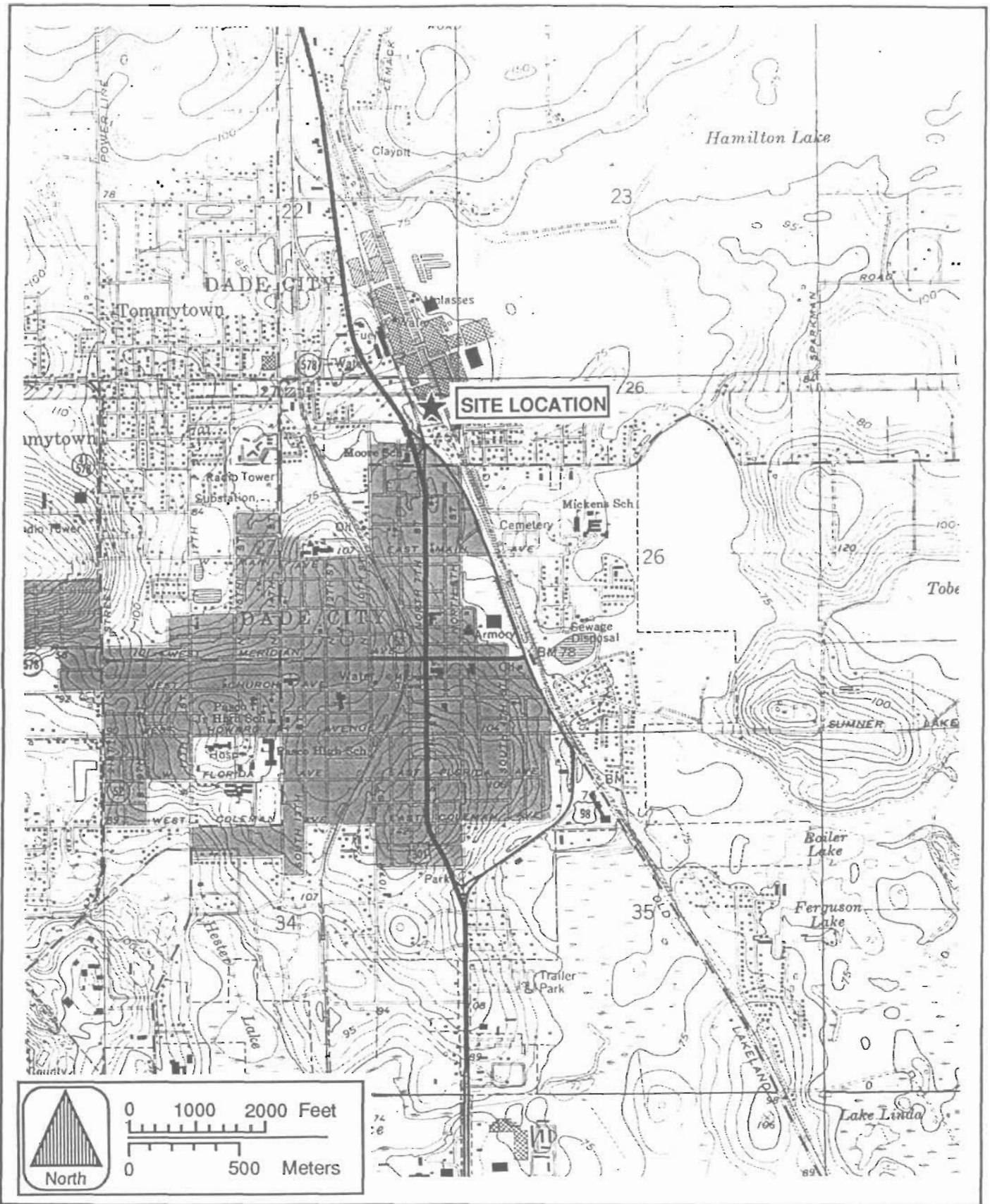


Figure 1-1 LOCATION OF THE PASCO COGENERATION FACILITY, PASCO COUNTY, FLORIDA

SOURCES: USGS, 1988; KBN, 1991.



4-1

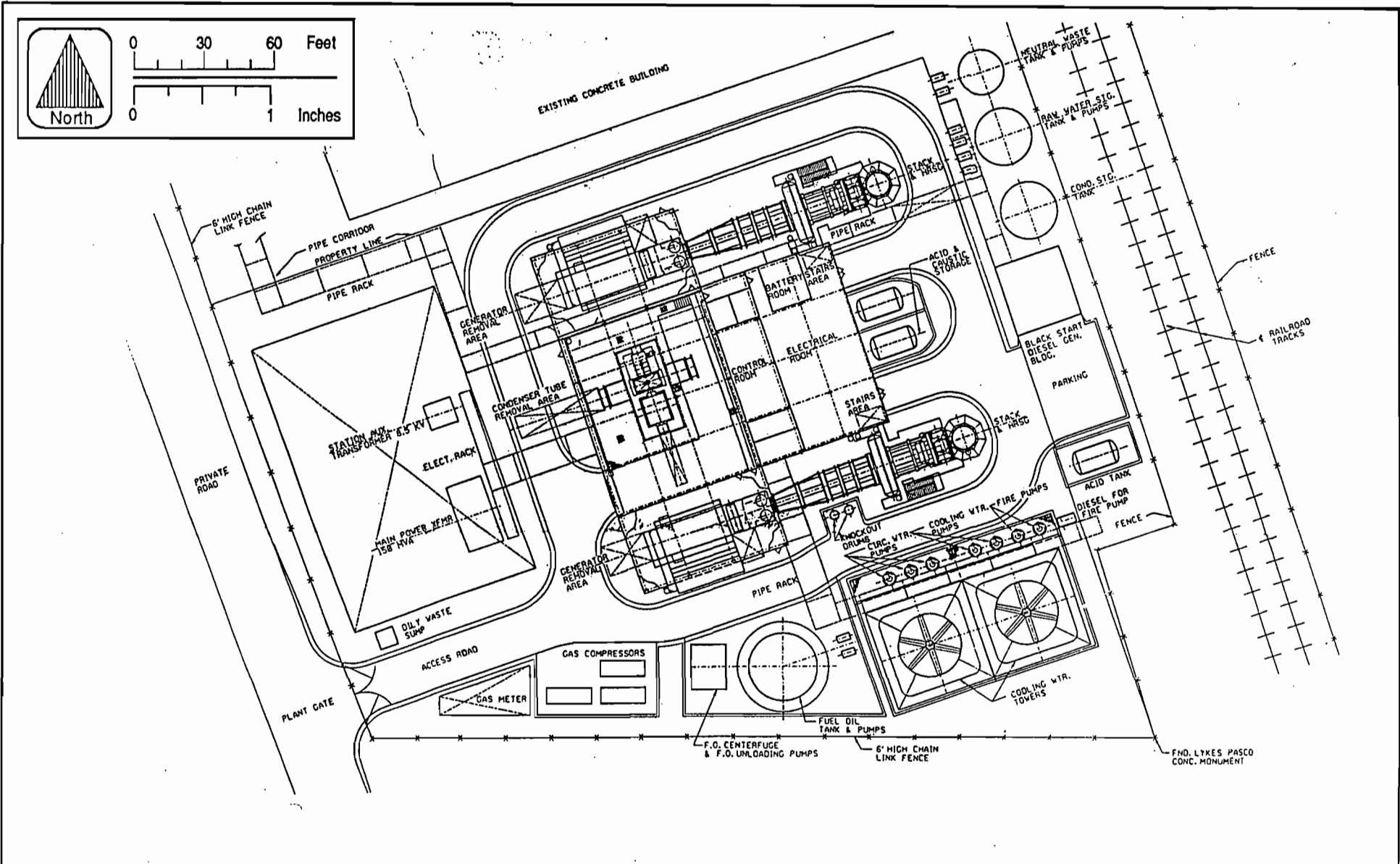


Figure 1-2 SITE PLAN OF PROPOSED FACILITY,
PASCO COUNTY, FLORIDA



This report is presented in seven sections. A general description of the proposed operation is given in Section 2.0. The air quality review requirements and applicability of the project to the PSD and nonattainment regulations are presented in Section 3.0. The control technology review for the project applicable under the U.S. Environmental Protection Agency's (EPA's) current top-down approach is discussed in Section 4.0. A discussion of the need for air quality monitoring data to satisfy the PSD preconstruction monitoring requirements is presented in Section 5.0. The air source impact analysis approach is presented in Section 6.0. The results of the air quality analyses and additional impact analyses associated with the project's impacts on vegetation, soils, and associated growth are discussed in Section 7.0.

2.0 PROJECT DESCRIPTION

2.1 GENERAL DESCRIPTION

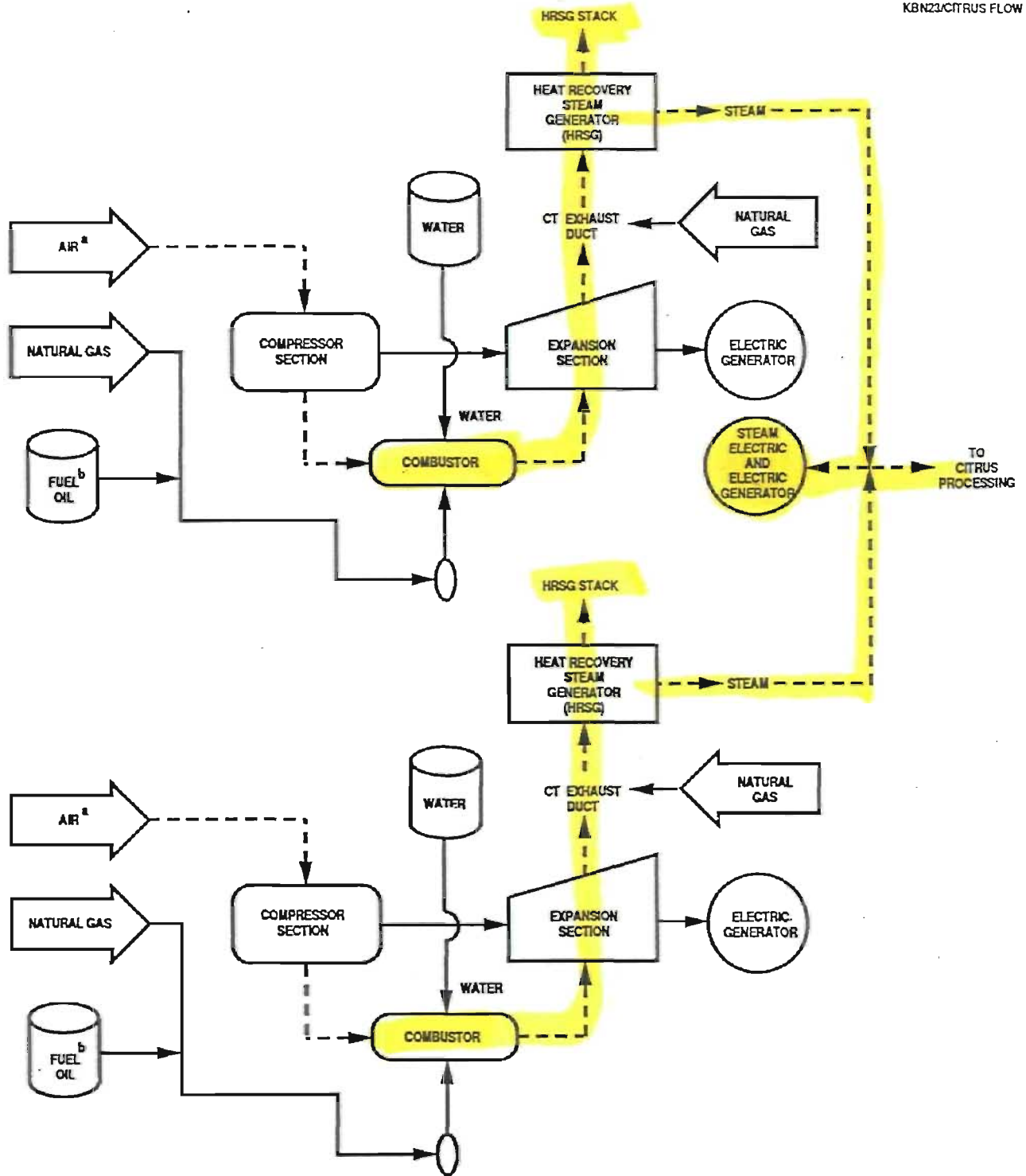
The proposed project will consist of two CTs and two HRSGs. The CTs will be the new General Electric (GE) LM 6000 machines. The LM 6000 is a newly developed aircraft derivative machine that has thermal efficiency of approximately 40 percent. This efficiency, developed from advanced aircraft compressor and turbine technology, makes the LM 6000 more efficient than the advanced heavy frame combustion turbine being offered by certain manufacturers (e.g., the GE Frame combustion turbine). A description of this machine is presented in Appendix A. Each CT will be served by a single HRSG, exhausting to an individual stack. There will be no bypass stacks on the CTs for simple cycle operation. A flow diagram of the project is presented in Figure 2-1.

The primary fuel for firing the CTs will be natural gas; distillate fuel oil will be used as emergency backup when natural gas is curtailed. Operation with distillate oil will not exceed 10 days per year. There will be supplementary firing of natural gas only in the HRSGs.

Air emission sources associated with the proposed project consist of the CTs and supplemental firing in the HRSGs. Wet injection will be used to control emissions of nitrogen oxides (NO_x) from the CTs. The use of natural gas or low-sulfur (0.1-percent sulfur maximum) distillate fuel oil will minimize the emissions of sulfur dioxide (SO_2) from the units.

2.2 FACILITY EMISSIONS AND STACK OPERATING PARAMETERS

The emissions and stack parameters for the CT are presented in Table 2-1. These data represent the maximum emissions since air inlet coolers will be installed on the CTs to maintain a compressor temperature of 51°F, which will increase generating capability and regulate temperature. Maximum potential annual emissions for the project are presented in Table 2-2. Performance information and maximum emission rates for regulated criteria



NOTES:

- (a) COOLED FROM AMBIENT
- (b) EMERGENCY BACKUP ONLY - 10 DAYS/YEAR

Figure 2-1 SIMPLIFIED FLOW DIAGRAM OF PROPOSED UNIT



Table 2-1. Stack, Operating, and Emission Data for the Proposed Cogeneration Facility (Maximum at ISO Conditions)

| Parameter | Fuel Type | | |
|--|--------------------------------------|--------------------------|--------------------------|
| | Fuel Oil ^a Gas Turbine | Natural Gas | |
| | | Gas Turbine ^b | Duct Burner ^c |
| <u>Stack Data (ft)</u> | | | |
| Height | 100 | 100 | d |
| Diameter | 11 | 11 | d |
| <u>Operating Data</u> | | | |
| Temperature (°F) | 232 | 232 | d |
| Velocity (ft/sec) | 56.9 | 56.2 | d |
| <u>Building Data (ft)</u> | | | |
| Height | 51 | 51 | d |
| Length | 124 | 124 | d |
| Width | 80 | 80 | d |
| <u>Maximum Hourly Emission Data (lb/hr) for Each Emission Unit/Fuel Type</u> | | | |
| SO ₂ | 40.0 | 1.15 | 0.45 |
| PM | 10.0 | 2.5 | 0.9 |
| NO _x | 68.5 | 39.4 | 15.0 |
| CO | 75.5 | 40.3 | 30.0 |
| VOC | 4.15 | 1.65 | 4.5 |
| Sulfuric acid mist | 3.2 | Neg | Neg |
| Pb | 0.0034 | - | - |
| <u>Annual Potential Emission Data (TPY) for Each Emission Unit/Fuel Type</u> | | | |
| SO ₂ | 4.8 | 5.05 | 0.79 |
| PM | 1.2 | 11.0 | 1.58 |
| NO _x | 8.2 | 172.4 | 26.3 |
| CO | 9.1 | 176.6 | 52.5 |
| VOC | 0.5 | 7.2 | 7.9 |
| Sulfuric Acid Mist | 0.4 | Neg | Neg |
| Pb | 0.0004 | Neg | Neg |

^a Performance based on NO_x emissions of 42 ppmvd (corrected to 15 percent O₂); SO₂ emissions based on an average sulfur content of 0.3 percent sulfur; annual emission data based on 240 hr/yr (10 days/year).

^b Performance based on NO_x emissions of 25 ppmvd (corrected to 15 percent O₂); annual emissions data based on 8,760 hours/year (365 days/yr) operation.

^c Performance based on 150 x 10⁶ Btu/hour heat input per HRSG and 3,500 hours per year operation.

^d Same as gas turbine natural gas; duct burners will not fire No. 2 oil.

Table 2-2. Maximum Annual Potential Emissions From Proposed Cogeneration Project

| Pollutant | Distillate Oil ^a | Fuel (TPY) | | Total (TPY) |
|--------------------------------|-----------------------------|--------------------------|-------|-------------|
| | | Natural Gas ^b | | |
| | | GT | DB | |
| SO ₂ | 9.6 | 9.8 | 1.6 | 21.0 |
| PM ^c | 2.4 | 21.4 | 3.2 | 27.0 |
| NO _x | 16.4 | 335.4 | 52.6 | 404.7 |
| CO | 18.2 | 343.3 | 105.0 | 466.5 |
| VOC | 1.0 | 14.0 | 15.8 | 30.8 |
| H ₂ SO ₄ | 0.8 | Neg | Neg | 0.8 |
| Pb | 0.0008 | Neg | Neg | 0.0008 |

^a240 hours/year (i.e., 10 days/year).
^b8,520 hours/year operation.
^cPM10.

pollutants, regulated noncriteria pollutants, and nonregulated pollutants from each CT are presented in Tables A-1 through A-5 of Appendix A.

Supplemental firing with natural gas will take place in the duct between each CT and its associated HRSG. The supplemental firing, at a maximum rate of 150 million British thermal units per hour ($\times 10^6$ Btu/hr), will allow the HRSG to produce additional steam and therefore allow greater electrical power generation in the steam turbine/generator. The firing of natural gas will produce additional air emissions, as shown in Tables 2-1 and 2-2, for the maximum firing rate. These emissions will combine with the CT exhaust gases only during natural gas firing and exhaust through the HRSG stack. Supplemental firing will be limited to an equivalent of 3,500 hours per year at maximum capacity (i.e., $525,000 \times 10^6$ Btu).

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements and their applicability to the proposed project. These regulations must be satisfied before the proposed simple cycle turbines can begin operation.

3.1 NATIONAL AND STATE AAQS

The existing applicable national and Florida AAQS are presented in Table 3-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

3.2 PSD REQUIREMENTS

3.2.1 GENERAL REQUIREMENTS

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a preconstruction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA, and therefore PSD approval authority has been granted to the Florida Department of Environmental Regulation (FDER).

A "major facility" is defined as any one of 28 named source categories that has the potential to emit 100 TPY or more, or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment.

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels ($\mu\text{g}/\text{m}^3$)

| Pollutant | Averaging Time | AAQS ^a | | | PSD Increments ^a | | Significant Impact Levels ^b |
|---------------------------|----------------------------------|-------------------|--------------------|------------------|-----------------------------|-----------------|--|
| | | National | | State of Florida | Class I | Class II | |
| | | Primary Standard | Secondary Standard | | | | |
| Particulate Matter (TSP) | Annual Geometric Mean | NA | NA | NA | 5 | 19 | 1 |
| | 24-Hour Maximum | NA | NA | NA | 10 | 37 | 5 |
| Particulate Matter (PM10) | Annual Arithmetic Mean | 50 | 50 | 50 | 4 ^c | 17 ^c | 1 |
| | 24-Hour Maximum | 150 | 150 | 150 | 8 ^c | 30 ^c | 5 |
| Sulfur Dioxide | Annual Arithmetic Mean | 80 | NA | 60 | 2 | 20 | 1 |
| | 24-Hour Maximum | 365 | NA | 260 | 5 | 91 | 5 |
| | 3-Hour Maximum | NA | 1,300 | 1,300 | 25 | 512 | 25 |
| Carbon Monoxide | 8-Hour Maximum | 10,000 | 10,000 | 10,000 | NA | NA | 500 |
| | 1-Hour Maximum | 40,000 | 40,000 | 40,000 | NA | NA | 2,000 |
| Nitrogen Dioxide | Annual Arithmetic Mean | 100 | 100 | 100 | 2.5 | 25 | 1 |
| Ozone | 1-Hour Maximum ^d | 235 | 235 | 235 | NA | NA | NA |
| Lead | Calendar Quarter Arithmetic Mean | 1.5 | 1.5 | 15 | NA | NA | NA |

^aShort-term maximum concentrations are not to be exceeded more than once per year.

^bMaximum concentrations are not to be exceeded.

^cProposed October 5, 1989.

^dAchieved when the expected number of days per year with concentrations above the standard is fewer than 1.

Note: Particulate matter (TSP) = total suspended particulate matter.

Particulate matter (PM10) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.

NA = Not applicable, i.e., no standard exists.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.

40 CFR 50.

40 CFR 52.21.

Chapter 17-2.400, F.A.C.

A "major modification" is defined under PSD regulations as a change at an existing major facility that increases emissions by greater than significant amounts. PSD significant emission rates are shown in Table 3-2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality. The State of Florida has adopted PSD regulations that are essentially identical to federal regulations [Chapter 17-2.510, Florida Administrative Code (F.A.C.)]. Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, a new facility also must be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 INCREMENTS/CLASSIFICATIONS

In promulgating the 1977 CAA Amendments, Congress specified that certain increases above an air quality baseline concentration level of SO₂ and total suspended particulate matter [PM(TSP)] concentrations would constitute significant deterioration. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated, based on criteria established in the CAA Amendments. Initially, Congress promulgated areas as Class I (international parks,

Table 3-2. PSD Significant Emission Rates and De Minimis Monitoring Concentrations

| Pollutant | Regulated Under | Significant Emission Rate (TPY) | <u>De Minimis</u> Monitoring Concentration ^a ($\mu\text{g}/\text{m}^3$) |
|------------------------------------|-----------------|---------------------------------|--|
| Sulfur Dioxide | NAAQS, NSPS | 40 | 13, 24-hour |
| Particulate Matter (TSP) | NAAQS, NSPS | 25 | 10, 24-hour |
| Particulate Matter (PM10) | NAAQS | 15 | 10, 24-hour |
| Nitrogen Oxides | NAAQS, NSPS | 40 | 14, annual |
| Carbon Monoxide | NAAQS, NSPS | 100 | 575, 8-hour |
| Volatile Organic Compounds (Ozone) | NAAQS, NSPS | 40 | 100 TPY ^b |
| Lead | NAAQS | 0.6 | 0.1, 3-month |
| Sulfuric Acid Mist | NSPS | 7 | NM |
| Total Fluorides | NSPS | 3 | 0.25, 24-hour |
| Total Reduced Sulfur | NSPS | 10 | 10, 1-hour |
| Reduced Sulfur Compounds | NSPS | 10 | 10, 1-hour |
| Hydrogen Sulfide | NSPS | 10 | 0.2, 1-hour |
| Asbestos | NESHAP | 0.007 | NM |
| Beryllium | NESHAP | 0.0004 | 0.001, 24-hour |
| Mercury | NESHAP | 0.1 | 0.25, 24-hour |
| Vinyl Chloride | NESHAP | 1 | 15, 24-hour |
| Benzene | NESHAP | ^c | NM |
| Radionuclides | NESHAP | ^c | NM |
| Inorganic Arsenic | NESHAP | ^c | NM |

^a Short-term concentrations are not be exceeded.

^b No de minimis concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

^c Any emission rate of these pollutants.

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below de minimis monitoring concentrations.

NAAQS = National Ambient Air Quality Standards.

NM = No ambient measurement method.

NSPS = New Source Performance Standards.

NESHAP = National Emission Standards for Hazardous Air Pollutants.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

Sources: 40 CFR 52.21.
Chapter 17-2, F.A.C.

national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations.

On October 17, 1988, EPA promulgated regulations to prevent significant deterioration as a result of emissions of NO_x and established PSD increments for NO₂ concentrations. The EPA class designations and allowable PSD increments are presented in Table 3-1. FDER has adopted the EPA class designations and allowable PSD increments for SO₂, PM(TSP), and NO₂ increments.

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition, in the PSD regulations as amended August 7, 1980, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO₂ and PM(TSP) concentrations, or February 8, 1988, for NO₂ concentrations, but that were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO₂ and PM(TSP)

concentrations, and after February 8, 1988, for NO₂ concentrations; and

2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

In reference to the baseline concentration, the term "baseline date" actually includes three different dates:

1. The major facility baseline date, which is January 6, 1975, in the cases of SO₂ and PM(TSP), and February 8, 1988, in the case of NO₂.
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application.
3. The trigger date, which is August 7, 1977, for SO₂ and PM(TSP), and February 8, 1988, for NO₂.

The minor source baseline date for SO₂ and PM(TSP) has been set as December 27, 1977, for the entire State of Florida (Chapter 17-2.450, F.A.C.).

3.2.3 CONTROL TECHNOLOGY REVIEW

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that Best Available Control Technology (BACT) be applied to control emissions from the source [Chapter 17-2.500(5)(c), F.A.C]. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility or modification exceeds the significant emission rate (see Table 3-2).

BACT is defined in Chapter 17-2.100(25), F.A.C., as:

An emissions limitation, including a visible emission standard, based on the maximum degree of reduction of each pollutant emitted which the department, on a case by case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation.

BACT was promulgated within the framework of the PSD requirements in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT), (EPA, 1978) and in the PSD Workshop Manual (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with New Source Performance Standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, EPA developed a concern that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987, the EPA Assistant Administrator for Air and Radiation mandated changes in the implementation of the PSD program, including the adoption of a new "top-down" approach to BACT decisionmaking.

The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limit that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between

the proposed facility and the facility on which the control technique was applied previously must be justified. Recently, EPA issued a draft guidance document on the top-down approach entitled Top-Down Best Available Control Technology Guidance Document (EPA, 1990).

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 CFR 52.21(m) and Chapter 17-2.500(f), F.A.C, any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

Ambient air monitoring for a period of up to 1 year generally is appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987a).

The regulations include an exemption that excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that FDER may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the de minimis levels presented in Table 3-2 [Chapter 17-2.500(3)(e), F.A.C.].

3.2.5 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major source subject to PSD review for each pollutant for which the increase in emissions exceeds the significant emission rate (Table 3-2). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication *Guideline on Air Quality Models (Revised)* (EPA, 1987b). The source impact analysis for criteria pollutants may be limited to the new or modified source if the net increase in impacts as a result of the new or modified source is below significance levels, as presented in Table 3-1.

Various lengths of record for meteorological data can be used for impact analysis. A 5-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards.

3.2.6 ADDITIONAL IMPACT ANALYSIS

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [40 CFR 52.21; Chapter 17-2.500(5)(e), F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth

associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.2.7 GOOD ENGINEERING PRACTICE STACK HEIGHT

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). Identical regulations have been adopted by FDER [Chapter 17-2.270, F.A.C.]. GEP stack height is defined as the highest of:

1. 65 meters (m), or
2. A height established by applying the formula:

$$H_g = H + 1.5L$$

where: H_g = GEP stack height,

H = Height of the structure or nearby structure, and

L = Lesser dimension (height or projected width) of nearby structure(s), or

3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 kilometer (km). Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula.

3.3 NONATTAINMENT RULES

Based on the current nonattainment provisions (Chapter 17-2.510, F.A.C.), all major new facilities and modifications to existing major facilities located in a nonattainment area must undergo nonattainment review. A new major facility is required to undergo this review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the nonattainment pollutant. A major modification at a major facility is required to undergo review if it results in a significant net emission increase of 40 TPY or more of the nonattainment pollutant or if the modification is major (i.e., 100 TPY or more).

For major facilities or major modifications that locate in an attainment or unclassifiable area, the nonattainment review procedures apply if the source or modification is located within the area of influence of a nonattainment area. The area of influence is defined as an area that is outside the boundary of a nonattainment area but within the locus of all points that are 50 km outside the boundary of the nonattainment area. Based on Chapter 17-2.510(2)(a)2.a, F.A.C., all volatile organic compound (VOC) sources that are located within an area of influence are exempt from the provisions of new source review for nonattainment areas. Sources that emit other nonattainment pollutants and are located within the area of influence are subject to nonattainment review unless the maximum allowable emissions from the proposed source do not have a significant impact within the nonattainment area.

3.4 SOURCE APPLICABILITY

3.4.1 AREA CLASSIFICATION

The project site is located in Pasco County, which has been designated by EPA and FDER as an attainment area for all criteria pollutants. Pasco County and surrounding counties are designated as PSD Class II areas for SO₂, PM(TSP), and NO_x. The site is located 51 km from the closest part of the Chassahowitzka National Wilderness Area.

3.4.2 PSD REVIEW

3.4.2.1 Pollutant Applicability

The proposed project is considered to be a major facility because emissions of any regulated pollutant will exceed 250 TPY (refer to Table 2-2); therefore, PSD review is required for any pollutant for which the net increase in emissions exceeds the PSD significant emission rates presented in Table 3-2 (i.e., major modification). As shown, potential emissions from the proposed project will exceed the PSD significant emission rates for NO_x, CO, PM₁₀, PM, and inorganic As. Therefore, the project is subject to PSD review for these pollutants.

3.4.2.2 Ambient Monitoring

Based on the net increase in emissions from the proposed project, presented in Table 3-3, a PSD preconstruction ambient monitoring analysis is required for PM, NO_x, CO, and As. However, if the net increase in impact of a pollutant is less than the de minimis monitoring concentration, then an exemption from the preconstruction ambient monitoring requirement is provided for in the FDER regulations [FDER Rule 17-2.500(3)(e)]. In addition, if an acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required.

If preconstruction monitoring data are required to be submitted, data collected at or near the project site can be submitted, based on existing air quality data (e.g., FDER) or the collection of on-site data.

Maximum predicted impacts as a result of the net increase associated with the proposed project are presented in Table 3-4 for pollutants requiring PSD review. The methodology used to predict maximum impacts and the impact analysis results are presented in Sections 6.0 and 7.0. As shown in Table 3-4, the maximum net increase in impact is below the respective de minimis monitoring concentration for all pollutants. There is no acceptable ambient monitoring method for As; therefore, monitoring is not required for this pollutant.

Table 3-3. Net Increase in Emissions Due To the Pasco County Cogeneration Facility Compared to the PSD Significant Emission Rates

| Pollutant | Emissions (TPY) | | |
|---------------------------------------|--|---------------------------|------------|
| | Potential Emissions From Proposed Turbines | Significant Emission Rate | PSD Review |
| Sulfur Dioxide | 21.0 ^b | 40 | No |
| Particulate Matter (TSP) | 27.0 | 25 | Yes |
| Particulate Matter (PM10) | 27.0 | 15 | Yes |
| Nitrogen Dioxide | 404.7 | 40 | Yes |
| Carbon Monoxide | 466.5 | 100 | Yes |
| Volatile Organic Compounds | 30.8 | 40 | No |
| Lead | 0.0008 | 0.6 | No |
| Sulfuric Acid Mist | 0.8 | 7 | No |
| Total Fluorides | 0.003 | 3 | No |
| Total Reduced Sulfur ^a | NEG | 10 | No |
| Reduced Sulfur Compounds ^a | NEG | 10 | No |
| Hydrogen Sulfide ^a | NEG | 10 | No |
| Asbestos ^a | NEG | 0.007 | No |
| Beryllium | 0.0002 | 0.0004 | No |
| Mercury | 0.0003 | 0.1 | No |
| Vinyl Chloride ^a | NEG | 1 | No |
| Benzene ^a | NEG | 0 | No |
| Radionuclides ^a | NEG | 0 | No |
| Inorganic Arsenic | 0.0004 | 0 | Yes |

Note: NEG = Negligible.

All calculations based on 59°F peak load condition.

^aEmissions of these pollutants considered not to have any emission rate increase.

^bBased on a maximum sulfur content specification of 0.1 percent in fuel oil.

Table 3-4. Predicted Net Increase in Impacts Due To the Pasco County Cogeneration Facility Compared to PSD De Minimis Monitoring Concentrations

| Pollutant | Concentration ($\mu\text{g}/\text{m}^3$) | |
|---------------------------|--|--|
| | Predicted Net Increase In Impacts ^a | <u>De Minimis</u> Monitoring Concentration |
| Particulate Matter (TSP) | 4.95 (1.7) | 10, 24-hour |
| Particulate Matter (PM10) | 4.95 (1.7) | 10, 24-hour |
| Nitrogen Dioxide | 0.45 | 14, annual |
| Carbon Monoxide | 37.4 (34.8) | 575, 8-hour |
| Inorganic Arsenic | NA | NM |

Note: NA = Not applicable.

NM = No acceptable ambient measurement method has been developed and, therefore, de minimis levels have not been established by EPA.

^a TSP and PM10 impacts based on maximum emissions at 100-percent load and 100-percent capacity factor when firing oil, which will be limited to no more than 10 days per year. Impacts for natural gas, the primary fuel shown in parenthesis. Concentrations indicate the highest predicted values.

3.4.2.3 GEP Stack Height Impact Analysis

The GEP stack height regulations allow any stack to be at least 65 m high. The proposed stacks for the proposed turbines will be 100 feet (ft) in height (30.5 m) and, therefore, do not exceed the GEP stack height. The potential for downwash of the units' emissions caused by nearby structures is discussed in Section 6.0, Air Quality Modeling Approach.

3.4.3 NONATTAINMENT REVIEW

The project site is located in Pasco County, which is classified as an attainment area for all criteria pollutants. The plant is also located more than 50 km from any nonattainment area except for ozone. The proposed facility is approximately 23 km beyond the northern boundary of Hillsborough County, which defines the extent of the current nonattainment area for ozone. Therefore, nonattainment requirements are not applicable.

3.4.4 HAZARDOUS POLLUTANT REVIEW

The FDER has promulgated guidelines (FDER, 1991) to determine whether any emission of a hazardous or toxic pollutant can pose a possible health risk to the public. All regulated pollutants for which an ambient standard does not exist and all nonregulated hazardous pollutants are to be compared to No Threat Levels (NTL) for each applicable pollutant. If the maximum predicted concentration for any hazardous pollutant is less than the corresponding NTL for each applicable averaging time, that emission is considered not to pose a significant health risk.

4.0 CONTROL TECHNOLOGY REVIEW

4.1 APPLICABILITY

The control technology review requirements of the PSD regulations are applicable to emissions of NO_x, CO, and inorganic As (see Section 3.0). This section presents the applicable NSPS and the proposed BACT for these pollutants. The approach to BACT analysis is based on the regulatory definitions of BACT, as well as EPA's current policy guidelines requiring the top-down approach.

4.2 NEW SOURCE PERFORMANCE STANDARDS

The applicable NSPS for gas turbines are codified in 40 CFR 60, Subpart GG. These regulations apply to:

1. Electric utility stationary gas turbines with a heat input at peak load of greater than 100×10^6 Btu/hr [40 CFR 60.332 (b)];
2. Stationary gas turbines with a heat input at peak load between 10 and 100×10^6 Btu/hr [40 CFR 60.332 (c)]; or
3. Stationary gas turbines with a manufacturer's rate base load at ISO conditions of 30 MW or less [40 CFR 60.332 (d)].

The electric utility stationary gas turbine provisions apply to stationary gas turbines constructed for the purpose of supplying more than one-third of their potential electric output capacity for sale to any utility power distribution system [40 CFR 60.331 (q)]. The requirements for electric utility stationary gas turbines are applicable to the project and are the most stringent provision of the NSPS. These requirements are summarized in Table 4-1 and were considered in the BACT analysis.

As noted from Table 4-1, the NSPS NO_x emission limit can be adjusted upward to allow for fuel-bound nitrogen (FBN). For a fuel-bound nitrogen concentration of 0.015 percent or less, no increase in the NSPS is provided; for a fuel-bound nitrogen concentration of 0.06 percent, the NSPS is increased by 0.0024 percent or 24 parts per million (ppm).

Table 4-1. Federal NSPS for Electric Utility Stationary Gas Turbines

| Pollutant | Emission Limitation ^a |
|------------------------------|--|
| Nitrogen Oxides ^b | 0.0075 percent by volume (75 ppm) at 15 percent O ₂ on a dry basis adjusted for heat rate and fuel nitrogen |

^a Applicable to electric utility gas turbines with a heat input at peak load of greater than 100 x 10⁶ Btu/hr.

^b Standard is multiplied by 14.4/Y; where Y is the manufacturer's rated heat rate in kilojoules per watt at rated load or actual measured heat rate based on the lower heating value of fuel measured at actual peak load; Y cannot be greater than 14.4. Standard is adjusted upward (additive) by the percent of nitrogen in the fuel:

| Fuel-bound nitrogen (percent by weight) | Allowed Increase NO _x percent by volume |
|---|--|
| N ≤ 0.015..... | 0 |
| 0.015 < N ≤ 0.1..... | 0.04(N) |
| 0.1 < N ≤ 0.25..... | 0.004 + 0.0067(N - 0.1) |
| N > 0.25..... | 0.005 |

where:

N = the nitrogen content of the fuel (percent by weight).

Source: 40 CFR 60 Subpart GG.

For the proposed CTs, the NSPS emission limit would be 113 ppm corrected to 15 percent oxygen at a fuel-bound nitrogen content of 0.015 percent. The applicable NSPS for the duct burners will be 40 CFR 60, Subpart Db. The applicable requirements are presented in Table 4-2.

4.3 BEST AVAILABLE CONTROL TECHNOLOGY

4.3.1 NITROGEN OXIDES

4.3.1.1 Identification of NO_x Control Technologies for CTs

NO_x emissions from combustion of fossil fuels consist of thermal NO_x and fuel-bound NO_x. Thermal NO_x is formed from the reaction of oxygen and nitrogen in the combustion air at combustion temperatures. Formation of thermal NO_x depends on the flame temperature, residence time, combustion pressure, and air-to-fuel ratios in the primary combustion zone. The design and operation of the combustion chamber dictates these conditions. Fuel-bound NO_x is created by the oxidation of volatilized nitrogen in the fuel. Nitrogen content in the fuel is the primary factor in its formation.

Table 4-3 presents a listing of the lowest achievable emission rates/best available control technology (LAER/BACT) decisions made by state environmental agencies and EPA regional offices for gas turbines. This table was developed from the information contained in the LAER/BACT clearinghouse documents (EPA, 1985b, 1986, 1987c, 1988c, 1989) and by contacting state agencies, such as the California Air Control Board, the South Coast Air Quality Management District, the New Jersey Department of Environmental Protection, and the Rhode Island Department of Environmental Management.

The most stringent NO_x controls for CTs established as LAER/BACT by state agencies are selective catalytic reduction (SCR) with wet injection and wet injection alone. When SCR has been employed, wet injection is used initially to reduce NO_x emissions. SCR has been installed or permitted in about 132 projects. The majority of these projects (more than 90 percent) are cogeneration facilities with capacities of 50 MW or less. About

Table 4-2. Federal NSPS for Industrial Steam-Generating Units, 40 CFR 60, Subpart Db^a

| Pollutant | Emission Limitation for Gaseous or Liquid Fuels |
|-----------------------------|--|
| Particulate Matter | Natural gas - no emission limits Oil - 0.10 lb/10 ⁶ Btu |
| Visible Emissions | 20% opacity (6-minute average), except up to 27% opacity is allowed for one 6-minute period per hour |
| Sulfur Dioxide ^b | Natural gas - no emission limits Oil: 1) Annual capacity factor for oil > 30% - 0.80 lb/10 ⁶ Btu <u>and</u> 90% reduction in potential emissions 2) Annual capacity factor for oil < 30% ^c - 0.30 lb/10 ⁶ Btu (no percentage reduction requirements) 3) Combustion of 0.3 lb SO ₂ /10 ⁶ Btu or less oil - 0.30 lb/10 ⁶ Btu - No percentage reduction requirements |
| Nitrogen Oxides | Natural gas/distillate oil: 1) Low heat release rate unit - 0.10 lb/10 ⁶ Btu 2) High heat release rate unit - 0.20 lb/10 ⁶ Btu 3) Duct burner in combined cycle system - 0.20 lb/10 ⁶ Btu Residual oil: 1) Low heat release rate unit - 0.30 lb/10 ⁶ Btu 2) High heat release rate unit - 0.40 lb/10 ⁶ Btu 3) Duct burner in combined cycle system - 0.40 lb/10 ⁶ Btu |

^a Applies to any device that combusts fuel to produce steam and that has a maximum heat input of more than 100 x 10⁶ Btu/hr. Sources subject to Subpart Da are not subject to Subpart Db.

^b Compliance determined on a 30-day, rolling average basis (with certain exceptions).

^c Includes combined cycle system where 30 percent or less of the heat input to the steam generator is from combustion of oil in the duct burner and 70 percent or more of the heat input is from the gas turbine exhaust gases entering the duct burner.

Source: 40 CFR 60, Subpart Db.

Table 4-3. LAER/BACT Decisions for Gas Turbines (Page 1 of 4)

| Company Name | State | Unit Description | Capacity (Size) | Date of Permit | Emission Limit | Emission Control |
|-------------------------------|-------|-------------------|--|----------------|---|---|
| Virginia Power | VA | GE turbine | 1,875x10 ⁶ BTU/hr | 4/88 | NO _x 42 ppmvd at 15% O ₂ (gas) NO _x 77 ppmvd at 18% O ₂ (fuel oil) | Steam injection with maximization NSPS Subpart GG |
| Trunkline LNG | LA | Gas turbine | 147,102 scf/hr | 5/87 | NO _x 59 lb/hr | |
| Wichita Falls E. I., I. | TX | Gas turbine | 20 MW | 6/86 | NO _x 684 TPY CO 420 TPY | Steam injection |
| Merck Sharp and Pohme | PA | Turbine | 310x10 ⁶ Btu/hr | 5/88 | NO _x 42 ppm at 15% O ₂ | Steam injection |
| California Dept. of Corr. | CA | Gas turbine | 5.1 MW | 12/86 | NO _x 38 ppmv at 15% O ₂ | 1 to 1 H ₂ O injection |
| City of Santa Clara | CA | Gas turbine | | 1/87 | NO _x 42 ppmvd at 15% O ₂ | Water injection |
| Combined Energy Resources | CA | Cogeneration Fac. | 27 MW | 3/87 | NO _x 199 lb/day | SCR unit, duct burner, H ₂ O injection, low NO _x design |
| Double 'C' Limited | CA | Gas turbine | 25 MW | 11/86 | NO _x 194 lb/day | H ₂ O injection and SCR 95.80 efficiency |
| Kern Front Limited | CA | Gas turbine | 25 MW | 11/86 | NO _x 194 lb/day 4.5 ppmvd at 15% O ₂ | H ₂ O injection and SCR 95.80 efficiency |
| Midway - Sunset Project | CA | Gas turbine | 973x10 ⁶ Btu/hr | 1/87 | NO _x 113.4 lb/hr 16.31 ppmv | H ₂ O injection, 73% efficiency |
| O'Brien Energy Systems | CA | Gas turbine | 359.5x10 ⁶ Btu/day | 12/86 | NO _x 30.3 lb/hr 15 ppmvd at 15% O ₂ | Duct burner, H ₂ O injection and scrubber |
| PG and E, Station T | CA | GE gas turbine | 396x10 ⁶ Btu/hr | 8/86 | NO _x 25 ppm at 15% O ₂ 63 lb/hr | Steam injection at steam/fuel ratio of 1.7/1, 75% efficiency |
| Sierra LTD. | CA | GE gas turbine | 11.34x10 ⁶ ft ³ /day | | NO _x 4.04 lb/hr | Scrubber and CO catalytic converter |
| Sycamore Cogeneration Co. | CA | Gas turbine | 75 MW | 3/87 | CO 10 ppmv at 15% O ₂ 3 hr average | CO oxidizing catalyst combustion control |
| U.S. Borax and Chemical Corp. | CA | Gas turbine | 45 MW | 2/87 | NO _x 40 lb/hr 25 ppm at 15% O ₂ Dry CO 23 lb/hr | Scrubber Proper combustion techniques |
| Western Power System, Inc | CA | GE gas turbine | 26.5 MW | 3/86 | NO _x 9 ppmvd at 15% O ₂ | H ₂ O injection, SCR 80% efficiency |
| Calcogen, Cal Polytechic | CA | Gas turbine | 21.4 MW | 4/84 | NO _x 42 ppm at 15% O ₂ | H ₂ O injection, 70% efficiency |

Table 4-3. LAER/BACT Decisions for Gas Turbines (Page 2 of 4)

| Company Name | State | Unit Description | Capacity (Size) | Date of Permit | Emission Limit | Emission Control |
|-----------------------------|-------|------------------------------|--|----------------|--|---|
| Greenleaf Power Co. | CA | GE gas turbine | 35.62 MW | 4/85 | NO _x 42 ppm at 15% O ₂ 91 lb/hr CO 20.41 lb/hr 0.016 lb/10 ⁶ Btu | H ₂ O injection Good Engineering Practices Steam injection 95.86 efficiency |
| Greenleaf Power Co. | CA | Duct Burner | 63.7x10 ⁶ Btu/hr | 4/85 | NO _x 0.1 lb/10 ⁶ Btu 6.4 lb/hr CO 0.12 lb/10 ⁶ Btu 7.6 lb/hr | Low NO _x design |
| OLS Energy | CA | GE gas turbine | 256x10 ⁶ Btu/hr | 1/86 | NO _x 9 ppmvd at 15% O ₂ | H ₂ O injection and scrubber 80% efficiency for scrubber |
| Ciba Giegy Corp. | NJ | Gas turbine | 3 MW | 1/85 | NO _x 11.06 lb/hr CO 9.4 lb/hr | SIP, H ₂ O injection, 55% efficiency |
| Energy Reserve, Inc. | CA | Gas turbine | 322.5x10 ⁶ Btu/hr | 10/85 | NO _x 185.4 lb/day | H ₂ O injection, SCR 92.5% efficiency |
| Gilroy Energy Co. | CA | Gas turbine | 60 MW | 8/85 | NO _x 25 ppmvd at 15% O ₂ | Steam injection, quiet combustor |
| | | Auxiliary boiler | 90x10 ⁶ Btu/hr | | NO _x 40 ppmvd at 3% O ₂ | Low NO _x burners |
| Kern Energy Corp. | CA | Gas turbine | 8.8x10 ⁶ ft ³ /day | 4/86 | NO _x 8.29 lb/hr 0.023 lb/10 ⁶ Btu | Scrubber with NH ₃ reduction agent Steam injection and low NO _x configuration exhaust duct burner 87% efficiency |
| Moran Power, Inc. | CA | Gas turbine | 8.0x10 ⁶ ft ³ /day | 4/86 | NO _x 8.29 lb/hr 0.023 lb/10 ⁶ Btu | Scrubber with NH ₃ reduction agent Steam injection and low NO _x configuration exhaust duct burner 87% efficiency |
| Northern California Power | CA | GE gas turbine | 25.8 MW | 4/85 | NO _x 75 ppm | H ₂ O injection |
| Shell California Production | CA | Gas turbine | 22 MW | 4/85 | NO _x 42 ppm at 15% O ₂ 35 lb/hr CO 10 ppmv at 15% O ₂ 22 lb/hr | H ₂ O injection Proper combustion |
| Southeast Energy, Inc. | CA | Gas turbine | 8.0x10 ⁶ ft ³ /day | 4/86 | NO _x 8.29 lb/hr 0.023 lb/10 ⁶ Btu | Scrubber with NH ₃ reduction agent Steam injection and low NO _x configuration exhaust duct burner 87% efficiency |
| Sunlaw/Industrial Park | CA | Gas turbine | 412.3x10 ⁶ Btu/hr | 6/85 | NO _x 9 ppmvd at 15% O ₂ | Scrubber and steam injection, 80% efficiency |
| Union Cogeneration | CA | Gas turbine with Duct burner | 16 MW | 1/86 | NO _x 25 ppmv at 15% O ₂ | H ₂ O injection and scrubber |

Table 4-3. LAER/BACT Decisions for Gas Turbines (Page 3 of 4)

| Company Name | State | Unit Description | Capacity (Size) | Date of Permit | Emission Limit | Emission Control |
|------------------------------|-------|-----------------------------|--|----------------|--|---|
| Willamette Industries | CA | GE gas turbine | 230x10 ⁶ Btu/hr | 4/85 | NO _x 15 ppmvd at 15% O ₂ | H ₂ O injection with SCR 92% efficiency |
| Witco Chemical Corp. | CA | Gas turbine | 350x10 ⁶ Btu/hr | 12/84 | NO _x 0.18 lb/10 ⁶ Btu oil 0.20 lb/10 ⁶ Btu gas | |
| | | Duct burner | 111.6x10 ⁶ Btu/hr | | NO _x 0.12 lb/10 ⁶ Btu | Gas firing only |
| AES Placerita, Inc. | CA | Turbine and Recovery Boiler | 519x10 ⁶ Btu/hr | 3/86 | NO _x 629 lb/day 7 ppmvd at 15% O ₂ CO 103 lb/day 2 ppmvd at 15% O ₂ | H ₂ O injection, SCR 80% efficiency |
| AES Placerita, Inc. | CA | Turbine and Recovery Boiler | 530x10 ⁶ Btu/hr | 7/87 | NO _x 340 lb/day 9 ppmvd at 15% O ₂ | Steam injection, SCR |
| AES Placerita, Inc. | CA | Gas turbine | 530x10 ⁶ Btu/hr | 7/87 | NO _x 289 lb/day 9 ppmvd at 15% O ₂ | Steam injection, SCR |
| Alaska Electrical Generation | AK | Gas turbine | 80 MW | 3/87 | NO _x 75 ppmvd at 15% O ₂ CO 109 lb/scf fuel | H ₂ O injection |
| Alaska Electrical Generation | AK | Gas turbine | 38 MW | 3/85 | NO _x 75 ppm at 15% O ₂ | H ₂ O injection |
| BAF Energy | CA | Turbine, Generator | 887.2x10 ⁶ Btu/hr | 7/87 | NO _x 9 ppm at 15% O ₂ 30.1 lb/hr | Steam injection, scrubber 80% efficiency |
| BAF Energy | CA | Auxiliary Boiler | 150x10 ⁶ Btu/hr | 10/87 | NO _x 17.4 lb/day 40 ppmvd at 3% O ₂ CO 63.6 lb/day 0.018 lb/10 ⁶ Btu | Flue gas recirculation Low NO _x burners Oxidation catalyst |
| Champion International Corp. | TX | Gas turbine | 30.6 MW (1,342x10 ⁶ Btu/hr) | 3/85 | NO _x 720.34 TPY CO 70.08 TPY | Low NO _x burners |
| Cogen Technologies | NJ | GE gas turbines | 40 MW | 6/87 | NO _x 9.6 ppmvd at 15% O ₂ CO 50 ppmvd at 15% O ₂ | H ₂ O injection and SCR, 95% efficiency |
| Combined Energy Resources | CA | Gas turbine | 2 MW | 2/88 | NO _x 199 lb/hr | H ₂ O injection and scrubber, 81% efficiency |
| Formosa Plastic Corp. | TX | GE gas turbine | 38.4 MW | 5/86 | NO _x 640 TPY CO 32.4 TPY | Steam injection |
| Midland Cogeneration Venture | MI | Turbine Duct burner | 984.2x10 ⁶ Btu/hr 249x10 ⁶ Btu/hr | 2/88 | NO _x 42 ppmv at 15% O ₂ CO 26 lb/hr NO _x 0.1 lb/10 ⁶ Btu | Steam injection Turbine design Burner design |

Table 4-3. LAER/BACT Decisions for Gas Turbines (Page 4 of 4)

| Company Name | State | Unit Description | Capacity (Size) | Date of Permit | Emission Limit | Emission Control |
|------------------------------|-------|--------------------------|--------------------------------|----------------|---|--|
| Pacific Gas Transmission | OR | Gas turbine | 14,000 HP | 5/87 | NO _x 154 ppm 50 lb/hr CO 6 lb/hr 25 TPY | Combustion control |
| Power Development Co. | CA | Gas turbine | 49x10 ⁶ Btu/hr | 6/87 | NO _x 36 lb/day 9 ppmvd at 15% O ₂ | Scrubber and H ₂ O injection |
| San Joaquin Cogen Limited | CA | Gas turbine | 48.6 MW | 6/87 | NO _x 250 lb/day 6 ppmvd at 15% O ₂ CO 1326 lb/day 55 ppmvd at 15% O ₂ | Scrubber and H ₂ O injection 76% efficiency Combustion controls |
| United Airlines | CA | Gas turbine-Cogeneration | 21 MW | 12/85 | NO _x 15 ppmvd at 15% O ₂ | SCR and steam injection Oil limited to 500 hours operation |
| TBG/Grumman | NY | Gas turbine | 16 MW | 3/88 | NO _x 75 ppm + NSPS Corr. 0.2 lb/10 ⁶ Btu CO 0.181 lb/10 ⁶ Btu | H ₂ O injection and combustion controls CO catalyst |
| Texas Gas Transmission Corp. | KY | Gas turbine | 14,300 HP | 2/88 | NO _x 0.015% by Volume | |
| Orlando Utilities Commission | FL | Gas turbine | 4 x 445x10 ⁶ Btu/hr | 9/88 | NO _x 42 ppmvd Gas 65 ppmvd Oil CO 10 ppmvd | Steam injection Good combustion |
| Anheuser-Busch | FL | Gas turbine | 95.7x10 ⁶ Btu/hr | 4/87 | NO _x 0.1 lb/10 ⁶ Btu | |
| Ocean State Power | RI | Combined Cycle | 500 MW | 1/89 | NO _x 9 ppmvd at 15% O ₂ (Natural Gas) NO _x 42 ppmvd at 15% O ₂ (fuel oil) CO 25 ppmvd at 15% O ₂ | SCR and steam injection |
| Pawtucket Power | RI | Cogeneration-Gas turbine | 58 MW | 2/89 | NO _x 9 ppmvd at 15% O ₂ (natural gas) NO _x 18 ppmvd at 15% O ₂ (fuel oil) CO 23 ppmvd at 15% O ₂ | SCR and steam injection |
| Cogen Technologies | NJ | Gas turbine | 55 MW | 3/87 | NO _x 9 ppmvd at 15% O ₂ (natural gas) NO _x 14 ppmvd at 15% O ₂ (fuel oil) CO 8 ppm; 20 ppm NH ₃ | SCR and wet injection |

83 percent (i.e., 109) of the projects have been in California. Of these 109 projects that have either installed SCR or have been permitted with SCR, 43 percent have been in the Southern California NO₂ nonattainment area where SCR was required not as BACT but as LAER, a more stringent requirement. LAER is distinctly different from BACT in that there is no consideration of economic, energy, or environmental impacts; if a control technology has previously been installed, it must be required as LAER. LAER is defined as follows:

Lowest achievable emission rate means, for any source, the more stringent rate of emissions based on the following: (i) The most stringent emissions limitation which is contained in the implementation plan of any State of such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or (ii) The most stringent emissions limitation which is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new modified stationary source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance (40 CFR 51, Appendix S.II, A.18).

As noted previously, there are distinct regulatory and policy differences between LAER and BACT.

All the projects in California have natural gas as the primary fuel, and only 15 of the SCR applications in California have distillate fuel as backup.

The remaining projects with SCR (i.e., 23 projects) are located in the eastern United States. These projects are located in Vermont, Massachusetts, Connecticut, New Jersey, New York, Rhode Island, and Virginia. A majority of these projects are cogenerators or independent power producers. The size of these projects ranges from 22 MW to 450 MW, with 87 percent less than 100 MW in size. While almost all of the facilities have distillate oil as backup fuel, distillate oil generally is restricted by permit to 1,000 hours per CT or less.

Reported and permitted NO_x removal efficiencies of SCR range from 40 to 80 percent. The most stringent emission limiting standards associated with SCR are approximately 9 ppm for natural gas firing. However, two facilities have reported emission limits of about 4.5 ppm. These emission limits were clearly determined to be LAER on CTs using water injection with uncontrolled NO_x levels below 42 ppm. For fuel oil firing, permitted NO_x emission limits with SCR have ranged from 14 ppm to 42 ppm. SCR has not been installed or permitted on simple cycle CTs.

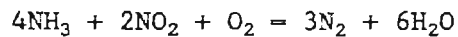
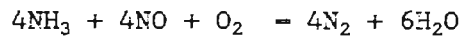
Wet injection is the primary method of reducing NO_x emissions from CTs. This method of control was first mandated by the NSPS to reduce NO_x levels to 75 parts per million by volume, dry (ppmvd) (corrected to 15 percent O₂ and heat rate). Development of improved wet injection combustors reduced NO_x concentrations to 25 ppmvd and 42 ppmvd (corrected to 15 percent O₂) when burning natural gas and fuel oil, respectively. Recently, CT manufacturers have developed dry low NO_x combustors that can reduce NO_x concentrations to 25 ppmvd (corrected to 15 percent O₂) when firing natural gas.

In Florida, a majority of the most recent PSD permits and BACT determinations for simple cycle gas turbines have required wet injection for NO_x control. The emission limits included in these permits and BACT determinations were 42 ppm and 65 ppm (corrected to 15 percent O₂, dry conditions), respectively, for natural gas and fuel oil firing. In November 1990, FDER determined that a CT using a dry low NO_x combustor to reduce NO_x concentrations to 25 ppmvd when firing natural gas was BACT. The corresponding BACT emission limit for distillate oil firing was 65 ppmvd using wet injection.

4.3.1.2 Technology Description and Feasibility

Selective Catalytic Reduction (SCR)--SCR uses ammonia (NH₃) to react with NO_x in the gas stream in the presence of a catalyst. NH₃, which is diluted with air to about 5 percent by volume, is introduced into the gas stream at

reaction temperatures between 600°F and 750°F. The reactions are as follows:



SCR operating experience, as applied to gas turbines, consists primarily of baseload natural-gas-fired installations either of cogeneration or combined cycle configuration; no simple cycle facilities have SCR. Exhaust gas temperatures of simple cycle CTs generally are in the range of 1,000°F, which exceeds the optimum range for SCR. All current SCR applications have the catalyst placed in the HRSG to achieve proper reaction conditions. This allows a relatively constant temperature for the reaction of NH_3 and NO_x on the catalyst surface.

The use of SCR has been limited to facilities that burn natural gas or small amounts of fuel oil since SCR catalysts are contaminated by sulfur-containing fuels (i.e., fuel oil). For most fuel-oil-burning facilities, catalyst operation is discontinued, or the exhaust bypasses the SCR system. While the operating experience has not been extensive, certain cost, technical, and environmental considerations have surfaced. These considerations are summarized in Table 4-4. Experience at the United Airlines cogeneration facility using Jet A fuel oil found catalyst contamination after 2,500 hours of operation. For this facility, the catalyst has been replaced three times, and the recommended duration of operation by the manufacturer was 500 hours. Currently, the facility does not operate on fuel oil.

As presented in Table 4-4, ammonium salts (ammonium sulfate and bisulfate) are formed by the reaction of NH_3 and sulfur combustion products. Ammonium bisulfate can be corrosive and could cause damage to the HRSG surfaces that follow the catalyst, as well as to the stack. Corrosion protection for these areas would be required. Ammonium sulfate is emitted as particulate matter.

Table 4-4. Cost, Technical, and Environmental Considerations of SCR Used on Combustion Turbines (Page 1 of 2)

| Consideration | Description |
|---|---|
| COST: | |
| Catalyst Replacement | Catalyst life varies depending on the application. Cost ranges from 20 to 40 percent of total capital cost and is the dominant annual cost factor. |
| Ammonia | Ratio of at least 1:1 NH ₃ to NO _x generally needed to obtain high removal efficiencies. Special storage and handling equipment required. |
| Space Requirements | For new installations, space in the catalyst is needed for replacement layers. Additional space is also required for catalyst maintenance and replacement. |
| Backup Equipment | Reliability requirements necessitate redundant systems such as ammonia control and vaporization equipment. |
| Catalyst Back Pressure Heat Rate Reduction | Addition of catalyst creates back pressure on the turbine which reduces overall heat rate. |
| Electrical | Additional usage of energy to operate ammonia pumps and dilution fans. |
| TECHNICAL: | |
| Ammonia Flow Distribution | NH ₃ must be uniformly distributed in the exhaust stream to assure optimum mixing with NO _x prior to reaching the catalyst. |
| Temperature | The narrow temperature range that SCR systems operate within, i.e., about 100°F, must be maintained even during load changes. Operational problems could occur if this range is not maintained. HRSG duct firing requires careful monitoring. |
| Ammonia Control | Quantity of NH ₃ introduced must be carefully controlled. With too little NH ₃ , the desired control efficiency is not reached; with too much NH ₃ , NH ₃ emissions (referred to as slip) occur. |

Table 4-4. Cost, Technical, and Environmental Considerations of SCR Used on Combustion Turbines (Page 2 of 2)

| Consideration | Description |
|----------------|--|
| Flow Control | The velocity through the catalyst must be within a range to assure satisfactory residence time. |
| ENVIRONMENTAL: | |
| Ammonia Slip | NH ₃ slip (NH ₃ that passes unreacted through the catalyst and into the atmosphere) can occur if 1) too much ammonia is added, 2) the flow distribution is not uniform, 3) the velocity is not within the optimum range, or 4) the proper temperature is not maintained. |
| Ammonium Salts | Ammonium salts (ammonium sulfate and bisulfate) can lead to increased corrosion. These salts usually occur when firing fuel oil. These compounds are emitted as particulates. |

Zeolite catalysts, which are reported to be capable of operating in temperature ranges from 600°F to 950°F, have been available commercially only recently. Their application with SCR primarily has been limited to internal combustion engines. Optimum performance of an SCR system using a zeolite catalyst is reported to range from about 800°F to 900°F. At temperatures of 1,000°F and above, the zeolite catalyst will be irreparably damaged. Therefore, application of an SCR system using a zeolite catalyst on a simple cycle operation is technically infeasible without exhaust gas cooling. Moreover, since zeolite catalysts have not been operated continuously in combustion exhausts greater than 900°F, the cooling system would have to reduce turbine exhaust temperatures about 200°F (i.e., to around 800°F).

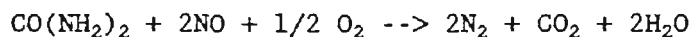
Wet Injection--The injection of water or steam in the combustion zone of CTs reduces the flame temperature with a corresponding decrease of NO_x emissions. The amount of NO_x reduction possible depends on the combustor design and the water-to-fuel ratio employed. An increase in the water-to-fuel ratio will cause a concomitant decrease in NO_x emissions until flame instability occurs. At this point, operation of the CT becomes inefficient and unreliable, and significant increases in products of incomplete combustion will occur (i.e., CO and VOC emissions).

For the CTs being considered for the project, the combustion chamber design includes the use of water injection. This combustor allows an increase in the amount of steam or water injected into the combustion zone while reducing the impacts of incomplete combustion. The lowest NO_x emission level guaranteed by GE for the LM 6000 is 25 ppmvd (corrected to 15 percent O₂) when firing natural gas and 42 ppmvd (corrected to 15 percent O₂) when firing fuel oil.

Dry Low NO_x Combustor--In the past several years, CT manufacturers have offered and installed machines with dry low NO_x combustors. These combustors, which are offered on machines manufactured by GE, Kraftwerk Union, and Asea Brown Boveri (ABB), can achieve NO_x concentrations of

25 ppmvd or less when firing natural gas. Thermal NO_x formation is inhibited by using combustion techniques where the natural gas and combustion air are premixed before ignition. However, when firing oil, NO_x emissions are controlled only through water or steam injection to exhaust concentrations of 65 ppmvd. Dry low NO_x combustors have not been developed for the aircraft-derivative CTs, such as the GE LM 6000 proposed for the project.

NO_x OUT Process--The NO_xOUT process originated from the initial research by the Electric Power Research Institute (EPRI) in 1976 on the use of urea to reduce NO_x. EPRI licensed the proprietary process to Fuel Tech, Inc., for commercialization. In the NO_xOUT process, aqueous urea is injected into the flue gas stream ideally within a temperature range of 1,600°F to 1,900°F. In the presence of oxygen, the following reaction results:



The amount of urea required is most cost effective when the treatment rate is 0.5 to 2 moles of urea per mole of NO_x. In addition to the original EPRI urea patents, Fuel Tech claims to have a number of proprietary catalysts capable of expanding the effective temperature range of the reaction to between 1,000°F and 1,950°F. Advantages of the system are as follows:

1. Low capital and operating costs as a result of use of urea injection, and
2. The proprietary catalysts used are nontoxic and nonhazardous, thus eliminating potential disposal problems.

Disadvantages of the system are as follows:

1. Formation of ammonia from excess urea treatment rates and/or improper use of reagent catalysts, and
2. SO₃, if present, will react with ammonia created from the urea to form ammonium bisulfate, potentially plugging the cold end equipment downstream.

Commercial application of the NO_xOUT system is limited to three reported cases:

1. Trial demonstration on a 62.5-ton-per-hour (TPH) stoker-fired wood waste boiler with 60 to 65 percent NO_x reduction,
2. A 600 x 10⁶ Btu CO boiler with 60 to 70 percent NO_x reduction, and
3. A 75-MW pulverized coal-fired unit with 65 percent NO_x reduction.

The NO_xOUT system has not been demonstrated on any combustion turbine/HRSG unit.

The NO_xOUT process is not technically feasible for the proposed project because of the high application temperature of 1,000°F to 1,950°F. The exhaust gas temperature of the CT is about 1,000°F. Raising the exhaust temperature the required amount essentially would require installation of a heater. This would be economically prohibitive and would result in an increase in fuel consumption, an increase in the volume of gases that must be treated by the control system, and an increase in uncontrolled air emissions, including NO_x.

Thermal DeNO_x--Thermal DeNO_x is Exxon Research and Engineering Company's patented process for NO_x reduction. The process is a high temperature selective noncatalytic reduction (SNCR) of NO_x using ammonia as the reducing agent. Thermal DeNO_x requires the exhaust gas temperature to be above 1,800°F. However, use of ammonia plus hydrogen lowers the temperature requirement to about 1,000°F. For some applications, this must be achieved by additional firing in the exhaust stream before ammonia injection.

The only known commercial applications of Thermal DeNO_x are on heavy industrial boilers, large furnaces, and incinerators that consistently produce exhaust gas temperatures above 1,800°F. There are no known applications on or experience with CTs. Temperatures of 1,800°F require alloy materials constructed with very large piping and components since the exhaust gas volume would be increased by several times. As with the NO_xOUT

process, high capital, operating, and maintenance costs are expected because of construction-specified material, an additional duct burner system, and fuel consumption. Uncontrolled emissions would increase because of the additional fuel burning.

Thus, the Thermal DeNO_x process will not be considered for the proposed project since its high application temperature makes it technically infeasible. The exhaust gas temperature of a combustion turbine is typically about 850°F; the cost to raise the exhaust gas to such a high temperature is prohibitively expensive.

Nonselective Catalytic Reduction--Certain manufacturers, such as Engelhard, market a nonselective catalytic reduction system (NSCR) for NO_x control on reciprocating engines. The NSCR process requires a low oxygen content in the exhaust gas stream and high temperature (700°F to 1,400°F) in order to be effective. CTs have the required temperature but also have high oxygen levels (greater than 12 percent) and, therefore, cannot use the NSCR process. As a result, NSCR is not a technically feasible add-on NO_x control device for CTs.

Duct Firing--The proposed control technology for duct firing will be the use of low NO_x burners that will limit the emissions to 0.1 lb/10⁶ Btu heat input. This proposed limit is the lowest being permitted for similar facilities and is one-half the NSPS limit.

Summary of Technically Feasible NO_x Control Methods--The available information suggests that SCR with wet injection is technically feasible for the project.

A technical evaluation of tail gas controls (i.e., SCR, NO_xOUT, Thermal DeNO_x, and NSCR) indicates that these processes have not been applied to CTs/HRSGs and are technically infeasible for the project because of process constraints (e.g., temperature). Dry low NO_x combustors are inappropriate

for the project since they are unavailable for the aircraft-derivative machine.

Wet injection is a technically feasible alternative for the project. The application of this technology has the following limitations:

1. Wet injection can be accomplished until a condition of maximum moisturization occurs; this design condition occurs at 25 ppm with natural gas and 42 ppm with fuel oil (corrected to 15 percent oxygen, dry conditions).
2. Wet injection will not reduce substantially NO_x formation caused by fuel-bound nitrogen. Fuel quality will limit the formation of fuel-bound NO_x .
3. Wet injection will increase the emissions of CO and VOC. Emissions are dependent on the water-to-fuel ratio.

For the BACT analysis, SCR and wet injection capable of achieving NO_x emission levels to 25 ppm when firing natural gas and 42 ppm when firing fuel oil (corrected to 15 percent O_2 dry conditions) was assumed.

4.3.1.3 Impact Analysis

A BACT determination requires an analysis of the economic, environmental, and energy impacts of the proposed and alternative control technologies [see 40 CFR 52.21(b)(12), Chapter 17-2.100(25), F.A.C., and Chapter 17-2.500(5)(c), F.A.C.]. The analysis must, by definition, be specific to the project (i.e., case-by-case).

The BACT analysis was performed for the following alternatives:

1. SCR and wet injection at an emission rate of approximately 9 ppmvd corrected to 15 percent O_2 ; maximum NO_x emissions are 142 TPY.
2. Wet injection at an emission rate of 25 ppmvd corrected to 15 percent O_2 ; maximum NO_x emissions are 405 TPY.

Economic--The total capital and annualized costs for the alternative NO_x control technologies are presented in Tables 4-5 and 4-6, respectively.

Table 4-5. Direct and Indirect Capital Cost for Selective Catalytic Reduction (SCR) (Page 1 of 2)

| Cost Component | Estimated Cost (\$) | Basis for Cost Estimate |
|--|---------------------|---|
| <u>Direct Capital Costs</u> | | |
| SCR Associated Equipment | 575,700 | Developed from manufacturer budget quotations |
| Ammonia Storage Tank | 150,000 | Developed from manufacturer budget quotations |
| HRSG Modification | 264,000 | Developed from manufacturer budget quotations |
| <u>Indirect Capital Costs</u> | | |
| Installation | 374,300 | 20% of SCR associated equipment and ammonia storage tank |
| Engineering, Erection Supervision, Startup, and O&M Training | 298,400 | 10% SCR equipment and catalyst, ammonia storage tank and HRSG costs |
| Project Support | 164,100 | 5% SCR equipment and catalyst, ammonia storage tank, HRSG and engineering costs |
| Ammonia Emergency Preparedness Program | 19,200 | Engineering estimate |
| Liability Insurance | 16,400 | 0.5% SCR equipment and catalyst, ammonia storage tank, HRSG and engineering costs |
| Interest During Construction | 614,500 | 15% of all direct and indirect capital costs including catalyst cost |
| Contingency | 558,400 | 25% of all capital costs |
| <u>Total Capital Costs</u> | 3,035,100 | Sum of all capital costs |
| <u>Annualized Capital Costs</u> | 356,500 | Capital recovery of 10% over 20 years, 11.74% per year |
| <u>Recurring Capital Costs</u> | | |
| SCR Catalyst (Materials and Labor) | 1,296,000 | Developed from manufacturer budget quotations |

Table 4-5. Direct and Indirect Capital Cost for Selective Catalytic Reduction (SCR) (Page 2 of 2)

| Cost Component | Estimated Cost (\$) | Basis for Cost Estimate |
|---|---------------------|---|
| Contingency | 324,000 | 25% of recurring capital costs |
| <u>Total Recurring Capital Costs</u> | 1,620,000 | Sum of recurring capital costs |
| <u>Annualized Recurring Capital Costs</u> | 651,400 | Capital recovery of 10% over 3 years, 40.21% per year |

Table 4-6. Annualized Cost for Selective Catalytic Reduction (SCR)
(Page 1 of 2)

| Cost Component | Estimated Cost (\$) | Basis for Cost Estimate |
|----------------------------------|---------------------|--|
| <u>Direct Annual Costs</u> | | |
| Operating Personnel | 20,800 | 16 hours/week @ \$25/hour |
| Ammonia | 29,200 | \$300/ton; $\text{NH}_3:\text{NO}_x = 1:1$ volume |
| Accident/Emergency Response Plan | 8,100 | Consultant estimate, 80 hours/year @ \$75/hour plus expenses @ 35% labor |
| Inventory Cost | 50,700 | Capital recovery (11.74%/year) for 1/3 of catalyst cost |
| Catalyst Disposal Cost | 60,000 | Engineering estimate |
| Contingency | 50,900 | 25% of indirect costs |
| <u>Energy Costs</u> | | |
| Electrical | 70,100 | 80 kwh/hr; \$0.05/KWH |
| Heat Rate Penalty | 184,200 | 4" back pressure, heat rate reduction of 0.5%, energy loss at \$0.05/KWH |
| MW Loss Penalty | 137,300 | 84 MW lost for 3 days; lost capacity @ \$0.05/KW; cost of natural gas @ \$3/MMBtu subtracted |
| Fuel Escalation Costs | 115,600 | Real cost increase of fuel |
| Contingency | 92,400 | 25% of energy costs; excludes fuel escalation |
| <u>Total Direct Annual Costs</u> | 819,300 | Sum of all direct annual costs |
| <u>Indirect Annual Costs</u> | | |
| Overhead | 35,000 | 60% of ammonia plus 115% of O&M labor; plus 15% of O&M labor (O&MPS Cost Control Manual) |
| Property Taxes and Insurance | 93,100 | 2% of total capital costs |
| Annualized Capital Costs | 356,500 | Capital recovery of 10% over 20 years, 11.74% per year |
| Recurring Capital Costs | 651,400 | Capital recovery of 10% over 3 years, 40.21% per year |

Table 4-6. Annualized Cost for Selective Catalytic Reduction (SCR)
(Page 2 of 2)

| Cost Component | Estimated Cost (\$) | Basis for Cost Estimate |
|------------------------------------|---------------------|----------------------------------|
| <u>Total Indirect Annual Costs</u> | 1,136,000 | Sum of all indirect annual costs |
| <u>Total Annual Costs</u> | 1,955,300 | Total annualized cost |

Note: All calculations rounded off to the nearest \$100.

^aBased on 100% capacity factor; 65% removal of NO_x.

The total annualized cost is \$1,955,262. The cost effectiveness for SCR was estimated to be greater than \$7,000/ton of NO_x removed for the project.

Environmental--The maximum predicted impacts of the alternative technologies are all considerably below the PSD increment for NO_x of 25 µg/m³, annual average, and the AAQS for NO_x, 100 µg/m³. Indeed, the impacts are less than the significant impact levels. Additional controls beyond steam injection alone (i.e., SCR and SCR with water injection) would further reduce predicted impacts by much less than 1 percent of the PSD increment and the AAQS for the project.

Use of SCR on the proposed project will cause emissions of ammonia and ammonium salts, such as ammonium sulfate and bisulfate. Ammonia emissions associated with SCR are expected to be 10 ppm and higher based on reported experience; previous permit conditions have specified this level. Ammonia emissions could be about 57 TPY. Potential emissions of ammonium sulfate and bisulfate will increase emissions of PM10; up to 43 TPY could be emitted.

The electrical energy required to run the SCR system and the back pressure from the turbine will generate secondary emissions since this lost energy will necessitate additional generation. These emissions, coupled with potential emissions of ammonia and ammonium salts are presented in Table 4-7, which shows the emissions balance for the project with and without SCR. Emissions of carbon dioxide were included in this table, since this gas is under study as required in the 1990 Clean Air Act Amendments. As noted from this table, the total emissions with SCR would be greater than that proposed.

The replacement of the SCR catalyst will create additional economic and environmental impacts since certain catalysts contain materials that are listed as hazardous chemical wastes under Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261).

Table 4-7. Maximum Potential Emissions Differentials With and Without Selective Catalytic Reduction (SCR)

| Pollutants | <i>With SCR</i> | | | Project Without SCR CT/DB | Difference (with-w/out) |
|-------------------------------|-----------------|------------|-------|------------------------------|----------------------------|
| | Primary | Secondary* | Total | | |
| Particulate | 43 | 2.54 | 46 | 0 | 46 |
| Sulfur Dioxide | 0 | 27.94 | 28 | 0 | 28 |
| Nitrogen Oxides | 142 | 13.97 | 156 | 405 | (249) |
| Carbon Monoxide | 0 | 0.84 | 1 | 0 | 1 |
| Volatile Organic Compounds | 0 | 0.13 | 0 | 0 | 0 |
| Ammonia | 57 | 0.00 | 57 | 0 | 57 |
| Total Emissions: | 243 | 45.42 | 288 | 405 | (117) |
| Carbon Dioxide | 0 | 4,362 | 4,362 | 0 | 4,362 |

* EPA emission factors used for 1% sulfur fuel oil and an assumed heat rate of 10,000 Btu/kWh.
Lost energy of 0.58 MW for 8,760 hours per year operation.

Ammonia delivery and storage must be handled with caution because of its hazardous nature. Special precautions would be required to assure that no environmental discharge occurs.

Energy--Energy penalties will occur with all control alternatives evaluated. However, significant energy penalties occur with SCR. With SCR, the output of the CT is reduced by about 0.50 percent over that of wet injection. This penalty is the result of the SCR pressure drop, which would be about 4 inches of water and would amount to about 3,850,000 kilowatt hours (kWh) in potential lost generation per year. The energy required by the SCR equipment would be about 1,401,600 kilowatt hours per year (kWh/yr). Taken together, the lost generation and energy requirements of SCR could supply the electrical needs of 400 residential customers. To replace this lost energy, an additional 5.3×10^{10} British thermal units per year (Btu/yr) or about 53 million ft³/yr of natural gas would be required.

Technology Comparison--Since the purpose of the project is to produce electrical energy, and combustion turbine technology is rapidly advancing, it is appropriate to compare the proposed emissions on an equivalent generation basis to that of both the advanced and conventional CTs. The heat rate of the LM 6000 will be 9,112 Btu/kWh or better at ISO conditions (see Table A-1 in Appendix A). In contrast, heat rates for the conventional Frame 6 and the advanced CT are about 11,000 Btu/kWh and 9,600 Btu/kWh, respectively. The NO_x emission rates of the LM 6000 and advanced CTs, relative to the heat rate and NO_x emission rate of conventional CTs at 25 ppmvd corrected, are as follows:

- LM 6000 CT - 20.6 ppmvd corrected to 15 percent O₂
- Advanced CT* - 21.8 ppmvd corrected to 15 percent O₂
- Conventional CT - 25 ppmvd corrected to 15 percent O₂

*Dry low NO_x combustor.

As shown, the LM 6000 will emit less NO_x on a MW-generated basis than the advanced CT.

4.3.1.4 Proposed BACT and Rationale

The proposed BACT for the project is wet injection. The proposed NO_x emissions levels using wet injection are 25 ppm when firing natural gas and 42 ppm when firing fuel oil. This control technology is proposed for the following reasons:

1. SCR was rejected based on technical, economic, environmental, and energy grounds. The estimated incremental cost of SCR for natural gas firing exceeds \$7,000 per ton of NO_x removed. These costs are in the range for other projects that have rejected SCR as unreasonable. Additional environmental impacts would result from SCR operation, including emissions of ammonia; from secondary generations (to replace the lost generation); and from the generation of hazardous waste (i.e., spent catalyst replacement). The energy impacts of SCR will reduce generation by more than 5 million kWh. The NO_x emissions will be the lowest on an MW basis than any permitted CT without SCR.
2. The proposed BACT of wet injection provides the least costly control alternative and results in low environmental impacts (approximately 1 percent of the allowable PSD increments and less than 1 percent of the AAQS for NO_x). Wet injection at the proposed emissions levels has been adopted previously in BACT determinations. In addition, CT manufacturers have been willing to guarantee this level of NO_x emissions.

25 ppm
to
9 ppm

4.3.2 CARBON MONOXIDE (CO)

4.3.2.1 Emission Control Hierarchy

CO emissions are a result of incomplete or partial combustion of fossil fuel. Combustion design and catalytic oxidation are the control alternatives that are viable for the project.

Combustion design is the more common control technique used in CTs. Sufficient time, temperature, and turbulence is required within the combustion zone to maximize combustion efficiency and minimize the emissions of CO. Combustion efficiency is dependent upon combustor design. When wet NO_x control systems are employed, the amount of water or steam injected in the combustion zone also affects combustion efficiency. For the CTs being evaluated and with wet injection NO_x control, CO emissions will not exceed 42 ppm, corrected to dry conditions when firing natural gas and 78 ppm when firing fuel oil. These emission limits are based on calculated CO levels with margins added to account for the lack of operating experience with the LM 6000. Actual emissions under full-load conditions are expected to be less than one-half of those presented in this application.

Catalytic oxidation is a post-combustion control that has been employed in CO nonattainment areas where regulations have required CO emission levels to be less than those associated with wet injection. These installations have been required to use LAER technology and typically have CO limits in the 10 ppm range (corrected to dry conditions).

4.3.2.2 Technology Description

In an oxidation catalyst control system, CO emissions are reduced by allowing unburned CO to react with oxygen at the surface of a precious metal catalyst, such as platinum. Combustion of CO starts at about 300°F, with efficiencies above 90 percent occurring at temperatures above 600°F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, which reduces the amount of thermal energy required. For CTs, the oxidation catalyst can be located directly after the CT. Catalyst size depends upon the exhaust flow, temperature, and desired efficiency. The existing oxidation catalyst applications primarily have been limited to smaller cogeneration facilities burning natural gas.

Oxidation catalysts have not been used on fuel-oil-fired CTs or combined cycle facilities. The use of sulfur-containing fuels in an oxidation

catalyst system would result in an increase of SO₃ emissions and concomitant corrosive effects to the stack. In addition, trace metals in the fuel could result in catalyst poisoning during prolonged periods of operation.

Since the units likely will require numerous startups, variations in exhaust conditions will influence catalyst life and performance. Very little technical data exist to demonstrate the effect of such cycling.

The lack of demonstrated operation with oil firing suggests rejection of catalytic oxidation as a technically feasible alternative. However, the advent of a second generation catalyst suggests that an oxidation catalyst could be used.

Combustion design is dependent upon the manufacturer's operating specifications, which include the air-to-fuel ratio and the amount of water injected. The CTs proposed for the project have designs to optimize combustion efficiency and minimize CO emissions. Installations with an oxidation catalyst and combustion controls generally have controlled CO levels of 10 ppm as LAER and BACT.

For the project, the following alternatives were evaluated for natural gas firing as BACT:

1. Oxidation catalyst at 10 ppmvd; maximum annual CO emissions are 117 TPY;
2. Combustion controls at 75 percent control; maximum annual CO emissions are 467 TPY.

4.3.2.3 Impact Analysis

Economic--The estimated annualized cost of a CO oxidation catalyst is \$968,120 (Table 4-8), with a cost effectiveness of about \$2,800/ton of CO removed. The cost effectiveness is based on 75 percent efficiency (42 ppmvd to 10 ppmvd). No costs are associated with combustion techniques since they are inherent in the design.

Table 4-8. Capital and Annualized Cost for Oxidation Catalyst

| Cost Component | Cost (\$) | Basis |
|---|------------------|--|
| I. CAPITAL COSTS | | |
| A. DIRECT: | | |
| 1. Associated Equipment for Catalyst | 157,500 | Manufacture Estimate - \$1,750 per lb/sec mass flow |
| 2. Exhaust Modification | 150,000 | Engineering Estimate - \$75,000/CT |
| 3. Installation | 300,000 | 25% of Equipment Costs (I.A.1. & 2., and II.A.) |
| B. INDIRECT: | | |
| 1. Engineering & Supervision | 90,000 | 7.5% of Equipment Costs (I.A.1. & 2., and II.A.) |
| 2. Construction and Field Expense | 120,000 | 10% of Equipment Costs (I.A.1. & 2., and II.A.) |
| 3. Construction Contractor Fee | 60,000 | 5% of Equipment Costs (I.A.1. & 2., and II.A.) |
| 4. Startup & Testing | 24,000 | 2% of Equipment Costs (I.A.1. & 2., and II.A.) |
| 5. Contingency | 225,375 | 25% of Direct and Indirect Capital Costs (I.A. and I.B.1-4) |
| 6. Interest During Construction | 302,906 | 15% of Direct and Indirect Capital Costs, and Recurring Capital Costs (I.A., I.B.1.-4 and II.A.) |
| TOTAL CAPITAL COSTS | 1,429,781 | Sum of Direct and Indirect Capital Costs |
| ANNUALIZED CAPITAL COSTS | 167,942 | Capital Recovery of 10% over 20 years |
| II. RECURRING CAPITAL COSTS | | |
| A. Catalyst | | |
| | 892,500 | Manufacture Estimate - \$1,750 per lb/sec mass flow |
| B. Contingency | | |
| | 223,125 | 25% of Recurring Capital Costs (II.A) |
| TOTAL RECURRING CAPITAL COSTS | 1,115,625 | Sum of Recurring Capital Costs |
| ANNUALIZED RECURRING CAPITAL COSTS | 448,609 | Capital Recovery of 10% over 20 years |
| III. ANNUALIZED COST | | |
| A. DIRECT: | | |
| 1. Labor - Operator & Supervisor | 5,262 | 4 hours/week, 52 weeks/year, \$22/hour and 15% supervisor cost |
| 2. Maintenance | 12,727 | 0.5% of Total and Recurring Capital Costs |
| 3. Inventory Cost | 17,472 | Capital Carrying cost (10% over 20 years) for catalyst for 1 CT |
| B. ENERGY COSTS | | |
| 1. Heat Rate Penalty | 77,165 | 0.2% heat rate penalty. \$50/MW energy loss |
| 2. MW Loss Penalty (catalyst changeout) | 50,554 | Loss of 84 MW for one day; cost of natural gas at \$3/10 ⁶ Btu deducted from cost |
| 3. Fuel Escalation Costs | 35,079 | Fuel escalation of 3% over inflation; annualized over 20 years |
| 4. Contingency | 40,699 | 25% of energy costs |
| C. INDIRECT: | | |
| 1. Overhead | 10,794 | 60% of Labor and Maintenance Costs (III.A.1. and 2.) |
| 2. Property Taxes | 25,454 | 1% of Total and Recurring Capital Cost |
| 3. Insurance | 25,454 | 1% of Total and Recurring Capital Cost |
| 4. Administration | 50,908 | 2% of Total and Recurring Capital Cost |
| Annualized Capital Costs | 167,942 | |
| Annualized Recurring Capital Costs | 448,609 | |
| TOTAL ANNUALIZED COSTS | 968,120 | Sum of Operating and Maintenance and Annualized Capital Costs |

Note: All calculations using machine performance were based on 59 F conditions.
Assumptions based on percentage of costs were adapted from EPA OAQPS Control Cost Manual (1990).

Environmental--The air quality impacts of both oxidation catalyst control and combustion design control techniques are below the significant impact levels for CO. Therefore, no significant environmental benefit would be realized by the installation of a CO catalyst.

Energy--An energy penalty would result from the pressure drop across the catalyst bed. A pressure drop of about 2 inches water gauge would be expected. At a catalyst back pressure of about 2 inches, an energy penalty of about 1,925,000 kWh/yr would result at 100 percent load. This energy penalty is sufficient to supply the electrical needs of about 160 residential customers over a year. To replace this lost energy, about 1.93×10^{10} Btu/yr or about 19 million ft³/yr of natural gas would be required.

4.3.2.4 Proposed BACT and Rationale

Combustion design is proposed as BACT as a result of the technical and economic consequences of using catalytic oxidation on CTs. Catalytic oxidation is considered unreasonable for the following reasons:

1. Catalytic oxidation will not produce measurable reduction in the air quality impacts; and
2. The economic impacts are significant (i.e., an annualized cost of almost one million dollars, with a cost effectiveness of over \$2,700/ton of CO removed).
3. Actual CO emissions are expected to be one-half or less than those proposed. The proposed level is based on the lack of operating experience with the LM 6000 in industrial applications.

4.3.3 OTHER REGULATED AND NONREGULATED POLLUTANT EMISSIONS

The PSD source applicability analysis shows that the PSD significant emission level is exceeded for PM, PM₁₀, and As, requiring PSD review (including BACT) for these pollutants. There are no technically feasible methods for controlling the emissions of these pollutants from CTs, other than the inherent quality of the fuel. Levels of trace metals in

distillate oil are limited by fuel oil specifications. Low-sulfur (0.1 percent or less) distillate oil represents BACT for this pollutant.

For the nonregulated pollutants, most of which are trace metals, none of the control technologies evaluated for other pollutants (i.e., SCR or oxidation catalyst) would reduce such emissions; thus, natural gas and low sulfur distillate oil represent BACT because of their inherent low metals content.

5.0 AIR QUALITY MONITORING DATA

5.1 PSD PRECONSTRUCTION

The CAA requires that an air quality analysis be conducted for each pollutant subject to regulation under the act before a major stationary source or major modification is constructed. This analysis may be performed by the use of modeling and/or by monitoring the air quality. The use of monitoring data refers to either the use of representative air quality data from existing monitoring stations or establishing a monitoring network to monitor existing air quality. Monitoring must be conducted for a period up to 1 year prior to submission of a construction permit application. In addition to establishing existing air quality, the air quality data are useful for determining background concentrations (i.e., concentrations from sources not considered in the modeling). The background concentrations can be added to the concentrations predicted for the sources considered in the modeling to estimate total air quality impacts. These total concentrations are then evaluated to determine compliance with the AAQS.

For the criteria pollutants, continuous air quality monitoring data must be used to establish existing air quality concentrations in the vicinity of the proposed source or modification. However, preconstruction monitoring data generally will not be required if the ambient air quality concentration before construction is less than the de minimis impact monitoring concentrations (refer to Table 3-2 for de minimis impact levels). Also, if the maximum predicted impact of the source or modification is less than the de minimis impact monitoring concentrations, the source generally would be exempt from preconstruction monitoring.

For noncriteria pollutants, EPA recommends that an analysis based on air quality modeling generally should be used instead of monitoring data. The permit-granting authority has discretion in requiring preconstruction monitoring data when:

1. The state has an air quality standard for the noncriteria pollutant, and emissions from the source or modification pose a threat to the standard;
2. The reliability of emission data used as input to modeling existing sources is highly questionable; or
3. Air quality models have not been validated or may be suspect for certain situations, such as complex terrain or building downwash conditions.

However, if the maximum concentrations from the major source or major modification are predicted to be above the significant monitoring concentrations, EPA recommends that an EPA-approved measurement method be available before a permit-granting authority requires preconstruction monitoring.

EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) (EPA, 1987a) sets forth guidelines for preconstruction monitoring. The guidelines allow the use of existing air quality data in lieu of additional air monitoring if the existing data are representative. The criteria used in determining the representativeness of data are monitor location, quality of data, and currentness of data.

For the first criterion, monitor location, the existing monitoring data should be representative of three types of areas:

1. The location(s) of maximum concentration increase from the proposed source or modification;
2. The location(s) of the maximum air pollutant concentration from existing sources; and
3. The location(s) of the maximum impact area (i.e., where the maximum pollutant concentration hypothetically would occur, based on the combined effect of existing sources and the proposed new source or modification).

Basically, the locations and size of the three types of areas are determined through the application of air quality models. The areas of maximum concentration or maximum combined impact vary in size and are influenced by factors such as the size and relative distribution of ground level and elevated sources, the averaging times of concern, and the distances between impact areas and contributing sources.

For the second criteria, data quality, the monitoring data should be of similar quality as would be obtained if the applicant were monitoring according to PSD requirements. As a minimum, this would mean:

1. Use of continuous instrumentation,
2. Production of quality control records that indicate the instruments' operations and performances,
3. Operation of the instruments to satisfy quality assurance requirements, and
4. Data recovery of at least 80 percent of the data possible during the monitoring effort.

For the third criteria, currentness of data, the monitoring data must have been collected within a 3-year period preceding the submittal of permit application and must still be representative of current conditions.

5.2 PROJECT MONITORING APPLICABILITY

As determined by the source applicability analysis described in Section 3.4, an ambient monitoring analysis is required by PSD regulations for PM, NO₂, CO, and As emissions. As may be exempt from monitoring requirements because no acceptable monitoring technique has been established for that pollutant. The maximum predicted impacts from the proposed turbines also are less than de minimis levels for PM, NO₂, and CO. Therefore, preconstruction monitoring is not required for those pollutants for this project.

6.0 AIR QUALITY MODELING APPROACH

6.1 ANALYSIS APPROACH AND ASSUMPTIONS

6.1.1 GENERAL MODELING APPROACH

The general modeling approach follows EPA and FDER modeling guidelines. The highest predicted concentrations are compared with both PSD significant impact levels and de minimis air quality levels. If a facility exceeds the significant impact level for a particulate pollutant, current policies stipulate that the highest annual average and HSH short-term (i.e., 24 hours or less) concentrations be compared with AAQS and PSD increments when 5 years of meteorological data are used. The HSH concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with the air quality standards, which permit a short-term average concentration to be exceeded once per year at each receptor.

To develop the maximum short-term concentrations for the facility, the general modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. The basic difference between the two phases is the receptor grid used when predicting concentrations.

Concentrations for the screening phase were predicted using a coarse receptor grid and a 5-year meteorological record. After a final list of maximum short-term concentrations was developed, the refined phase of the analysis was conducted by predicting concentrations for a refined receptor grid centered on the receptor at which the HSH concentration from the screening phase was produced. The air dispersion model then was executed for the entire year during which HSH concentrations were predicted. This

approach was used to ensure that valid HSH concentrations were obtained. More detailed descriptions of the emission inventory and receptor grids used in the screening and refined phases of the analysis are presented in the following sections.

6.1.2 MODEL SELECTION

The selection of the appropriate air dispersion model was based on its ability to simulate impacts in areas surrounding the plant site. Within 50 km of the site, the terrain can be described as simple (i.e., flat to gently rolling). As defined in the EPA modeling guidelines, simple terrain is considered to be an area where the terrain features are all lower in elevation than the top of the stack(s) under evaluation. Therefore, a simple terrain model was selected to predict maximum ground-level concentrations.

The Industrial Source Complex (ISC) dispersion model (EPA, 1988a) was selected to evaluate the pollutant emissions from the proposed units and other modeled sources. This model is contained in EPA's User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 6 (EPA, 1988b). The ISC model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights.

The ISC model consists of two sets of computer codes that are used to calculate short- and long-term ground level concentrations. The main differences between the two codes are the input format of the meteorological data and the method of estimating the plume's horizontal dispersion.

The first model code, the ISC short-term (ISCST) model, is an extended version of the single-source (CRSTER) model (EPA, 1977). The ISCST model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The hourly concentrations are processed into non-overlapping, short-term, and annual

averaging periods. For example, a 24-hour average concentration is based on twenty-four 1-hour averages calculated from midnight to midnight of each day. For each short-term averaging period selected, the highest and second-highest average concentrations are calculated for each receptor. As an option, a table of the 50 highest concentrations over the entire field of receptors can be produced.

The second model code within the ISC model is the ISC long-term (ISCLT) model. The ISCLT model uses joint frequencies of wind direction, wind speed, and atmospheric stability to calculate seasonal and/or annual average ground-level concentrations. Because the input wind directions are for 16 sectors, with each sector defined as 22.5 degrees, the model calculates concentrations by assuming that the pollutant is uniformly distributed in the horizontal plane within a 22.5-degree sector.

In this analysis, the ISCST model was used to calculate both short-term and annual average concentrations because these concentrations are readily obtainable from the model output. Major features of the ISCST model are presented in Table 6-1. Concentrations caused by stack and volume sources are calculated by the ISCST model using the steady-state Gaussian plume equation for a continuous source. The area source equation in the ISCST model is based on the equation for a continuous and finite crosswind line source. The ISC model has rural and urban options that affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground-level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3-km radius circle centered on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

Table 6-1. Major Features of the ISCST Model

ISCST Model Features

- Polar or Cartesian coordinate systems for receptor locations
- Rural or one of three urban options that affect wind speed profile exponent, dispersion rates, and mixing height calculations
- Plume rise as a result of momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975)
- Procedures suggested by Huber and Snyder (1976); Huber (1977); Schulmann and Hanna (1986); and Schulmann and Scire (1980) for evaluating building wake effects
- Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
- Separation of multiple-point sources
- Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
- Capability of simulating point, line, volume, and area sources
- Capability to calculate dry deposition
- Variation with height of wind speed (wind speed-profile exponent law)
- Concentration estimates for 1-hour to annual average
- Terrain-adjustment procedures for elevated terrain, including a terrain truncation algorithm
- Receptors located above local terrain (i.e., "flagpole" receptors)
- Consideration of time-dependent exponential decay of pollutants
- The method of Pasquill (1976) to account for buoyancy-induced dispersion
- A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
- Procedure for calm-wind processing
- Wind speeds less than 1 m/s are set to 1 m/s.

Source: EPA, 1990.

For modeling analyses that will undergo regulatory review, such as PSD permit applications, the following model features are recommended by EPA (1987a) and are referred to as the regulatory options in the ISCST model:

1. Final plume rise at all receptor locations,
2. Stack-tip downwash,
3. Buoyancy-induced dispersion,
4. Default wind speed profile coefficients for rural or urban option,
5. Default vertical potential temperature gradients,
6. Calm wind processing, and
7. Reducing calculated SO₂ concentrations in urban areas by using a decay half-life of 4 hours (i.e., reduce the SO₂ concentration emitted by 50 percent for every 4 hours of plume travel time).

In this analysis, the EPA regulatory options were used to address maximum impacts. Based on a review of the land use around the facility and discussions with FDER, the rural mode was selected because of the lack of residential, industrial, and commercial development within 3 km of the plant site.

6.2 METEOROLOGICAL DATA

Meteorological data used in the ISCST model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport and Ruskin, respectively. The 5-year period of meteorological data was from 1982 through 1986. The NWS station in Tampa, located approximately 55 km to the southwest of the site, was selected for use in the study because it is the closest primary weather station to the study area considered to have meteorological data representative of the project site. This station has surrounding topographical features similar to the project site and the most readily available and complete database.

The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling height. The wind speed, cloud cover, and cloud ceiling values were used in the ISCST meteorological preprocessor program to determine atmospheric stability using the Turner stability scheme. Based on the temperature measurements at morning and afternoon, mixing heights were calculated from the radiosonde data at Ruskin using the Holzworth approach (Holzworth, 1972). The Ruskin station is located about 75 km to the southwest of the site. Hourly mixing heights were derived from the morning and afternoon mixing heights using the interpolation method developed by EPA (Holzworth, 1972). The hourly surface data and mixing heights were used to develop a sequential series of hourly meteorological data (i.e., wind direction, wind speed, temperature, stability, and mixing heights). Because the observed hourly wind directions at the NWS stations are classified into one of thirty-six 10-degree sectors, the wind directions were randomized within each sector to account for the expected variability in air flow. These calculations were performed using the EPA RAMMET meteorological preprocessor program.

6.3 EMISSION INVENTORY

Stack operating parameters and air emission rates for the proposed HRSGs were presented in Section 2.0.

Modeling of the proposed turbines demonstrated that the facility's PM, NO_x, and CO impacts are below the significant impact levels. Further modeling for this facility is not required.

6.4 RECEPTOR LOCATIONS

In the ISCST modeling, concentrations were predicted for the screening phase using a polar receptor grid. A description of the receptor locations for determining maximum predicted impacts is as follows:

The screening grid receptors consisted of 432 receptors located at distances of 47; 100; 300; 600; 900; 1,200; 1,600; 2,000; 2,500; 3,000; 4,000; and 5,000 m along 36 radials with each radial spaced at 10-degree

increments. The 47-m distance is representative of the minimum distance at which the ISCST model will predict a concentration for the modeled building height.

After the screening modeling was completed, refined modeling was conducted using a receptor grid centered on the receptor that had the highest concentration from the screening analysis. The receptors were located at intervals of 100 m between the distances considered in the screening phase, along 9 radials spaced at 2-degree increments, centered on the radial along which the maximum concentration was produced. For example, if the maximum concentration was produced along the 90-degree radial at a distance of 1.6 km, the refined receptor grid would consist of receptors at the following locations:

| <u>Directions (degrees)</u> | <u>Distance (km)</u> |
|---------------------------------------|--|
| 82, 84, 86, 88, 90, 92, 94, 96, 98 | 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, and 1.9 per direction |

To ensure that a valid maximum concentration was calculated, concentrations were predicted using the refined grid for the entire year that produced the highest concentration from the screening receptor grid. If maximum concentrations for other years were within 10 percent of that for the highest year, they also were refined.

Refined modeling analysis was not performed for the annual averaging period because the spatial distribution of annual average concentrations are not expected to vary significantly from those produced from the screening analysis.

The maximum PSD increment consumption at the Chassahowitzka Wilderness Area, a PSD Class I area, was determined for the proposed facility alone. Receptors were located at 51 km and at radials 300° to 314° from the proposed facility at intervals of 2°. The highest predicted concentration over five years of meteorological data was compared with PSD Class I

allowable increments. The highest concentration was used because the proposed facility was below significant impact levels in Class II areas. The analysis was performed for both PM and NO_x.

6.5 BUILDING DOWNWASH EFFECTS

Based on the building dimensions associated with buildings and structures planned at the plant, the stacks for the proposed turbines will be less than GEP. Therefore, the potential for building downwash to occur was considered in the modeling analysis.

The procedures used for addressing the effects of building downwash are those recommended in the ISC Dispersion Model User's Guide. The building height, length, and width are input to the model, which uses these parameters to modify the dispersion parameters. For short stacks (i.e., physical stack height is less than $H_b + 0.5 L_b$, where H_b is the building height and L_b is the lesser of the building height or projected width), the Schulman and Scire (1980) method is used. If this method is used, then direction-specific building dimensions are input for H_b and L_b for 36 radial directions, with each direction representing a 10-degree sector. The features of the Schulman and Scire method are as follows:

1. Reduced plume rise as a result of initial plume dilution,
2. Enhanced plume spread as a linear function of the effective plume height, and
3. Specification of building dimensions as a function of wind direction.

For cases where the physical stack is greater than $H_b + 0.5 L_b$ but less than GEP, the Huber-Snyder (1976) method is used. For this method, the ISCST model calculates the area of the building using the length and width, assumes the area is representative of a circle, and then calculates a building width by determining the diameter of the circle. If a specific width is to be modeled, then the value input to the model must be adjusted according to the following formula:

$$M_w = \frac{\pi W^2}{4}$$

$$M_w = 0.8886 W$$

where: M_w is input to the model to produce a building width of W used in the dispersion calculation. W is the actual building width.

The building dimensions considered in the modeling analysis are presented in Table 6-2. In the case of the existing boilers, the boiler stacks are located on the existing boiler buildings and are affected by downwash for all directions.

Table 6-2. Building Dimensions Used in ISCST Modeling Analysis To
Address Potential Building Wake Effects

| Source | Associated Building | <u>Actual Building Dimensions (m)</u> | | | Projected | <u>Modeled Building Dimensions (m)</u> | |
|-------------------|---------------------------|---------------------------------------|-------|--------|------------|--|--------|
| | | Length | Width | Height | Width* (m) | Length, Width | Height |
| Proposed Turbines | Steam Generation Building | 37.79 | 24.38 | 15.54 | 44.98 | 39.85 | 15.54 |

*Diagonal of actual building dimensions.

7.0 AIR QUALITY MODELING RESULTS

7.1 PROPOSED UNITS ONLY

7.1.1 SIGNIFICANT IMPACT ANALYSIS

A summary of the maximum concentrations as a result of the proposed turbines operating at maximum load conditions is presented in Table 7-1. The results are presented for a generic emission rate concentration of 10 g/s, and it is assumed that the stacks are collocated. Since the inlet air will be held constant by chillers, the operating load was assumed to be a 100 percent load under all operating conditions. Table 7-1 indicates the maximum screening concentrations for each year and averaging time with an emission rate of 10 g/s. Based on the results in Table 7-1, refined modeling was performed. The results of the refined modeling are presented in Table 7-2, including receptor location and the day and period of the maximum impacts. The maximum pollutant-specific concentrations for PM, NO₂, and CO were determined from the maximum generic impacts and are presented in Table 7-3.

The maximum predicted NO₂ concentration as a result of the proposed turbines is 0.45 µg/m³. Since this concentration is below the significance level for NO₂ (1.0 µg/m³), no further modeling analysis is necessary for that pollutant. The maximum predicted 1-hour and 8-hour CO concentrations are 167.8 and 71.2 µg/m³, respectively. Because these concentrations are below the PSD significant levels of 2,000 and 500 µg/m³, additional modeling is not necessary for CO.

The maximum predicted annual and 24-hour average PM concentrations when firing oil only are 0.10 and 4.95 µg/m³, respectively. With the primary fuel, natural gas, the maximum impacts are 0.02 and 1.26 µg/m³ for the annual and 24-hour averaging times, respectively. These maximum impacts are less than the PM significance impact levels. Therefore, additional modeling is not required for this pollutant.

Table 7-1. Maximum Predicted Impacts for the Pasco County Cogeneration Facility Using a Generic Emission Rate of 10 g/s--Screening Analysis

| Averaging Time | Year | Concentration ($\mu\text{g}/\text{m}^3$) | Receptor Location ^a | | Day/Period |
|----------------------|------|--|--------------------------------|--------------|------------|
| | | | Direction (degrees) | Distance (m) | |
| Annual | 1982 | 0.34 | 240 | 2500 | / |
| | 1983 | 0.24 | 240 | 2500 | / |
| | 1984 | 0.32 | 240 | 2500 | / |
| | 1985 | 0.32 | 70 | 1200 | / |
| | 1986 | 0.38 | 90 | 1200 | / |
| 1-Hour ^b | 1982 | 58.25 | 130 | 100 | 14/14 |
| | 1983 | 60.74 | 90 | 100 | 83/14 |
| | 1984 | 76.93 | 220 | 100 | 230/ 4 |
| | 1985 | 54.49 | 360 | 100 | 243/ 9 |
| | 1986 | 44.66 | 10 | 100 | 73/12 |
| 3-Hour ^b | 1982 | 34.81 | 120 | 100 | 14/ 5 |
| | 1983 | 25.53 | 90 | 100 | 83/ 5 |
| | 1984 | 47.57 | 130 | 100 | 59/ 4 |
| | 1985 | 33.08 | 20 | 100 | 243/ 7 |
| | 1986 | 16.44 | 120 | 100 | 27/ 5 |
| 8-Hour ^b | 1982 | 16.42 | 120 | 100 | 14/ 2 |
| | 1983 | 17.36 | 290 | 100 | 58/ 2 |
| | 1984 | 31.64 | 120 | 100 | 89/ 2 |
| | 1985 | 25.69 | 360 | 100 | 243/ 2 |
| | 1986 | 8.90 | 100 | 100 | 27/ 2 |
| 24-Hour ^b | 1982 | 6.87 | 120 | 100 | 14/ 1 |
| | 1983 | 5.93 | 110 | 100 | 34/ 1 |
| | 1984 | 17.16 | 130 | 100 | 59/ 1 |
| | 1985 | 13.92 | 360 | 100 | 243/ 1 |
| | 1986 | 3.76 | 90 | 1200 | 230/ 1 |

^aRelative to the location of the proposed units.

^bAll short-term concentrations indicate highest predicted concentrations.

Table 7-2. Maximum Predicted Impacts for the Pasco County Cogeneration Facility Using a Generic Emission Rate of 10 g/s--Refined Analysis

| Averaging Time | Year | Concentration ($\mu\text{g}/\text{m}^3$) | Receptor Location ^a | | Day/Period |
|----------------------|------|--|--------------------------------|--------------|------------|
| | | | Direction (degrees) | Distance (m) | |
| Annual | 1986 | 0.4 | 88 | 1400 | |
| 1-Hour ^b | 1984 | 88.2 | 218 | 100 | 230/ 4 |
| 3-Hour ^b | 1984 | 54.1 | 128 | 200 | 59/ 4 |
| 8-Hour ^b | 1984 | 37.4 | 122 | 200 | 89/ 2 |
| 24-Hour ^b | 1984 | 19.66 | 128 | 200 | 59/ 1 |

^aRelative to the location of the proposed units.

^bAll short-term concentrations indicate highest predicted concentrations.

Table 7-3. Maximum Predicted Pollutant Impacts of the Pasco County Cogeneration Facility Turbines Compared to PSD Significant Impact Levels

| Pollutant | Averaging Period | Emission Rate (lb/hr) | Generic Impact ($\mu\text{g}/\text{m}$) | Predicted Impact ($\mu\text{g}/\text{m}$) | Significant Impact Level ($\mu\text{g}/\text{m}$) |
|--------------------|------------------|-----------------------|---|---|---|
| Particulate Matter | Annual | 20.0 ^a | 0.39 | 0.10 (0.034) | 1 |
| | 24-Hour | (6.8) ^b | 19.66 | 4.95 (1.68) | 5 |
| Nitrogen Oxides | Annual | 92.4 ^b | 0.39 | 0.45 | 1 |
| Carbon Monoxide | 1-Hour | 151.0 ^a | 88.2 | 167.8 (156.3) | 2,000 |
| | 8-Hour | (140.6) ^b | 37.4 | 71.2 (66.3) | 500 |

Note: Short-term maximum impacts are highest predicted concentrations for 1982-86.

^a Emission rate for two turbines firing oil, which will only be used up to 240 hrs/yr and only during gas curtailments.

^b Emission rate for two turbines and duct burners firing natural gas, the primary fuel. Impacts for natural gas shown in parenthesis.

^c Emission rate based on 404.7 TPY.

7.1.2 CLASS I ANALYSIS

The maximum predicted facility impacts at the Chassahowitzka Wilderness Area using a generic emission rate of 10 g/sec are presented in Table 7-4. The maximum annual and 24-hour generic impacts are 0.04 and 0.54 $\mu\text{g}/\text{m}^3$. The pollutant-specific results are presented in Table 7-5. Based on a PM emission rate of 20 lb/hr (oil), the maximum PSD PM annual and 24-hour increment consumption is 0.01 and 0.14 $\mu\text{g}/\text{m}^3$, respectively. These concentrations are considerably below the proposed allowable increments of 4 and 8 $\mu\text{g}/\text{m}^3$ (which are more stringent than the current PM(TSP) allowable increments of 5 and 10 $\mu\text{g}/\text{m}^3$, respectively).

Based on a NO_x emission rate of 92.3 lb/hr (gas), the maximum NO_x PSD increment consumption is 0.05. This is well below the allowable increment of 2.5 $\mu\text{g}/\text{m}^3$.

7.2 TOXIC POLLUTANT ANALYSIS

The maximum impacts of regulated and nonregulated hazardous pollutants that will be emitted in significant amounts by the proposed facility (see Table 3-3) are presented in Table 7-6. Inorganic arsenic is the only pollutant to be addressed and is compared in the table to the Florida Department of Environmental Regulation (FDER) No Threat Levels (NTL). The maximum 8-hour, 24-hour, and annual impacts for arsenic are well below the NTL for each respective averaging time.

7.3 ADDITIONAL IMPACT ANALYSIS

7.3.1 IMPACTS UPON SOILS AND VEGETATION

Predicted impacts of all regulated pollutants are less than the significant impact levels (see Table 7-3). As a result, no impacts are expected to occur to soils or vegetation as a result of the proposed emissions of other regulated pollutants.

Table 7-4. Maximum Predicted PSD Class I Impacts for the Pasco County Cogeneration Facility Using a Generic Emission Rate of 10 g/s

| Averaging Time | Year | Concentration ($\mu\text{g}/\text{m}^3$) | Receptor Location ^a | | Day/Period |
|----------------------|------|--|--------------------------------|--------------|------------|
| | | | Direction (degrees) | Distance (m) | |
| Annual | 1982 | 0.04 | 300 | 51000 | / |
| | 1983 | 0.03 | 300 | 51000 | / |
| | 1984 | 0.03 | 302 | 51000 | / |
| | 1985 | 0.03 | 300 | 51000 | / |
| | 1986 | 0.04 | 300 | 51000 | / |
| 24-Hour ^b | 1982 | 0.54 | 302 | 51000 | 334/ 1 |
| | 1983 | 0.44 | 302 | 51000 | 318/ 1 |
| | 1984 | 0.32 | 304 | 51000 | 62/ 1 |
| | 1985 | 0.42 | 300 | 51000 | 157/ 1 |
| | 1986 | 0.48 | 302 | 51000 | 29/ 1 |

^aRelative to the location of the proposed units.

^bAll short-term concentrations indicate highest predicted concentrations.

Table 7-5. Maximum Predicted Pollutant Impacts of the Pasco County Cogeneration Facility Turbines Compared to PSD Class I Allowable Increments

| Pollutant | Averaging Period | Emission Rate (lb/hr) | Generic Impact ($\mu\text{g}/\text{m}$) | Predicted Impact ($\mu\text{g}/\text{m}$) | PSD Class I Increment ($\mu\text{g}/\text{m}$) |
|---------------------------|------------------|-----------------------|---|---|--|
| Particulate Matter (PM10) | Annual | 20.0 ^a | 0.04 | 0.01 (0.003) | 4 ^d |
| | 24-Hour | (6.8) ^b | 0.54 | 0.14 (0.05) | 8 ^d |
| Nitrogen Oxides | Annual | 92.4 ^c | 0.04 | 0.05 | 2.5 |

Note: Short-term maximum impacts are highest predicted concentrations for 1982-86.

^a Emission rate for two turbines firing oil, which will only be used up to 240 hrs/yr and only during gas curtailments.

^b Emission rate for two turbines and duct burners firing natural gas, the primary fuel. Impacts for natural gas shown in parenthesis.

^c Emission rate based on 404.7 TPY.

^dProposed.

Table 7-6. Predicted Maximum Impacts of Toxic Pollutants for the Pasco County Cogeneration Facility

| Pollutant | Averaging Period | Emission Rate (lb/hr) | Generic Impact ($\mu\text{g}/\text{m}$) | Predicted Impact ($\mu\text{g}/\text{m}$) | No Threat Levels ($\mu\text{g}/\text{m}$) |
|----------------------|------------------|------------------------|---|---|---|
| <u>Non-Regulated</u> | | | | | |
| Inorganic Arsenic | 8-Hour | 0.0033 ^a | 37.4 | 0.0016 | 0.50 |
| | 24-Hour | | 19.7 | 0.0008 | 0.48 |
| | Annual | 9.13×10^{-5b} | 0.39 | 4.5×10^{-7} | 2.3×10^{-4} |

Note: Short-term generic impacts are highest predicted concentrations for 1982-86.

^a Based on maximum emissions when firing oil, which will only be used for up to 240 hrs/yr.

^b Based on total TPY for two turbines.

7.3.2 IMPACTS DUE TO ADDITIONAL GROWTH

A limited number of additional personnel may be added to the current plant personnel. These additional personnel are expected to have an insignificant effect on the residential, commercial, and industrial growth in Pasco County.

7.3.3 IMPACTS TO VISIBILITY

The plant is located approximately 51 km from the Chassahowitzka Wilderness Area, a PSD Class I area. Impacts to visibility were estimated using the VISCREEN computer model. Impacts were calculated for particulates and nitrogen oxides (as nitrogen dioxide). The results of the screening analysis are presented in Table 7-7. Based on the results, the proposed facility is not expected to significantly impair visibility in the Chassahowitzka Wilderness Area.

Table 7-7. Visibility Analysis for the Pasco County Cogeneration Facility on the PSD Class I Area

Visual Effects Screening Analysis for
Source: PASCO COGENERATION FACILITY
Class I Area: CHASSAHOWITZKA WILDERNESS AREA

*** Level-1 Screening ***

Input Emissions for

| | | |
|--------------|--------|--------|
| Particulates | 27.00 | TON/YR |
| NOx (as NO2) | 404.70 | TON/YR |
| Primary NO2 | .00 | TON/YR |
| Soot | .00 | TON/YR |
| Primary SO4 | .00 | TON/YR |

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

| | |
|-------------------------------|---------------|
| Background Ozone: | .04 ppm |
| Background Visual Range: | 25.00 km |
| Source-Observer Distance: | 51.00 km |
| Min. Source-Class I Distance: | 51.00 km |
| Max. Source-Class I Distance: | 71.00 km |
| Plume-Source-Observer Angle: | 11.25 degrees |
| Stability: | 6 |
| Wind Speed: | 1.00 m/s |

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

| Backgrnd | Theta | Azi | Distance | Alpha | Delta E | | Contrast | |
|----------|-------|-----|----------|-------|---------|-------|----------|-------|
| | | | | | Crit | Plume | Crit | Plume |
| SKY | 10. | 84. | 51.0 | 84. | 2.00 | .294 | .05 | -.001 |
| SKY | 140. | 84. | 51.0 | 84. | 2.00 | .094 | .05 | -.002 |
| TERRAIN | 10. | 84. | 51.0 | 84. | 2.00 | .027 | .05 | .000 |
| TERRAIN | 140. | 84. | 51.0 | 84. | 2.00 | .008 | .05 | .000 |

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

| Backgrnd | Theta | Azi | Distance | Alpha | Delta E | | Contrast | |
|----------|-------|-----|----------|-------|---------|-------|----------|-------|
| | | | | | Crit | Plume | Crit | Plume |
| SKY | 10. | 65. | 47.6 | 104. | 2.00 | .311 | .05 | -.001 |
| SKY | 140. | 65. | 47.6 | 104. | 2.00 | .099 | .05 | -.002 |
| TERRAIN | 10. | 55. | 45.6 | 114. | 2.00 | .037 | .05 | .001 |
| TERRAIN | 140. | 55. | 45.6 | 114. | 2.00 | .011 | .05 | .000 |

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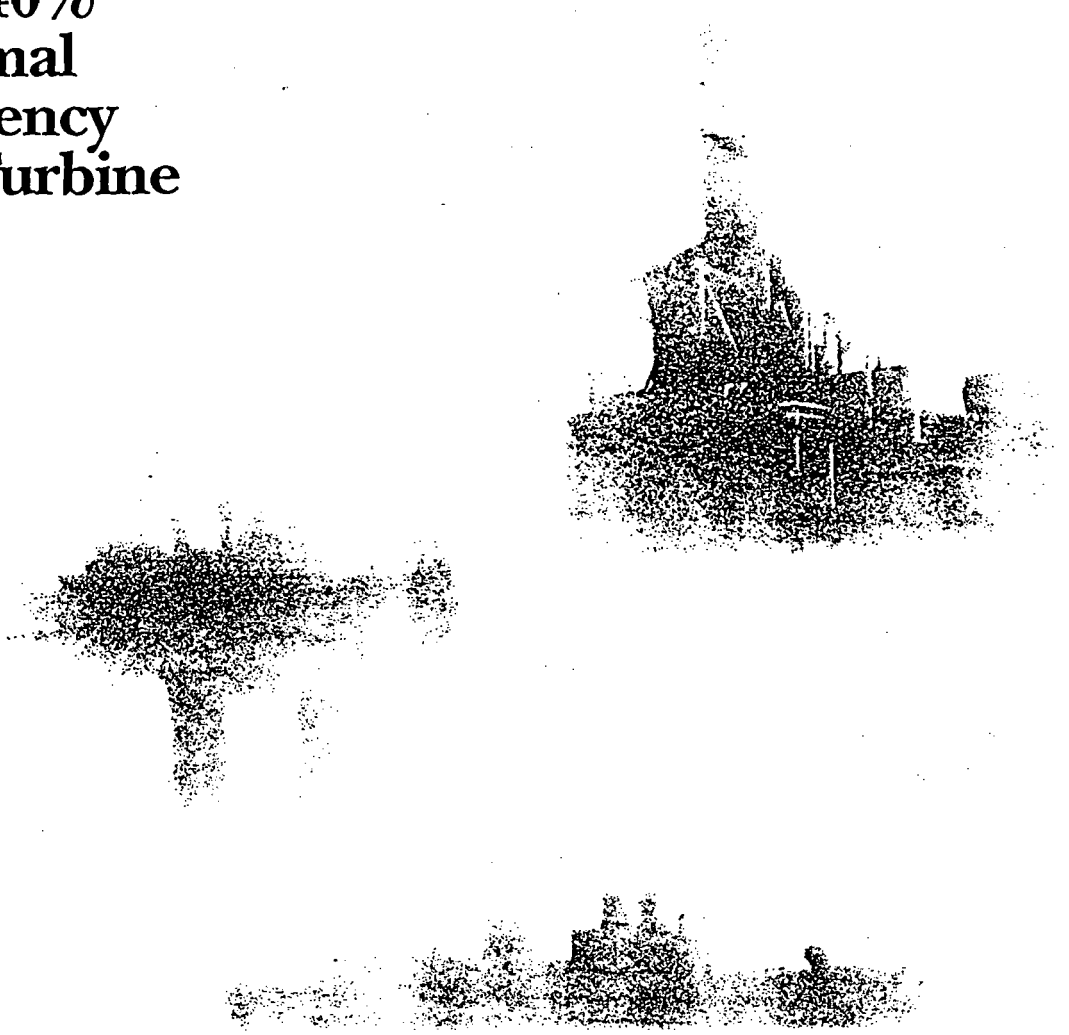
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APPENDIX A
MANUFACTURER'S ARTICLE
EMISSION CALCULATIONS AND FACTORS



*GE Marine &
Industrial Engines*

**GE LM6000
Development of the
First 40%
Thermal
Efficiency
Gas Turbine**



**G. Oganowski
General Manager
LM6000/LM1600 Projects
GE Marine & Industrial Engine
and Service Division**

GE LM6000 Development of the First 40% Thermal Efficiency Gas Turbine

ABSTRACT

General Electric has launched development of a new generation aeroderivative gas turbine, the LM6000. This 40MW-class machine, targeted for 1992 field service introduction, combines GE Aircraft Engines' latest engine technology together with a new method of aeroderivative load coupling to achieve two gas turbine firsts:

- The first simple cycle industrial gas turbine to achieve an iso base-rated thermal efficiency in excess of 40% (LHV).
- The first simple cycle, aeroderivative gas turbine to be competitive on a first cost basis with all other gas turbines in its size class.

This paper describes the LM6000 concept, basic engine, expected performance and development program for this revolutionary gas turbine.

INTRODUCTION

Since their initial introduction in the 1960's, aeroderivative gas turbines have been at the industrial gas turbine forefront in terms of simple cycle efficiency. The close association of the aeroderivatives to their aircraft engine ancestors have allowed them to be close-coupled beneficiaries of the enormous amount of resources poured into aircraft engine research and technology development. The heavy weight industrial gas turbines have also benefitted greatly from this technology development but on a much delayed time scale and not to the full extent of the aeroderivatives. The result has been a consistent 4 to 5 percentage point thermal efficiency advantage for the aeroderivatives in industrial applications.

This efficiency advantage has come with a price tag, however. Although on a \$/hp basis, a high technology aircraft engine cost is comparable to that of a heavy weight industrial gas turbine, this is largely due to volume effects. A successful aircraft engine will have 5 to 10 times the annual production volume of a comparable successful industrial machine with the obvious effect on unit cost and development cost amortization. Where aeroderivative engines suffer on the cost front is in the area of modifying the machine for industrial use. Typically, this is done by developing unique hardware to adapt the high efficiency, high volume aircraft com-

ponents to drive a generator or other industrial load. Although the amount of unique hardware is generally small, the factor of 5 to 10 reduction in volume for these unique components can have a major impact on the total engine cost. The result is a hybrid machine that has the high efficiency of its ancestors but also a relatively high price tag due to the low volume unique components contained in the machine.

In 1988, GE's aeroderivative gas turbine arm, the Marine and Industrial Engines and Service Division (GE M&I), initiated studies to find a means of providing customers with the proven aeroderivative advantages of high efficiency, availability and maintainability but at a first cost significantly lower than previous machines. The result of that study and the development program internally launched at GE in mid-1989 is the LM6000. As described in subsequent sections of this paper, the LM6000 will not only provide aero technology at significantly lower cost but also will provide a quantum step in industrial gas turbine performance.

CONCEPT

In trying to develop a more first-cost effective method of applying aircraft engines for industrial use, GE focussed on maximizing the commonality between the aircraft engine and the industrial derivative. This approach was viewed as having two advantages:

1. The higher volume aircraft common parts would bring the desired cost improvement, and
2. Maximizing use of aircraft common parts would improve performance relative to use of unique industrial parts which are designed with low volume as a major consideration with the tradeoff often being performance.

Figure 1 illustrates the approach used on the traditional aeroderivative machine like the LM5000. The twin spool LM5000 gas generator maintained a high degree of commonality with the parent aircraft engine, the CF6-50. The low pressure compressor (LPC), high pressure compressor (HPC), combustor and high pressure turbine (HPT) were nearly identical. The low pressure turbine (LPT) which drives the LPC and fan of the aircraft engine, however, was totally unique on the industrial machine. In effect, the aircraft engine LPT was split into two pieces - a single stage LPT for driving the gas generator LPC and a power turbine, aero-

dynamically coupled to the gas generator to drive the industrial load. The unique LPT and power turbine of the industrial machine, because of their relatively low volume, represent 40 to 50% of the cost of an LM5000 gas turbine. In addition, the more industrial-based design of the power turbine and its aerodynamic coupling resulted in the loss of some performance. The efficiency difference between the aircraft engine LPT and the combined aeroderivative LPT/power turbine is not insignificant.

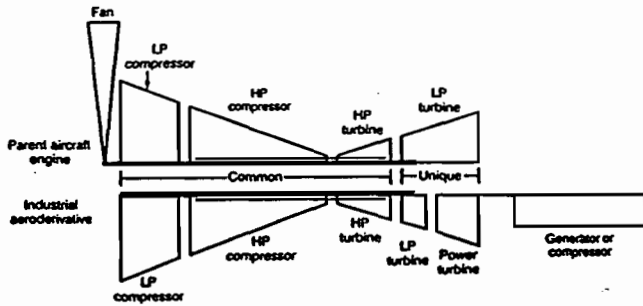


Figure 1
Traditional adaptation of aircraft engine to industrial use.

The LM6000 gas turbine approach takes advantage of the fact that the low pressure rotor normal operating speed of the large turbofan aircraft engines, such as the GE CF6-80C2, is approximately 3600 rpm. The GE LM6000 concept provides for direct coupling of the gas turbine low pressure system to the load, as illustrated in Figure 2. For 60 cycle generator applications, the match is perfect. This concept allows the entire LPT of the aircraft engine to be utilized instead of a unique LPT and power turbine resulting in a nearly 10 to 1 reduction in the cost of these components of the engine. The result is a significant reduction in the cost of an LM6000 relative to its aeroderivative predecessors. In addition, use of the entire high tech aircraft engine LPT and direct coupling results in a precedent-setting improvement in engine performance – the first machine to exceed 40% (LVH) thermal efficiency

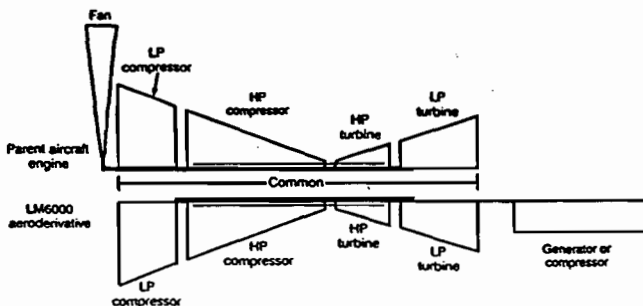


Figure 2
LM6000 adaptation of aircraft engine to industrial application.

LM6000 ENGINE

The LM6000 gas turbine is designed around GE's latest production aircraft engine, the CF6-80C2 (Figure 3). This engine, certified in 1985, is the industry's leading new power plant for large, widebody aircraft with more than 600 units in service and total firm orders in excess of 1600. The CF6-80C2 has set new standards for both performance and reliability during its initial 2 million hours of revenue service. This, combined with a production volume approaching 300 units per year made it a natural choice for use as the basis for the LM6000. Table 1 provides some CF6-80C2 statistics.

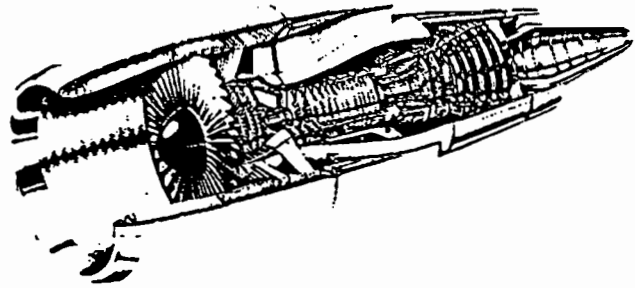


Figure 3
GE CF6-80C2 Aircraft Engine.

Table 1
CF6-80C2 Characteristics

| | |
|-----------------------------|-----------------------------------|
| Thrust | 52,500 – 61,500 lbs. |
| Units in service (12/31/89) | 557 |
| Flight hours (12/31/89) | 2.05 million |
| Applications | 767; 747; A300; A310; A330; MD-11 |

The LM6000 gas turbine, shown in the Figure 4 and 5 cross-section and illustration utilizes the CF6-80C2 HPC, combustor, HPT and LPT almost totally intact. Only a minor seal change and modification of the LPT shaft to allow coupling to the load prevent these sections from being identical. The LPC is adapted from the LM5000 and its predecessor the CF6-50. This selection was made due to the excellent air flow match between this LPC and the cycle selected for the LM6000. The LPC rotor and stator airfoils are common to the LM5000 with the remaining hardware only slightly modified to adapt it to the CF6-80C2 mating components.

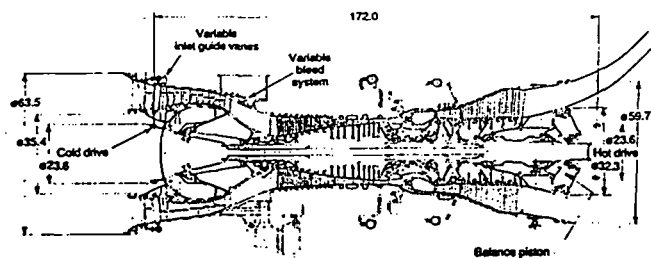


Figure 4
LM6000 Cross-Section.

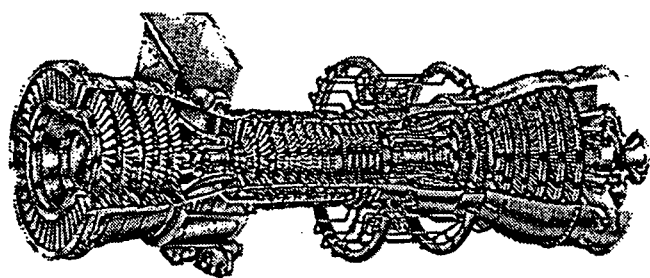


Figure 5
GE LM6000 Aeroderivative Gas Turbine

A variable inlet guide vane system has been added to modulate airflow during startup, shutdown and part load operation when the low pressure system operates at a constant 3600 rpm while the high pressure system operates at reduced speed. A variable bleed system between the low pressure and high pressure systems will also function under these conditions to provide the proper match between LPC and HPC airflows.

The LM6000 rear frame area has been modified to provide a low pressure rotor thrust balance system needed to offset the 60,000 pounds of thrust lost with elimination of the fan from the engine.

Table 2 provides a description of the various engine sections.

As illustrated in Figure 4, the LM6000 will provide for both front and rear end drives. This feature will maximize the applicability of the machine by allowing two LM6000's to be coupled to a single generator for installations requiring higher output; by enabling LM6000's to be retrofit into older, existing installations with a minimum of modifications and by allowing package and facility designs to be optimized for the overall mission of the installation. All LM6000 gas turbines will be produced with front and rear drive capability.

The LM6000 will be initially offered with a variety of fuel and NOx suppressions alternatives as listed in Table 3.

Table 2
LM6000 Engine Description

| | |
|--|-----------------|
| LPC | |
| Derived from: | LM5000/CF6-50 |
| Normal operating speed | 3600 rpm |
| Stages – Rotor | 5 |
| Stator | 5 + VIGV |
| HPC | |
| Common to: | CF6-80C2 |
| Stages – Rotor | 14 |
| Stator | 14 (6 variable) |
| HPT | |
| Common to: | CF6-80C2 |
| Stages – Rotor | 2 |
| Stator | 2 |
| LPT | |
| Common to: | CF6-80C2 |
| Stages – Rotor | 5 |
| Stator | 5 |
| Overall length (fwd. coupling to rear coupling) | 172.0 in |
| Total weight (estimated) | 12,300 lbs |

Table 3
LM6000 Fuel/NOx System Alternatives

| | |
|--------------|---|
| Fuel systems | NOx suppression (ref 15% O ₂) |
| Gas | Water – 25 ppm Steam – 25 ppm |
| Distillate | Water – 42 ppm |
| Dual fuel | Water – 42 ppm (liquid) Water – 25 ppm (gas) |

PERFORMANCE

On a simple cycle, dry, base-rated, ISO no-loss-basis, the LM6000 will produce 43.1MW at a thermal efficiency of 41.8% (LHV) at the gas turbine shaft. This precedent-setting performance is attributable to the LM6000 heritage in the latest proven aircraft engine technology and the method of application wherein it fully utilizes that aircraft engine technology.

This excellent performance extends to operation under more typical base load conditions requiring NOx suppression. Table 4 lists the LM6000 performance under base load, ISO conditions for various NOx level and method circumstances.

The base-rated conditions are established on a criteria of achieving a minimum of 25,000 hours between hot section maintenance actions and 50,000 hours

Table 4
LM6000 Base Load Performance

| | Dry | Steam | Water |
|------------------------------------|---------|--------|--------|
| NOx suppressant | | | |
| NOx level (ref 15%O ₂) | 175 ppm | 25 ppm | 42 ppm |
| Inlet loss (in H ₂ O) | 4 | 4 | 4 |
| Exhaust loss (in H ₂ O) | 4 | 10 | 4 |
| Power (MW) | 42.4 | 42.2 | 42.4 |
| Heat rate (Btu/kW-hr) – LHV | 8230 | 7980 | 8440 |
| Thermal efficiency (%) – LHV | 41.5% | 42.8% | 40.4% |
| Gas turbine exhaust temp (°F) | 846 | 799 | 825 |
| Gas turbine exhaust flow (lb/sec) | 276 | 280 | 278 |

Pressure ratio

Conditions:

- Base rating (25,000 hour hot section life; 50,000 hour overhaul)
- Sea level
- 59°F (15°C)
- Shaft performance
- 3600 rpm
- Natural gas
- 60% relative humidity

between overhauls. As with other aeroderivatives, the hot section maintenance activity at 25,000 hours will be accomplished on-site with only a 2-3 day outage.

The base load, off-design temperature performance of the LM6000 is illustrated in Figure 6. Two unusual characteristics are readily apparent:

1. The single curve is representative of three different operating modes (dry, steam to 25 ppm NOx and water to 42 ppm NOx).
2. Power falls off with ambient temperatures below ~60°F.

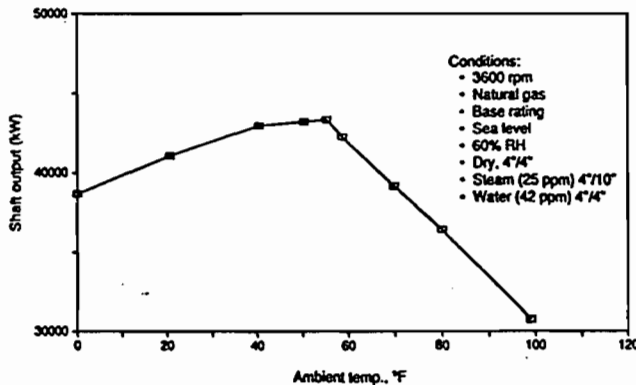


Figure 6

LM6000 output vs. ambient temperature.

The reasons for these unusual characteristics lie in the conservative initial rating limitations established by GE to assure an experience-based, reliable introduction of the machine. Unlike most gas turbines which are

limited by turbine inlet temperature, the LM6000 introductory limits are based on mass flow-dependent parameters below ~60°F and by compressor exit temperature above 60°F. These limits have been set based on actual test and operating experience of the CF6-80C2. During development testing of the LM6000, the limiting characteristics will be examined at higher levels and, if justified by the results, the limits will be relaxed to allow the machine to operate up to its ultimate capability.

The base rating heat rate versus ambient performance is shown in Figure 7 and the part load performance is shown in Figure 8.

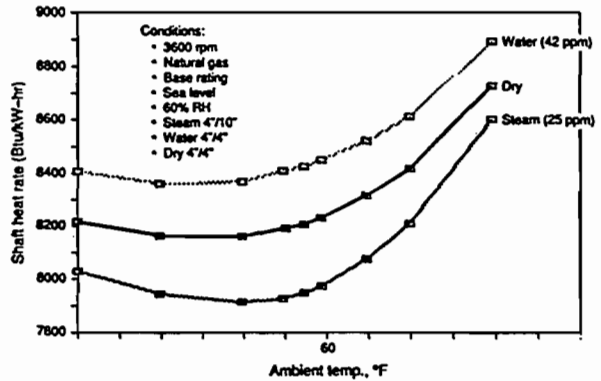


Figure 7

LM6000 heat rate vs. ambient temperature

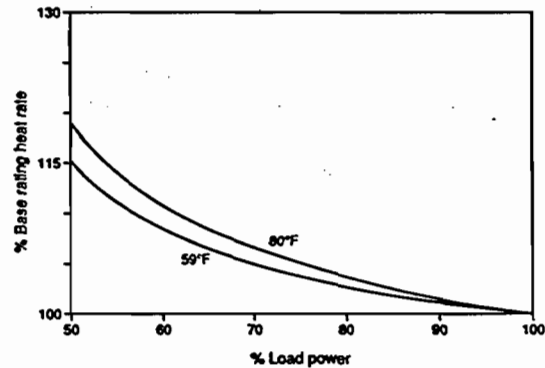


Figure 8

LM6000 part load heat rate.

The above mentioned characteristics also affect the initial peak rating of the LM6000 as illustrated in Figure 9. As shown, below 60°F the base and peak ratings are the same. This again is due to the fact that GE has limited performance based on mass flow-dependent parameters. Above 60°F where compressor exit temperature is the limiting parameter, higher output is achievable. The rating in this region is based on a 6

year maintenance interval for a typical 1000 hour/year peaking application. Once again, when development testing increases the knowledge base, improved peak rating performance is expected.

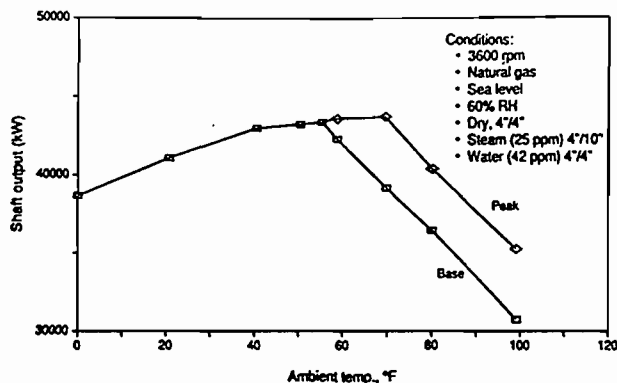


Figure 9
LM6000 peak vs. base rating characteristics.

In combined cycle the LM6000 is also anticipated to provide industry-leading performance in its size class. Depending on the method used for NO_x control, an LM6000 combined cycle system will produce from 49 to 53MW at the generator terminals with a thermal efficiency ranging from 49 to almost 52%.

The electrical generating performance discussed above is for 60 cycle application with this 3600 rpm driver. For 50 cycle applications, it is anticipated that a reduction gear will provide the most efficient, economic method of adapting the LM6000. Studies are being made to determine if modifications to the gas turbine are practical to achieve satisfactory 3000 rpm operation. It is expected, however, that the 3000 rpm engine uniqueness will result in a first cost and development cost impact that will exceed the 1-1.5 percentage point penalty associated with the gear.

COST

GE's effort to develop an aeroderivative gas turbine with a cost significantly lower than previous aeroderivatives was quite successful. The minimizing of hardware in the LM6000 unique to the aircraft version of the engine has resulted in a machine expected to be competitive on a first cost basis with any machine in its size class.

DEVELOPMENT PROGRAM

The high degree of utilization of existing aircraft engine hardware will enable GE to bring the LM6000 to reality on a schedule faster than traditional new gas

turbines. The program was internally launched at GE in mid-1989 and the first unit will go to test in Evendale, Ohio, in the third quarter of 1991. This testing, which will utilize a generator for load, will center on optimizing the variable geometry schedules of the gas turbine, qualifying the limited unique hardware and expanding the proven operating envelope of the machine to establish actual gas turbine capabilities.

The first LM6000 for field application will be shipped in late 1991 with full production anticipated to start in early 1992.

Additional program milestones are provided in Table 5.

Table 5

| | |
|----------------------------------|-------|
| • Program launch (internal) | 6/89 |
| • Release to production | 11/89 |
| • Ratings established | 4/90 |
| • Detail design complete | 3Q/90 |
| • Public release | 6/90 |
| • First engine assembly complete | 2Q/91 |
| • First engine development test | 3Q/91 |
| • Ship first engine | 4Q/91 |
| • First production shipment | 1Q/92 |
| • First field engine operation | 3Q/92 |

During the development program, GE has been working closely with its aeroderivative OEM's to provide installation and performance data to allow their development of system packages which will be both timely and, in character with the gas turbine, cost effective. With this close coordination, GE and its OEM's anticipate initial LM6000 field operation in mid- to late 1992 with significant early penetration of the market due to the superior economics of the LM6000 system.

Additional performance, installation and application information is now available from these OEM's.

SUMMARY

In 1989, GE initiated development of a revolutionary aeroderivative industrial gas turbine in the 40 MW size range. The new machine, the LM6000, will achieve thermal efficiencies in excess of 40% and be provided at a cost comparable to less efficient heavy weight machines in the same size class. The LM6000 will direct drive the load from the aero-based low pressure gas turbine system to achieve the unprecedented cost and efficiency. Under development at GE's aircraft engine facility in Evendale, Ohio, the LM6000 will be tested in mid-1991 and achieve initial field operation in 1992.

EMISSION CALCULATIONS AND FACTORS

Emission rates for all regulated and nonregulated pollutants were calculated using both manufacturer's data and EPA emission factors. The design information and emissions data are presented in Tables A-1 through A-5. These tables were generated using a computerized spreadsheet (i.e., Lotus 1-2-3). Tables A-1 through A-5 have been annotated to show the columns (i.e., A, B, C, and D) and rows (i.e., 1, 2, 3,) in the spreadsheet. Following these tables is a printout of all the calculations made in the spreadsheet, along with the basis for the calculation. The calculations, as well as text comments, are listed alphanumerically in ascending order. For example, in Table A-1, column D row 12 is listed as A:D12 on the calculation page, and the data input is 9232; as noted, these data were provided by General Electric (GE). A copy of the relevant EPA emission factors also is included in this appendix.

Table A-1. Design Information and Stack Parameters for
Cogeneration Project

| Data | Gas Turbine Natural Gas | Duct Burner Natural Gas | Gas Turbine Fuel Oil |
|----------------------------------|----------------------------|----------------------------|-------------------------|
| A | B | C | D |
| General: | | | |
| Power (kW) ^a | 42,044.0 | NA | 41,917.0 |
| Heat Rate (Btu/kwh) ^a | 9,112.0 | NA | 9,232.0 |
| Heat Input (MMBtu/hr) | 383.1 | 150.0 | 387.0 |
| Fuel Oil (lb/hr) | 18,533.4 | 7,256.5 | 21,031.4 |
| (cf/hr) | 403,268.3 | 157,894.7 | |
| Fuel: | | | |
| Heat Content - (LHV) | 20,671 Btu/lb | 20,671 Btu/lb | 18,400 Btu/lb |
| Sulfur | 1 gr/100cf | 1 gr/100cf | 0.1 |
| CT Exhaust: | | | |
| Volume Flow (acfm) | 593,208 | | 590,922 |
| Volume Flow (scfm) | 247,404 | | 244,711 |
| Mass Flow (lb/hr) ^b | 1,079,779 | | 1,081,322 |
| Temperature (°F) | 806 | | 815 |
| Moisture (% Vol.) | 11.00 | | 9.30 |
| Oxygen (% Vol.) | 13.36 | | 13.46 |
| Molecular Weight | 28.03 | | 28.38 |
| Water Injected (lb/hr) | 19,061 | | 21,793 |
| HRSG Stack: | | | |
| Volume Flow (acfm) | 324,249 | | 320,720 |
| Temperature (°F) | 232 | | 232 |
| Diameter (ft) | 11.0 | | 11.0 |
| Velocity (ft/sec) | 56.9 | | 56.2 |

Source: General Electric and Stewart and Stevenson, 1991.

Note: All data shown on this table and subsequent tables are for each
combustion turbine and duct burner.

- ^a Represents ISO conditions, which produces maximum potential emissions; actual operating power and heat rate will produce lower heat input.
- ^b A 5% margin added to maximize emissions since machine is new and the operating history in industrial applications has not yet been developed.

Table A-2. Maximum Criteria Pollutant Emissions for
Cogeneration Project

| Pollutant | Gas Turbine Natural Gas | Duct Burner Natural Gas | Gas Turbine Fuel Oil | |
|------------------|----------------------------|----------------------------|-------------------------|----|
| A | B | C | D | |
| Particulate: | | | | 47 |
| Basis | Manufacturer | 0.006 lb/MMBtu | Manufacturer | 48 |
| lb/hr | 2.50 | 0.90 | 10.0 | 49 |
| TPY | 10.95 | 1.58 | 1.2 | 50 |
| Sulfur Dioxide: | | | | 51 |
| Basis | 1 gr/100 cf | 1 gr/100 cf | 0.1% Sulfur | 52 |
| lb/hr | 1.15 | 0.45 | 39.96 | 53 |
| TPY | 5.05 | 0.79 | 4.8 | 54 |
| Nitrogen Oxides: | | | | 55 |
| Basis | 25 ppm ^a | 0.1 lb/MMBtu | 42 ppm ^a | 56 |
| lb/hr | 39.4 | 15.0 | 68.5 | 57 |
| TPY | 172.37 | 26.3 | 8.2 | 58 |
| ppm | 25.0 | NA | 42.0 | 59 |
| Carbon Monoxide: | | | | 60 |
| Basis | 42 ppm ^b | 0.2 lb/MMBtu | 78 ppm ^b | 61 |
| lb/hr | 40.3 | 30.0 | 75.5 | 62 |
| TPY | 176.58 | 52.5 | 9.1 | 63 |
| ppm | 42.0 | NA | 78.0 | 64 |
| VOCs: | | | | 65 |
| Basis | 4 ppm ^b | 0.03 lb/MMBtu | 10 ppm ^b | 66 |
| lb/hr | 1.65 | 4.50 | 4.15 | 67 |
| TPY | 7.2 | 7.9 | 0.5 | 68 |
| ppm | 4.0 | NA | 10.0 | 69 |
| Lead: | | | | 70 |
| Basis | | | EPA(1988) | 71 |
| lb/hr | NA | NA | 3.44E-03 | 72 |
| TPY | NA | NA | 4.13E-04 | 73 |

^a Corrected to 15% O₂ dry conditions.

^b Corrected to dry conditions.

Note: Annual emission for CT when firing natural gas based on 8,760 hr/yr
and 240 hr/yr for fuel oil firing. Annual emissions for duct burners
on 3,500 hr/yr.

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Table A-3. Maximum Other Regulated Pollutant Emissions for
Cogeneration Project

| Pollutant A | Gas Turbine Natural Gas B | Duct Burner Natural Gas C | Gas Turbine No.2 Oil D | |
|------------------------|---------------------------------|---------------------------------|------------------------------|--|
| As (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 0.0016253065248 1.95E-04 | 96 97 98 99 100 101 102 103 104 105 106 107 |
| Be (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 0.00096744436 1.16E-04 | 108 109 110 |
| Hg (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 1.16E-03 1.39E-04 | 111 112 113 |
| F (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 0.01257677668 1.51E-03 | 114 115 116 |
| H2SO4 (lb/hr) (TPY) | 8.81E-03 3.86E-02 | 3.45E-03 6.04E-03 | 3.22E+00 3.86E-01 | 117 118 119 120 121 122 |

Sources: EPA, 1988; EPA, 1980

Table A-4. Maximum Non-Regulated Pollutant Emissions for
Cogeneration Project

| Pollutant | Gas Turbine Natural Gas | Duct Burner Natural Gas | Gas Turbine No.2 Oil | |
|-------------------------------|----------------------------|----------------------------|-------------------------|--|
| A | B | C | D | |
| Manganese (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 2.49E-03 2.99E-04 | 125 126 127 128 129 130 131 132 133 134 135 136 |
| Nickel (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 6.58E-02 7.89E-03 | 137 138 139 |
| Cadmium (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 4.06E-03 4.88E-04 | 140 141 142 |
| Chromium (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 1.84E-02 2.21E-03 | 143 144 145 |
| Copper (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 1.08E-01 1.30E-02 | 146 147 148 |
| Vanadium (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 2.70E-02 3.24E-03 | 149 150 151 |
| Selenium (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 9.08E-03 1.09E-03 | 152 153 154 |
| POM (lb/hr) (TPY) | 4.27E-04 1.87E-03 | 1.67E-04 2.93E-04 | 1.08E-04 1.30E-05 | 155 156 157 |
| Formaldehyde (lb/hr) (TPY) | 3.38E-02 1.48E-01 | 6.08E-02 1.06E-01 | 1.57E-01 1.88E-02 | 158 159 160 161 162 |

Table A-5. Maximum Emissions for Additional Nonregulated Pollutant
for Cogeneration Project

| Pollutant A | Gas Turbine Natural Gas B | Duct Burner Natural Gas C | Gas Turbine No.2 Oil D |
|--|---------------------------------|---------------------------------|------------------------------|
| Antimony (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 8.45E-03 1.01E-03 |
| Barium (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 7.55E-03 9.07E-04 |
| Cobalt (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 3.51E-03 4.21E-04 |
| Zinc (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 2.64E-01 3.17E-02 |
| Chlorine ^a (lb/hr) (TPY) | NEG. NEG. | NEG. NEG. | 1.05E-02 1.26E-03 |

Source: EPA, 1979

^aAssumes 0.5 ppm in fuel oil.

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A:A1: [W24] 'Table A-1. Design Information and Stack Parameters for
A:E1: [W6] 1
A:A2: [W24] ' Cogeneration Project
A:E2: [W6] (E1+1)
A:A3: [W24] _
A:B3: [W18] _
A:C3: [W18] _
A:D3: [W18] _
A:E3: [W6] (E2+1)
A:E4: [W6] (E3+1)
A:A5: [W24] ^Data
A:B5: [W18] "Gas Turbine
A:C5: [W18] "Duct Burner
A:D5: [W18] "Gas Turbine
A:E5: [W6] (E4+1)
A:B6: [W18] "Natural Gas
A:C6: [W18] "Natural Gas
A:D6: [W18] "Fuel Oil
A:E6: [W6] (E5+1)
A:A7: [W24] ^A
A:B7: [W18] "B
A:C7: [W18] "C
A:D7: [W18] "D
A:E7: [W6] (E6+1)
A:A8: [W24] _
A:B8: [W18] _
A:C8: [W18] _
A:D8: [W18] _
A:E8: [W6] (E7+1)
A:E9: [W6] (E8+1)
A:A10: [W24] ^General:
A:E10: [W6] (E9+1)
A:A11: [W24] 'Power (kW)
A:B11: (,1) [W18] 42044 From GE
A:C11: (,1) [W18] "NA
A:D11: (,1) [W18] 41917 From GE
A:E11: [W6] (E10+1)
A:A12: [W24] 'Heat Rate (Btu/kwh)
A:B12: (,1) [W18] 9112 From GE
A:C12: (,1) [W18] "NA
A:D12: (,1) [W18] 9232 From GE
A:E12: [W6] (E11+1)
A:A13: [W24] 'Heat Input (mmBtu/hr)
A:B13: (,1) [W18] (B11*B12/1000000) Power * Heat Rate
A:C13: (,1) [W18] 150 Maximum Proposed
A:D13: (,1) [W18] (D11*D12/1000000) Power * Heat Rate
A:E13: [W6] (E12+1)
A:A14: [W24] 'Fuel Oil (lb/hr)
A:B14: (,1) [W18] (B13/0.020671) Heat Input ÷ Heat Content

A:C14: (,1) [W18] (C13/0.020671)
 A:D14: (,1) [W18] (D13/0.0184)
 A:E14: [W6] (E13+1)
 A:A15: [W24] ' (cf/hr)
 A:B15: (,1) [W18] (B13/950*10^6) Heat Input ÷ Heat Content
 A:C15: (,1) [W18] (C13/950*10^6)
 A:E15: [W6] (E14+1)
 A:E16: [W6] (E15+1)
 A:A17: [W24] ^Fuel:
 A:E17: [W6] (E16+1)
 A:A18: [W24] 'Heat Content - (LHV)
 A:B18: (,1) [W18] "20,671 Btu/lb Fuel Specification
 A:C18: (,1) [W18] "20,671 Btu/lb
 A:D18: (,1) [W18] "18,400 Btu/lb
 A:E18: [W6] (E17+1)
 A:A19: [W24] 'Sulfur
 A:B19: (,1) [W18] "1 gr/100cf Maximum Sulfur Content in Natural Gas
 A:C19: (,1) [W18] "1 gr/100cf
 A:D19: (,1) [W18] 0.1 Maximum Sulfur Content in Fuel Oil
 A:E19: [W6] (E18+1)
 A:E20: [W6] (E19+1)
 A:A21: [W24] ^CT Exhaust:
 A:E21: [W6] (E20+1)
 A:A22: [W24] 'Volume Flow (acfm)
 A:B22: (,0) [W18] (B24*1545*(460+B25))/(B28*2116.8*60) See Note A
 A:D22: (,0) [W18] (D24*1545*(460+D25))/(D28*2116.8*60)
 A:E22: [W6] (E21+1)
 A:A23: [W24] 'Volume Flow (scfm)
 A:B23: (,0) [W18] (B24*1545*(460+68))/(B28*2116.8*60) See Note A
 A:D23: (,0) [W18] (D24*1545*(460+68))/(D28*2116.8*60)
 A:E23: [W6] (E22+1)
 A:A24: [W24] 'Mass Flow (lb/hr)
 A:B24: (,0) [W18] 1028361*1.05 From GE w/ 5% Margin
 A:D24: (,0) [W18] 1029830*1.05
 A:E24: [W6] (E23+1)
 A:A25: [W24] 'Temperature (oF)
 A:B25: (,0) [W18] 806 From GE
 A:D25: (,0) [W18] 815
 A:E25: [W6] (E24+1)
 A:A26: [W24] 'Moisture (% Vol.)
 A:B26: (F2) [W18] 10.9989 From GE
 A:D26: (F2) [W18] 11.5039
 A:E26: [W6] (E25+1)
 A:A27: [W24] 'Oxygen (% Vol.)
 A:B27: (F2) [W18] 13.3597 From GE
 A:D27: (F2) [W18] 13.3161
 A:E27: [W6] (E26+1)
 A:A28: [W24] 'Molecular Weight
 A:B28: (F2) [W18] 28.0323 Calculated from GE

A:D28: (F2) [W18] 27.9796
A:E28: [W6] (E27+1)
A:A29: [W24] 'Water Injected (lb/hr)
A:B29: (,0) [W18] 19061 From GE
A:D29: (,0) [W18] 21793
A:E29: [W6] (E28+1)
A:E30: [W6] (E29+1)
A:A31: [W24] ^HRSG Stack:
A:E31: [W6] (E30+1)
A:A32: [W24] 'Volume Flow (acfm)
A:B32: (,0) [W18] (B22*(B33+460)/(B25+460)) Adjustment for Temperature
A:D32: (,0) [W18] (D22*(D33+460)/(D25+460))
A:E32: [W6] (E31+1)
A:A33: [W24] 'Temperature (oF)
A:B33: (,0) [W18] 232 From Design Engineer
A:D33: (,0) [W18] 232
A:E33: [W6] (E32+1)
A:A34: [W24] 'Diameter (ft)
A:B34: (,1) [W18] 11
A:D34: (,1) [W18] 11
A:E34: [W6] (E33+1)
A:A35: [W24] 'Velocity (ft/sec)
A:B35: (,1) [W18] (B32/60/(B34^2*3.14159/4)) Volume ÷ Flow
A:D35: (,1) [W18] (D32/60/(D34^2*3.14159/4))
A:E35: [W6] (E34+1)
A:E36: [W6] (E35+1)
A:A37: [W24] _
A:B37: [W18] _
A:C37: [W18] _
A:D37: [W18] _
A:E37: [W6] (E36+1)
A:E38: [W6] (E37+1)
A:A39: [W24] 'Source: General Electric and Stewart and Stevenson, 1991.
A:E39: [W6] (E38+1)
A:A40: [W24] 'Note: All data shown on this table and subsequent tables are for each
A:E40: [W6] (E39+1)
A:A41: [W24] ' combustion turbine and duct burner.
A:E41: [W6] (E40+1)
A:A47: [W24] 'Table A-2. Maximum Criteria Pollutant Emissions for
A:E47: [W6] 47
A:A48: [W24] ' Cogeneration Project
A:E48: [W6] (E47+1)
A:A49: [W24] _
A:B49: [W18] _
A:C49: [W18] _
A:D49: [W18] _
A:E49: [W6] (E48+1)
A:E50: [W6] (E49+1)
A:A51: [W24] ^Pollutant

A:B51: [W18] "Gas Turbine
 A:C51: [W18] "Duct Burner
 A:D51: [W18] "Gas Turbine
 A:E51: [W6] (E50+1)
 A:B52: [W18] "Natural Gas
 A:C52: [W18] "Natural Gas
 A:D52: [W18] "Fuel Oil
 A:E52: [W6] (E51+1)
 A:A53: [W24] ^A
 A:B53: [W18] "B
 A:C53: [W18] "C
 A:D53: [W18] "D
 A:E53: [W6] (E52+1)
 A:A54: [W24] _
 A:B54: [W18] _
 A:C54: [W18] _
 A:D54: [W18] _
 A:E54: [W6] (E53+1)
 A:E55: [W6] (E54+1)
 A:A56: [W24] 'Particulate:
 A:E56: [W6] (E55+1)
 A:A57: [W24] ' Basis
 A:B57: (,1) [W18] "Manufacturer
 A:C57: (,1) [W18] "0.006 lb/mmBtu
 A:D57: (,1) [W18] "Manufacturer
 A:E57: [W6] (E56+1)
 A:A58: [W24] ' lb/hr
 A:B58: (F2) [W18] 2.5 From GE
 A:C58: (F2) [W18] (C13*0.006) Emission Factor Based on GE
 A:D58: (F1) [W18] 10 From GE
 A:E58: [W6] (E57+1)
 A:A59: [W24] ' TPY
 A:B59: (F2) [W18] (B58*8760/2000) Emissions * 8,760 hours/year ÷ 2,000 lb/ton
 A:C59: (F2) [W18] (C58*3500/2000) Emissions * 3,500 hours/year ÷ 2,000 lb/ton
 A:D59: (,1) [W18] (D58*240/2000) Emissions * 240 hours/year ÷ 2,000 lb/ton
 A:E59: [W6] (E58+1)
 A:E60: [W6] (E59+1)
 A:A61: [W24] 'Sulfur Dioxide:
 A:E61: [W6] (E60+1)
 A:A62: [W24] ' Basis
 A:B62: (,1) [W18] "1 gr/100 cf
 A:C62: (,1) [W18] "1 gr/100 cf
 A:D62: (,1) [W18] "0.1 % Sulfur
 A:E62: [W6] (E61+1)
 A:A63: [W24] ' lb/hr
 A:B63: (F2) [W18] (B15*1/7000*2/100) Fuel Used (CF/HR) * Sulfur Content * 2 lb SO₂/lb S * 1/100 CF
 A:C63: (F2) [W18] (C15*1/7000*2/100)
 A:D63: (F2) [W18] (D14*0.001*2*0.95) Fuel Used (lb/hr) * Sulfur Content * 2 lb SO₂/lb S * 95% Emitted
 A:E63: [W6] (E62+1)

A:A64: [W24] ' TPY
A:B64: (F2) [W18] (B63*8760/2000)
A:C64: (F2) [W18] (C63*3500/2000)
A:D64: (,1) [W18] (D63*240/2000)
A:E64: [W6] (E63+1)
A:E65: [W6] (E64+1)
A:A66: [W24] 'Nitrogen Oxides:
A:E66: [W6] (E65+1)
A:A67: [W24] ' Basis
A:B67: (,1) [W18] "25 ppm*
A:C67: (,1) [W18] "0.1 lb/mmBtu
A:D67: (,1) [W18] "42 ppm*
A:E67: [W6] (E66+1)
A:A68: [W24] ' lb/hr
A:B68: (,1) [W18] $(B70/5.9*(20.9*(1-B26/100)-B27)*B22*2116.8*46*60/(1545*(460+B25)*1000000))$ See Note B
A:C68: (,1) [W18] (C13*0.1) Heat Input * Emission Factor
A:D68: (,1) [W18] $(D70/5.9*(20.9*(1-D26/100)-D27)*D22*2116.8*46*60/(1545*(460+D25)*1000000))$ See Note B
A:E68: [W6] (E67+1)
A:A69: [W24] ' TPY
A:B69: (F2) [W18] (B68*8760/2000)
A:C69: (,1) [W18] (C68*3500/2000)
A:D69: (,1) [W18] (D68*240/2000)
A:E69: [W6] (E68+1)
A:A70: [W24] ' ppm
A:B70: (,1) [W18] 25 From GE
A:C70: (,1) [W18] "NA
A:D70: (,1) [W18] 42 From GE
A:E70: [W6] (E69+1)
A:E71: [W6] (E70+1)
A:A72: [W24] 'Carbon Monoxide:
A:E72: [W6] (E71+1)
A:A73: [W24] ' Basis
A:B73: (,1) [W18] "42 ppm+ From GE
A:C73: (,1) [W18] "0.2 lb/mmBtu From GE
A:D73: (,1) [W18] "78 ppm+ From GE
A:E73: [W6] (E72+1)
A:A74: [W24] ' lb/hr
A:B74: (,1) [W18] $(B76*(1-B26/100)*B22*2116.8*28*60/(1545*(460+B25)*1000000))$ See Note C
A:C74: (,1) [W18] (C13*0.2) Heat Input * Emission Factor
A:D74: (,1) [W18] $(D76*(1-D26/100)*D22*2116.8*28*60/(1545*(460+D25)*1000000))$ See Note C
A:E74: [W6] (E73+1)
A:A75: [W24] ' TPY
A:B75: (F2) [W18] (B74*8760/2000)
A:C75: (,1) [W18] (C74*3500/2000)
A:D75: (,1) [W18] (D74*240/2000)
A:E75: [W6] (E74+1)
A:A76: [W24] ' ppm
A:B76: (,1) [W18] 42
A:C76: (,1) [W18] "NA
A:D76: (,1) [W18] 78

A:E76: [W6] (E75+1)
A:E77: [W6] (E76+1)
A:A78: [W24] 'VOC's:
A:E78: [W6] (E77+1)
A:A79: [W24] ' Basis
A:B79: (,1) [W18] "4 ppm+
A:C79: (,1) [W18] "0.03 lb/mmBtu
A:D79: (,1) [W18] "10 ppm+
A:E79: [W6] (E78+1)
A:A80: [W24] ' lb/hr
A:B80: (F2) [W18] (B82*(1-B26/100)*B22*2116.8*12*60/(1545*(460+B25)*1000000)) See Note C
A:C80: (F2) [W18] (C13*0.03)
A:D80: (F2) [W18] (D82*(1-D26/100)*D22*2116.8*12*60/(1545*(460+D25)*1000000))
A:E80: [W6] (E79+1)
A:A81: [W24] ' TPY
A:B81: (,1) [W18] (B80*8760/2000)
A:C81: (,1) [W18] (C80*3500/2000)
A:D81: (,1) [W18] (D80*240/2000)
A:E81: [W6] (E80+1)
A:A82: [W24] ' ppm
A:B82: (,1) [W18] 4
A:C82: (,1) [W18] "NA
A:D82: (,1) [W18] 10
A:E82: [W6] (E81+1)
A:E83: [W6] (E82+1)
A:A84: [W24] 'Lead:
A:E84: [W6] (E83+1)
A:A85: [W24] ' Basis
A:D85: [W18] "EPA(1988)
A:E85: [W6] (E84+1)
A:A86: [W24] ' lb/hr
A:B86: (S2) [W18] "NA
A:C86: (S2) [W18] "NA
A:D86: (S2) [W18] (D13*8.9/1000000) From EPA 1988; Page 4-156; Heat Input * Emission Factor
A:E86: [W6] (E85+1)
A:A87: [W24] ' TPY
A:B87: (S2) [W18] "NA
A:C87: (S2) [W18] "NA
A:D87: (S2) [W18] (D86*240/2000)
A:E87: [W6] (E86+1)
A:A88: [W24] _
A:B88: [W18] _
A:C88: [W18] _
A:D88: [W18] _
A:E88: [W6] (E87+1)
A:E89: [W6] (E88+1)
A:A90: [W24] '* corrected to 15% O2 dry conditions
A:E90: [W6] (E89+1)
A:A91: [W24] '+ corrected to dry conditions
A:E91: [W6] (E90+1)

A:A92: [W24] 'Note: Annual emission for CT when firing natural gas based on 8,760 hrs/yr
A:E92: [W6] (E91+1)
A:A93: [W24] ' and 240 hrs/yr for fuel oil firing. Annual emissions for duct burners
A:E93: [W6] (E92+1)
A:A94: [W24] ' on 3,500 hrs/yr.
A:E94: [W6] (E93+1)
A:A96: [W24] 'Table A-3. Maximum Other Regulated Pollutant Emissions for
A:E96: [W6] 96
A:A97: [W24] ' Cogeneration Project
A:E97: [W6] (E96+1)
A:A98: [W24] _
A:B98: [W18] _
A:C98: [W18] _
A:D98: [W18] _
A:E98: [W6] (E97+1)
A:E99: [W6] (E98+1)
A:A100: [W24] ^Pollutant
A:B100: [W18] "Gas Turbine
A:C100: [W18] "Duct Burner
A:D100: [W18] "Gas Turbine
A:E100: [W6] (E99+1)
A:B101: [W18] "Natural Gas
A:C101: [W18] "Natural Gas
A:D101: [W18] "No.2 Oil
A:E101: [W6] (E100+1)
A:A102: [W24] ^A
A:B102: [W18] "B
A:C102: [W18] "C
A:D102: [W18] "D
A:E102: [W6] (E101+1)
A:A103: [W24] _
A:B103: [W18] _
A:C103: [W18] _
A:D103: [W18] _
A:E103: [W6] (E102+1)
A:E104: [W6] (E103+1)
A:A105: [W24] ' As (lb/hr)
A:B105: [W18] "NEG.
A:C105: [W18] "NEG.
A:D105: [W18] (D13*4.2/1000000) From EPA 1988, See Page 4-158
A:E105: [W6] (E104+1)
A:A106: [W24] ' (TPY)
A:B106: [W18] "NEG.
A:C106: [W18] "NEG.
A:D106: (S2) [W18] (D105*240/2000)
A:E106: [W6] (E105+1)
A:E107: [W6] (E106+1)
A:A108: [W24] ' Be (lb/hr)
A:B108: [W18] "NEG.
A:C108: [W18] "NEG.

A:D108: [W18] (D13*2.5/1000000) From EPA 1988, See Page 4-159
A:E108: [W6] (E107+1)
A:A109: [W24] ' (TPY)
A:B109: [W18] "NEG.
A:C109: [W18] "NEG.
A:D109: (S2) [W18] (D108*240/2000)
A:E109: [W6] (E108+1)
A:E110: [W6] (E109+1)
A:A111: [W24] ' Hg (lb/hr)
A:B111: [W18] "NEG.
A:C111: [W18] "NEG.
A:D111: (S2) [W18] (D13*3/1000000) From EPA 1988, See Page 4-157
A:E111: [W6] (E110+1)
A:A112: [W24] ' (TPY)
A:B112: [W18] "NEG.
A:C112: [W18] "NEG.
A:D112: (S2) [W18] (D111*240/2000)
A:E112: [W6] (E111+1)
A:E113: [W6] (E112+1)
A:A114: [W24] ' F (lb/hr)
A:B114: [W18] "NEG.
A:C114: [W18] "NEG.
A:D114: [W18] (D13*32.5/1000000) From EPA 1981, 2.324 pq/J * 14 pq/J = 32.5 lb/10⁶ BTU
A:E114: [W6] (E113+1)
A:A115: [W24] ' (TPY)
A:B115: [W18] "NEG.
A:C115: [W18] "NEG.
A:D115: (S2) [W18] (D114*240/2000)
A:E115: [W6] (E114+1)
A:E116: [W6] (E115+1)
A:A117: [W24] ' H2SO4 (lb/hr)
A:B117: (S2) [W18] (B63*0.005*3.06/2) SO₂ Emission * 0.005 (%H₂SO₄ Formed) * MW_{H2SO4}/MW_{SO2}
A:C117: (S2) [W18] (C63*0.005*3.06/2) SO₂ emissions * %H₂SO₄ formed (5%) * MW_{H2SO4}/MW_{SO2} * correction to total SO₂
A:D117: (S2) [W18] (D63*0.05*3.06/2/0.95)
A:E117: [W6] (E116+1)
A:A118: [W24] ' (TPY)
A:B118: (S2) [W18] (B117*8760/2000)
A:C118: (S2) [W18] (C117*3500/2000)
A:D118: (S2) [W18] (D117*240/2000)
A:E118: [W6] (E117+1)
A:E119: [W6] (E118+1)
A:A120: [W24] \
A:B120: [W18] \
A:C120: [W18] \
A:D120: [W18] \
A:E120: [W6] (E119+1)
A:E121: [W6] (E120+1)
A:A122: [W24] 'Sources: EPA, 1988; EPA, 1980
A:E122: [W6] (E121+1)
A:A125: [W24] 'Table A-4. Maximum Non-Regulated Pollutant Emissions for

A:E125: [W6] 125
A:A126: [W24] ' Cogeneration Project
A:E126: [W6] (E125+1)
A:A127: [W24] \
A:B127: [W18] \
A:C127: [W18] \
A:D127: [W18] \
A:E127: [W6] (E126+1)
A:E128: [W6] (E127+1)
A:A129: [W24] ^Pollutant
A:B129: [W18] "Gas Turbine
A:C129: [W18] "Duct Burner
A:D129: [W18] "Gas Turbine
A:E129: [W6] (E128+1)
A:B130: [W18] "Natural Gas
A:C130: [W18] "Natural Gas
A:D130: [W18] "No.2 Oil
A:E130: [W6] (E129+1)
A:A131: [W24] ^A
A:B131: [W18] "B
A:C131: [W18] "C
A:D131: [W18] "D
A:E131: [W6] (E130+1)
A:A132: [W24] \
A:B132: [W18] \
A:C132: [W18] \
A:D132: [W18] \
A:E132: [W6] (E131+1)
A:E133: [W6] (E132+1)
A:A134: [W24] ' Manganese (lb/hr)
A:B134: [W18] "NEG.
A:C134: [W18] "NEG.
A:D134: (S2) [W18] (D13*6.44/1000000) From EPA 1988, See Page 4-156
A:E134: [W6] (E133+1)
A:A135: [W24] ' (TPY)
A:B135: [W18] "NEG.
A:C135: [W18] "NEG.
A:D135: (S2) [W18] (D134*240/2000)
A:E135: [W6] (E134+1)
A:E136: [W6] (E135+1)
A:A137: [W24] ' Nickel (lb/hr)
A:B137: [W18] "NEG.
A:C137: [W18] "NEG.
A:D137: (S2) [W18] (D13*170/1000000) From EPA 1988, See Page 4-158
A:E137: [W6] (E136+1)
A:A138: [W24] ' (TPY)
A:B138: [W18] "NEG.
A:C138: [W18] "NEG.
A:D138: (S2) [W18] (D137*240/2000)
A:E138: [W6] (E137+1)

A:E139: [W6] (E138+1)
A:A140: [W24] ' Cadmium (lb/hr)
A:B140: [W18] "NEG.
A:C140: [W18] "NEG.
A:D140: (S2) [W18] (D13*10.5/1000000) From EPA 1988, See Page 4-159
A:E140: [W6] (E139+1)
A:A141: [W24] ' (TPY)
A:B141: [W18] "NEG.
A:C141: [W18] "NEG.
A:D141: (S2) [W18] (D140*240/2000)
A:E141: [W6] (E140+1)
A:E142: [W6] (E141+1)
A:A143: [W24] ' Chromium (lb/hr)
A:B143: [W18] "NEG.
A:C143: [W18] "NEG.
A:D143: (S2) [W18] (D13*47.5/1000000) From EPA 1988, See Page 4-160
A:E143: [W6] (E142+1)
A:A144: [W24] ' (TPY)
A:B144: [W18] "NEG.
A:C144: [W18] "NEG.
A:D144: (S2) [W18] (D143*240/2000)
A:E144: [W6] (E143+1)
A:E145: [W6] (E144+1)
A:A146: [W24] ' Copper (lb/hr)
A:B146: [W18] "NEG.
A:C146: [W18] "NEG.
A:D146: (S2) [W18] (D13*280/1000000) From EPA 1988, See Page 4-161
A:E146: [W6] (E145+1)
A:A147: [W24] ' (TPY)
A:B147: [W18] "NEG.
A:C147: [W18] "NEG.
A:D147: (S2) [W18] (D146*240/2000)
A:E147: [W6] (E146+1)
A:E148: [W6] (E147+1)
A:A149: [W24] ' Vanadium (lb/hr)
A:B149: [W18] "NEG.
A:C149: [W18] "NEG.
A:D149: (S2) [W18] (D13*30*2.324/1000000) From EPA 1988, See Page 4-162; 2.324 pq/J = 1 lb/10⁶ BTU
A:E149: [W6] (E148+1)
A:A150: [W24] ' (TPY)
A:B150: [W18] "NEG.
A:C150: [W18] "NEG.
A:D150: (S2) [W18] (D149*240/2000)
A:E150: [W6] (E149+1)
A:E151: [W6] (E150+1)
A:A152: [W24] ' Selenium (lb/hr)
A:B152: [W18] "NEG.
A:C152: [W18] "NEG.
A:D152: (S2) [W18] (D13*10.1*2.324/1000000) From EPA 1988, See Page 4-162
A:E152: [W6] (E151+1)

A:A153: [W24] ' (TPY)
A:B153: [W18] "NEG.
A:C153: [W18] "NEG.
A:D153: (S2) [W18] (D152*240/2000)
A:E153: [W6] (E152+1)
A:E154: [W6] (E153+1)
A:A155: [W24] ' POM (lb/hr)
A:B155: (S2) [W18] (\$B\$13*0.48*2.324/1000000) From EPA 1988, See Page 4-161
A:C155: (S2) [W18] (\$C\$13*0.48*2.324/1000000)
A:D155: (S2) [W18] (\$D\$13*0.12*2.324/1000000)
A:E155: [W6] (E154+1)
A:A156: [W24] ' (TPY)
A:B156: (S2) [W18] (B155*8760/2000)
A:C156: (S2) [W18] (C155*3500/2000)
A:D156: (S2) [W18] (D155*240/2000)
A:E156: [W6] (E155+1)
A:E157: [W6] (E156+1)
A:A158: [W24] ' Formaldehyde (lb/hr)
A:B158: (S2) [W18] (\$B\$13*38*2.324/1000000) From EPA 1988, See Page 4-156
A:C158: (S2) [W18] (\$C\$13*405/1000000)
A:D158: (S2) [W18] (\$D\$13*405/1000000)
A:E158: [W6] (E157+1)
A:A159: [W24] ' (TPY)
A:B159: (S2) [W18] (B158*8760/2000)
A:C159: (S2) [W18] (C158*3500/2000)
A:D159: (S2) [W18] (D158*240/2000)
A:E159: [W6] (E158+1)
A:A160: [W24] _
A:B160: [W18] _
A:C160: [W18] _
A:D160: [W18] _
A:E160: [W6] (E159+1)
A:E161: [W6] (E160+1)
A:E162: [W6] (E161+1)
A:A165: [W24] 'Table A-5. Maximum Emissions for Additional Non-Regulated Pollutant
A:E165: [W6] 165
A:A166: [W24] ' for Cogeneration Project
A:E166: [W6] (E165+1)
A:A167: [W24] _
A:B167: [W18] _
A:C167: [W18] _
A:D167: [W18] _
A:E167: [W6] (E166+1)
A:E168: [W6] (E167+1)
A:A169: [W24] ^Pollutant
A:B169: [W18] "Gas Turbine
A:C169: [W18] "Duct Burner
A:D169: [W18] "Gas Turbine
A:E169: [W6] (E168+1)
A:B170: [W18] "Natural Gas

A:C170: [W18] "Natural Gas
A:D170: [W18] "No.2 Oil
A:E170: [W6] (E169+1)
A:A171: [W24] ^A
A:B171: [W18] "B
A:C171: [W18] "C
A:D171: [W18] "D
A:E171: [W6] (E170+1)
A:A172: [W24] _
A:B172: [W18] _
A:C172: [W18] _
A:D172: [W18] _
A:E172: [W6] (E171+1)
A:E173: [W6] (E172+1)
A:A174: [W24] ' Antimony (lb/hr)
A:B174: [W18] "NEG.
A:C174: [W18] "NEG.
A:D174: (S2) [W18] (\$D\$13*9.4*2.324/1000000) From EPA 1979, See Page 137
A:E174: [W6] (E173+1)
A:A175: [W24] ' (TPY)
A:B175: [W18] "NEG.
A:C175: [W18] "NEG.
A:D175: (S2) [W18] (D174*240/2000)
A:E175: [W6] (E174+1)
A:E176: [W6] (E175+1)
A:A177: [W24] ' Barium (lb/hr)
A:B177: [W18] "NEG.
A:C177: [W18] "NEG.
A:D177: (S2) [W18] (\$D\$13*8.4*2.324/1000000) From EPA 1979, See Page 137
A:E177: [W6] (E176+1)
A:A178: [W24] ' (TPY)
A:B178: [W18] "NEG.
A:C178: [W18] "NEG.
A:D178: (S2) [W18] (D177*240/2000)
A:E178: [W6] (E177+1)
A:E179: [W6] (E178+1)
A:A180: [W24] ' Colbalt (lb/hr)
A:B180: [W18] "NEG.
A:C180: [W18] "NEG.
A:D180: (S2) [W18] (\$D\$13*3.9*2.324/1000000) From EPA 1979, See Page 137
A:E180: [W6] (E179+1)
A:A181: [W24] ' (TPY)
A:B181: [W18] "NEG.
A:C181: [W18] "NEG.
A:D181: (S2) [W18] (D180*240/2000)
A:E181: [W6] (E180+1)
A:E182: [W6] (E181+1)
A:A183: [W24] ' Zinc (lb/hr)
A:B183: [W18] "NEG.
A:C183: [W18] "NEG.

A:D183: (S2) [W18] (\$D\$13*294*2.324/1000000) From EPA 1979, See Page 137
A:E183: [W6] (E182+1)
A:A184: [W24] ' (TPY)
A:B184: [W18] "NEG.
A:C184: [W18] "NEG.
A:D184: (S2) [W18] (D183*240/2000)
A:E184: [W6] (E183+1)
A:E185: [W6] (E184+1)
A:A186: [W24] ' Chlorine^a (lb/hr)
A:B186: [W18] "NEG.
A:C186: [W18] "NEG.
A:D186: (S2) [W18] (D14*0.5/1000000) 0.5 ppm in Fuel Oil Assumed
A:E186: [W6] (E185+1)
A:A187: [W24] ' (TPY)
A:B187: [W18] "NEG.
A:C187: [W18] "NEG.
A:D187: (S2) [W18] (D186*240/2000)
A:E187: [W6] (E186+1)
A:A188: [W24] \
A:B188: [W18] \
A:C188: [W18] \
A:D188: [W18] \
A:E188: [W6] (E187+1)
A:E189: [W6] (E188+1)
A:A190: [W24] 'Source: EPA, 1979
A:E190: [W6] (E189+1)
A:A191: [W24] ' ^a Assumes 0.5 ppm in fuel oil.
A:E191: [W6] (E190+1)

NOTE A

Volume is calculated based on ideal gas law:

where: $PV = mRT/M$
 P = pressure = 2116.8 lb/ft²
 m = mass flow of gas (lb/hr)
 R = universal gas constant = 1545
 M = molecular weight of gas
 T = temperature (K)

Example: $V = mRT/(MP)$ for natural gas
 $= 1,079,779 * 1,545 * (460 + 806) / 28.0323 / 2,116.8 / 60$
 $= 593,208 \text{ ft}^3/\text{min}$

NOTE B

NO_x is calculated by correcting to 15% O₂ dry conditions using ideal gas law and moisture and O₂ conditions.

Oxygen correction:

$$V_{\text{NO}_x (15\%)} = \frac{V_{\text{NO}_x \text{ Dry}} * 5.9}{20.9 - \%O_2 \text{ Dry}}$$

$$V_{\text{NO}_x \text{ Dry}} = V_{\text{NO}_x (15\%)} (20.9 - \%O_2 \text{ Dry}) / 5.9$$

$$\%O_2 \text{ Dry} = \%O_2 \text{ Act} / (1 - \%H_2O) ; \%O_2 \text{ Act} = \%O_2 \text{ Dry} (1 - \%H_2O)$$

$$V_{\text{NO}_x \text{ Act}} = V_{\text{NO}_x \text{ Dry}} (1 - \%H_2O)$$

Substituting:

$$\begin{aligned} V_{\text{NO}_x \text{ Act}} &= V_{\text{NO}_x 15\%} (20.9 - \%O_2 \text{ Dry}) (1 - \%H_2O) / 5.9 \\ &= V_{\text{NO}_x (15\%)} [20.9 - (\%O_2 \text{ Act} / (1 - \%H_2O))] (1 - \%H_2O) / 5.9 \\ &= V_{\text{NO}_x (15\%)} [20.9 (1 - \%H_2O) - \%O_2] / 5.9 \end{aligned}$$

$$m_{\text{NO}_x} = \frac{PVM_{\text{NO}_x}}{RT} = \frac{V_{\text{NO}_x (15\%)} [20.9 (1 - \%H_2O) - \%O_2] * P * M_{\text{NO}_x}}{RT * 5.9}$$

Example calculation for natural gas

$$\begin{aligned} m_{\text{NO}_x} &= 25 * 593,208 [20.9 (1 - 0.1100) - 13.36] * 2,116.8 * 46 \\ &\quad * 60 * 1/10^6 / [(460 + 806) * 1,545 * 5.9] \\ &= 39.4 \text{ lb/hr} \end{aligned}$$

NOTE C

Same as D except only moisture correction is used:

$$V_{CO \text{ Act}} = V_{CO \text{ Dry}} (1 - \%H_2O)$$

$$\begin{aligned} m_{CO} &= PV_{CO \text{ Act}} M_{CO} / RT \\ &= PV_{CO \text{ Dry}} (1 - \%H_2O) M_{CO} / RT \end{aligned}$$

Example for natural gas

$$\begin{aligned} m_{CO} &= 42 * 593,208 * (1 - 0.1100) * 2,116.8 * 28 * 60 \\ &\quad / [1,545 * (460 + 806) * 10^6] \\ &= 40.3 \text{ lb/hr} \end{aligned}$$

EMISSION FACTORS

Toxic Air Pollutant Emission Factors—A Compilation For Selected Air Toxic Compounds And Sources

By
Anne A. Pope
Air Quality Management Division
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Patricia A. Cruse
Claire C. Most
Radian Corporation
Research Triangle Park, North Carolina 27709

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office Of Air And Radiation
Office Of Air Quality Planning And Standards
Research Triangle Park, North Carolina 27711

October 1988

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|----------------------------------|----------|--|----------|---------------------------------------|------------|------------------------|---|-----------|
| Nonylphenol production | 2869 | General | 301 | Phenol | 108952 | 8.0 x 10E-4 lb/lb used | From engineering estimates | 13 |
| Nonylphenol production | 2869 | Fugitive | 301 | Phenol | 108952 | 1.9 x 10E-4 lb/lb used | From engineering estimates | 13 |
| Nonylphenol production | 2869 | Storage | 407004 | Phenol | 108952 | 1.0 x 10E-5 lb/lb used | From engineering estimates | 13 |
| Normal superphosphate production | 2574 | Curing building | 30102806 | Fluoride | 16984488 | 3.8 lb/ton P2O5 | Uncontrolled | 97 |
| Normal superphosphate production | 2874 | Mixer and den | 30102805 | Fluoride | 16984488 | 0.2 lb/ton P2O5 | Wet scrubber (97%) | 97 |
| Oil and coal combustion | 49 | Stack - particulate | 102 | Polychlorinated dibenzo-p-dioxins | | 68 ng/g | No penta homologue included, one location, TCDD detection = 20 ng/g | 119 |
| Oil and coal combustion | 49 | Stack - particulate | 102 | Tetrachlorodibenzo-p-dioxin, 2,3,7,8- | 1746016 | Not detectable | One location, detection limit = 10 ng/g | 119 |
| Oil combustion | | Oil-fired boiler or furnace, util/commerc/industr/residential | 1 | Formaldehyde | 50000 | 405 lb/10E12 Btu ✓ | Uncontrolled, based on emissions testing | 36 |
| Oil combustion | | Industrial, commercial, and residential boilers | 1 | Lead | 7439921 | 8.9 lb/10E12 Btu ✓ | Uncontrolled, calculated based on engineering judgement, assumed use distillate oil | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 26 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 11.96 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 5.72 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 2.86 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 14 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 6.44 lb/10E12 Btu ✓ | Controlled with multiclone, calculated based on engineering | 36 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|--------------------|----------|--|-----|-----------|------------|--------------------|---|-----------|
| | | al | | | | | Judgement | |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 3.08 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Manganese | 7439965 | 1.54 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 3.2 lb/10E12 Btu | Uncontrolled, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 3.2 lb/10E12 Btu | Controlled by multiclone, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 2.4 lb/10E12 Btu | Controlled by ESP, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 0.83 lb/10E12 Btu | Controlled by scrubber, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 3.0 lb/10E12 Btu | Uncontrolled, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 3.0 lb/10E12 Btu | Controlled by multiclone, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 2.25 lb/10E12 Btu | Controlled by ESP, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boiler, util/commerc/industr/residential | 1 | Mercury | 7439976 | 0.78 lb/10E12 Btu | Controlled by scrubber, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 1260 lb/10E12 Btu | Uncontrolled, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 642.6 lb/10E12 Btu | Controlled by multiclone, based on engineering judgement | 36 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|--------------------|----------|--|-----|-----------|------------|--------------------|---|-----------|
| | | al | | | | | | |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 352.8 lb/10E12 Btu | Controlled by ESP, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 50.4 lb/10E12 Btu | Controlled by scrubber, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 170 lb/10E12 Btu ✓ | Uncontrolled, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 86.7 lb/10E12 Btu | Controlled by multiclone, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 47.6 lb/10E12 Btu | Controlled by ESP, based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Nickel | 7440020 | 6.8 lb/10E12 Btu | Controlled by scrubber, based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 19 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 4.2 lb/10E12 Btu ✓ | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 2.06 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 0.50 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 0.42 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 9.31 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering | 36 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|--------------------|----------|--|-----|-----------|------------|---------------------|---|-----------|
| | | al | | | | | Judgement | |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 2.28 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Arsenic | 7440382 | 1.90 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 4.2 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 2.5 lb/10E12 Btu ✓ | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 1.58 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 0.35 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 0.15 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 2.65 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 0.59 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Beryllium | 7440417 | 0.25 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 15.7 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 10.5 lb/10E12 Btu ✓ | Uncontrolled, calculated based on engineering judgement | 36 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|--------------------|----------|--|-----|-----------|------------|---------------------|---|-----------|
| | | al | | | | | | |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 7.45 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 1.58 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 0.63 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 46.86 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 9.90 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Cadmium | 7440439 | 3.96 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 21 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 47.5 lb/10E12 Btu ✓ | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 27.8 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 13.92 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 3.84 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 12.18 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|--------------------|----------|--|----------|-----------|------------|-------------------------|---|-----------|
| | | oil | | | | | Judgement | |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 6.09 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Chromium | 7440473 | 1.68 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 278 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 280 lb/10E12 Btu ✓ | Uncontrolled, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 165.2 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 42 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Distillate oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 25.2 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 165.2 lb/10E12 Btu | Controlled with multiclone, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 42.0 lb/10E12 Btu | Controlled with ESP, calculated based on engineering judgement | 36 |
| Oil combustion | | Residual oil-fired boilers, util/commerc/industr/residential | 1 | Copper | 7440508 | 25.2 lb/10E12 Btu | Controlled with scrubber, calculated based on engineering judgement | 36 |
| Oil combustion | | Utility boilers | 101004 | Lead | 7439921 | 28 lb/10E12 Btu | Uncontrolled, calculated based on engineering judgement, assumed use residual oil | 36 |
| Oil combustion | | Distillate watertube boilers | 10300501 | PCN | | <0.12 pg/J heat input ✓ | Uncontrolled | 114 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|----------------------------|----------|---|----------|---------------------------------------|------------|----------------------|--|-----------|
| Oil combustion | | Scotch marine boilers, distillate oil | 10300501 | PM | | 17.7 pg/J | Uncontrolled | 114 |
| Oil combustion | | Cast iron sectional boilers, distillate oil | 10300501 | PM | | <14.9 pg/J | Uncontrolled, home heating application | 114 |
| Oil combustion | | Hot air furnace, distillate oil | 10300501 | PM | | <0.14 pg/J | Uncontrolled, same reference also lists <15.4 for same boiler/fuel type | 114 |
| Oil combustion | 49 | Boiler flue gas | 1 | Tetrachlorodibenzo-p-dioxin, 2,3,7,8- | 1746016 | Not detectable | Low ash, 2% sulfur oil, sampled after heat exch., before ESP, 2378-TCDD detec. limit=<4.2-<7.9 ng/m3 | 119 |
| Oil combustion | 49 | Flue gas | 1 | Tetrachlorodibenzofuran, 2,3,7,8- | 51207319 | Not detectable | Low ash, 2% sulfur oil, sampled after heat exch., before ESP, 2378-TCDD detec. limit=<0.67-<1.3ng/m3 | 119 |
| Oil combustion, commercial | | Residual oil-fired tangential furnaces | 103004 | Vanadium | 7440622 | 3660 pg/J | Uncontrolled, based on reported emissions and engineering judgement | 54 |
| Oil combustion, commercial | | Residual oil-fired wall furnaces | 103004 | Vanadium | 7440622 | 3660 pg/J | Uncontrolled, based on reported emissions and engineering judgement | 54 |
| Oil combustion, commercial | | Tangential furnace, residual oil | 103004 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, commercial | | Wall furnace, residual oil | 103004 | Selenium | 7782492 | 10.1 pg/J ✓ | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, commercial | | Scotch marine boilers, residual oil | 10300401 | PM | | 0.95 pg/J heat input | Uncontrolled, represents benzo(a)pyrene only | 114 |
| Oil combustion, commercial | | Distillate oil-fired tangential furnaces | 103005 | Vanadium | 7440622 | 30.0 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, commercial | | Distillate oil-fired wall furnaces | 103005 | Vanadium | 7440622 | 30.0 pg/J ✓ | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, commercial | | Tangential furnace, distillate oil | 103005 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|-----------------------------|----------|--|----------|-----------|------------|----------------------|--|-----------|
| Oil combustion, commercial | | Wall furnace, distillate oil | 103005 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, industrial | | Tangential furnaces | 102 | Vanadium | 7440622 | 260 pg/J | Controlled by scrubber, based on reported emissions and engineering judgement | 54 |
| Oil combustion, industrial | | Tangential furnaces | 102 | Vanadium | 7440622 | 1300 pg/J | Uncontrolled, based on reported emissions and engineering judgement | 54 |
| Oil combustion, industrial | | Wall furnaces | 102 | Vanadium | 7440622 | 260 pg/J | Controlled by scrubber, based on reported emissions and engineering judgement | 54 |
| Oil combustion, industrial | | Wall furnaces | 102 | Vanadium | 7440622 | 1300 pg/J | Uncontrolled, based on reported emissions and engineering judgement | 54 |
| Oil combustion, industrial | | Tangential furnace | 102 | Selenium | 7782492 | 2.0 pg/J | Controlled by scrubber, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, industrial | | Tangential furnace | 102 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, industrial | | Wall furnace | 102 | Selenium | 7782492 | 2.0 pg/J | Controlled by scrubber, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, industrial | | Wall furnace | 102 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, industrial | | Steam atomized watertube, residual oil | 10200401 | POM | | 2.3 pg/J heat input | Uncontrolled, represents mostly particulate POM | 114 |
| Oil combustion, industrial | | Watertube, residual oil | 10200401 | POM | | 0.63 pg/J heat input | Uncontrolled, represents both gaseous and particulate POM | 114 |
| Oil combustion, residential | | Distillate oil-fired boilers | | Vanadium | 7440622 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, residential | | Distillate oil-fired furnaces | | Selenium | 7782492 | 2.9 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |

| INDUSTRIAL PROCESS | SIC CODE | EMISSION SOURCE | SCC | POLLUTANT | CAS NUMBER | EMISSION FACTOR | NOTES | REFERENCE |
|-------------------------|----------|--|----------|-----------|------------|-------------------------------------|---|-----------|
| Oil combustion, utility | | Wall-fired, residual oil | 10100401 | POH | | 3.9 pg/J heat input | Uncontrolled, ave. of 4 values ranging from 0.45-12.3 pg/J, represents gaseous & particulate POM | 114 |
| Oil combustion, utility | | Face-fired, residual oil | 10100401 | POH | | 0.37 pg/J heat input | Uncontrolled, represents both gaseous and particulate POM | 114 |
| Oil combustion, utility | | Tangential-fired, residual oil | 10100404 | POH | | 2.5 pg/J heat input | Cyclone controls, represents both gaseous and particulate POM | 114 |
| Oil combustion, utility | 4911 | Residual oil-fired tangential furnaces | 101004 | Vanadium | 7440622 | 303 pg/J | Controlled by ESP, based on reported emissions and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Residual oil-fired tangential furnaces | 101004 | Vanadium | 7440622 | 1516 pg/J | Uncontrolled, based on reported emissions and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Residual oil-fired wall furnaces | 101004 | Vanadium | 7440622 | 303 pg/J | Controlled by ESP, based on reported emissions and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Residual oil-fired wall furnaces | 101004 | Vanadium | 7440622 | 1516 pg/J | Uncontrolled, based on reported emissions and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Tangential, residual oil | 101004 | Selenium | 7782492 | 2.0 pg/J | Controlled by ESP, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Tangential, residual oil | 101004 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Wall furnace, residual oil | 101004 | Selenium | 7782492 | 2.0 pg/J | Controlled by ESP, based on reported emissions data and engineering judgement | 54 |
| Oil combustion, utility | 4911 | Wall furnace, residual oil | 101004 | Selenium | 7782492 | 10.1 pg/J | Uncontrolled, based on reported emissions data and engineering judgement | 54 |
| Oil shale retorting | 1311 | Modified in situ retort | | POH | | 3.3 g/hr | Based on offgas concentration and flow rate | 114 |
| Oil shale retorting | 2911 | Entire process | | Mercury | 7439976 | 2.2 x 10E-4 lbs/barrel oil produced | Includes Hg compound form, assumes fac. using 13,000 tons/day raw shale to prod. 12,000 bbl/day oil | 40 |

PB81-225559

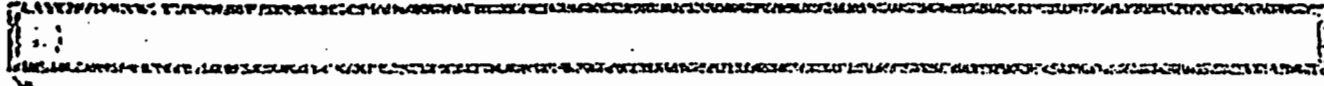
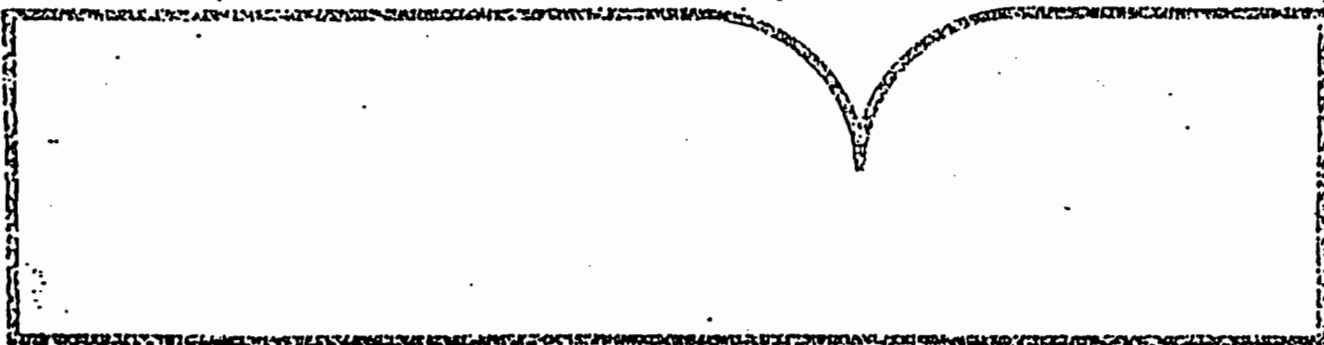
Emissions Assessment of Conventional Stationary
Combustion Systems: Volume V: Industrial
Combustion Sources

TRW, Inc.
Redondo Beach, CA

Prepared for

Industrial Environmental Research Lab.
Research Triangle Park, NC

1981



U.S. Department of Commerce
National Technical Information Service
DISTRIBUTION STATEMENTS

TABLE 61. COMPARISON OF EXISTING TRACE ELEMENT EMISSION FACTOR DATA WITH RESULTS OF CURRENT STUDY OF OIL-FIRED INDUSTRIAL COMBUSTION SOURCES, pg/j

| Element | Distillate oil-fired boilers | | | Residual oil-fired boilers | | | |
|----------------|------------------------------|---------------|---------|----------------------------|---------------|---------|---------|
| | Current study | Existing data | | Current study | Existing data | | |
| | | Ref. 42 | Ref. 43 | | Ref. 42 | Ref. 21 | Ref. 28 |
| Aluminum (Al) | 178 | 15 | 250 | 177 | 156 | 87 | 132 |
| Arsenic (As) | 3.5 | 1.3 | 1.5 | 1.2 | 9.1 | 18 | 12 |
| Barium (Ba) | 1.2 | 8.4 | 16 | 3.3 | 9.5 | 29 | 31 |
| Calcium (Ca) | 75 | 845 | 450 | 229 | 780 | 320 | 1428 |
| Cadmium (Cd) | 1.3 | 2.5 | 11 | 0.66 | 0.2 | 52 | 6.9 |
| Cobalt (Co) | 3.8 | 2.3 | 1.0 | 11 | 23 | 50 | 10 |
| Chromium (Cr) | 24 | 36 | 29 | 29 | 50 | 30 | 21 |
| Copper (Cu) | 37 | 205 | 160 | 10 | 93 | 64 | 350 |
| Fluorine (F) | — | 14 | — | — | 1.0 | 2.7 | 149 |
| Iron (Fe) | 363 | 545 | 140 | 83 | 379 | 411 | 453 |
| Mercury (Hg) | — | 1.7 | 1.2 | — | 1.9 | 0.9 | 1.5 |
| Potassium (K) | 85 | 60 | 230 | 261 | 213 | 777 | 392 |
| Lithium (Li) | 0.5 | 1.5 | 1.2 | 1.1 | 1.0 | 1.4 | 1.7 |
| Manganese (Mn) | 42 | 40 | 210 | 24 | 111 | 297 | 2384 |
| Nickel (Ni) | 255 | 112 | 290 | 728 | 804 | 964 | 433 |
| Lead (Pb) | 24 | 48 | 42 | 2 | 7 | 80 | 34 |
| Antimony (Sb) | — | 1.7 | 5.7 | — | 21 | 10 | 25 |
| Silicon (Si) | 735 | 173 | — | 8655 | 1610 | 400 | 595 |
| Vanadium (V) | 195 | 30 | 2.9 | 366 | 250 | 3656 | 714 |
| Zinc (Zn) | 42 | 40 | 110 | 33 | 46 | 29 | 66 |

Ave. 50.9

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National Technical Information Service
PB-296 390

**Emission Assessment of Conventional
Stationary Combustion Systems; Volume II
Internal Combustion Sources**

TRW, Inc, Redondo Beach, CA

Prepared for

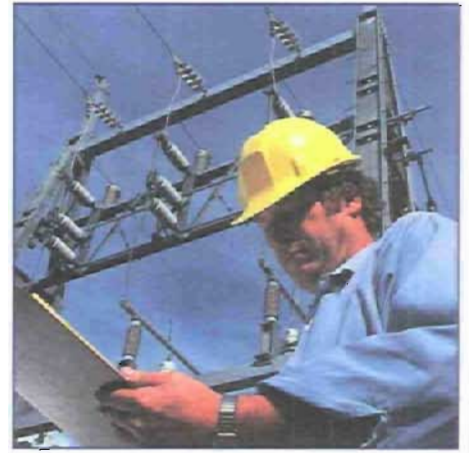
Industrial Environmental Research Lab, Research Triangle Park, NC

Feb 1979

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TABLE 52. COMPARISON OF TRACE ELEMENT EMISSION FACTORS FOR DISTILLATE OIL-FUELED GAS TURBINES AND DISTILLATE OIL ENGINES

| Trace Element | Mean Emission Factor, pg/J | |
|---------------|-----------------------------------|-------------------------------------|
| | Distillate Oil Fueled Gas Turbine | Distillate Oil Reciprocating Engine |
| Aluminum | 64 | 66 |
| Antimony | 9.4 | 12 |
| Arsenic | 2.1 | 2.2 |
| Barium | 8.4 | 14 |
| Beryllium | 0.14 | 0.03 |
| Boron | 28 | 11 |
| Bromine | 1.8 | 4.0 |
| Cadmium | 1.8 | 3.1 |
| Calcium | 330 | 237 |
| Chromium | 20 | 26 |
| Cobalt | 3.9 | 5.7 |
| Copper | 578 | 453 |
| Iron | 256 | 325 |
| Lead | 25 | 26 |
| Magnesium | 100 | 44 |
| Manganese | 145 | 16 |
| Mercury | 0.39 | 0.13 |
| Molybdenum | 3.6 | 12.5 |
| Nickel | 526 | 564 |
| Phosphorus | 127 | 97 |
| Potassium | 185 | 179 |
| Selenium | 2.3 | 2.1 |
| Silicon | 575 | 301 |
| Sodium | 590 | 1625 |
| Tin | 35 | 9.1 |
| Vanadium | 1.9 | 0.95 |
| Zinc | 294 | 178 |



Material Characterization Forms and Instructions for Waste Generators

**OGDEN WASTE
TREATMENT SERVICES, INC.**

**OGDEN
PROJECTS, INC.**



AN OGDEN COMPANY

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Ogden Waste Treatment Services, Inc.

Material Characterization Forms and Instructions for Waste Generators

INTRODUCTION

Thank you for selecting Ogden Waste Treatment Services, Inc. (OWTS) for management and disposal of your nonhazardous, non-regulated waste streams.

The attached Material Characterization Forms (MCF) have been designed to provide the information required for OWTS to evaluate and confirm the feasibility of managing and disposing of your nonhazardous materials at one of our waste-to-energy (WTE) facilities operated by Ogden Projects, Inc. (Ogden) and its subsidiaries. The information will be maintained in strict confidence and used only to ensure compliance with all applicable local, state and federal regulations, as well as individual facility permits and processing capabilities. This will also ensure that your waste streams are disposed of appropriately and in a manner that is safe and environmentally sound.

To assist us in giving you a prompt response to your approval request, please adhere closely to the following guidelines:

- ▶ A separate MCF must be completed for each waste or each grouping of similar wastes.
- ▶ A new or revised MCF must be submitted if there is a change in waste characteristics, the process producing the waste, or a change in the regulatory status of the waste material.
- ▶ **IMPORTANT: ALL QUESTIONS MUST BE ANSWERED.** A response of "None" or "NA" should be made when appropriate.
- ▶ Forms should be printed in ink or typed, and additional information, as requested, must be attached.
- ▶ The waste generator must designate a person to be responsible for completing the forms. This will give OWTS one contact person for any questions or clarifications, thereby avoiding any miscommunications.
- ▶ The designee selected to complete the forms must be familiar with the waste materials and/or the process generating the waste.
- ▶ The completed MCF must be submitted to OWTS Customer and Technical Services as follows:

Ogden Waste Treatment Services, Inc.
40 Lane Road
Fairfield, NJ 07007
ATTN: Customer and Technical Services

OR

Ogden Waste Treatment Services, Inc.
P.O. Box 2615
Fairfield, NJ 07007-2615

Forms can also be faxed to (201) 882-7034 with a hard copy sent in the mail.

If the waste is acceptable for processing at an Ogden WTE facility, a written Approval Letter will be issued prior to acceptance of waste by an approved Ogden facility. *No verbal approvals will be granted.*

The MCF is comprised of General Information, Form 1, Sections 1.0 through 4.0; and Waste Specific Information Forms 2 through 4, Sections 5.0 through 8.0. Form 5 should be completed only if the waste is designated for disposal at Ogden Martin Systems of Stanislaus, California. If completing multiple MCFs, please make sure the completed Form 1 is accompanied by the associated additional Forms 2, 3 4 or 5.

FORM 1

GENERAL INFORMATION

1.0 GENERAL INFORMATION

1.1 GENERATOR INFORMATION

Please provide name, address and telephone number for the generating facility. If there are multiple locations for the waste, please supply a list in the section provided, following the Generator's telephone number. A comprehensive listing of different locations can also be provided as a separate attachment, if necessary.

1.2 PERSON PREPARING THE MCF

This section needs to be completed only if the person preparing the form is different than the authorized representative.

2.0 AUTHORIZED REPRESENTATIVE

This section advises OWTS of the person authorized to represent the company on this transaction.

3.0 GENERAL WASTE STREAM INFORMATION

3.1 WASTE NAME/DESCRIPTION

Please provide the name of the waste, a description or verbiage commonly used by the Generator to refer to the waste. Please note that this waste name will be referenced on all Ogden correspondence associated with the waste (i.e., MCFs, Requests for Additional Information, Ogden Waste Response Letters, 24-Hour Shipping Notices, etc.).

The following are examples of Waste Names/Descriptions for the three General Waste Categories:

- | | | |
|----|-------------------------------------|--|
| a. | Industrial Wastes | 1. Paint Waste from Car Painting Operation 2. Dewatered Filter Cake from XYZ Processing |
| b. | Oily Wastes | 1. Cleanup waste from over-the-road #2 Fuel Oil spill. 2. Waste from routine shop maintenance activities. |
| c. | Pharmaceutical & Commodity Waste | 1. Expired Aspirin - Class A 2. Rejected Shampoo - Class D |

3.2 GENERAL WASTE CLASSIFICATION

General waste classifications have been developed by Ogden for completion of Section 3.2 as follows:

1. Industrial Wastes (also complete Form 2)
2. Oily Wastes (also complete Form 3)
3. Pharmaceutical and Commodity Wastes (also complete Form 4)

These classifications assist Ogden personnel in identifying regulatory requirements which may apply to that specific type of waste, and they also assist in determining feed rates and processing requirements for each facility and the specific type of waste. Please check the general Waste Classification that most appropriately categorizes the waste. (A brief explanation of each classification is provided in this section.) Ogden further categorizes these materials by physical form or quantity delivered to determine processing methods. Each Ogden classification is described in detail in Addendum A.

As noted, each classification also has a separate form which must be completed. This additional form provides further detail for proper management and disposal of the waste. Instructions for completing Forms 2, 3, 4 and 5 are provided following these instructions for Form 1.

Industrial Wastes PLEASE NOTE: INDICATE ON FORM 1, SECTION 3.2 AND COMPLETE FORM 2.

Industrial Wastes include those wastes generated as the result of industrial or manufacturing processes, (except pharmaceutical or commodity manufacturing processes). Examples of Industrial Wastes include, but are not limited to, paint wastes, ink residues, spent resins, filter cakes, industrial wastewater treatment sludges, plant/manufacturing debris, etc.

Oily Wastes PLEASE NOTE: INDICATE ON FORM 1, SECTION 3.2 AND COMPLETE FORM 3.

Oily Wastes include solid waste commingled with petroleum products, virgin oil or used oil. These wastes can result from spill cleanup activities, tank cleanings, routine maintenance, shop maintenance, filter collections, synthetic oil manufacturing, etc. Examples of Oily Wastes include but are not limited to, non-terne used oil filters; other types of filters (such as air, fuel, railroad, etc.); automotive maintenance debris; absorbents, rags, wipers contaminated with petroleum (virgin or used oil); tank bottom clean-out waste; oil-water separator sludge, cleanup debris from over-the-road spills, etc.

Pharmaceutical or Commodity Wastes PLEASE NOTE: INDICATE ON FORM 1, SECTION 3.2 AND COMPLETE FORM 4.

Pharmaceutical or Commodity Wastes includes solid wastes generated from manufacturing, recalling and expiring pharmaceutical or commodity goods. Categories of pharmaceutical products include, but are not limited to, prescription drugs, over-the-counter materials and commodities, Drug Enforcement Agency (DEA) controlled substances, research & development drugs, etc. Commodity Wastes includes, but is not limited to, general categories of health care products, such as shampoos, cremes, lotions, cosmetics, etc.

California Destination Wastes PLEASE NOTE: FOR WASTES DESIGNATED FOR DISPOSAL AT THE STANISLAUS, CA. FACILITY PLEASE ATTACH FORM 1 - GENERAL INFORMATION; THE APPROPRIATE MCF (FORM 2, 3 OR 4), AND FORM 5 - CALIFORNIA NONHAZARDOUS WASTE CERTIFICATION.

In addition to wastes being characterized as RCRA Non-Hazardous per Federal EPA regulations, wastes designated for disposal at the Ogden Martin Systems of Stanislaus facility must be characterized as California Non-Hazardous. Please indicate in the appropriate box whether the waste is destined for disposal at the Stanislaus facility.

3.3 PROCESS DESCRIPTION

A specific description of the process which generated the waste is required to classify the waste according to federal, state and local definitions. Please attach a detailed process description which includes, but is not limited to, the following:

1. The origin of the waste material;
2. Whether the characteristics of the waste are random, consistent or controlled;
3. Past analytical information, if it is the basis of a process knowledge determination;
4. Any physical or visual characteristics that can better describe the waste, such as "the waste is a waxy solid...", "...it has the consistency of sand, molasses, grease", etc.
5. Any information regarding packaging, etc.
6. Knowledge of raw materials used in the process, or MSDSs supplied.

For additional guidance regarding process descriptions, please refer to Addendum B.

In addition, through a separate attachment, please advise of any special requirements or services for handling the waste, such as:

1. Visual Assured Destruction (i.e., Witness Burns)
2. Conveyor or Direct Hopper Charging, etc.

If the Generator requires direct charge, it should be noted whether the waste can be packaged into sixty (60) pound charges to enable:

1. Compliance with OSHA Health and Safety standards, and
2. Direct hopper charging weight restrictions.

3.4 REGULATORY WASTE CHARACTERIZATION

Section 3.4.1 to 3.4.3 apply to the regulatory classification of the waste. *All questions in this section must be answered.* Please attach pertinent analytical data or other information used to support the nonhazardous characterization of the waste. If a waste is characterized as **RCRA HAZARDOUS**, it is **NOT ACCEPTABLE** at any Ogden facility. If the waste is characterized as a hazardous waste by state regulations in the state of origin, certain restrictions for disposal at Ogden facilities may apply. The elements of a complete nonhazardous characterization are presented herein.

The Regulatory Waste Characterization section of this MCF requires information that demonstrates compliance with multiple facility permits including:

1. Solid Waste Permit
2. Air Permit
3. Facility Service Agreement

Other permit and operational requirements are described in Sections 3.5 and 6.3.

Federal Nonhazardous Characterization (per 40 CFR Part 261 - RCRA)

A person who generates a solid waste (as defined per 40 CFR Part 261, and includes liquid wastes and sludges), must determine if the solid waste is a hazardous waste, by:

- a. Ascertaining whether the waste is excluded from hazardous waste determination by a Federal Exemption. Please refer to 40 CFR Part 261.4 for a complete listing. Examples of wastes exempt from RCRA classification include: Non-Terme Used Oil Filters, Solid Wastes commingled with used oils, triple rinsed or RCRA empty containers, etc.
- b. Determining whether the waste exhibits any of the characteristics of hazardous waste, as defined per Subpart C of 40 CFR Part 261.21 - .24.

| <u>Hazardous Characteristic</u> | <u>EPA Waste Code</u> | <u>Subcategory</u> | <u>Evaluation Method</u> |
|---------------------------------|-------------------------------------|---|--|
| Ignitability FP < 140 F | D001 | Liquid Flash Point Ignitable Solid Ignitable Gas Oxidizer | SW-846 1010 or 1020 40CFR 261.21 (a)(2) 49CFR 173.300 49CFR 173.151 |
| Corrosivity 2 < pH > 12.5 | D002 | Aqueous pH Liquid Corrosivity | SW-846 9040 SW-846 1110 |
| Reactivity | D003 | Reactive Cyanides Reactive Sulfides Water Reactivity Instability Explosives | SW-846 9010 SW-846 9030 40CFR 261.23(a)(2-4) 40CFR 261.23(a)(a) 40CFR 261.23(a)(7-8) |
| Toxicity | D004-D012 D013-D020 D021-D043 | Metals Pesticides/Herbicides Volatiles and Semi-Volatiles | TCLP 40CFR261 Appendix II |

- c. Determining if the waste is a listed hazardous waste in Subpart D 40 CFR Part 261.30-34.

To make the non-hazardous determination (listed in items a. through c., above), the Generator can use: 1) Representative analytical sampling and testing according to the methods set forth in 40 CFR Part 261, and/or 2) Application of process knowledge regarding the absence or presence of hazard characteristics in the waste, which is based upon raw materials or processes used to generate the waste. If the Generator chooses to use process knowledge, the information used to support his determination must be provided (i.e., MSDS, product formulation sheets, package inserts, process descriptions or previous analytical data, etc.).

3.4.4 STATE SPECIAL WASTE REQUIREMENTS

Certain categories of solid waste are classified as Special Wastes in the state of disposal. These wastes cannot be delivered to certain Ogden facilities without prior written authorization by the State Solid Waste and/or the Air Agencies. For certain wastes, the following states require submittal of Special Waste forms for review by the representative agency prior to disposal: Connecticut, Indiana, New York, Oklahoma, Pennsylvania and Virginia. If the waste is classified as Special, Residual or Regulated in the state of origin, disposal authorization from the Solid Waste or Air Agency (or both) may be required. Please contact your OWTS Technical or Customer Service Representative regarding state-specific special waste requirements.

3.5 WASTE INFORMATION

The information required in Section 3.5 will assist in determining whether the waste is acceptable based upon the following facility-related concerns:

1. Definitions within facility-specific Service Agreement contracts,
2. Materials Management Techniques or Combustion Capabilities, and
3. Visual verification. Upon delivery, a visual verification will occur at the facility that ensures that the waste delivered is the same waste described in the MCF profile.

3.5.1 The physical form of the waste (i.e., solid, liquid, slurry, powder, granules, etc.).

3.5.2 Description of the color(s) of the waste.

3.5.3 Description of any odor associated with the waste.

3.5.4 An estimated or measured Higher Heating Value (BTU/lb).

4.0 SHIPPING INFORMATION

4.1 Please check the appropriate boxes that describe the shipping package.

4.2 Please provide the quantity per delivery.

4.3 Please provide the frequency of delivery.

4.4 Please provide the type of vehicle used for the delivery.

FORM 2 INDUSTRIAL WASTES

5.0 WASTE CHARACTERISTIC INFORMATION

5.1 WASTE NAME/DESCRIPTION

Provide a description, trade name, chemical name or specific name (found on a label) commonly used by the Generator to refer to the waste.

5.2 ADDITIONAL WASTE INFORMATION

If your waste exhibits any characteristics in this Section, please indicate so. Check the appropriate boxes that describe any hazards associated with the waste. If YES is shown for any of these, provide sufficient information to determine the regulatory status or hazardous classification.

5.3 ADDITIONAL IGNITABILITY INFORMATION

This section addresses specific criteria regarding the ignitability characteristic. The percentage of alcohol and water can determine whether the waste is classified as a liquid or an aqueous solution. This information is useful when completing Section 5.4.2, regarding the RCRA exemption for aqueous solutions.

5.4 EPA WASTE EXEMPTIONS

Please provide information regarding applicable regulatory exemptions. Example certifications for RCRA empty container wastes and non-terne used oil filters are found in Addendum D.

6.0 WASTE COMPOSITION

Completion of Section 6.1 (Physical Characteristics) and Section 6.2 (Waste Components and Chemical Compositions) will be used to evaluate permit compliance based upon the chemical species present within the waste. A percentage breakdown of bulk waste components and chemical compounds is required. List the composition of the waste stream and each percentage. List all chemical ingredients present in any concentrations. If a trade name is used, or the material is a commercial product, please provide the actual chemical name and/or chemical formula (if available). Also, be sure to include inert materials, such as plastics (type - polyvinyl chloride, high density polyethylene, etc.), debris (type - gloves, floor sweepings, etc.), packaging, etc.

The average percentage of chemical constituents must total 100 weight percent (100 wt%).

All substances regulated by 29 CFR 1910.1000 Subpart Z must be listed.

The following table is an example of a complete Section 6.2. Information provided by the Generator is shadowed.

| WASTE COMPONENTS AND CHEMICAL COMPOSITIONS | | CHEMICAL FORMULA | AVG (%) | MAX (%) |
|--|------------------------------------|------------------|---------|---------|
| A. | GENERAL BULKY DEBRIS containing: | | | |
| 1. | RAGS | NA | 15 | 21 |
| 2. | PAPER TOWELS | NA | 5 | 7 |
| B. | CHEMICAL PRODUCTS, COMPOUNDS, ETC. | | | |
| 1. | LATEX PAINT SPRAY | SEE MSDS | 10 | 15 |
| 2. | PAPER PAINT FILTERS | NA | 70 | 85 |
| C. | PACKAGING | | | |
| 1. | GAYLORD BOXES | NA | <1 | <1 |
| TOTAL | | | 100 % | |

6.3 WASTE CHEMICAL ANALYSIS - PERMIT COMPLIANCE

6.3.1 CONSTITUENTS OF CONCERN

Besides being able to demonstrate nonhazardous classification, compliance with Facility Air Permits and State Air Toxic Standards must be demonstrated. Each of Ogden's facilities is permitted with specific limits for acid gas and metal constituents, which include: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium and zinc. To be acceptable at Ogden facilities, these chemical constituents within the waste must be within concentration levels concurrent with the Air Permits and Air Toxic Standards. It is preferred that analytical data be provided to prove permit compliance; however, detailed process knowledge can be used, when available. Whether analytical or process knowledge is used, permit compliance information must be provided in the following concentration units:

| | |
|------------------------------------|--|
| Weight Percent (wt %) | Sulfur, Chloride, Nitrogen; Non-Combustibles |
| Parts per Million (ppm) | Bromide, Fluoride and Iodine |
| Total Metal Concentrations (mg/kg) | Metal constituents (as described above) |

The percentage of non-combustibles (inerts, such as Speedi-Dry, kitty litter, sand, vermiculite, etc.) must also be provided for air compliance consideration. If none are present, please do not check any other boxes. A more detailed explanation regarding the Basis of Determination for permit compliance requirement is provided herein.

6.3.2 BASIS OF DETERMINATION

To demonstrate environmental compliance with facility limits, the Generator may use detailed process knowledge, representative analytical testing, or a combination of both. If detailed process knowledge is used, the Generator must attach all relevant data used to support the determination (i.e., MSDS, formulation sheets, etc.). General guidelines applicable to process knowledge are found in Addendum B.

7.0 SUMMARY OF ATTACHMENTS

This section describes each attachment presented on Form 2 - the Industrial Waste MCF. Please provide all applicable attachments associated with your waste stream, and check the appropriate boxes. A description of each category is provided in the Glossary for Attachments - Addendum C, which follows the instructions.

- 7.1.1 Process Description
- 7.1.2 Waste Analysis Plans
- 7.1.3 QA/QC Standard Operating Procedures
- 7.1.4 Material Safety Data Sheets
- 7.1.5 Package Inserts
- 7.1.6 Analytical Data (a. Total Chlorides, b. Total Sulfur, and c. PCBs)
- 7.1.7 TCLP Analytical Data
- 7.1.8 Ignitability Analytical Data
- 7.1.9 Corrosivity Analytical Data
- 7.1.10 Reactivity Analytical Data
- 7.1.11 Total Metals Analysis
- 7.1.12 Formulation Sheets
- 7.1.13 Certifications
- 7.1.14 State Special Waste Application(s)

8.0 GENERATOR NONHAZARDOUS CERTIFICATION

Because this document is being used for regulatory compliance purposes, each Material Characterization Form must be signed and dated by the Generator as referenced in Section 1.1 and 2.0 of the MCF. Title: Section 8.0 certifies that the statements presented in the MCF are true and accurate with respect to the wastes.

FORM 3

OILY WASTE STREAMS

5.0 OILY WASTE CHARACTERIZATION

5.1 ACTIVITY OR PROCESS PRODUCING THE WASTE

Please check the appropriate boxes that describe the activity or process that produced the waste.

5.2 TYPE OF OILY WASTE

- 5.2.1** If the waste is comprised solely of non-terne used oil filters, please check YES. Non-terne used oil filters are filters that are not manufactured from an alloy of lead and tin. Non-terne used oil filters are exempt from RCRA regulations (40 CFR Part 261) and considered nonhazardous solid waste; therefore, RCRA hazardous characterization is not required. If your waste is solely comprised of non-terne used oil filters, do not complete Section 5.3, 5.5 and 5.6, and go directly to Sections 5.4, 6.0, 7.0 and 8.0.
- 5.2.2** If the waste consists of filters other than the non-terne used oil type, please indicate which type by checking the appropriate boxes in this section. These types of filters encompass all other filters such as fuel, air and railroad filters. Specialty filters are not covered under the RCRA exemption for non-terne used oil filters and must be characterized per RCRA regulations (40 CFR Part 261). If YES is checked for any of these boxes, do not complete Section 5.4. Please complete Sections 5.3, 5.5, 6.0, 7.0 and 8.0.
- 5.2.3** If waste is classified as solid waste commingled with used oil (as defined per Federal Regulation 40 CFR Part 279), please indicate so in this section. This type of waste category is not managed under RCRA regulations (40 CFR Part 261), and separate management standards are applicable. These standards are the Federal Used Oil Management Standards of 40 CFR Part 279. If YES is checked, please continue to Sections 5.3, 5.6, 6.0, 7.0 and 8.0. Do not complete Section 5.4.
- 5.2.4** If the waste is classified as solid waste commingled with virgin oil, please indicate so, and check the appropriate type of oil that comprises the waste stream. An example of this type of waste stream includes tank bottoms cleanout of a #2 fuel oil storage tank. Solid waste commingled with virgin oil requires characterization according to RCRA regulations (40 CFR Part 261). If a solvent is a component of the waste, please provide the chemical name, formula or any other pertinent information regarding the solvent. If YES is checked, proceed to Sections 5.3, 5.5, 6.0, 7.0 and 8.0. Do not complete Section 5.4.

5.3 PHYSICAL FORM

- 5.3.1** Free Oil. Ogden facilities are prohibited from accepting free oil, either by regulatory or Service Agreement constraints. If free oil is present, please indicate so, and proceed to Section 5.3.2.
- 5.3.2** Free Oil is not acceptable unless it is absorbed. Please indicate whether free oil can be absorbed by using a combustible absorbent, and specify the type of absorbent.
- 5.3.3** Single versus Multiple Sources of Generation. This section must be completed to advise OWTS whether the waste is a dedicated load of a single waste (such as a truckload of non-terne used oil filters) or a mixed load containing multiple waste components from various sources of generation (such as automotive waste - rags, absorbents, oil, etc.). If the waste is a mixed load, please complete the Waste Component and Percentage Table in this section. If the waste is from a single source, completion of the Waste Component and Percentage Table is not required.

5.4 NON-TERNE USED OIL FILTERS

This section is to be completed only if the waste consists of non-terne used oil filters. To be acceptable at Ogden facilities, the wastes must be managed according to the RCRA exemption 40 CFR Part 261.4(b)(13)(i)(ii)(iii)(iv). The exemption allows for these filters to be managed as solid waste (and not hazardous waste) if they are drained. Free flowing oil is not acceptable; therefore, the filters must be drained using one of the following methods, as specified in 40 CFR Part 261.4(b)(13)(i)(ii)(iii)(iv):

1. punctured and hot-drained
2. hot-drained and crushed

3. dismantled and hot-drained or
4. drained by any other method equivalent to hot-draining that removes oil.

Additionally, non-terne used oil filters are not managed under California hazardous waste regulations if free oil is removed by crushing, draining or any of the federal regulatory methods, and they are segregated and clearly labeled. For detailed requirements for disposal of non-terne used oil filters in California, please contact your OWTS Technical or Customer Service Representative.

- 5.4.1 If analytical testing was done on the non-terne used oil filters for permit compliance (which is addressed in Section 6.0), please indicate whether the entire filter was tested (i.e., paper internals and metal housing) or there was separate testing of one or more components. This information will be used to set processing requirements based upon the metal concentrations in the waste.
- 5.4.2 Please provide the average weight percentage of each component (oil, filter internals and housing) This information will be used to determine processing requirements.

5.5 REGULATORY WASTE CHARACTERIZATION

This section applies to the regulatory classification of the waste, and pertains to oily wastes in the following categories: fuel filters, specialty filters, transmission oil filters and virgin oily wastes. This section does not apply to non-terne used oil filters or solid waste commingled with used oil. If the waste requires regulatory classification under this section, all questions must be answered. Please attach pertinent analytical data, or information used to support the nonhazardous characterization of the waste. If a waste is characterized as **RCRA HAZARDOUS**, it is **NOT ACCEPTABLE** at any Ogden facility. If the waste is characterized as a hazardous waste in the state of origin, certain restrictions for disposal at Ogden facilities may apply. The elements of a complete nonhazardous characterization were previously presented in Section 3.4.

To make the nonhazardous determination, the Generator can use:

1. Representative analytical sampling and testing according to the methods set forth in 40 CFR Part 261 and/or
2. Application of process knowledge regarding the absence/presence of hazardous characteristics in the waste, which is based on raw materials/processes used to generate the waste.

If the Generator chooses to use process knowledge, information used to support this determination must be provided (i.e., MSDSs, Specifications, Process Descriptions or previous analytical, etc.).

5.6 SOLID WASTES COMMINGLED WITH USED OIL

- 5.6.1 If a waste falls into this category, it must be managed as used oil, according to the requirements of 40 CFR Part 279. Specific management, notification and recordkeeping requirements are applicable depending upon whether the used oil is classified as on-specification or off-specification used oil. The questions provided in Section 5.6.1 (a.-g.) are meant to aid the Generator in determining whether the waste would be classified as on-specification or off-specification. Per the federal regulations of 40 CFR Part 279, the individual who first declares a used oil to be on-specification, must provide sufficient documentation to support that determination. Total metals analytical data is required for arsenic, cadmium, chromium and lead; however, analytical or process knowledge can be used to determine the flash point and the total halogen concentration of the waste.

If YES is checked for 5.6.1 (a.-f.), the waste is considered on-specification (by federal standards). Question 5.6.1(g) pertains to potential PCB concentration, which is associated with state-specific requirements.

- 5.6.2 This section is associated with obtaining information about whether the used oil waste was in contact with transformers or transformer oils. These questions have been asked with the intent to gather information regarding the potential presence (or absence) of PCBs.
- 5.6.3 Please provide the Generator's EPA Identification Number in this Section.

6.0 WASTE CHEMICAL COMPOSITION

6.1 WASTE CHEMICAL ANALYSIS - PERMIT COMPLIANCE

6.1.1 CONSTITUENTS OF CONCERN

Besides being able to demonstrate nonhazardous classification, compliance with facility Air Permits and State Air Toxic Standards must be demonstrated. Each of Ogden's facilities is permitted with specific limits for acid gas and metal constituents, which include antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium and zinc. To be acceptable at Ogden facilities, the chemical constituents in the waste must be within concentration levels concurrent with the Air Permits and State Air Toxic Standards. It is preferred that analytical data be provided to prove permit compliance; however, detailed process knowledge can be used, if available. Permit compliance information must be provided in the following concentration units:

| | |
|------------------------------------|--|
| Weight Percent (wt %) | Sulfur, Chloride, Nitrogen; Non-Combustibles |
| Parts per Million (ppm) | Bromide, Fluoride and Iodine |
| Total Metal Concentrations (mg/kg) | Metal constituents (as described above) |

Additionally, the percentage of non-combustibles (inerts, such as Speedi-Dry, kitty litter, sand, vermiculite, etc.) also must be provided for air compliance consideration. If none are present, please do not check any other boxes. A more detailed explanation regarding the Basis of Determination for permit compliance requirement is provided below.

6.1.2 BASIS OF DETERMINATION

To demonstrate environmental compliance with facility permit limits, the Generator may use detailed process knowledge, representative analytical testing, or a combination of both. If detailed process knowledge is used, the Generator must attach all relevant data used to support the determination (i.e., MSDSs, Formulation Sheets, etc.). Addendum B presents general guidelines, which have been developed by Ogden, that can be used when considering process knowledge.

7.0 SUMMARY OF ATTACHMENTS

This section describes each attachment presented on Form 3 - the Oily Waste MCF. Please provide all applicable attachments associated with your waste stream, and check the appropriate boxes. A description of each category is provided in the Glossary for Attachments - Addendum C, which follows the instructions.

- 7.1.1 Process Description
- 7.1.2 Waste Analysis Plans
- 7.1.3 QA/QC Standard Operating Procedures
- 7.1.4 Material Safety Data Sheets
- 7.1.5 Analytical Data (On-Spec./Off-Spec. Determination)
- 7.1.6 Total Metals Analysis (required for Used Oil)
- 7.1.7 MA01 Certification (for Massachusetts Only)
- 7.1.8 Non-Hazardous in State of Generation
- 7.1.9 State Special Waste Application(s)

8.0 GENERATOR NONHAZARDOUS CERTIFICATION

Because this document is being used for regulatory compliance purposes, each Material Characterization Form must be signed and dated by the Generator as referenced in Section 1.1 and 2.0 of the MCF. Section 8.0 certifies that the statements presented in the MCF are true and accurate with respect to the wastes.

FORM 4
PHARMACEUTICAL/COMMODITY WASTES

5.0 WASTE CHARACTERISTIC INFORMATION

5.1 WASTE NAME /DESCRIPTION

Provide a description, trade name, chemical name or specific name (found on a label) or name commonly used by the Generator to refer to the waste.

5.2 OWTS WASTE CLASSIFICATION

Please indicate the OWTS Waste Classification(s) that corresponds to the form(s) in which the materials will be shipped for disposal. The categories of the forms listed in this Section correspond to the OWTS categories of Class A through F, described in Addendum A.

5.3 REASON FOR DISPOSAL

Please provide the reason for disposal. This includes expired, rejected, defective or contaminated products or materials. If the product or material has been voluntarily recalled or removed from the marketplace due to regulatory or health concerns, please indicate such. If the products or materials are off-specification, indicate why and list any constituents of the product or material that differ from the commercial/consumer packaged formulation. If the products are contaminated, please describe the source, type and chemical makeup of the contamination.

5.4 ADDITIONAL WASTE INFORMATION

Check the appropriate boxes that describe any hazards associated with the waste. Additionally, provide sufficient backup information regarding the nonhazardous characterization of the waste, such as hazardous characteristics, and additional ignitability information. If the waste is regulated by another government agency, such as FIFRA, please indicate such.

6.0 WASTE COMPOSITION

6.1 WASTE COMPONENTS AND PHYSICAL/CHEMICAL COMPOSITION

Information in this Section will be used to evaluate permit compliance based on the chemical species present within the waste. A percentage breakdown of bulk waste components and chemical compounds is required. List all chemical ingredients present in any concentrations. List the composition of the waste stream and each percentage. List all chemical ingredients present in any concentrations. If a trade name is used, or the material is a commercial product, please provide the actual chemical name and/or chemical formula. Also, be sure to include any other materials, such as plastics (type - polyvinyl chloride, high density polyethylene, etc.), debris (gloves, PPE, product manufacturing sweepings, etc.), packaging, etc.

The average percentage of chemical constituents must total 100 weight percent (100 wt%).

All substances regulated by 29 CFR 1910.1000 Subpart Z must be listed.

The table below is an example of a complete Section 6.1. Information provided by the Generator is shadowed

| WASTE COMPONENTS AND CHEMICAL COMPOSITIONS | | CHEMICAL FORMULA | AVG (%) | MAX (%) |
|--|--------------------------------|------------------|---------|---------|
| A. | CHEMICAL CONSTITUENTS | | | |
| 1. | ASPIRIN (ACETYLSALICYLIC ACID) | $C_9H_8O_4$ | 2 | 3 |
| 2. | CARBOXYMETHYL CELLULOSE | $C_6H_{10}O_5$ | 8 | 12 |
| B. | PACKAGING | | | |
| 1. | HDPE LIDS AND BOTTLES | NA | 10 | 10 |
| 2. | COTTON | NA | 5 | 5 |
| 2. | CARDBOARD BOXES AND INSERTS | NA | 75 | 85 |
| TOTAL | | | 100 % | |

6.2 WASTE CHEMICAL ANALYSIS - PERMIT COMPLIANCE

6.2.1 CONSTITUENTS OF CONCERN

In addition to demonstrating nonhazardous classification, compliance with facility Air Permits and State Air Toxic Standards must be demonstrated. Each Ogden facility is permitted with specific limits for acid gas and metal constituents, which include antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium and zinc. To be acceptable at Ogden facilities, the chemical constituents within the waste must be within concentration levels concurrent with the Air Permits and State Air Toxic Standards. It is preferred that analytical data be provided to prove permit compliance; however, detailed process knowledge can be used, if available. Permit compliance information must be provided in the following concentration units:

| | |
|------------------------------------|--|
| Weight Percent (wt %) | Sulfur, Chloride, Nitrogen; Non-Combustibles |
| Parts per Million (ppm) | Bromide, Fluoride and Iodine |
| Total Metal Concentrations (mg/kg) | Metal constituents (as described above) |

Additionally, the percentage of non-combustibles (inerts, such as Speedi-Dry, kitty litter, sand, vermiculite, etc.) must also be provided for air compliance consideration. If none are present, please do not check any other boxes. A more detailed explanation regarding the Basis of Determination for permit compliance requirement is provided.

6.2.2 BASIS OF DETERMINATION

To demonstrate environmental compliance with facility permit limits, the Generator may use detailed process knowledge, representative analytical testing, or a combination of both. If detailed process knowledge is used, the Generator must attach all relevant data used to support the determination (i.e., MSDSs, Formulation Sheets, etc.). General guidelines applicable to process knowledge are found in Addendum B.

7.0 SUMMARY OF ATTACHMENTS

This section describes each attachment presented on Form 4. Please provide all applicable attachments associated with the waste stream, and check the appropriate boxes. A description of each category is provided in the Glossary for Attachments - Addendum C, which follows the instructions.

- 7.1.1 Process Description
- 7.1.2 Waste Analysis Plans
- 7.1.3 QA/QC Standard Operating Procedures
- 7.1.4 Material Safety Data Sheets
- 7.1.5 Package Inserts
- 7.1.6 Formulation Sheets
- 7.1.7 TCLP Analytical Data
- 7.1.8 Ignitability Analytical Data
- 7.1.9 Corrosivity Analytical Data
- 7.1.10 Reactivity Analytical Data
- 7.1.11 Total Metals Analysis
- 7.1.12 Total Sulfur/Chloride Analysis
- 7.1.13 Other
- 7.1.14 State Special Waste Application(s)

8.0 GENERATOR NONHAZARDOUS CERTIFICATION

Because this document is being used for regulatory compliance purposes, each Material Characterization Form must be signed and dated by the Generator as referenced in Section 1.1 and 2.0 of the MCF. Section 8.0 certifies that the statements presented in the MCF are true and accurate with respect to the wastes.

FORM 5
CALIFORNIA NONHAZARDOUS WASTE CERTIFICATION

This certification is required if waste is a candidate for disposal at Ogden Martin Systems of Stanislaus, Inc., in California. In addition to the requirement of the waste being characterized as RCRA Nonhazardous (per federal regulations), the waste must be certified as California Nonhazardous to enable evaluation for Stanislaus. California Nonhazardous characterization must be completed according to Title 22 of the California Code of Regulations. These requirements address the California regulatory concerns of Persistent and Bioaccumulative Toxicity, Toxins, Ignitability, Reactivity, Corrosivity, and address health and safety concerns regarding carcinogens and reproductive toxins. Please complete Form 5, which details the Title 22 requirements.

OGDEN WASTE TREATMENT SERVICES

NONHAZARDOUS WASTE CLASSIFICATIONS

- CLASS A** CONSUMER PACKAGED PRODUCTS: OTC and Prescription Pharmaceuticals, Health Care Products, and Consumer Products. Products must be in original consumer packaging, over packed in boxes or fiber drums, palletized and shrink-wrapped.
- CLASS B1** BULK POWDER 100% ACTIVE OR 100% INACTIVE INGREDIENTS: Powders, Dust and Granules in boxes, bags or drums .
- CLASS B2** BULK POWDER PRODUCTS: Powders, Dusts and Granules which are finished formulations. These materials are waste found prior to the final pressing, encapsulation or packaging process. These may include: off spec, rejected or expired formulations.
- CLASS B3** BULK POWDER INTERMEDIATE WASTE: Powders, Dusts and Granules which consist of a combination of: active and inactive ingredients, Class B2 Materials, Rejected Pressed Pills and Capsules, and clean-up materials (tyvek, rags, etc.) used in the clean up of the manufacturing process or from a dust collection system.
- CLASS C** BULK PRESSED TABLETS AND CAPSULES: Finished products not in consumer package.
NO POWDERS, OR DUSTS! NO CLASS B1 OR B2! NO CLEANUP MATERIALS! NO DEBRIS!
- CLASS D1** BULK, 100% ACTIVE OR 100% INACTIVE INGREDIENTS: Creams, liquids and pastes in drums, totes and bulk tank trucks: These materials are not consumer packaged however they are flowable, non-dusting ingredients and raw materials.
- CLASS D2** BULK PRODUCT, FINISHED FORMULATION: Creams, liquids and pastes in drums, totes and bulk tank trucks (shampoos, lotions, etc.).
- CLASS E** PHARMACEUTICAL AND CONSUMER PRODUCT MANUFACTURING DEBRIS: Production, Industrial Plant scraps contaminated with less than 25% Class B1, B2, B3, D1 and D2. Material may include, plastic containers, paper bags, cardboard, Tyvec, etc. Debris including filter media, filter cakes, absorbents, containers and general trash.
- CLASS F** NON-HAZARDOUS REPACKED MATERIALS: Small quantities of reagent grade-off specification, unused or discarded non-hazardous laboratory chemicals and products that have been designated as non-hazardous waste for disposal. These materials will be in laboratory type containers of five gallon size or smaller as specified by the approval. These five gallon and smaller packages will be over packed in 55 gallon and smaller fiber/poly/steel drums and gaylord boxes.

Each delivery must conform to specific repacking procedures.

- NOTE:**
1. The classifications described above do not include hazardous materials or any mixtures of hazardous and nonhazardous materials.
 2. "BULK" is defined as any material packaged in an individual unit of greater than 5 gallons and up to 6500 gallons in size.
 3. All nonhazardous wastes delivered to Ogden facilities must be pre-approved, packaged and labeled according to OWTS policies.

ADDENDUM B

GUIDANCE ON PROCESS KNOWLEDGE

This guidance is presented to illustrate how process knowledge can be used to determine RCRA nonhazardous characterization. It also provides suggestions regarding the preparation of a detailed process description. Please note that this Addendum is to serve as a guideline and is not meant to restrict the flow of accurate and sufficient information.

1. Accurately describe your waste stream by including the following:
 - a. List all raw materials introduced to the process.
 - b. Provide Material Safety Data Sheets (MSDSs), specification sheets, formulation sheets, etc. for all input raw materials. Letters from raw material suppliers, product labels, etc. are also acceptable.
 - c. Compare chemical constituents in the raw materials to the list of RCRA constituents (TCLP and Appendix VIII Constituents-40 CAR Part 261). Compare chemical constituents in raw materials to Ogden's "Constituents of Concern" (for Air permit criteria).
 - d. List any materials that may contact raw materials or the waste stream generated. Provide MSDSs, specification or formulation sheets, etc. for these. Compare with RCRA TCLP, Appendix VIII Constituents and Ogden's list of "Constituents of Concern" (air permit criteria). If no contact with other substances was made, please indicate this.
 - e. If other wastes were commingled with the waste stream, evaluate which constituents may be present as a result of the other waste streams.
 - f. Provide data from previous analytical testing, if available, which was used to support/confirm the absence of RCRA constituents and Ogden's "Constituents of Concern".
 - g. Attach Process Flow Diagrams, if they can be used to describe the processes generating the waste.
 - h. Include descriptions or copies of Waste Analysis Plans, Standard Operating Procedures, Quality Control methods, permit excerpts used routinely to document hazardous versus nonhazardous determination procedures.
2. The more information about the waste that you have available, the easier it will be to accept process knowledge to support the nonhazardous determination and permit compliance.
3. A certification stating that the waste is nonhazardous and meets Ogden's Air permit levels is not enough. Documentation must be provided to support such a general statement.
4. The USEPA or State Hazardous Waste Departments may provide guidance on which TCLP constituents must be tested for, based on specific waste classes. For example, water mixed with gasoline must be analyzed for benzene, toluene, xylene, ethyl benzene and lead. In this example, process knowledge for these constituents is not sufficient because typical characterizations of this waste show evidence that the aforementioned constituents are commonly present in such a waste.

ADDENDUM C GLOSSARY FOR ATTACHMENTS

This glossary is intended to define the information required in the Section 7.0 of Forms 2 and Forms 4, generally. The glossary is listed alphabetically. The section number corresponding to either Form 2, Form 3 or Form 4 immediately follows the heading and is listed as such (7.1.6 - F2 means Section 7.1.6 of Form 2.)

Analytical Data (7.1.6-F2) (7.1.12-F4)

The analytical data required for this attachment includes the following three test parameters: Total Chlorides (7.1.6.a-F2) (7.1.12-F4), Total Sulfur (7.1.6.b-F2) (7.1.12-F4) and PCBs (7.1.6.c). Chloride and sulfur analyses are required to demonstrate permit compliance for Indiana Department of Environmental Management (IDEM) Special Waste applications (for disposal at Ogden Martin Systems of Indianapolis, Inc.). PCB information is also required for IDEM Special Waste submittal and to demonstrate permit compliance associated with the Honolulu facility.

Analytical Data (On-Spec./Off-Spec. Determination) (7.1.5-F3)

The analytical data required for this attachment includes the following test parameters:

1. total metals for arsenic
2. total metals for cadmium
3. total metals for chromium
4. total metals for lead
5. flash point
6. total halogens

This test data is required to demonstrate whether the waste is on-specification or off-specification. It is the responsibility of the person who first claims that a used oil is On-specification to demonstrate such.

If the waste is Off-Specification, it may be considered hazardous, depending on state-specific regulations. In some states, if the waste is shown to be Off-Specification, certain notification, tracking and recordkeeping requirements are applicable.

Certifications (7.1.13-F2)(7.1.13a-F2)(7.1.13.b-F2)(7.1.7-F3)

Certifications must be provided for certain wastes that are exempt from RCRA regulations. Copies of these certifications will be retained in the OWTS files. Examples of these types of exemption certifications are provided in Addendum D.

A certification stating that the waste is not classified as an MA01 waste is required for disposal at Ogden Martin Systems of Haverhill, Inc. An example MA01 Certification is provided in Addendum D. MA01 is defined as liquid waste oil that is not characteristically hazardous waste (pursuant to Massachusetts regulation 310 CMR 30.120 through 30.136).

Virginia regulations require a certification stating that the waste is not hazardous in the state of generation for waste disposal at Ogden Martins Systems of Alexandria and Fairfax. An example of this certification is provided in Addendum D.

Corrosivity Analytical Data (7.1.9-F2) (7.1.9-F4)

This analytical data, if provided, will demonstrate that the waste does not meet the characteristic of corrosivity as defined by 40 CFR Part 261.22.

Formulation Sheets (7.1.12-F2) (7.1.6-F4)

Formulation sheets can be used to demonstrate compliance for permitted constituents (i.e., acid gases and metals, as described in previous sections). Formulation sheets are recipes used to produce a product or material. A list of each ingredient and their respective percentages is usually provided on a formulation sheet. If trade secrets or proprietary ingredients are used, the Generator may provide a range instead of actual percentages.

Ignitability Analytical Data (7.1.8-F2) (7.1.8-F4)

This analytical data, if provided, will demonstrate that the waste does not meet the characteristic of ignitability as defined by 40 CFR Part 261.21.

Material Safety Data Sheets (7.1.4-F2) (7.1.4-F3) (7.1.4-F4)

MSDSs can provide information regarding the chemical makeup of the waste, which is useful in evaluating air permit compliance concerns. MSDSs can also provide relevant information concerning special safety, storage and handling requirements of the waste material, descriptions of personal protective equipment (PPE), firefighting equipment, etc. required for handling the waste. MSDSs must be provided for either the composite waste stream or each major constituent of the waste stream. If an MSDS is provided for each constituent, but does not necessarily apply to the aggregate mixture, the Generator should state such and briefly explain why. If MSDSs are not required for a certain waste, the Generator should also state this and explain why.

Other (7.1.13-F4)

Any other type of information that will be pertinent to characterizing the waste in terms of Environmental, Health and Safety or Operational perspective can be included in this attachment.

Package Inserts (7.1.5-F2) (7.1.5-F4)

Package Inserts can provide chemical information for the Environmental Compliance evaluation or pertinent Health and Safety information. Product Inserts should be provided as attachments when MSDSs are not available. Copies of product labels can also serve as Product Inserts for various materials if original Product Inserts are not available.

Process Description (7.1.1-F2) (7.1.1-F3) (7.1.1-F4)

A complete and detailed process description is necessary to provide an accurate understanding of the waste. Guidelines relating to the components of a Process Description have been provided in Addendum B.

QA/QC Standard Operating Procedures (7.1.3-F2) (7.1.3-F3) (7.1.3-F4)

Any QA/QC or Standard Operating Procedures used by the Generator to handle the waste may be useful to aid in the Environmental, Health and Safety and Operational evaluations of the waste.

Reactivity Analytical Data (7.1.10-F2) (7.1.10-F4)

This analytical data, if provided, will demonstrate that the waste does not meet the characteristic of reactivity as defined by 40 CFR Part 261.23.

State Special Waste Application(s) (7.1.14-F2) (7.1.9-F3) (7.1.14-F4)

Certain categories of solid wastes are classified as Special Wastes in the state of disposal, despite the state of origin, and require prior written authorization by state agencies. The following states require submittal of Special Waste forms for review by the representative agency prior to disposal: Connecticut, Indiana, New York, Oklahoma, Pennsylvania and Virginia. Please contact your OWTS Technical or Customer representative if copies of state special waste applications are needed.

TCLP Analytical Data (7.1.7-F2) (7.1.7-F4)

This analytical data, if provided, will demonstrate that the waste does not meet the characteristic of toxicity as defined by 40 CFR Part 261.24.

Total Metals Analysis (7.1.11-F2) (7.1.6-F3) (7.1.11-F4)

Total metals analytical data is required to demonstrate that the waste will not affect air permit conditions.

Waste Analysis Plans (7.1.2-F2) (7.1.2-F3) (7.1.2-F4)

Waste analysis plans can be provided to illustrate the procedures used by the Generator to ensure that waste is characterized as nonhazardous or tests to meet Ogden's permit compliance criteria.

ADDENDUM D
EXAMPLE COPIES OF CERTIFICATIONS

- A. RCRA Empty Certification
- B. Non-Terne Used Oil Filter Certification
- C. MA01 Certification
- D. Nonhazardous in the State of Generation Certification

Ogden Waste Treatment Services, Inc.
Material Characterization Forms
Check List

It is our goal to review and process your approval request in a timely fashion. This check list has been developed to assist you in making sure that all required forms are completed accurately and thoroughly: all questions answered; all spaces filled in. **INCOMPLETE, ILLEGIBLE OR INACCURATE FORMS CAUSE A SIGNIFICANT DELAY IN THE APPROVAL PROCESS.**

Please help us to help you. Use this check list to verify your approval request.

Please confirm that the PROCESS DESCRIPTION LETTER includes:

- Generator description of the process generating the waste
- Ogden facility preferred for disposal, with back up facilities in order of preference
- A list of materials being submitted for approval with the OWTS waste classification for each (if more than one waste stream is being submitted)
- Statement of nonhazardous determination through process knowledge or testing

Please confirm that each approval request includes:

- Material Characterization Form 1
- Material Characterization Form 2, 3 or 4 depending on waste type
- Form 5, California nonhazardous certificate, if applicable
- Separate MCF for each waste stream
- Signatures on all forms as required

Please confirm that all supporting materials are included:

- MSDS (for classes B, D and E)
- Product Inserts, Labels or MSDSs , if available (for classes A and C)
- Analytical Data (for oily and industrial wastes) including:
 - RCRA Characterization (ignitability, corrosivity, etc.)
 - Total metals for TC Metals and Hazardous Air Pollutants
 - Concentration or weight percentage of acid gases
 - Back up documentation which supports nonhazardous determination and permit compliance (if process knowledge is used instead of analytical)
- Copies of state application forms, if required

Thank you for your interest in Ogden Waste Treatment Services. We are proud of the service we provide our clients and appreciate this opportunity to work with you.

If you have any questions regarding our approval process or any suggestions on how we may better serve you, please contact your Regional Sales Manager or your Technical Service Representative.

FORM 1G - GENERAL INFORMATION - TO BE INCLUDED WITH ALL WASTE DISPOSAL REQUESTS

**OGDEN WASTE TREATMENT SERVICES, INC. (OWTS)
MATERIAL CHARACTERIZATION FORM (MCF)**

OWTS Information Only

Date of Receipt: _____ Request #: _____

1.0 GENERAL INFORMATION

1.1 Generator's Name:

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone #: () _____ Fax #: () _____

If multiple locations, indicate here and attach list:
List should include physical address, contact person and phone.

1.2 Person completing form (complete ONLY if different than authorized representative - See 2.0 below):

Name: _____

Title: _____

Signature: _____ Date: _____

Telephone #: () _____ Fax #: () _____

Address (if different than above): _____

2.0 AUTHORIZED REPRESENTATIVE

Name: _____

Title: _____

Signature: _____ Date: _____

Telephone #: () _____ Fax #: () _____

Address (if different than above): _____

3.0 GENERAL WASTE STREAM INFORMATION

3.1 Waste Name/Description:

3.2 General Waste Classification:

| Waste Type | Yes or No | If yes, also complete the additional form below (1) |
|----------------------------|--|---|
| Industrial | <input type="checkbox"/> YES <input type="checkbox"/> NO | 2 |
| Oily Waste | <input type="checkbox"/> YES <input type="checkbox"/> NO | 3 |
| Pharmaceutical/Commodities | <input type="checkbox"/> YES <input type="checkbox"/> NO | 4 |
| California Destination | <input type="checkbox"/> YES <input type="checkbox"/> NO | 5 |

(1) Complete Form 1 and either Form 2, 3 or 4. Complete Form 5 only if the waste will be shipped to the Stanislaus Facility.

3.3 Process Description:

Attach a process description that identifies:

- 1) The origin of the waste material;
- 2) Whether its characteristics are random, consistent or if they can be controlled; and
- 3) Analytical information, if it is the basis of a knowledge of process determination.

3.0 GENERAL WASTE STREAM INFORMATION (cont.)

3.4 Regulatory Waste Characterization

ALL OF THE FOLLOWING QUESTIONS MUST BE ANSWERED:

3.4.1 Is the waste an EPA Listed Hazardous Waste per 40 CFR 261?

YES NO

3.4.2 Is the waste an EPA Characteristic Hazardous Waste per 40 CFR 261?

YES NO

- If Yes was answered to either 3.4.1 or 3.4.2, PLEASE STOP.

- Has the waste been evaluated by analytical methods to determine whether it exhibits the characteristics of:

Ignitability YES NO Toxicity YES NO

Corrosivity YES NO Reactivity YES NO

If Yes, attach analytical data. If no, attach an explanation of what process knowledge has been used to answer these questions in lieu of analytical.

3.4.3 Is this waste a "Hazardous Waste" as defined by State of Origin?

YES NO

If YES enter the State Waste Identification Number below:

State Waste Identification Number: _____

3.4.4 Is this waste any of the following in the State of Origin?

Special Waste Residual Waste Regulated Waste
 None of the above

State Waste Code (if assigned): _____

3.5 Waste Information:

3.5.1 Physical Form (Check One)

Do not consider packaging.

- | | | |
|--|--------------------------------|-----------------------------------|
| <input type="checkbox"/> Liquid | <input type="checkbox"/> Wax | <input type="checkbox"/> Granular |
| <input type="checkbox"/> Viscous Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Powder |
| <input type="checkbox"/> Slurry | <input type="checkbox"/> Paste | <input type="checkbox"/> Creams |
| <input type="checkbox"/> Other (Describe): _____ | | |

3.5.2 Color (Describe): _____

3.5.3 Odor (Describe): _____

3.5.4 Indicate the approximate higher heating value of the waste: _____ BTU/lb

Is this an estimated value? YES NO

Is this a measured value? YES NO

4.0 SHIPPING INFORMATION

4.1 Shipping Packaging -- check all that apply:

- | | | |
|---|--|--|
| <input type="checkbox"/> Palletized & Shrinkwrapped | <input type="checkbox"/> Metal Pails | <input type="checkbox"/> Plastic Pails |
| <input type="checkbox"/> Steel Drums | <input type="checkbox"/> Fiber Drums | <input type="checkbox"/> Poly Drums |
| <input type="checkbox"/> Fiber Boxes | <input type="checkbox"/> Rolloffs | <input type="checkbox"/> Gaylord Boxes |
| <input type="checkbox"/> Super Sacs | <input type="checkbox"/> Other (Describe): _____ | |

Provide drum size in gallons: _____

4.2 Quantity per Delivery: _____ Cubic Yards _____ Tons

_____ Gallons _____ Pounds

Other (Explain): _____

4.3 Frequency of Delivery: Quarterly Monthly Weekly Daily

One Time Other (Describe): _____

4.4 Delivery Vehicle: Van Trailer Dumptrailer Box Truck

Tanker Truck Rolloff Container (Size) _____

Other (Describe): _____

FORM 2 - INDUSTRIAL WASTES

OGDEN WASTE TREATMENT SERVICES MATERIAL CHARACTERIZATION FORM

OWTS Information Only

Date of Receipt: _____ Request #: _____

5.0 WASTE CHARACTERISTIC INFORMATION

5.1 Waste Name/Description:

5.2 Additional Waste Information:
- Confirm if the waste has any of the following characteristics:

| | | | |
|-------------------|--|-----------------------|--|
| Compressed Gas | <input type="checkbox"/> YES <input type="checkbox"/> NO | Ammonia Containing | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| RCRA/DOT Oxidizer | <input type="checkbox"/> YES <input type="checkbox"/> NO | PCB Containing | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Water Reactive | <input type="checkbox"/> YES <input type="checkbox"/> NO | Asbestos | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Explosive | <input type="checkbox"/> YES <input type="checkbox"/> NO | Silica Crystalline | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Radioactive | <input type="checkbox"/> YES <input type="checkbox"/> NO | DOT Hazardous Mat'l | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Dioxin Containing | <input type="checkbox"/> YES <input type="checkbox"/> NO | FIFRA Regulated Mat'l | <input type="checkbox"/> YES <input type="checkbox"/> NO |

5.3 Ignitability Information:
- Confirm if the waste has any of the following characteristics:

| | | | |
|------------------|--|------------------|---------|
| Flash Point (°F) | <input type="checkbox"/> YES <input type="checkbox"/> NO | Flash Point (°F) | _____ |
| Contains Alcohol | <input type="checkbox"/> YES <input type="checkbox"/> NO | % Alcohol = | _____ % |
| Contains Water | <input type="checkbox"/> YES <input type="checkbox"/> NO | % Water = | _____ % |
| Solid | <input type="checkbox"/> YES <input type="checkbox"/> NO | | |

5.4 EPA Waste Exemptions:
If any of the following Federal Exemptions are applicable; identify the exemption in the space provided below.

5.4.1 RCRA Empty - 40CFR 261.7 Exemption: YES NO
- If yes, complete the OMS RCRA Empty Certification.

5.4.2 Aqueous Solution (<24% Alcohol, > 50% Water) YES NO
- If yes, complete section 6.3 and provide all pertinent back-up information.

5.4.3 Other relevant exemptions from the Federal Regulations (provide):

6.0 WASTE PHYSICAL/CHEMICAL COMPOSITION (cont.)

6.3 WASTE CHEMICAL ANALYSIS

6.3.1 Indicate which of the following constituents are present in the waste stream (and complete section 6.3.2 below).

ACID GASES (as either ppm or wt. %): None

| | | |
|----------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Bromine | <input type="checkbox"/> Chlorine | <input type="checkbox"/> Fluorine |
| <input type="checkbox"/> Iodine | <input type="checkbox"/> Nitrogen | <input type="checkbox"/> Sulfur |

HAZARDOUS AIR POLLUTANTS (as ppm): None

| | | | |
|------------------------------------|-----------------------------------|------------------------------------|-----------------------------------|
| <input type="checkbox"/> Antimony | <input type="checkbox"/> Cadmium | <input type="checkbox"/> Lead | <input type="checkbox"/> Silver |
| <input type="checkbox"/> Arsenic | <input type="checkbox"/> Chromium | <input type="checkbox"/> Manganese | <input type="checkbox"/> Selenium |
| <input type="checkbox"/> Barium | <input type="checkbox"/> Cobalt | <input type="checkbox"/> Mercury | <input type="checkbox"/> Vanadium |
| <input type="checkbox"/> Beryllium | <input type="checkbox"/> Copper | <input type="checkbox"/> Nickel | <input type="checkbox"/> Zinc |

INERTS (as wt. %):

| | | |
|---|---|------------------------------------|
| <input type="checkbox"/> Moisture (H2O) | <input type="checkbox"/> Aluminum Oxide | <input type="checkbox"/> Silicates |
| <input type="checkbox"/> Clay | <input type="checkbox"/> Titanium Dioxide | <input type="checkbox"/> None |

6.3.2 The above determination has been made based on the following information (check at least one):

Analytical Data
-If checked, attach analytical results that demonstrate the concentration (mg/Kg or wt %) of each constituent present.

Generator Process Knowledge
-If process knowledge is checked, evidence of the knowledge must be attached including: Analytical Data, Material Safety Data Sheets (MSDSs), Product Formulation Sheets, Package Inserts, Process Descriptions, etc., which provides constituent concentrations (mg/Kg or wt %).

Other (Describe and attach all pertinent documentation):

6.0 WASTE PHYSICAL/CHEMICAL COMPOSITION
YOU MUST COMPLETE SECTIONS 6.1, 6.2 AND 6.3

6.1 Physical Characteristics:

6.1.1 Is the Waste a single waste (ie: a single waste such as filter cake)?
 YES NO

6.1.2 Is the Waste a mixed waste (ie: a mix comprised of rags, debris, chemicals, etc.)?
 YES NO

6.2 WASTE COMPONENTS AND PHYSICAL/CHEMICAL COMPOSITION
Please complete the following table. List the composition of the waste stream and each percentage. The "A" group is for general bulky debris such as rags, paper, plastic, etc. The "B" group is for known chemical products, compounds, etc. If a trade name is used or the waste is a commercial product, supply the actual chemical name and/or chemical formula (if available).

Attach MSDSs, Formulation Sheets, Package Inserts, etc. used to prepare table.

| WASTE COMPONENTS AND CHEMICAL COMPOSITIONS | | CHEMICAL FORMULA | AVG (%) | MAX (%) |
|--|--------------------------------------|------------------|---------|---------|
| A | GENERAL BULKY DEBRIS | | | |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| B | CHEMICAL PRODUCTS/COMPOSITION | | | |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | TOTAL: | 2 | 100% |

C WHAT PERCENT OF THE DELIVERY WOULD BE PACKAGING? _____ %
(attach additional sheets if needed) _____

(1) % Packaging must be completed.
(2) Total average % for Sections A & B must be equal to 100%.
(3) All substances regulated by 29 CFR 1910.1000 subpart Z must be listed.

7.0 SUMMARY OF ATTACHMENTS

7.1 Indicate attachments Included with this Request:

| | |
|---|--|
| 7.1.1 Process Description | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.2 Waste Analysis Plans | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.3 QA/QC SOPS | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.4 Material Safety Data Sheets | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.5 Package Inserts | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.6 Analytical Data | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.6 a. Total Chlorides | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.6 b. Total Sulfur | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.6 c. PCBs | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.7 TCLP Analytical Data | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.8 Ignitability Analytical Data | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.9 Corrosivity Analytical Data | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.10 Reactivity Analytical Data | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.11 Total Metals Analysis | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.12 Formulation Sheets | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.13 Certifications | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.13 a. RCRA Empty | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.13 b. Other: | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| 7.1.14 State Special Waste Application(s) | <input type="checkbox"/> YES <input type="checkbox"/> NO |

8.0 NONHAZARDOUS CERTIFICATION

I certify, as an Authorized Representative of the Generator, that this document including all completed forms, and all pertinent addenda accurately represent and describe the waste stream outlined and that it is true accurate and complete and that no available information has been omitted or falsified. I further certify that the waste is nonhazardous based on Federal, State and Local Regulations.

DATE _____

SIGNATURE _____

PRINT NAME _____

TITLE & COMPANY _____

FORM 3 - OILY WASTE STREAMS

OGDEN WASTE TREATMENT SERVICES MATERIAL CHARACTERIZATION FORM

OWTS Information Only

Date of Receipt: Request #:

5.0 OILY WASTE CHARACTERIZATION

5.1 ACTIVITY OR PROCESS PRODUCING WASTE (Check One)

Routine Shop Maintenance Automotive Fleet Vehicle Maintenance

Oil Water Separator Maintenance/Cleaning Spill Clean-up Tank Cleaning

Other (describe): _____

5.2 TYPE OF OILY WASTE (Check all that Apply)

5.2.1 IS THE WASTE COMPRISED SOLELY OF NON-TERNE PLATED USED OIL FILTERS? YES NO

→ IF YES, COMPLETE SECTIONS 5.4, 6.0, 7.0 & 8.0 ONLY.

5.2.2 IS THE WASTE COMPRISED OF OTHER TYPES OF FILTERS?

a. Fuel Filters (Gasoline, Diesel, Aviation, Other) YES NO

b. Specialty Filters (Locomotive, Cloth Railroad, Air Filters, etc.) YES NO

c. Transmission Oil Filters YES NO

5.2.3 CAN THE WASTE BE CLASSIFIED (Per Fed. Reg. 40 CFR Part 279) AS "SOLID WASTE COMMINGLED WITH USED OIL?" YES NO

→ IF YES, COMPLETE SECTIONS 5.3, 5.6, 6.0, 7.0 & 8.0 ONLY.

5.2.4 CAN THE WASTE BE CLASSIFIED AS A "VIRGIN OILY WASTE"? YES NO

→ IF YES, INDICATE WHICH TYPE BELOW AND COMPLETE SECTIONS 5.3, 5.5, 6.0, 7.0 & 8.0 ONLY

- No. 2, 4 or 6 Fuel Oil
- Gasoline
- Kerosene
- Solvent (Give Type: Chlorinated or Other): _____
- Petroleum Oil
- Hydraulic Oil
- Lubricating Oil
- Grease
- Naphtha
- Other (Please Describe): _____

5.3 PHYSICAL FORM

5.3.1 Does the waste contain Free Oil? YES NO

IF YES, COMPLETE SECTION 5.3.2 BELOW; IF NO, PROCEED TO SECTION 5.5.

5.3.2 Will the Free Oil be absorbed by adding a non-hazardous combustible absorbent? YES NO

IF NO, FREE OIL IS UNACCEPTABLE. STOP.

IF YES, PROVIDE TYPE OF ABSORBENT MATERIALS USED, BELOW.

waste type be commingled at site of generation?) YES NO

IF YES, CONTINUE COMPLETION OF MATERIAL CHARACTERIZATION FORM.

IF NO, COMPLETE SECTION BELOW (List weight percent of all waste components).

| WASTE COMPONENT | PERCENT (must total 100%) | |
|---|---------------------------------------|-----------------------------------|
| a. Oil | _____ % | |
| b. Noncombustible Debris (Provide Description Below). | _____ % | |
| c. Absorbent Materials (Check Type Below). | _____ % | |
| <input type="checkbox"/> Polypropylene | <input type="checkbox"/> Clay-Based | <input type="checkbox"/> Oil Dry |
| <input type="checkbox"/> Cellulose | <input type="checkbox"/> Silica-Based | <input type="checkbox"/> Corn Cob |
| <input type="checkbox"/> Other (Provide Description): _____ | | |
| d. Non-Terne Used Oil Filters | _____ % | |
| TOTAL = 100 % | | |

THIS SECTION 5.4 IS FOR NON-TERNE USED OIL FILTERS Only

5.4 USED OIL FILTERS (Check All that Apply)

Drained per 40 CFR Part 261.4(b)(13)(i)(ii)(iii)(iv) (Check One Below)

Punctured and Hot Drained

Dismantled and Hot Drained Hot Drained and Crushed

Any Other Equivalent Method to Hot Draining that Removes Oil (Describe): _____

5.4.1 When answering the analytical requirements of 6.1.2, consider:
Was the analytical of Filter Only

5.4.2 What is the average makeup of the filter on a weight percent basis?

Oil _____ % Filter _____ % Housing _____ %

8.0 NONHAZARDOUS CERTIFICATION (SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE GENERATOR)

I certify, as an Authorized Representative of the Generator, that this document and all pertinent addenda accurately represent and describe the waste stream outlined. The information submitted is true, accurate and complete, and no available information has been omitted or falsified. I further certify that the material is nonhazardous based upon Federal, State and Local Regulations (or exemptions).

DATE _____

SIGNATURE _____

PRINT NAME _____

TITLE & COMPANY _____

5.0 OILY WASTE CHARACTERIZATION (cont)

5.5 REGULATORY WASTE CHARACTERIZATION

5.5.1 Are any of the wastes an EPA Listed Hazardous Waste? YES NO

5.5.2 Do any of the wastes exhibit EPA Hazardous Characteristics? YES NO

IF YES WAS ANSWERED TO 5.5.1 or 5.5.2, STOP.

IF NO, WAS THIS DETERMINATION MADE BY:

Analytical, OR Process Knowledge

PLEASE ATTACH ALL PERTINENT INFORMATION.

COMPLETE for wastes listed in section 6.2.3 - used oil wastes only

5.6 SOLID WASTES COMMINGLED WITH USED OIL

5.6.1 USED OIL SPECIFICATION DETERMINATION (On-Spec. vs. Off-Spec.)

Total Metals analysis is required to demonstrate Specification determination for a - d. below.

a. Does the Waste have < 5 mg/kg Arsenic? YES NO

b. Does the Waste have < 2 mg/kg Cadmium? YES NO

c. Does the Waste have < 10 mg/kg Chromium? YES NO

d. Does the Waste have < 100 mg/kg Lead? YES NO

Process Knowledge or Total Metals analysis can be used for Spec. determination: e.g. below.

e. Are Total Halogens ≤ 1000 ppm? YES NO

f. Is the Flashpoint < 100 F? YES NO

g. Does the Waste have > 2 mg/kg PCBs? YES NO

CHECK IF TOTAL METALS ANALYSIS RESULTS ARE ATTACHED.

CHECK IF PROCESS KNOWLEDGE DETERMINATION IS ATTACHED.

5.6.2 OTHER USED OIL WASTE CONSTITUENTS (Check All that Apply)

Is Transformer Oil present in the waste stream? YES NO

If yes, from what year is the transformer oil? _____

Are there solvents present in the waste stream? YES NO

If YES, are these solvents chlorinated (such as paraffins)? YES NO

Also describe if other than chlorinated. _____

5.6.3 PROVIDE GENERATOR EPA ID#: _____

6.0 WASTE CHEMICAL COMPOSITION

6.1 WASTE CHEMICAL ANALYSIS

6.1.1 Indicate which of the following constituents are present and Complete 6.1.2 below.

ACID GASES: None

Bromine Chlorine Fluorine

Iodine Nitrogen Sulfur

HAZARDOUS AIR POLLUTANTS: None

Antimony Cadmium Lead Silver

Arsenic Chromium Manganese Selenium

Barium Cobalt Mercury Vanadium

Beryllium Copper Nickel Zinc

INERTS:

Moisture (H2O) Aluminum Oxide Silicates

Clay Titanium Dioxide None

6.1.2 The determination in 6.1.1 has been made based on: (Check at least one)

ANALYTICAL DATA GENERATOR PROCESS KNOWLEDGE

Other (Describe and attach all pertinent documentation): _____

- If process knowledge is checked, evidence of the knowledge must be attached, including: Analytical Data, Material Safety Data Sheets (MSDSs), Product Formulation Sheets, Package Inserts, Process Descriptions, etc., which provides constituent concentrations (mg/Kg or wt %).

7.0 SUMMARY OF ATTACHMENTS

7.1 INDICATE ATTACHMENTS INCLUDED WITH THIS REQUEST:

7.1.1 Process Description YES NO

7.1.2 Waste Analysis Plans YES NO

7.1.3 QA/QC SOPS YES NO

7.1.4 Material Safety Data Sheets YES NO

7.1.5 Analytical Data (On-Spec./Off-Spec. Determination) YES NO

7.1.6 Total Metals Analysis (required for used oil) YES NO

7.1.7 MA01 Certification (For Massachusetts Only) YES NO

7.1.8 Non-Hazardous in State of Generation Certification YES NO

7.1.9 State Special Waste Applications YES NO

FORM 4 - PHARMACEUTICAL OR COMMODITY WASTES

OGDEN WASTE TREATMENT SERVICES MATERIAL CHARACTERIZATION FORM

OWTS Information Only

Date of Receipt: _____ Request #: _____

5.0 WASTE CHARACTERIZATION

5.1 Waste Name/Description: _____

5.2 Indicate form(s) in which materials will be shipped:

- Class A: Consumer Packaged/OTC drugs. YES
- Class B1: 100% bulk Active/Inactive solid ingredients. YES
- Class B2: Bulk finished formulations/powders/dusts/granules. YES
- Class B3: Bulk intermediate solid waste and filters. YES
- Class C: Bulk pressed pills and tablets. YES
- Class D: Bulk creams, pastes and liquids. YES
- Class E: Debris, packaging and Production Scrap. YES
(less than 1% active ingredients)
- Class F: Non-hazardous Re-Packs, QA/QC Samples, etc. YES

5.3 Reason for Disposal (Check One):

- Expired
- Off Specification
- Contaminated (Describe) _____
- Other (Describe) _____

5.4 Additional Waste Information:

- Confirm if the waste has any of the following characteristics:
If YES, provide the following:
- | | | | | |
|-------------------|------------------------------|-----------------------------|-------------|------------|
| Flash Point (°F) | <input type="checkbox"/> YES | <input type="checkbox"/> NO | Flash Point | (°F) |
| Contains Alcohol | <input type="checkbox"/> YES | <input type="checkbox"/> NO | % Alcohol = | _____ % |
| Contains Water | <input type="checkbox"/> YES | <input type="checkbox"/> NO | % Water = | _____ % |
| Contains Cresols | <input type="checkbox"/> YES | <input type="checkbox"/> NO | Cresols = | _____ mg/L |
| Contains Lindane | <input type="checkbox"/> YES | <input type="checkbox"/> NO | Lindane = | _____ mg/L |
| Contains Coal Tar | <input type="checkbox"/> YES | <input type="checkbox"/> NO | Coal Tar = | _____ mg/L |
| FIFRA Regulated | <input type="checkbox"/> YES | <input type="checkbox"/> NO | | |

6.0 WASTE PHYSICAL/CHEMICAL COMPOSITION

YOU MUST COMPLETE BOTH SECTION 6.1 AND 6.2

6.1 WASTE COMPONENTS AND PHYSICAL/CHEMICAL COMPOSITION

Please complete the following table. List the composition of the waste stream and each percentage. The "A" group is for the chemical constituents of the waste. If a trade name is used, or the waste is a commercial product, supply the actual chemical name and/or chemical formula (if available). The "B" group is for packaging (specify type of plastic-PVC or otherwise), debris (specify type of debris), etc.

Attach MSDSs, Formulation Sheets, Package Inserts, etc. from which the table was prepared.

| WASTE COMPONENTS AND CHEMICAL COMPOSITIONS | | CHEMICAL FORMULA | AVG (%) | MAX (%) |
|---|------------------------------|---------------------|---------|---------|
| A | CHEMICAL CONSTITUENTS | | | |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | ² TOTAL: | 100% | |
| B | PACKAGING | | | |
| WHAT PERCENT OF WHOLE DELIVERY IS PACKAGING: IF PLASTIC, IS IT PVC? | | | | 1 |

(attach additional sheets if needed)

- (1) % Packaging must be completed.
- (2) Total average % must be equal to 100%.
- (3) All substances regulated by 29 CFR 1910.1000 subpart Z must be listed.

6.0 WASTE PHYSICAL/CHEMICAL COMPOSITION (cont.)

6.2 WASTE CHEMICAL ANALYSIS:

6.2.1 - Indicate which of the following constituents are present in the waste stream (and complete section 6.2.2 below).

ACID GASES (as either ppm or wt. %): None

- Bromine Chlorine Fluorine
- Iodine Nitrogen Sulfur

HAZARDOUS AIR POLLUTANTS (as ppm): None

- Antimony Cadmium Lead Silver
- Arsenic Chromium Manganese Selenium
- Barium Cobalt Mercury Vanadium
- Beryllium Copper Nickel Zinc

INERTS (as wt. %):

- Moisture (H2O) Aluminum Oxide Silicates
- Clay Titanium Dioxide None

6.2.2 The above determination has been made based on the following information (check at least one):

Analytical Data
 -if checked, attach analytical results that demonstrate the concentration (mg/Kg or wt %) of each constituent present.

Generator Process Knowledge
 -if process knowledge is checked, evidence of the knowledge must be attached including: Analytical Data, Material Safety Data Sheets (MSDSs), Product Formulation Sheets, Package Inserts, Process Descriptions, etc., which provides constituent concentrations (mg/Kg or wt %).

Other (Describe and attach all pertinent documentation): _____

7.0 SUMMARY OF ATTACHMENTS

7.1 Indicate attachments included with this Request:

- 7.1.1 Process Description YES NO
- 7.1.2 Waste Analysis Plans YES NO
- 7.1.3 QA/QC SOPS YES NO
- 7.1.4 Material Safety Data Sheets YES NO
- 7.1.5 Package Inserts YES NO
- 7.1.6 Formulation Sheets YES NO
- 7.1.7 TCLP Analytical Data YES NO
- 7.1.8 Ignitability Analytical Data YES NO
- 7.1.9 Corrosivity Analytical Data YES NO
- 7.1.10 Reactivity Analytical Data YES NO
- 7.1.11 Total Metals Analysis YES NO
- 7.1.12 Total Sulfur/Chloride Analysis YES NO
- 7.1.13 Other YES NO
- 7.1.14 State Special Waste Application(s) YES NO

8.0 NONHAZARDOUS CERTIFICATION

I certify, as an Authorized Representative of the Generator, that this document including all completed forms, and all pertinent addenda accurately represent and describe the waste stream outlined and that it is true, accurate and complete and that no available information has been omitted or falsified. I further certify that the waste is non-hazardous based on Federal, State and Local Regulations.

DATE _____

SIGNATURE _____

PRINT NAME _____

TITLE & COMPANY _____

FORM 5 - CALIFORNIA NONHAZARDOUS WASTE CERTIFICATION

OGDEN WASTE TREATMENT SERVICES MATERIAL CHARACTERIZATION FORM

OWTS Information Only

Date of Receipt: _____ Request #: _____

As an authorized representative of _____ (Company Name), I certify that the materials consigned to Ogden Martin Systems of Stanislaus, Inc. (OMSS) for destruction by incineration are classified as nonhazardous according to Federal Regulations, 40 CFR Part 261, and it has been determined that the materials have been classified as nonhazardous, non-toxic and non-regulated according to the California Administrative Code, Title 22 Regulations. This determination has been made based upon process knowledge and/or analytical data.

DATE _____
SIGNATURE _____
PRINT NAME _____
TITLE _____
COMPANY _____

AFFIDAVIT OF PUBLICATION

News Chief

Published Daily

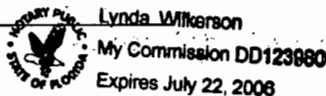
STATE OF FLORIDA
COUNTY OF POLK

Before the undersigned personally appeared Jacqueline Unger-Poole who on oath says that she is Classified Manager of the News Chief, a newspaper published at Winter Haven, in Polk County, Florida; that the attached copy of advertisement Public Notice of Intent to Issue Air Construction Permit in the matter of Citrusuco North America, Inc. in the Circuit Court, was published in said newspaper in the issue of December 20th, 2002.

Affiant further says that the News Chief is a newspaper published at Winter Haven, in said Polk County, Florida, and that said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Winter Haven, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission, or refund for the purpose of securing this advertisement for publication in said newspaper.

Signed Jacqueline Unger-Poole
Sworn to and subscribed before me this 20th day of December, A.D. 2002 by Jacqueline Unger-Poole who is personally known to me or who has produced () as identification.

Lynda Wilkerson
Notary Public



My Commission Expires: _____

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 1050001-006-AC
Citrusuco North America, Inc.
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Citrusuco North America, Inc., for its existing citrus juice processing facility located at 5937 Highway 60, East, Lake Wales, Polk County. The applicant's mailing address is: P.O. Box 3950, Lake Wales, Florida 33898-3950. The permit will impose a limit to the total annual boxes of citrus fruit processed at the facility. This limit will replace the current limit on the total wet citrus peel input to the citrus peel dryers, allowing for a higher moisture content of the peel input into the dryers.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, Florida Statutes (F.S.), before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code (F.A.C.).

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petitioner must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida 32301 Tampa, Florida 33619-8218 Telephone: 850/488-0114 Fax: 850/922-6979
Dept. of Environmental Protection Southwest District 3804 Coconut Palm Drive Tallahassee, Florida 32301 Tampa, Florida 33619-8218 Telephone: 813/744-6100

The complete project file includes the application, technical evaluation, draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, Title V, Section, or the Department's reviewing engineer for this project, Edward J. Svec, Engineer IV, at the Bureau of Air Regulation in Tallahassee, Florida, or call 850/488-0114, for additional information. Written comments directed to the Department's reviewing engineer should be sent to the following mailing address: Dept. of Environmental Protection, Bureau of Air Regulation, Mail Station #5505, Tallahassee, Florida 32399-2400.

Published: December 20, 2002; Ad# 10779

| SENDER: COMPLETE THIS SECTION | COMPLETE THIS SECTION ON DELIVERY |
|--|---|
| <ul style="list-style-type: none"> Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. | <p>A. Signature <input checked="" type="checkbox"/> <i>Frank Linggelfelt</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>Frank Linggelfelt</i> <i>11/17/03</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p> |
| <p>1. Article Addressed to:</p> <p>Mr. Nick Emanuel, C.O.O. Citrosuco North America, Inc. P.O. Box 3950 Lake Wales, Florida 33898-3950</p> | <p>3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p> |
| <p>2. Article Number (Transfer from service label) 7000 0600 0021 6524 2342</p> | <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p> |

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

| | | |
|---|-----------|------------------------------|
| Article Sent To: | | Postmark Here |
| Mr. Nick Emanuel, C.O.O. | | |
| Postage | \$ | |
| Certified Fee | | |
| Return Receipt Fee (Endorsement Required) | | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ | |
| Name (Please Print Clearly) (to be completed by mailer) | | |
| Mr. Nick Emanuel, C.O.O. | | |
| Street, Apt. No., or PO Box No. | | |
| P.O. Box 3950 | | |
| City, State, ZIP+4 | | |
| Lake Wales, Florida 33898-3950 | | |
| PS Form 3800, July 1999 | | See Reverse for Instructions |

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