

Memorandum

Florida Department of Environmental Protection

TO: C. H. Fancy

THRU: Scott Sheplak *SS*

FROM: Edward Svec *ES*

DATE: January 17, 2001

SUBJECT: City of Vero Beach Municipal Utilities Plant
DEP File No. 0610029-004-AC

Attached is the draft public notice package including the Intent to Issue and the Technical Evaluation and Preliminary Determination for the compressor inlet fogger project at the City of Vero Beach Municipal Utilities Plant. The application is to install an inlet fogger ahead of the compressor inlet of a combined cycle combustion turbine. The fogger will operate on hot days and days of relatively low humidity. The evaporative cooling effected by the fogger will allow the unit to operate closer to its rated capacity.

Both short-term and annual emissions will increase because the heat rate through the unit will increase when the fogger is operational. Maximum short-term emissions will still occur during cold days when use of the fogger is not feasible. The unit already complies with 40 CFR 60, Subpart GG, so NSPS applicability is not an issue. The City of Vero Beach will not have to limit the operation of the fogger to insure PSD is not triggered by their use.

I recommend your signature and approval of the cover letter and Intent to Issue.

SS/es

Attachments



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

January 18, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Rex Taylor, City Manager, Utilities Director
City of Vero Beach
Post Office Box 1389
Vero Beach, Florida 32961-1389

Re: DEP File No. 0610029-004-AC (PSD-FL-152C)
City of Vero Beach Municipal Utilities
Inlet Fogger Installation

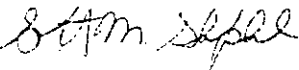
Dear Mr. Taylor:

Enclosed is one copy of the Draft Permit and Technical Evaluation and Preliminary Determination, for the referenced project in Indian River County. The Department's Intent to Issue PSD Permit Modification and the "PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION" are also included.

The "Public Notice of Intent to Issue PSD Permit Modification" must be published one time only, as soon as possible, the legal advertising section of a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modification.

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

Sincerely,


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

CHF/es

Enclosures

In the Matter of an
Application for Permit by:

Mr. Rex Taylor
City Manager, Utilities Director
City of Vero Beach
Post Office Box 1389
Vero Beach, Florida 32961-1389

DEP File No. 0610029-004-AC (PSD-FL-152C)
Combustion Turbine 005
Inlet Evaporative Cooler Installation
City of Vero Beach Municipal Utilities
Indian River County

INTENT TO ISSUE PSD PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue a PSD permit modification (copy of DRAFT PSD Permit Modification attached) for the proposed project, detailed in the application specified above and the attached Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, City of Vero Beach, applied on November 1, 2000, to the Department to add an inlet Evaporative Cooler to the combined cycle combustion turbine-electrical generator (Units 005) at the City of Vero Beach Municipal Utilities plant in Indian River County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212, and 40 CFR 52.21. The above actions are not exempt from permitting procedures. The action is not a modification of the facility with respect to the rules for the Prevention of Significant Deterioration (PSD). However, the Department has determined that a modification of the existing PSD permit (PSD permit modification) is required to conduct the work.

The Department intends to issue this PSD permit modification 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 Chapters 62-4, 62-204, 62-210, 62-212, 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 PSD Permit Modification." The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. 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. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. 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). The Department suggests that you publish the notice within thirty days of receipt of this letter. 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 or other authorization. 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 PSD Permit Modification 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 thirty (30) days from the date of publication of "Public Notice of Intent to Issue PSD Permit Modification." 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 PSD Permit Modification 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 of the Florida Statutes. 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) of the Florida Statutes 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), 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.

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, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

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

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.

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PSD PERMIT MODIFICATION (including the PUBLIC NOTICE, Technical Evaluation and Preliminary Determination, and the DRAFT PSD Permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on _____ to the person(s) listed:

Rex Taylor, City of Vero Beach*
Richard Siefert, City of Vero Beach
Ken Kosky P.E., Golder Associates
Len Kozlov, CD
Gregg Worley, EPA

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)

(Date)

PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0610029-004-AC (PSD-FL-152C)

City of Vero Beach Municipal Utilities Plant
Inlet Evaporative Cooler Project
Indian River County

The Department of Environmental Protection (Department) gives notice of its intent to issue a PSD permit modification to the City of Vero Beach: The permit is to install a Evaporative Cooler at the compressor inlet of a natural gas and No. 2 fuel oil-fired General Electric PG6541B combined cycle combustion turbine-electrical generator at the City of Vero Beach Municipal Utilities Plant in Indian River County. A Best Available Control Technology (BACT) determination was not required pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are City of Vero Beach, 100 17th Street, Vero Beach, Florida 32960.

The primary mover is the combustion turbine, which is typically nominally rated by General Electric at approximately 38 MW at 59 degrees when firing gas. The combustion turbine normally achieves its maximum rated output on cold (32 degrees) days because the greater compressor inlet air density allows greater throughput in the rotor or expansion section of the combustion turbine. The maximum power output is only about 32 MW on hot (100 degrees) days because of the lower compressor inlet air density. The Evaporative Coolers can increase hot-day power output (under very dry conditions) by as much as 6 MW, thus almost restoring the units to their nominal rating.

The Evaporative Coolers provide no benefit under humid or cold (less than approximately 50 degrees) conditions and will not be used when they occur. The maximum output of approximately 38 MW will continue to occur at low ambient temperature. The result is that maximum hourly emissions will not increase although actual annual emissions will increase within their permitted limits because more fuel will be used on hot, relatively dry days.

Although the number of days during which the Evaporative Coolers can economically operate probably limits emissions increases to levels below significance for the purposes of PSD applicability, the City of Vero Beach proposes enforceable conditions to insure non-applicability. The City of Vero Beach asserts and the Department accepts that the modification will not cause any meaningful change in the actual hours of operation of these combined cycle unit. The unit is allowed to operate continuously and already have a very high availability factor. The maximum increase in annual emissions caused by the project in tons per year is summarized below along with the PSD-significant levels.

<u>Pollutants</u>	<u>Annual Emission Increase</u>	<u>PSD Significant Levels</u>
PM/PM ₁₀	0.68	25/15
SO ₂	5.16	40
NO _x	6.98	40
VOC	0.60	40
CO	1.20	100

An air quality impact analysis was not required or conducted. No significant impacts are expected to occur as a result of this project. It will not cause or contribute to a violation of any ambient air quality standard or increment.

The Department will issue the FINAL permit modification 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 thirty (30) days from the date of publication of "Public Notice of Intent to

Issue a PSD Permit Modification." 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 of the Florida Statutes. 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 (14) 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) of the Florida Statutes 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), however, any person who asked the Department for notice of agency action may file a petition within fourteen (14) 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.

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, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

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

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:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida, 32301
Telephone: 850/488-1344
Fax: 850/922-6979

Department of Environmental Protection
Central District Office
3319 Maguire Boulevard, Suite 232
Orlando, Florida 33401
Telephone: 407/894-7555
Fax: 407/897-5963

The complete project file includes the application, technical evaluation, Draft PSD Permit Modification, 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 at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1. Applicant

City of Vero Beach
100 17th Street
Vero Beach, Florida 32960

Authorized Representative: Rex Taylor, City Manager, Utilities Director

2. Source Name and Location

City of Vero Beach Municipal Utilities
100 17th Street
Vero Beach, Florida 32960

UTM Coordinates: Zone 17, 561.4 km East and 3056.5 km North

3. Source Description

The City of Vero Beach Municipal Utilities Plant holds a Title V operating permit for four fossil fuel fired steam generators (Units 1-4), and one combined cycle gas turbine (Unit 5). Also included in this permit are two unregulated emissions units identified as fuel oil, gasoline and lube oil storage tanks and a wastewater treatment plant. Based on the Title V application, this facility is a major source of hazardous air pollutants (HAPs).

Fossil Fuel Steam Generator, Unit 1, rated at 13 MW, 202 mmBtu/hr for natural gas and 140 mmBtu/hr for fuel oil, capable of burning any combination of natural gas and numbers 2, 4 and 6 fuel oil, with emissions exhausted through a 200 ft. stack shared with Emissions Unit 002. The emissions unit is regulated under Rule 62-296.406, F.A.C., Fossil Fuel Steam Generators with Less than 250 million Btu per Hour Heat Input. Fossil fuel fired steam generator Unit 1 began commercial operation in 1961.

Fossil Fuel Steam Generator, Unit 2, rated at 17 MW, 248 mmBtu/hr for natural gas and 243 mmBtu/hr for fuel oil, capable of burning any combination of natural gas, numbers 2, 4 and 6 fuel oil, and propane as an ignitor fuel, with emissions exhausted through a 200 ft. stack shared with Emissions Unit 001. The emissions unit is regulated under Rule 62-296.406, F.A.C., Fossil Fuel Steam Generators with Less than 250 million Btu per Hour Heat Input. Fossil fuel fired steam generator Unit 2 began commercial operation in 1964.

Fossil Fuel Steam Generator, Unit 3, rated at 34 MW, 417 mmBtu/hr for natural gas and 410 mmBtu/hr for fuel oil, capable of burning any combination of natural gas, numbers 2, 4 and 6 fuel oil, and propane as an ignitor fuel, with emissions exhausted through a 200 ft. stack. The emissions unit is regulated under Acid Rain, Phase II and Rule 62-296.405, F.A.C., Fossil Fuel Steam Generators with More than 250 million Btu per Hour Heat Input. Fossil fuel fired steam generator Unit 3 began commercial operation in 1971.

Fossil Fuel Steam Generator, Unit 4, rated at 56 MW, 685 mmBtu/hr, capable of burning any combination of natural gas, numbers 2, 4 and 6 fuel oil, and propane as an ignitor fuel, with emissions exhausted through a 200 ft. stack. The emissions unit is regulated under Acid Rain, Phase II, and is subject to 40 CFR 60 Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971. Fossil fuel fired steam generator Unit 4 began commercial operation in 1976.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Combined Cycle Gas Turbine, Unit 5, a General Electric Model PG6541B, is rated at 38 MW, 455 mmBtu/hr for number 2 fuel oil and 414 mmBtu/hr for natural gas, capable of burning any combination of, number 2 fuel oil, and natural gas, with emissions exhausted through a 125 ft. stack. This emissions unit is regulated under Acid Rain, Phase II and is subject to 40 CFR 60, Subpart GG, Standards of Performance for New Stationary Gas Turbines. This unit underwent a BACT Determination dated June 28, 1991. BACT Limits were incorporated into the subsequent PSD permits including AC 31-253502 (PSD-FL-152B). Exhaust is vented through the heat recovery steam generator that is not equipped with duct burners and then through a 125 ft. stack. Emissions are controlled by dry low-NOx burners when firing natural gas, and by water injection when firing fuel oil. The turbine exhaust may also be vented through a bypass stack for simple cycle operation. The turbine began commercial operation in 1992.

4. Current Permit and Major Regulatory Program Status

City of Vero Beach Municipal Utilities Units 1, 2, and 3 were granted operating permits as existing units by the Department. Construction of Unit 4 was authorized by the Department under permit AC31-2182. Unit 5 was authorized construction under AC31-184928 and Permit PSD-FL-152. Unit 5 was modified by permits AC31-184928A and PSD-FL-152A on March 27, 1995 and again by permits AC31-253502 and PSD-FL-152B on September 21, 1995. AC31-253502/ PSD-FL-152B effectively superseded the previous construction permits.

The facility operates under Title V Air Operation Permit No. 0610029-002-AV effective January 1, 1998. This facility is a major source of hazardous air pollutants (HAPs) based on information submitted in the Title V application.

The combustion turbine is subject to 40 CFR 60, Subpart GG, Standards of Performance for New Stationary Gas Turbines. The combined cycle unit and the fossil fuel steam generators are regulated under the Title IV of the Clean Air Act, Acid Rain, Phase II.

5. Permit Modification Request

On November 1, 2000 the Department received a request from the City of Vero Beach for modification of its permits to install direct water spray fogging systems in the inlet duct of Combustion Turbine (CT) Unit 5 (ARMS Emissions Unit 005). The project is a performance enhancement that can improve both the turbine power output and the heat rate of the unit. The principle is based on evaporative cooling of the incoming, filtered, ambient air to lower its temperature and increase its density.

The combustion turbine is typically rated by General Electric at approximately 38 MW at 59 degrees when firing gas. The combustion turbines (exclusive of the steam cycle) normally achieve their maximum rated output on cold (32 degrees) days because the greater compressor inlet air density allows greater throughput in the rotor or expansion section of the combustion turbine. The maximum power output is only about 32 MW on hot (100 degrees) days because of the lower compressor inlet air density. The foggers can increase hot-day power output (under dry conditions) by around 6 MW, thus almost restoring the units to their nominal rating. The foggers provide no benefit under humid or cold (less than approximately 50 degrees) conditions and will not be used when they occur. The maximum output of approximately 38 MW will continue to occur at low ambient temperature.

Inlet foggers are routinely included in new combustion turbine projects and have not affected the Department's decisions regarding Best Available Control Technology.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

6. Emissions Increases Due to Modification/Method of Operation

The foggers are physical pieces of equipment whose addition and use can increase emissions on hot or dry days. The use of the foggers can also be considered a change in method of operation of the inlet "air conditioning system" that is already used to filter incoming air.

Assuming a design condition for Florida of 95 degrees (°F) and 50 percent (%) relative humidity, evaporative cooling to the point of saturation of the incoming gas stream results in a temperature decrease of approximately 16 °F to 79 °F. This represents an increase of roughly 5% in power output or on the order of 2 MW. Under average annually averaged conditions, the reduction typically possible is on the order of 5.5 °F, with an associated power increase of about 1 MW.

Refer to attached Heat Input versus Ambient Temperature Curve. The City of Vero Beach estimated that that heat input to the combustion turbine will increase by approximately 1.2 mmBtu per hour per degree of temperature reduction (mmBtu/hr/°F) by evaporative cooling, when firing natural gas. If emissions rates are known in terms of pounds per mmBtu (lb/mmBtu), the increase on hourly emissions can be estimated.

The City of Vero Beach assumed that the unit will be operated 8,760 hours per year gas and 2,871 hours on oil. The annual emissions were determined by multiplying the heat input increase per degree Fahrenheit (°F) times the emissions rate in lb/mmBtu for the number of °F-hours proposed for the turbine. The °F-hours/year represents the maximum potential amount of annual temperature reduction of evaporative cooling and was calculated by using the average temperature reduction multiplied by the hours of year assumed. For example, the °F-hours for gas firing are calculated by multiplying 8,760 hours by 10 °F, or 87,600 °F-hours. For Unit 5, a maximum of 58,890 °F-hours of operation on natural gas and 28,710 °F-hours of operation firing distillate fuel oil was used as the basis for the annual emissions estimate. Annual emissions are estimated as detailed in the following table.

TOTAL EMISSIONS INCREASES DUE TO USE OF INLET FOGGERS AT FOUR UNITS

Pollutant	Emission Rate lb/mmBtu (gas)	Emission Rate lb/mmBtu (oil)	Emission Increase ton/yr (gas)	Emission Increase ton/yr (oil)	Annual Increase tons/yr (Oil & Gas)	PSD Threshold tons/yr
NO _x	0.1070	0.1736	5.56	3.25	6.98	40
PM/PM ₁₀	0.0060	0.0250	0.31	0.47	0.68	25/15
CO	0.0224	0.0226	1.16	0.42	1.20	100
VOC	0.0112	0.0113	0.58	0.21	0.60	40
SO ₂	0.0030	0.2700	0.16	5.05	5.16	40

Source: Application submitted on November 1, 2000.

Limiting the unit to 5,889 hours of operation on gas and 2,871 hours of operation on oil will not effectively insure that annual emissions increases will not exceed the values given above. This is because the hours of operation will be chosen with a bias toward the days when the possible temperature decrease is greater than that assumed in the calculation. However, because the annual increases are so far below PSD thresholds, restriction to the current fuel use restrictions contained in the current Title V permit will ensure the thresholds will not be exceeded.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The emissions increases calculated are the direct result from the physical change in or change in method of operation such as is the installation of the inlet foggers. These assume that the ability to achieve greater power output when the foggers are used does not result in emissions increases outside the turbines original power curve. The rationale is discussed below.

The emissions characteristics (GE performance curves) do not change as a result of the use of the foggers from what would normally occur throughout the entire range of temperatures and relative humidity. Rather, the foggers move the operating points along the same curve toward the power and emissions that normally occur at lower temperatures. The worst case emissions scenario will still occur during the winter months and will occur with the foggers off. According to GE (reference: Brooks, 1996), evaporative cooling is limited to ambient temperatures of 59 °F and above because of the potential for icing the compressor.

7. Evaluation of PSD Applicability

As a major source, a modification or change in method of operation of Unit 5 resulting in **significant net emissions increases** is subject to PSD review. Significant net emissions increase is defined in Rule 62-212.400, F.A.C as follows:

Significant Net Emissions Increase – A significant net emissions increase of a pollutant regulated under the Act is a net emissions increase equal to or greater than the applicable significant emission rate listed in Table 212.400-2, Regulated Air Pollutants – Significant Emission Rates.

The significant emission rates are included (see PSD Threshold) in the Table above. The meaning of a net emissions increase is given in Rule 62-212.400, F.A.C. as:

Net Emissions Increase - A modification to a facility results in a net emissions increase when, for a pollutant regulated under the Act, the sum of all of the contemporaneous creditable increases and decreases in the actual emissions of the facility, including the increase in emissions of the modification itself and any increases and decreases in quantifiable fugitive emissions, is greater than zero.

The definition of actual emissions is given in Rule 62-210.200, F.A.C. (definitions) as follows:

Actual Emissions - The actual rate of emission of a pollutant from an emissions unit as determined in accordance with the following provisions:

- (a) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during a two year period which precedes the particular date and which is representative of the normal operation of the emissions unit. The Department may allow the use of a different time period upon a determination that it is more representative of the normal operation of the emissions unit. Actual emissions shall be calculated using the emissions unit's actual operating hours, production rates and types of materials processed, stored, or combusted during the selected time period.*
- (b) The Department may presume that unit-specific allowable emissions for an emissions unit are equivalent to the actual emissions of the emissions unit provided that, for any regulated air pollutant, such unit-specific allowable emissions limits are federally enforceable.*

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

- (c) For any emissions unit (other than an electric utility steam-generating unit specified in subparagraph (d) of this definition) which has not begun normal operations on a particular date, actual emissions shall equal the potential emissions of the emissions unit on that date.
- (d) For an electric utility steam generating unit (other than a new unit or the replacement of an existing unit) actual emissions of the unit following a physical or operational change shall equal the representative actual annual emissions of the unit following the physical or operational change, provided the owner or operator submits to the Department on an annual basis, for a period of 5 years representative of normal post-change operations of the unit, within the period not longer than 10 years following the change, information demonstrating that the physical or operational change did not result in an emissions increase. The definition of "representative actual annual emissions" found in 40 CFR 52.21(b)(33) is adopted and incorporated by reference in Rule 62-204.800, F.A.C.

The term electric utility steam-generating unit is defined as:

Electric Utility Steam Generating Unit – Any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale. Any steam supplied to a steam-electric generator that would produce electrical energy for sale is also considered in determining the electrical energy output capacity of the unit.

Based on Department records, actual hours of operation since 1994 are as follows:

	Annual Operating Hours 1994 - 1999				
<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>
7,212	7,302	7,794	4,073	2,540	3,324

The operation can be characterized as "baseload." The foggers will be allowed to operate continuously but will be limited in terms of "degree-hours." As previously mentioned, if the average temperature drop is in fact 10 °F, they can operate 5,889 hours on gas and 2,871 hours on oil for a total of 8,760 hours per year.

The combustion turbines have clearly begun *normal operation*. As modern combined cycle units, they are very efficient in comparison with conventional boiler-based steam-electrical units. The combustion turbine-electrical generator produces 38 MW (nominal) of electrical power. Therefore, the correct approach to determine the magnitude of a net emissions increase is to compare actual emissions from preceding years with representative actual annual emissions as described for steam electrical units.

The City of Vero Beach asserts and the Department accepts that use of the inlet foggers will not affect the hours of operation of the unit. As mentioned previously, they are already baseload units and any downtime is more likely due to maintenance than to demand. Most likely the combined cycle unit will continue their normal baseload operation within the recent historical hours per year per unit. The emissions are directly related to the hours of operation.

The modification project can be isolated from the normal operation of the units and its effects can be directly predicted and measured without having to make annual comparisons of actual emissions

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

from the combined cycle units before and after the change. The modification itself (i.e. installation and operation of the foggers), however, has not yet begun normal operation. The future actual emissions caused by the modification are equal to the potential-to-emit, which is based on the increases in heat input associated with the use of the fogging system.

The number of days during which the foggers can economically operate probably limits actual emissions increases to levels below significance for the purposes of PSD applicability. However, the City of Vero Beach sample calculations proposes to limit operation of the foggers to the equivalent of 5,889 (gas) when 2,871 (oil) hours per year on the basis of a 10 °F average compressor are used. This equates to 58,890 °F-hr on gas and 28,710 °F-hr on oil. If, for example, the average temperature drop is actually 20 °F, the foggers will only be allowed to operate half as many hours as the base case. Emissions will increase under these limitations (as previously tabulated) by levels less than the significant emissions rates. The Department concludes, therefore, that PSD does not apply to this project.

8. Proposed Addition of New Conditions to PSD-FL-152

The combustion turbine was constructed under the authority of PSD permit No. PSD-FL-152 issued on July 1, 1991. This permit was modified on March 27, 1995 and September 21, 1995. The Department will amend PSD-FL-152 adding a new condition authorizing installation and operation of the inlet fogger.

The new condition applicable to the inlet fogger proposed for Unit 5 (ARMS Emissions Unit 005) is shown in the draft PSD permit modifications. It does not limit operation of the inlet fogger..

9. Conclusions

The project will not increase the maximum short-term emission rates as these are already achieved under natural conditions of low ambient temperatures without the use of the foggers.

The Department concludes that PSD is not applicable to this project since this project as presented will not result in significant net emissions increase to major facility. The changes will not cause a significant impact or cause or contribute to a violation of any ambient air quality standard or PSD increment.

The Department's conclusion does not set a precedent for projects implemented at any facilities other than combined cycle unit inlet fogger installations. It does not set precedents related to any physical changes within the compressors, combustors, rotors, or other key components at such units. The application and determination of the Department's rules does not constitute an interpretation of the EPA rules under 40CFR52.21, Prevention of Significant Deterioration or 40CFR60, New Source Performance Standards.

For further details regarding this review, contact:

Scott Sheplak, P.E. Administrator
Edward Svec, Review Engineer
Title V Section
Bureau of Air Regulation
850/488-1344



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

PERMITTEE:

City of Vero Beach
100 17th Street
Vero Beach, Florida 32960

Authorized Representative:

Rex Taylor
City Manager, Utilities Director

DEP File No.	PSD-FL-152 C
Permit No.	0610029-004-AC
Project	Evaporative Cooling System
SIC No.	4911
Expires:	December 31, 2001

PROJECT AND LOCATION:

Installation of an evaporative cooling system on the existing 38 MW combined cycle General Electric PG6541B combustion turbine-electrical generator designated as City of Vero Beach Municipal Utilities Unit 5. This permit is a re-issuance of the original air construction permit authorizing the construction of Unit 5 and incorporating subsequent modifications including the present project.

The unit is located at the as City of Vero Beach Municipal Utilities Plant, 100 17th Street, Vero Beach, Indian River County.

The UTM coordinates are: Zone 17; 561.4 km E and 3056.5 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.). The above named permittee is authorized to modify the facility 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).

ATTACHED APPENDICES MADE A PART OF THIS PERMIT:

Appendix GC Construction Permit General Conditions
Appendix SC Specific Conditions including Permits PSD-FL-152 (AC31-184928), PSD-FL-152A (AC31-184928A) and PSD-FL-152B (AC31-253502)

Howard L. Rhodes, Director
Division of Air Resources
Management

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APPENDIX SC
SPECIFIC CONDITIONS

1. This permit, PSD-FL-152C (DEP File 0610029-004-AC), supersedes PSD permit PSD-FL-152B (DEP File AC31-253502) issued on September 21, 1995.
2. The provisions of air construction permit PSD-FL-152 (AC31-184928) issued on July 1, 1991 to construct Unit 5 and subsequent revisions PSD-FL-152A (AC31-184928A) issued on March 27, 1995 and PSD-FL-152B (AC31-253502) issued on September 21, 1995 are attached and incorporated into this air construction permit in addition to the change that follows in Specific Condition 3 below.
3. An evaporative cooling system may be installed at the compressor inlet of the City of Vero Beach Municipal Utilities Unit 5. The system may be operated at any time that Unit 5 is in operation.

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

- 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.

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

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.

- 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 re-issued permit incorporates previous determinations for:
- a) Best Available Control Technology (X)
 - b) Prevention of Significant Deterioration (X); and
 - c) 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.

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. 	A. Received by (Please Print Clearly) _____ B. Date of Delivery 1/2	
	C. Signature X <i>George Yang</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee	
1. Article Addressed to: Mr. Rex Taylor, City Manager Utilities Director City of Vero Beach P. O. Box 1389 Vero Beach, FL 32961-1389	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
	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.	
	4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes	
2. Article Number (Copy from service label) 7099 3400 0000 1453 2740		
PS Form 3811, July 1999	Domestic Return Receipt	102595-99-M-1789

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Return Receipt Fee (Endorsement Required)			
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City, State, ZIP+4 Vero Beach, FL 32961-1389			
PS Form 3800, July 1999		See Reverse for Instructions	