21 West Church Street
Jacksonville, Florida 32202-3158

JEA

December 30, 1999

RECEIVED
JAN 03 2000
BUREAU OF AIR REGULATION

Mr. Al Linero, P.E.
New Source Review Administrator
Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Northside Generating Station ✓ (1) 0310045-004-AC
Kennedy Generating Station ✓ (2) 0310047-004-AC
Combustion Turbine Fogging Systems

Dear Mr.Linero:

Enclosed please find an original and four (4) copies each of the permit applications for installing spray fogging systems on the existing combustion turbines at the Northside and Kennedy Generating Stations.

If you have any questions with regard to this matter, please contact me at (904) 665-6247.

Sincerely,

N. Bert Gianazza, P.E.
Environmental Permitting
& Compliance Group

cc: Steve Pace, P.E., RESD

cc: NED
EPA

APPLICATION FOR AIR PERMIT
INSTALLATION OF DIRECT WATER SPRAY FOGGING SYSTEMS
JACKSONVILLE ELECTRIC AUTHORITY
KENNEDY PLANT

Prepared For:

Jacksonville Electric Authority
21 West Church Street
Jacksonville, Florida 32202-3139

Prepared By:

Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653

December 1999
9937578Y/F2

DISTRIBUTION:

3 Copies - Jacksonville Electric Authority
1 Copies - Golder Associates Inc.

PART I

APPLICATION FOR AIR PERMIT
LONG FORM

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

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

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **JEA**	
2. Site Name: **J. Dillon Kennedy Generating Station**	
3. Facility Identification Number: **0310047** [ ] Unknown	
4. Facility Location: Street Address or Other Locator: **4215 Tallyrand Avenue** City: **Jacksonville** County: **Duval** Zip Code: **32206**	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Mr. N. Bert Gianazza, P.E.**
2. Application Contact Mailing Address: Organization/Firm: **JEA Environmental Permitting and Compliance Group** Street Address: **21 West Church Street – 8th Floor** City: **Jacksonville** State: **FL** Zip Code: **32202**
3. Application Contact Telephone Numbers: Telephone: **(904) 665 - 6247** Fax: **(904) 665 - 7376**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	January 3, 2000
2. Permit Number:	0310047-064-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)

[X] 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:
   Walter P. Bussells, CEO and Managing Director
2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **Jacksonville Electric Authority**
   Street Address: **21 West Church Street**
   City: **Jacksonville** State: **FL** Zip Code: **32202**
3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: (**904**) **665** - **7220** Fax: (**904**) **665** - **7376**
4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [ ], 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.*

Signature

12/23/99
Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**
2. Professional Engineer Mailing Address:
   Organization/Firm: **Golder Associates Inc.**
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653-1500**
3. Professional Engineer Telephone Numbers:
   Telephone: (**352**) **336** - **5600** Fax: (**352**) **336** - **6603**

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 [ ], 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 [X], 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

12/20/99
Date

(seal) PE

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
003	Combustion Turbine No. 3	AC1B	
004	Combustion Turbine No. 4	AC1B	
005	Combustion Turbine No. 5	AC1B	

Application Processing Fee

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

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Installation of direct water spray inlet fogging systems. Since the facility holds a Title V permit pursuant to Chapter 62-213 F.A.C., a permit fee is not required. Refer to Part II for discussion.

2. Projected or Actual Date of Commencement of Construction

3. Projected Date of Completion of Construction:

Application Comment

Existing gas turbines Nos. 3 through 5 will be installed with direct water spray fogging systems that will reduce the turbine inlet air temperature. The temperature reduction will improve the heat rate and increase power due to the cooler-denser inlet air. The net emissions change from this project will not result in an increase of any regulated pollutant greater than the PSD significant emission rates. Therefore, PSD review does not apply to proposed project. Refer to Part II for discussion.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **440.065** North (km): **3359.15**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): **30 / 21 / 52** Longitude (DD/MM/SS): **81 / 37 / 25**			
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment (limit to 500 characters): **The existing Northside plant currently consists of 3 Fossil Fuel Fired-Steam Generators and 3 simple cycle gas turbines. The 3 combustion turbines (CT Units 3-5) are fired with No. 2 Distillate Oil. Refer to Part II for discussion.**			

Facility Contact

1. Name and Title of Facility Contact: **Mr. N. Bert Gianazza, P.E.**
2. Facility Contact Mailing Address: Organization/Firm: **JEA Environmental Permitting and Compliance Group** Street Address: **21 West Church Street – 8th Floor** City: **Jacksonville** State: **FL** Zip Code: **32202**
3. Facility Contact Telephone Numbers: Telephone: **(904) 664 - 6247** Fax: **(904) 665 - 7376**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source? [ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?
5. [ ] Synthetic Minor Source of HAPs?
6. [X] One or More Emissions Units Subject to NSPS?
7. [ ] One or More Emission Units Subject to NESHAP?
8. [ ] Title V Source by EPA Designation?
9. Facility Regulatory Classifications Comment (limit to 200 characters):

List of Applicable Regulations

Facility emissions covered under existing Title V permit, no additional facility or emission unit applicable requirements as a result of the proposed change.	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [X] Attached, Document ID: Part II [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [ ] Attached, Document ID: _____ [X] Not Applicable
7. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities:
   [ ] Attached, Document ID:_____ [ ] Not Applicable

9. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID:_____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [ ] Not Applicable

10. Alternative Methods of Operation:
    [ ] Attached, Document ID:_____ [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID:_____ [ ] Not Applicable

12. Identification of Additional Applicable Requirements:
    [ ] Attached, Document ID:_____ [ ] Not Applicable

13. Risk Management Plan Verification:
    [ ] 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:_____)
    [ ] Plan to be submitted to CEPPO (Date required:_____)
    [ ] Not Applicable

14. Compliance Report and Plan:
    [ ] Attached, Document ID:_____ [ ] Not Applicable

15. Compliance Certification (Hard-copy Required):
    [ ] Attached, Document ID:_____ [ ] Not Applicable

PART II

SUPPORTING INFORMATION

Application for Air Permit
Installation of Direct Water Spray Fogging Systems
Kennedy Plant

Introduction

Jacksonville Electric Authority (JEA) is proposing to install direct water spray fogging systems in the inlet ducts of the existing 4 simple cycle combustion turbines at the Kennedy plant. The purpose of the inlet foggers to provide adiabatic inlet air cooling which increase turbine output and decreases heat rate. The project is part of increasing capacity in a cost effective manner.

Description

The direct inlet fogging systems achieve adiabatic cooling using water to form fine droplets (fog). The fog is produced by injection grids placed in the turbine inlet duct that use nozzles that produce a fine spray. The small fog particles (about 10 to 20 microns) extract the latent heat of vaporization from the gas stream when the water droplet is converted to gas. Heat is removed at a rate of 1,075 Btu/lb of water. The result of the fogging is a cooler more moisture laden air stream. Figure 1 presents a schematic of a typical fogging system.

The amount of heat removed is highly dependent upon the ambient air conditions. The two most important parameters are the dry bulb temperature and relative humidity. As moisture is added to the inlet air by the fogging, the vaporization of the fog droplets cools the air toward the wet-bulb temperature. For the proposed project, the design condition is based on the inlet cooling tests for Northside CT Unit 5, which had an average temperature of 90°F and 62-percent relative humidity. The resultant wet bulb temperature, based on psychrometric charts is 79°F, which was demonstrated during the tests. At 100 percent saturation the inlet cooling system would result in a 16°F decrease of the turbine inlet air.

While adiabatic cooling is most efficient for dry climates, adiabatic cooling in Florida can be an effective means of inlet air cooling during the late morning to evening hours. This period is typically 8 to 10 hours per day from about 10 a.m. to 8 p.m. In the early morning hours and evening hours, the typical relatively humidity in Florida is 70 to 90 percent depending

on the climatic conditions. Because of the highly variable nature of ambient air conditions, the annual average inlet cooling was assumed to be 11°F as demonstrated during the tests. This average was reviewed against a 30 year record of meteorological data for Jacksonville and found to be representative of the range in conditions that occur over an annual period. This includes cooling associated with the typical mid-afternoon summer days and early morning/evening periods that occur year-round. The typical mid-afternoon cooling for Jacksonville would be 14°F and would occur in August with a mid-afternoon temperature of 91°F and 58-percent relative humidity. During January, the mid-afternoon cooling would be about 7°F. The typical cooling that would occur in the early morning hours of evening hours with temperatures of about 80°F and a relative humidity of 80 percent would be 5°F. This cooling also assumes that the gas stream can be 100 percent saturated. The ambient air conditions that are modified by the fogging system occur naturally but are more frequent with the fogging system. For example, the average minimum temperatures for the months of November through April range from 41.7°F to 55.7°F with relative humidities ranging from 83 to 88 percent. The amount of adiabatic cooling would range from only 1 to 2°F. For the Kennedy CTs, an average temperature reduction of 11°F was used as the basis of emission estimates.

Fogging Tests and Statistical Evaluation

A preliminary statistical evaluation of the tests performed on Northside Generating Station Combustion Turbine CT5 was conducted. The evaluation is summarized in the attached Table 1. The techniques used to evaluate the data were identical to those specified in 40 CFR Part 60 Appendix C for determining differences in emission rates, but for non-paired data. Parameters initially evaluated included NO_x emission rate in lb/mmBtu, NO_x emission rate in lb/hr, capacity in megawatts (MW) and heat input in mmBtu/hr. Three test conditions were evaluated: base operation, fogging with all data and fogging at 20 gallons/minute (gpm) or greater.

The results indicated that the NO_x emission rate in lb/mmBtu for the fogging categories evaluated are statistically lower at the 95 percent confidence level than at base load operation without fogging. This conclusion is for all data and at the higher fogging rates (i.e., >20 gpm). The NO_x emission rate in lb/hr for the fogging is not statistically different at the 95 percent confidence level from the base load operation. This is primarily a result in the increase in mass flow and volume that is shown by the increases in capacity and heat input. With fogging, the capacity and heat input are statistically higher at the 95 percent confidence level than at base load operation without fogging. The average increase in capacity was about 5.5 percent or about 2.5 MW with the higher fogging rates. Similarly, the average heat input increase was about 5.8 percent and about 37 mmBtu/hr.

All the data for carbon monoxide demonstrated emissions near zero; therefore, fogging did not appear to have any influence on the combustion process and emissions of CO. Given this result, any change in emissions of volatile organic compounds (VOCs) are not expected.

From an emission perspective, the data suggests that the NO_x emission rate in lb/hr does not increase. However, fogging will result in an increase in the heat input and concomitant increase in particulate matter and sulfur dioxide as a result of more fuel input to the CT.

The data suggests that both the increases in capacity and heat input are consistent with the performance curves. The predicted increase as a differential is about 2.5 MW and 30 mmBtu/hr for the average ambient dry bulb temperature and relative humidity. The fogging system brought the turbine inlet temperature very close to the wet bulb inlet temperature. The results of the tests on Northside CT 5 are assumed to be representative for the Kennedy CTs. When installed at the Kennedy plant, an analysis similar to that performed for Northside will be evaluated.

Turbine Performance and Emission Estimates

The effect of decreasing the turbine inlet air through the use of fogging will be to increase the mass flow of air that can go through the turbine which allows higher heat input and power output. The combustion turbine is also more efficient since the heat rate decreases

with decreasing temperature. For the combustion turbines at the Kennedy plant, an 11°F average decrease in temperature would result in a 4.9 percent increase in power and an associated 0.6 percent decrease in heat rate. Thus, while power increases, the production of power is more efficient with concomitant lower emissions per MW-hr generated. The increase in heat rate as a function of temperature decrease is a linear function and for the Kennedy turbines would be 2.8 mmBtu/hr/°F. The data were determined using manufacture supplied data (see Attachment A).

The increase in emissions of PM, SO_2, and VOC associated with fogging were determined using emission limits contained in the Title V Permit for the facility and AP-42 emission factors where no limits are provided. Table 2 presents a summary of the operating conditions and emission increases resulting from fogging. The annual emissions were determined by multiplying the heat input increase times the emissions rate in lb/mmBtu for the number of hours of proposed for the turbines. For the Kennedy turbines, a maximum of 1,000 hours of fogger operation for each turbine was used as the basis for annual emission estimates.

Regulatory Applicability

A modification is defined in Rule 62-210.200 Florida Administrative Code (F.A.C.) as any physical change in, or a change in the method of operation of, or addition to a facility which would result in an increase in the actual emissions of any air pollutant subject to regulation under the Clean Air Act. A modification to a major source of air pollution, such as the Kennedy plant, may be subject to review under the Department's Prevention of Significant Deterioration (PSD) rules codified in Rule 62-212.400 F.A.C.

The proposed installation of direct water spray fogging systems is a modification according to Rule 62-212.200 (188) F.A.C., since annual emissions will potentially increase as a result of the increased power and heat input.

Based on the available data, it is concluded that the emission rate does not change as a result of inlet fogging. Therefore, increase in annual potential emissions can be conservatively

determined through the use of increases in heat input associated with the use of the fogging systems. For the 3 combustion turbines the maximum potential annual increase in emissions is estimated as follows:

Summary of Maximum Annual Emissions - All Units - 3 CTs at 1,000 hours/year

Pollutant	Tons/Year
PM	2.33
NO_x	0.0[a]
SO_2	30.92
CO	0.0[a]
VOC	1.04

[a]Assumed from the tests conducted on Northside CT Unit 5.

These maximum potential emission rates are less than the significant emission rates in Table 62-212.400-2 in Rule 62-212.400 F.A.C. and therefore PSD would not apply.

JEA proposes that the amount of fogging allowed by the Department be based on a cumulative amount of operating hours for the 3 combustion turbines. This would amount to 3,000 hours of operation. As described previously, the emission rates would not be affected.

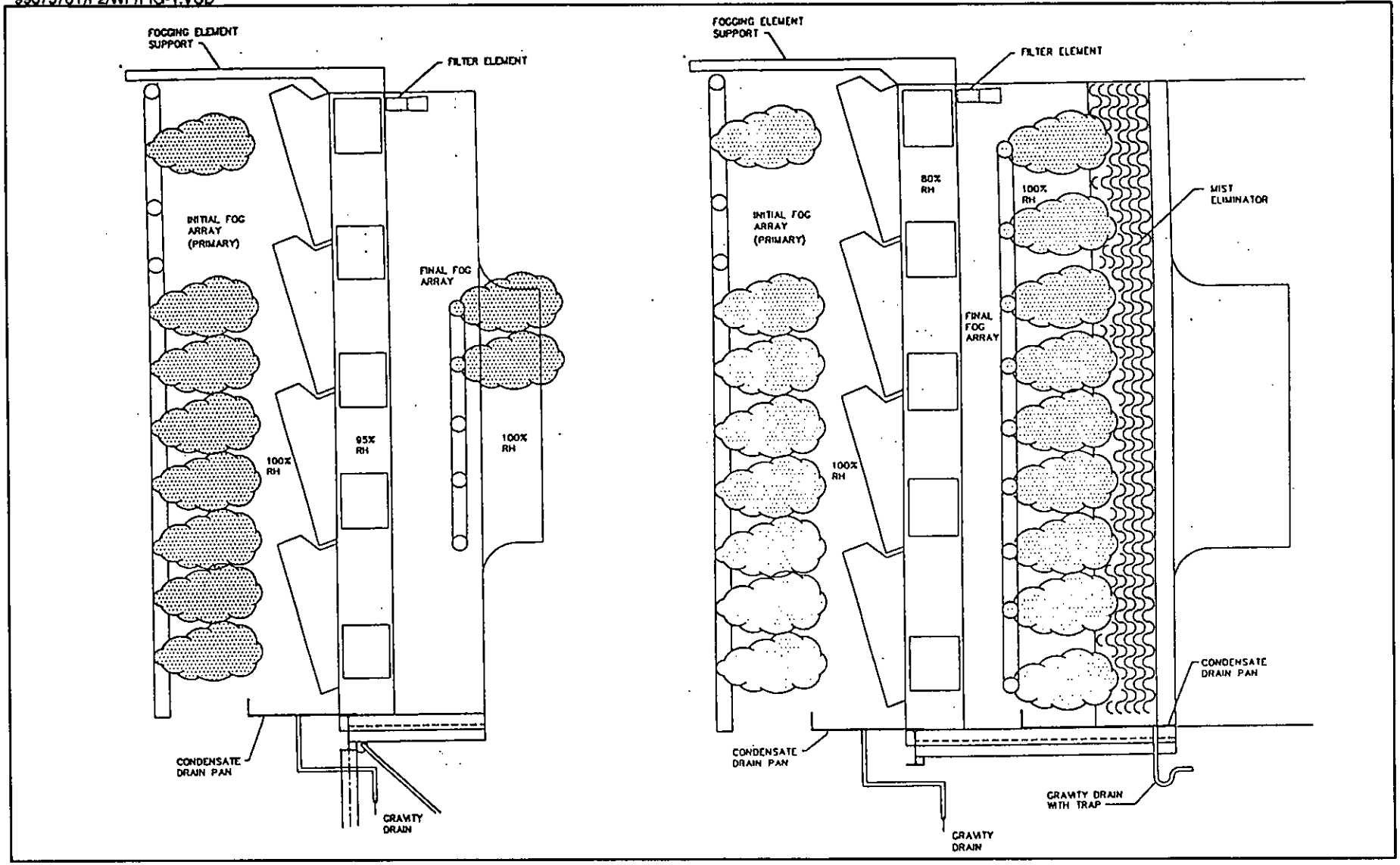

Figure 1. Illustrative (typical) Fogging System Schematic

Source: Caldwell Energy and Environmental, Inc.

Golder Associates

Table 1. Average and Upper and Lower 95 Percent Confidence Intervals for Combustion Turbine Inlet Fogging Tests – Northside Generating Station CT5

Parameter	Test Condition	Upper C.I.	Average	Lower C.I.
NO_x (lb/mmBtu)	Base	0.48	0.47	0.45
NO_x (lb/mmBtu)	Fogging All Data	0.45	0.44	0.42
NO_x (lb/mmBtu)	Fogging > 20 gpm	0.44	0.43	0.41
NO_x (lb/hr)	Base	307.4	300.0	292.6
NO_x (lb/hr)	Fogging All Data	299.9	290.0	280.0
NO_x (lb/hr)	Fogging > 20 gpm	297.0	285.3	273.6
Capacity (MW)	Base	48.7	47.4	46.2
Capacity (MW)	Fogging All Data	50.3	49.5	48.7
Capacity (MW)	Fogging > 20 gpm	51.1	50.0	48.6
Heat Input (mmBtu/hr)	Base	641.6	634.0	626.4
Heat Input (mmBtu/hr)	Fogging All Data	671.7	666.2	660.8
Heat Input (mmBtu/hr)	Fogging > 20 gpm	674.7	671.0	667.3

Table 2 Emission Estimates of the Kennedy Generating Station Simple Cycle Combustion Turbines with Inlet Air Cooling System with Direct Water Spray Inlet Fogging (No. 2 fuel Oil Combustion).

Performance Basis			
Temperature Decrease	°F (1)	11	
Power Increase		6.30%	GE Curves @ 80 °F
Heat Rate Decrease		1.78%	GE Curves @ 80 °F
Heat Input Increase		4.27%	GE Curves Average
Heat Input Change	mmBtu/ °F	3.1	GE Curves Average
Hours/year		1,000 (2)	

Pollutants	Units	Emissions (3)	Comments
PM	lb/MMBtu	0.038	AP-42 Section 3.1
	TPY	0.64	per machine
NO_x	lb/MMBtu	0	No Increase in lb/hr emission rate
	TPY	0.00	per machine
SO_2	lb/MMBtu	0.505	AP-42 Section 3.1 (S=0.5%)
	TPY	8.52	per machine
CO	lb/MMBtu	0	No Increase in lb/hr emission rate
	TPY	0.00	per machine
VOC	lb/MMBtu	0.017	AP-42 Section 3.1
	TPY	0.29	per machine

Legend - TPY: tons per year

(1) Temperature decrease is average temperature differential of ambient temperature to compressor inlet temperature utilizing inlet fogger during tests.

(2) Hours of fogger operation based on estimate of 8 hours per day and 125 days per year.

(3) Emission factor references - Title V Permit No. 0310045-002-AV, EPA AP-42 Emission Factors Section 3.1 "Stationary Gas Turbines".

ATTACHMENT A
PERFORMANCE CURVE DATA

Table A. Combustion Turbine Performance Data

Temp. (°F)	Heat Input (mmBtu/hr)	Increase (mmBtu/hr)	Increase (%)	Capacity (MW)	Increase (MW)	Increase (%)	Heat Rate (Btu/kWhr)	Decrease (Btu/kWhr)	Decrease (%)
100	717			47.7			15,031		
90	746	29	4.04%	50.6	2.9	6.08%	14,743	-288.36	-1.92%
80	776	30	4.02%	53.5	2.9	5.73%	14,505	-238.41	-1.62%
70	806	30	3.87%	56.4	2.9	5.42%	14,291	-213.89	-1.47%
60	837	31	3.85%	59.3	2.9	5.14%	14,115	-176.11	-1.23%
50	869	32	3.82%	62.2	2.9	4.89%	13,971	-143.61	-1.02%
40	901	32	3.68%	65.1	2.9	4.66%	13,840	-130.82	-0.94%
Average:		30.67	3.88%		2.9	5.32%		-198.53	-1.37%
Average per °F:		3.07	0.39%		0.29	0.53%		-19.85	-0.14%

ATTACHMENT B
STATISTICAL ANALYSIS

Table B. Statistical Analysis of Northside Unit CT5 Fogging Tests.

Test Day	Date	Test Name	Wet Bulb (°F)	Dry Bulb (°F)	RH (%)	Capacity MW	NOx (lb/mmBtu)	NOx (lb/hr)	Heat Input (mmBtu/hr)
Tuesday	8/10	Base Load - no spray	79	86	76	48	0.48	304.61	641.02
Tuesday	8/10	Back to Base Load	78	86	70	52	0.47	303.18	649.35
Thursday	8/12	Base Load	79	94	50	44	0.49	300.89	616.05
Thursday	8/12	Back to Base Load	79	92	55	44	0.49	302.81	616.88
Friday	8/13	Base Load @ high humidity	ND	82	94	49	0.41	271.19	656.75
Wednesday	8/18	Base Load	79	95	49	46	0.51	319.84	631.31
Wednesday	8/18	Return to Base Load	80	92	59	49	0.48	298.52	626.75
Thursday	8/19	Base Load	78	93	51	46	0.49	307.73	627.78
Thursday	8/19	Back to Base Load	80	91	63	50	0.42		
Friday	8/20	Base Load	79	88	65	47	0.48	302.98	635.20
Friday	8/20	Back to Base Load	78	90	59	47	0.45	288.38	638.94
		Average:	79	90	63				
Tuesday	8/10	Base Load + 5 GPM	ND	ND	ND	48.68	0.47	304.71	649.35
Tuesday	8/10	Base Load + 10 GPM	82	89	74	49	0.48	315.35	658.71
Tuesday	8/10	Base Load + 15 GPM	ND	ND	ND		0.46		
Tuesday	8/10	Base Load + 20 GPM	78	84	76	50	0.44	297.22	668.08
Tuesday	8/10	Base Load + 25 GPM	78	86	73	51	0.47	320.20	674.32
Tuesday	8/10	Base Load + 30 GPM	78	86	70	52	0.42	288.90	682.65
Thursday	8/12	Base Load + 15 GPM	78	95	47	47	0.45	292.02	647.96
Thursday	8/12	Base Load + 30 GPM	80	95	50	49	0.44	289.67	661.32
Wednesday	8/18	Base Load + 30 GPM	80	92	59	49	0.42	278.18	666.00
Thursday	8/19	Base + Z1-Z4 @ 3000	78	93	51	46	0.45	300.44	672.66
Thursday	8/19	Base + Z1-Z4 @ 3200	80	92	61	50	0.40	264.13	666.52
Thursday	8/19	Base + Z1-Z4 @ 3400	80	91	63	50	0.39	264.13	671.55
Friday	8/20	Base + Z1-Z4 @ 3400	79	89	63	51	0.39	264.86	675.71
		Average (All Data):	79	90	62				
		Average (> 20 gpm):	79	90	63				