

Check Sheet

Company Name:
Permit Number:
PSD Number:
Permit Engineer:

R.S. Properties III
AC 116-095616

Cross References:

-
-
-

*Processing was completed
by the district.*

Application:

- Initial Application
- Incompleteness Letters
- Responses
- Waiver of Department Action
- Department Response
- Other

Intent:

- Intent to Issue
- Notice of Intent to Issue
- Technical Evaluation
- BACT or LAER Determination
- Unsigned Permit
- Correspondence with:

- EPA
- Park Services
- Other
- Proof of Publication
- Petitions - (Related to extensions, hearings, etc.)
- Waiver of Department Action
- Other

Final

- Determination:**
- Final Determination
- Signed Permit
- BACT or LAER Determination
- Other

Post Permit Correspondence:

- Extensions/Amendments/Modifications
- Other





SHOLTÈS & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

DER
NOV 7 1985
BAQM

SKEC 258-83-01

November 5, 1985

Mr. Jerry Woosley
Duval County Bio-Environmental
Services Division
515 West 6th Street
Jacksonville, Florida 32206-4397

Subject: Duval County - AP
RS Properties III
Construction Permit AC16-95616

Dear Jerry:

This is to confirm the recent conversation that we had regarding an apparent clerical error in the subject Air Pollution Source Construction Permit and a request to modify this apparent error.

Specific Condition No. 8 of the subject Air Pollution Source Construction Permit lists specific hourly and annual air pollutant emission rates for each of the two caterpillar engines covered by the permit. The specific pollutants addressed by Specific Condition No. 8 are nitrogen oxides, carbon monoxide and volatile organic compounds.

In information presented to the Florida Department of Environmental Regulation (FDER) in support of the Application for Permit No. AC16-95616, (see Section V of the Permit Application entitled Supplemental Requirements) hourly emission rates for the three cited pollutants were reported. The hourly emission rates for each engine were reported as 3.6 pounds per hour of nitrogen oxides, 2.8 pounds per hour of carbon monoxide and 0.9 pounds per hour of volatile organic compounds. These emission rates are exactly twice the emission rates stated in Specific Condition No. 8 of the Permit.

The annual emission rates reported in Specific Condition No. 8; i.e., 15.75 tons per year of nitrogen oxides, 12.2 tons per year of carbon monoxide and 3.95 tons per year of volatile organic compounds, are consistent with the hourly emission rates reported in Section V of the Permit Application.

It appears that both the hourly emission rates (reported in Section V of the Permit Applications for individual engines) and the annual emission rates (reported in Section V of the Permit Application for both engines total) were divided by a factor of two to arrive at the emission rates stated in Specific Condition No. 8 of the Permit. If my supposition is correct, the hourly air pollutant

emission rates stated in Specific Condition No. 8 of Permit AC16-96616 should be doubled. This will result in permitted emission rates of 3.60 pounds per hour for nitrogen oxides for each engine, 2.80 pounds per hour of carbon monoxide for each engine and 0.90 pounds per hour of volatile organic compounds for each engine.

I would also like to request clarification on Specific Condition No. 5 of the subject Air Pollution Source Construction Permit. This condition states that emission testing shall be conducted on each engine within 30 days of start-up for nitrogen oxides and visible emissions. I interpret this to mean that this Condition sets forth a one-time only test requirement for the two engines with subsequent test requirements to be addressed in the Operating Permit that will be issued for the two engines. I would like to request that when the Operating Permit is issued, the requirement for nitrogen oxides emission testing be imposed "only when required by the Florida Department of Environmental Regulation or the Duval County Bio-Environmental Services Division". Since the two Caterpillar engines emit such a small quantity of nitrogen oxides it does not seem reasonable to require testing on an annual basis. The suggested wording for the Operating Permit will, however, give the Department or BESD the option of requiring nitrogen oxides emission tests if conditions justify. I see no problem with the requirement for conducting annual visible emission observations on the two engines.

If there are any questions or comments concerning the matters addressed herein, please feel free to give me a call.

Very truly yours,

SHOLTES & KOGLER,
ENVIRONMENTAL CONSULTANTS


John B. Koogler, Ph.D., P.E.

JBK:ssc

cc: Mr. Frank Watkins, FDER
Mr. Bruce Mitchell, FDER
Mr. James W. Ridgley, RS Properties III
Mr. Bill Johnson, RS Properties III

PS Form 3811, July 1983

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. Show to whom, date and address of delivery.

2. Restricted Delivery.

3. Article Addressed to:
 Mr. James W. Ridgely, Jr.
 R. S. Properties III
 9501 Arlington Expressway, Rm E-26
 Jacksonville, Florida 32211

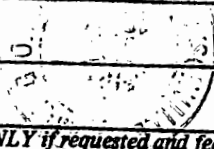
4. Type of Service: Article Number

Registered Insured
 Certified COD 0158672
 Express Mail

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee
 X *James W. Ridgely, Jr.*

6. Signature - Agent
 X

7. Date of Delivery


8. Addressee's Address (*ONLY if requested and fee paid*)

DOMESTIC RETURN RECEIPT

No. 0158672
 RECEIPT FOR CERTIFIED MAIL
 NO INSURANCE COVERAGE PROVIDED—
 NOT FOR INTERNATIONAL MAIL
 (See Reverse)

SENT TO		Mr. James W. Ridgely, Jr.	
STREET AND NO.			
P.O., STATE AND ZIP CODE			
POSTAGE		\$	
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢	
	SPECIAL DELIVERY	¢	
	RESTRICTED DELIVERY	¢	
	RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY		¢	
	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢	
TOTAL POSTAGE AND FEES-		\$	
POSTMARK OR DATE		3/7/85	

PS Form 3800, Apr. 1976

Main File Copy

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

March 6, 1985

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James W. Ridgely, Jr.
General Manager
R.S. Properties III
9501 Arlington Expressway, Room E-26
Jacksonville, Florida 32211

Dear Mr. Ridgely:

RE: Completeness Review for the Application to Modify
Air Pollution Sources: AC 16-095616

On February 11, 1985, the department received your initial response to the bureau's December 31, 1984 incompleteness letter. On February 21, 1985, the department received some additional data, the December - 1983 Summary of Emission Measurements for the Regency Square Properties internal combustion engines. Based on the review of the data submitted, the application package is deemed incomplete and the following information, including all assumptions, calculations and reference documents, shall be submitted to the department before the status of your application can be determined:

° In the most recent submittal, the December - 1983 stack tests, the introduction chapter states that the power plant will exist strictly as an emergency stand-by facility with electric power being purchased from Jacksonville Electric Authority. Therefore,

- in what circumstances will any of the electrical generating units be operated?
- will the above operating mode affect the operation of the Caterpillar engines driving the air conditioning chillers?


Mr. James W. Ridgely, Jr.
Page Two
March 6, 1985

- calculate the annual potential pollutant emissions for each Worthington electrical generating unit and for each fuel type fired.
- calculate the annual potential pollutant emissions for the Caterpillar electrical generating units.
- if the Caterpillar engines driving air conditioning chillers are to be in use, calculate the annual potential pollutant emissions from these sources.
- when electrical power will have to be generated, which electrical generating unit(s) will be used, the Worthington(s) or the Caterpillar(s)? Will the least pollutant emitter(s) be used first?

- ° Since the power plant is retiring and removing from service Worthington electrical generating unit No. 1 and Caterpillar electrical generating units Nos. 1, 8 and 9, recalculate the existing facility's baseline annual pollutant emissions.

If there are any questions, please call Bruce Mitchell at (904)488-1344, or write to me at the above address.

Sincerely,


C.H. Faney, P.E.
Deputy Bureau Chief
Bureau of Air Quality
Management

CHF/BM/rw

cc: John B. Koogler
Jerry Woosley
Don Summerfield
Doug Dutton ✓
Reading File ✓
Bruce Mitchell ✓

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Air and Water Pollution Control

DER
FEB 26 1985
BAQM



February 25, 1985

Mr. Bruce Mitchell
BAQM - CAPS
Department of Environmental Regulation
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, Florida 32301

Re: Regency Square Properties

Dear Mr. Mitchell:

Enclosed is a copy of an excerpt from the December 1983 Summary of Emission Measurements for the Regency Square Properties internal combustion engines as requested.

If there is any additional information required, please do not hesitate to call.

Very truly yours,

Don Summerfield
Don Summerfield
Assistant Engineer

DS/cb

Enclosure

cc: BESD File/2020-B



file # 2020-4

TABLE 1
 SUMMARY OF EMISSION MEASUREMENTS
 REGENCY SQUARE POWER PLANT
 JACKSONVILLE, FLORIDA

Engine	Flow SCMH	Temperature °F	Load KW	Estimated Fuel Consumption (ft. ³ /hr)	Nitrogen Oxides			Opacity	
					Conc. ppm	Conc. lbs/hr	Permit Limit lbs/hr	Observed Percent	Permit Limit Percent
Worthingtons									
2	92.7	608	940	3060	974	14.7	22.6	0.0	5
3	76.3	560	1040	3700	621	7.7	37.9	4.4	5
4	69.2	914	1460	5075	644	7.2	12.0	14.8	15
6	140.0	480	1550	5500	1112	25.2	31.2	4.2	5
Caterpillars In Electrical Service									
3	23.4	493	420	*	194	0.74	0.20	0.0	5
10	22.1	516	402	*	223	0.80	0.20	0.0	5
11	25.8	525	410	*	163	0.68	0.20	0.0	5
Caterpillars In Chiller Service									
JA	5.6	332	*	*	213	0.19	0.20	0.0	5
JB	18.4	357	*	*	344	1.03	0.20	0.0	5

* NOT AVAILABLE

DER
 FEB 26 1985
 BAQM

3.0 TEST RESULTS

Table 1 summarizes the results of these tests. The Worthington engines comfortably comply with the permit provisions, whereas the Caterpillar engines consistently exceed the permit limit for oxides of nitrogen. In view of the consistency of the Caterpillar results, it is suggested that the permit limit of 0.2 pounds per hour was based on inadequate data. The apparent compliance of the JA chiller engine is attributed to the lack of air conditioning load during the test period. It is suggested that at a heavy or even reasonable load condition, this engine would also exceed the 0.2 pounds per hour limit.

All engines complied with the permitted limits for opacity of emissions.

Resource data used in the development of Table 1 are included in the Appendix of this report.

1.0 INTRODUCTION

The Regency Square power generating facility has been in existence for many years and during that period has experienced several expansions in the generating capacity, the last of which resulted in the need for a PSD review through the offices of the Florida Department of Environmental Regulation (FDER) and the U.S. Environmental Protection Agency (EPA) Region IV. These procedures have extended over many months and resulted in FDER Permit AC 16-60981 in the late summer of 1983. The review and permit anticipate the operation of six (6) rather large Worthington engines of various sizes, and in addition, the operation of seven (7) Caterpillar engines, each having a rating of 775 brake horsepower. Two of these seven Caterpillar engines are devoted to air conditioning service and are not involved in the generation of electricity.

In late 1983, the operation and responsibility for this generating plant and, for that matter the Regency Square Shopping Center, was transferred from Regency Square Properties, Inc. to new owners. The new operating company, R. S. Properties III, is adopting a different philosophy from that existing in past years, insofar as this generating plant is concerned. The new philosophy is headed toward

having this plant exist as a strictly emergency stand-by facility with electric power being purchased in normal use from the Jacksonville Electric Authority. This change in philosophy has had spin-off effects in terms of investment, maintenance and repair.

At the time of the testing reported herein, a decision had been made to completely cease operation of Worthington Engines Nos. 1 and 6. Additionally, two of the Caterpillar engines in electric generating service were permanently retired. The operating engines were tested in the condition which existed, which limited the power production capabilities of the engine in question.

These tests were witnessed in part by Mr. George Hawkins of the Bio-Environmental Services Division, City of Jacksonville.



DER
FEB 11 1985
BAQM

February 8, 1985

C.H. Fancy
P.E. Deputy Chief
Bureau of Air Quality Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blainstone Road
Tallahassee, FL 32301-8241

Dear Mr. Fancy:

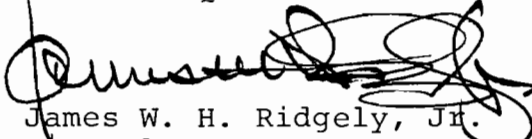
Enclosed is a check for \$1,000 for the processing fee pursuant to FAC Rule 17-4.

The requested stack test results were forwarded to you under separate cover some time ago.

The Worthington electrical generating Unit #5 is no longer in operation and will not be operated again by R.S. Properties Three. At the present time a purchase contract is being prepared for Unit #5 with a removal date in the near future. If you would require it, I can forward to you the actual removal schedule at the time the sales contract is completed.

If I may be of any further assistance in this, please do not hesitate to contact me.

Sincerely,
REGENCY SQUARE SHOPPING CENTER



James W. H. Ridgely, Jr.
General Manager

Enc.

cc: Dr. John Koogler
William Johnson

REGENCY SQUARE

9501 Arlington Expressway, Suite E-26
Jacksonville, FL. 32211 904/725-3830

PS Form 3811, Jan. 1979

SENDER: Complete Items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)

Show to whom and date delivered.....¢

Show to whom, date and address of delivery...¢

RESTRICTED DELIVERY
Show to whom and date delivered.....¢

RESTRICTED DELIVERY.
Show to whom, date, and address of delivery. \$ _____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Mr. James W. Ridgely
9501 Arlington Expressway
Jacksonville, FL 32211

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0155796	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE - Addressee Authorized agent

K. Kolbrenski

4. DATE OF DELIVERY POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-300-459

No. 0155796
RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

PS Form 3800, Apr. 1976

SENT TO		Mr. James W. Ridgely
STREET AND NO.		
P.O., STATE AND ZIP CODE		
POSTAGE		\$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢
	SPECIAL DELIVERY	¢
	RESTRICTED DELIVERY	¢
	OPTIONAL SERVICES	
	RETURN RECEIPT SERVICE	
	SHOW TO WHOM AND DATE DELIVERED	¢
	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES		\$
POSTMARK OR DATE		12/31/84

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

December 31, 1984

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James W. Ridgely
General Manager
R.S. Properties Three
9501 Arlington Expressway, Room E-26
Jacksonville, Florida 32211

Dear Mr. Ridgely:

RE: Completeness Review for the Application to Modify Air
Pollution Sources: AC 16-095616

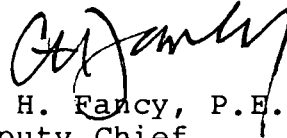
The department is in receipt of John B. Koogler's cover letter dated November 30, 1984, and the above referenced application, which contains requests to modify existing air pollution sources. The Bureau finds the above referenced application incomplete and the following information, including calculations, assumptions and reference documents, shall be submitted to the Bureau before the status of your application can be determined:

- ° Remit to the Department of Environmental Regulation the sum of \$1,000 as the processing fee pursuant to FAC Rule 17-4.
- ° Submit the stack test results that have recently been performed on which the modifications (emission rate increases) are based.
- ° For the existing Worthington electrical generating unit No. 5 will R.S. Properties Three accept a Specific Condition that it will not operated until the Department has issued proper air source construction and operating permits?

Mr. James W. Ridgely
Page Two
December 31, 1984

If there are any questions, please call Bruce Mitchell at
(904) 488-1344 or write to me at the above address.

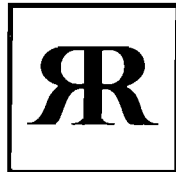
Sincerely,



C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/BM/pa

cc: Dr. John Koogler
Jerry Woosley
Doug Dutton



REGENCY
SQUARE

DER
DEC 03 1984
BAQM

November 30, 1984

Florida Department of Environmental
Regulation
Mr. C. H. Fancy
Deputy Bureau Chief
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: R.S. Properties Three
(formerly Regency Square Properties)
Modification to Permit AC16-60981

Dear Mr. Fancy:

Enclosed are five copies of a construction permit application addressing modifications to existing permit conditions for the R.S. Properties Three Total Energy Plant. Modifications were addressed in detail in a letter to you from Sholtes & Koogler, Environmental Consultants, dated June 29, 1984. The enclosed applications represent the information previously submitted to you by Sholtes & Koogler on DER Form 17-1.202(1).

In submitting the applications, R.S. Properties Three is unsure of the appropriate permit application fee. As previously stated, the enclosed permit applications address only modifications resulting in change in air pollutant emission rates. If the Department will advise us on the applications fee, the appropriate fee will be forwarded to your office.

During a recent discussion of the enclosed permit application with Sholtes & Koogler, your staff requested that the status of the retired electric power generating units be defined. Worthington Engine #1 is presently being cannibalized for parts and is in such a disassembled state it cannot ever be run. Worthington Engine #5 has fuel lines disconnected. Caterpillar Engines #1, 8 and 9 have also been disassembled to a point where they cannot run.

Mr. C. H. Fancy
page 2

If there are any questions regarding the enclosed permit applications or if additional information is required, please contact Dr. John B. Koogler at 904/377-5822.

Sincerely,
REGENCY SQUARE SHOPPING CENTER

A handwritten signature in black ink, appearing to read "James W. H. Ridgely, Jr.", written over a horizontal line.

James W. H. Ridgely, Jr.
General Manager

JWHR/vjd

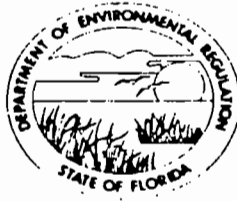
Enc.

cc: Sholtes & Koogler
William Johnson

DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHEAST DISTRICT
BRANCH OFFICE

825 NORTHWEST 23rd AVENUE
SUITE G
GAINESVILLE, FLORIDA 32601



DER
DEC 3 1984
BAQM

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Electric Power Generator [] New¹ [X] Existing¹
APPLICATION TYPE: [] Construction [] Operation [] Modification
COMPANY NAME: RS Properties III* COUNTY: Duval
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) Total Energy Plant
SOURCE LOCATION: Street 9501 Arlington Expressway City Jacksonville
UTM: East 447.170 km North 3354.610 km
Latitude 30° 19' 26" N Longitude 81° 32' 58" W
APPLICANT NAME AND TITLE: James W. Ridgely, General Manager
APPLICANT ADDRESS: 9501 Arlington Expressway, Room E26, Jacksonville, FL 32211

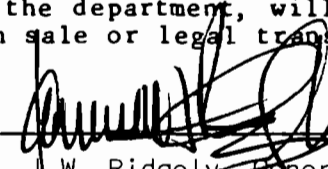
SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of RS Properties III

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: 
J.W. Ridgely, General Manager
Name and Title (Please Type)

Date: 11-30-84 Telephone No. 904/725-3830

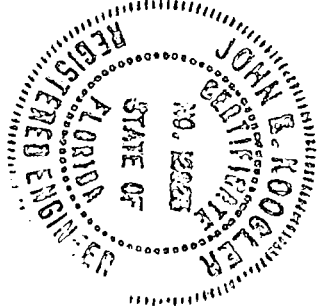
B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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 judgment, that

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

* Formerly Regency Square Properties

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 

John B. Koogler
Name (Please Type)

SHOLTES & KOOGLER, Environmental Consultants
Company Name (Please Type)

1213 N.W. 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 11/27/84 Telephone No. 904/377-5822

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.

See page 2a

B. Schedule of project covered in this application (Construction Permit Application Only)
Not applicable - permit modifications to an existing facility only.
Start of Construction _____ Completion of Construction _____

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.)
Not applicable; there is no add-on pollution control equipment.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.
Permit A016-2575 expiring 6/30/81; AC16-40548 and A016-45674 expiring 7/31/86;
AC16-60981 issued 7/18/83 and expiring 12/31/83.

SECTION II: GENERAL PROJECT INFORMATION

- A. A modification to the permitted conditions (AC16-60918) of the existing Regency Square Total Energy Plant (TEP). The permitted facility consists of six dual fuel (natural gas/diesel) electric power generating units, seven natural gas fired electric power generating units and two natural gas fired air conditioning chillers. The proposed modifications include the permanent retirement of two dual fuel electric power generators (units 1 and 5), the permanent retirement of three natural gas fired electric power generators (units 1, 8 and 9) and changes in the allowable NO_x emission rates of the remaining natural gas fired electric power generators and the air conditioning chillers. The proposed modifications will require that the maximum generating capacity of the TEP be reduced approximately five percent (to 53.9 million kwh per year) and that the hours of operation of the generating units be reduced approximately one percent (to 50,379 hours per year). These modifications will further affect the fuel consumption of all generating units; a modification addressed herein.

One final modification requested is an increase in the full-load hours of operation of the air conditioning chillers (from 3500 to 4000 hours per year).

The proposed modifications will result in no pollutant emission rate increase that will exceed the de minimus increases defined in 17-2.500, Florida Administrative Code.

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

Electric power generating units (4 dual fuel and 4 natural gas) will not operate
more than 50,379 hours per year. Two air conditioning chillers will not operate
more than 4000 full-load hours per year.

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? Yes
a. If yes, has "offset" been applied? NA
b. If yes, has "Lowest Achievable Emission Rate" been applied? NA
c. If yes, list non-attainment pollutants. 0 zone
2. Does best available control technology (BACT) apply to this source?
If yes, see Section VI. No
3. Does the State "Prevention of Significant Deterioration" (PSD)
requirement apply to this source? If yes, see Sections VI and VII. No
4. Do "Standards of Performance for New Stationary Sources" (NSPS)
apply to this source? No
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 justifi-
cation for any answer of "No" that might be considered questionable.

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

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Not applicable - fuel use only; see Section III E				

B. Process Rate, if applicable: (See Section V, Item 1)

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

2. Product Weight (lbs/hr): NA

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

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/yr	T/yr	
See Page 4a.							

¹See Section V, Item 2.

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)

³Calculated from operating rate and applicable standard.

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

SECTION III, C. - AIRBORNE CONTAMINANTS EMITTED

Operating Unit	Contaminant	Requested Emission Rate				Emission Standard	Uncontrolled Emissions (lb/hr) (tpy)
		Dual Fuel		100% Diesel			
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Worthington							
2	NOx	22.6		9.4		----	Same as Requested Emissions
	Part	0.2		2.8		----	
	SO ₂	0.2		2.6		----	
	VOC	0.8		0.5		----	
	CO	5.0		8.3		----	
3	NOx	37.9		9.5		----	No specific emission limiting standard in 17-2, F.A.C.
	Part	0.2		2.8		----	
	SO ₂	0.2		2.6		----	
	VOC	1.2		0.5		----	
	CO	5.2		8.4		----	
4	NOx	12.0		14.7		----	See Page 4b
	Part	0.2		4.3		----	
	SO ₂	0.2		4.0		----	
	VOC	0.8		0.7		----	
	CO	7.3		12.9		----	
6	NOx	31.2		17.6		----	See Page 4b
	Part	0.3		5.2		----	
	SO ₂	0.3		4.8		----	
	VOC	1.7		0.9		----	
	CO	8.3		15.6		----	
Caterpillars (4 power generating units & 2 A.C. chillers; all identical)							
	NOx	----		----		1.1	No specific emission limiting standard in 17-2, F.A.C.
	Part	----		----		<0.1	
	SO ₂	----		----		<0.1	
	VOC	----		----		0.2	
	CO	----		----		2.1	

PROPOSED OPERATING CONDITIONS FOR ALL ENGINES;
EXISTING PLUS PROPOSED

REGENCY SQUARE PROPERTIES
DUVAL COUNTY, FLORIDA

Condition	Annual Generating Capacity (kw)	Annual Operating Time (hrs)	Annual Fuel Consumption		Annual Emissions (tpy)				
			Diesel (gal)	Gas (ft ³)	NOx	HC	CO*	SO ₂	PM
Permitted/Actual	22.26 x 10 ⁶ (1)	23,379	78.39 x 10 ³	246.4 x 10 ⁶	167.3	8.6	49.0	1.4	1.4
Increase									
Dual Fuel 100%									
4 Worthingtons	26.28 x 10 ⁶	16,200	98.4 x 10 ³	277.5 x 10 ⁶	240.9	12.2	58.0	1.8	1.8
4 Caterpillars	5.40 x 10 ⁶	10,800	0	69.9 x 10 ⁶	5.9	0.5	11.3	0.0	0.0
2 Caterpillars	0	4,000	0	26.4 x 10 ⁶	2.2	0.2	4.2	0.0	0.0
Total With Dual Fuel 100%	53.94 x 10 ⁶	54,379	176,790	620.2 x 10 ⁶	416.3	21.5	122.5	3.2	3.2
Increase									
Dual 80% - Diesel 20%									
4 Worthingtons	27.82 x 10 ⁶	18,360	646.1 x 10 ³	222.0 x 10 ⁶	227.3	11.4	76.9	10.9	11.6
4 Caterpillars	4.32 x 10 ⁶	8,640	0	55.9 x 10 ⁶	4.8	0.4	9.1	0.1	0.0
2 Caterpillars	0	4,000	0	26.4 x 10 ⁶	2.2	0.2	4.2	0.1	0.0
Total With Dual 80% - Diesel 20%	54.40 x 10 ⁶	54,379	646,100	550.7 x 10 ⁶	406.1	20.6	139.2	12.4	13.0

(1) FROM FDER CALCULATIONS.

REVISED 5/13/83
REVISED 6/28/84

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Not applicable - no add-on control devices are used for emission control.				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr **	max./hr	
Diesel fuel (No. 2 oil)	74	420	58.0
Natural Gas	0.06	0.10	104.2
(also see page 4b)			
** Based on annual average fuel use and 80% dual fuel firing/20% gas firing.			

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: oil/gas

Percent Sulfur: 0.2/Nil Percent Ash: 0.2/Nil

Density: 6.8/NA lbs/gal Typical Percent Nitrogen: Nil/Nil

Heat Capacity: 20290/NA BTU/lb 138,000 BTU/gal./1045 BTU/ft³ BTU/gal

Other fuel Contaminants (which may cause air pollution): None

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

Annual Average NA Maximum

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

No solid or liquid wastes are generated at the Total Energy Plant

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):
 (See page 6a.)

Stack Height: _____ ft. Stack Diameter: _____ ft.
 Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.
 Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

(Not Applicable)

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (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 device: Cyclone Wet Scrubber Afterburner
 Other (specify) _____

SECTION III: H - STACK PARAMETERS

Unit	Stack		Stack Gas				
	Height (feet)	Dia. (feet)	Flow		Temp (°F)	Moist (%)	Vel (fps)
Worthington							
2	30	1.50	8,777	3,757	650	10	82.8
3	28	1.50	6,730	2,880	650	10	63.5
4	28	1.50	7,588	2,557	950	10	71.6
6	57	2.00	12,090	4,075	950	10	64.2
Caterpillars (6 identical)	22	0.73	1,875	657	550	33	74.9

Brief description of operating characteristics of control devices: There is no add-on
pollution control equipment on any operating unit.

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

No liquid or solid waste is generated by the electric power generators or air
conditioning chillers.

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

(See page 7a.)

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)]
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.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
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.)
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).
6. An 8 1/2" 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.
7. An 8 1/2" 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 (Example: Copy of relevant portion of USGS topographic map).
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

SECTION V: SUPPLEMENTAL REQUIREMENTS

1. Process Input and Product Weight Rate - Not applicable; fuel combustion only.
2. Emission Rate Calculation - See SKEC letter dated June 29, 1984; Attachment 1.
3. Uncontrolled Emissions - Same as controlled; see Section V, 2.
4. Control Equipment Specifications - Not Applicable.
5. Control Equipment Efficiency - Not Applicable.
6. Flow Diagram - See Attachment 2 for unit operating parameters.
7. Location Map - Attachment 3.
8. Site Map - Attachment 4.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
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? (Not applicable)

Yes No

Contaminant	Rate or Concentration

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

Yes No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

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

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 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:

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 Costs:
 - 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

(Not applicable)

A. Company Monitored Data

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).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [] Yes [] No

b. Was instrumentation calibrated in accordance with Department procedures?

[] Yes [] No [] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

2. Surface data obtained from (location) _____

3. Upper air (mixing height) data obtained from (location) _____

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO ²	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.



SHOLTÈS & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

SKEC 258-84-01

June 29, 1984

Mr. Clair Fancy
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Regency Square Properties, Inc.
Duval County, Florida
Construction Permit AC16-60981

Dear Mr. Fancy:

As I've discussed with Mr. Bruce Mitchell of your staff, we would like to request several modifications to the subject Air Pollution Source Construction Permit. This permit was issued to Regency Square Properties for the installation of a dual fuel fired electric power generating unit at the Regency Square Properties Total Energy Plant and for an increase in the hours of operation of the existing electric power generating units at this facility.

Specifically the construction permit addressed the installation of a electric power generator driven by a Worthington reciprocating engine. This unit was identified as Worthington generating unit No. 5. In addition, Regency Square Properties requested, and was permitted for, an increase in the hours of operation of five existing generating units driven by Worthington dual fuel fired engines (units 1, 2, 3, 4 and 6); seven generating units driven by natural gas fired Caterpillar engines (units 1, 2, 3, 8, 9, 10 and 11) and two air conditioning chillers driven by natural gas fired Caterpillar engines. Subsequent to the issuance of the permit, Regency Square Properties has decided to permanently retire Worthington units 1 and 5 and Caterpillar units 1, 8 and 9.

Also subsequent to the issuance of the subject construction permit, air pollution emission measurements were made on various units at the Total Energy Plant in December, 1983 and the results reported to your office. These emission measurements demonstrated that the

nitrogen oxides emissions from the Caterpillar engines exceeded the emission rates anticipated in the Construction Permit Application. Nitrogen oxides emission rates from the Caterpillar engines ranged nominally from 0.7 to 1.0 pounds per hour whereas the engines were permitted for nitrogen oxides emission rates of 0.2 pounds per hour (based on limited earlier emission measurements).

Regency Square Properties is requesting that the subject Air Pollution Source Construction Permit be modified to reflect the permanent retirement of Worthington generating units 1 and 5 and Caterpillar generating units 1, 8 and 9 and other modifications that will result in a higher allowable nitrogen oxides emission limit for the Caterpillar engines. The modifications will require that the maximum generating capacity of the facility be reduced to 53.9 million kilowatt hours per year; the maximum hours of operation of all generating units shall not exceed 50,379 hours per year and that within this cap the Worthington engines will be permitted to fire 100 percent diesel fuel for 5,400 hours per year.

Further, Regency Square Properties is requesting that specific condition A5a be modified to reflect a maximum diesel fuel consumption of 646,100 gallons per year if the Worthington engines operate 5,400 hours per year on 100 percent diesel fuel; that specific condition A5b be modified to allow the consumption of 176,790 gallons per year of diesel fuel if all engines are dual fuel fired for a maximum of 50,379 hours per year; that specific condition A5c be modified to allow the consumption of 620.2 million cubic feet of natural gas per year if all engines are dual fuel fired for a maximum of 50,379 hours per year; and that specific condition A5d be modified to allow the combustion of 550.7 million cubic feet of natural gas per year if the Worthington engines operate a maximum of 5,400 hours per year on 100 percent diesel fuel. Regency Square Properties also requests that specific condition A6 be changed to allow a nitrogen oxides emission rate of 1.1 pounds per hour from all Caterpillar engines. The emission limits for the other pollutants in specific condition A6 are acceptable.

Regency Square Properties requests that some of the specific conditions related to the Caterpillar engines driving the air conditioning units also be modified. Specifically, it is requested that specific condition B2 be modified to allow the total operating hours for the two engines to not exceed 4,000 full load hours per year and that condition B4 be modified to allow emission rate of 1.1 pounds of nitrogen oxides per hour from each of the two engines.

Under conditions of the above requested modifications, the maximum annual nitrogen oxides emission rate from the facility, as reflected in specific condition C1, will not exceed 416.3 tons per year. Other maximum air pollutant emission rates from the facility, as reflected in specific condition C2, will be:

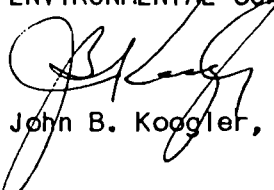
VOC	21.5 tons per year
CO	139.2 tons per year
SO ₂	12.4 tons per year
Particulate Matter	13.0 tons per year

The calculations supporting the requested permit modifications are attached hereto. These calculations and summary tables represent revision to data originally submitted to your office on March 25, 1983 and revised on May 13, 1983. The data also references calculations prepared by Mr. Bruce Mitchell of your office and filed under an interoffice memo dated May 9, 1983.

For purposes of clarification, I would like to state that the retirement of the various Worthington and Caterpillar engines resulted from a decision made by a new management group at Regency Square; not from indecision on the part of the management group that initiated the original permit application. If there are any questions regarding the requested modifications, please feel free to contact me.

Very truly yours,

SHOLTES & KOGLER,
ENVIRONMENTAL CONSULTANTS


John B. Koogler, Ph.D., P.E.

JBK:ssc
Attachments

cc: Mr. Bill Johnson

TABLE 1

SUMMARY OF FUEL CONSUMPTION, GENERATING CAPACITY AND EMISSIONS FOR
ALL ENGINES EXCEPT THE 9 CATERPILLARS WHEN OPERATING AT 100% CAPACITY ON DIESEL FUEL

REGENCY SQUARE PROPERTIES
DUVAL COUNTY, FLORIDA

Diesel Fuel Firing 100% of the Time							
Engine	Fuel Diesel (gal/yr)	Generating Capacity (kw/yr)	Pollutant Emissions (tpy)				
			NOx	HC	CO	SO ₂	PM
2	700.8 x 10 ³	8.06 x 10 ⁶	41.1	2.0	36.3	11.3	12.1
3	700.8 x 10 ³	8.20 x 10 ⁶	41.8	2.1	36.9	11.5	12.3
4	1050.0 x 10 ³	12.60 x 10 ⁶	64.2	3.1	56.6	17.6	19.0
6	1230.0 x 10 ³	15.16 x 10 ⁶	77.3	3.8	68.2	21.2	22.7
Total	3681.6 x 10 ³	44.1 x 10 ⁶	224.4	11.0	198.0	61.6	66.1
Emissions Per 1,000 Hours Per Engine			6.40	0.31	5.65	1.75	1.89

Revised 6/28/84

Revised 5/13/83

TABLE 2

SUMMARY OF FUEL CONSUMPTION GENERATING CAPACITY AND EMISSIONS FOR
ALL ENGINES WHEN OPERATING AT 100% CAPACITY ON DUAL FUEL

REGENCY SQUARE PROPERTIES
DUVAL COUNTY, FLORIDA

Dual Fuel Firing 100 Percent of the Time								
Engine	Fuel Use		Generating Capacity (kw/yr)	Pollutant Emissions (tpy)				
	Gas (ft ³ /yr)	Diesel (gal/yr)		NOx	HC	CO	SO ₂	PM
2	119.2 x 10 ⁶	46.3 x 10 ³	10.95 x 10 ⁶	110.6	3.8	24.3	0.8	0.8
3	126.5 x 10 ⁶	53.2 x 10 ³	11.83 x 10 ⁶	199.9	6.5	26.3	0.9	0.9
4	162.3 x 10 ⁶	48.8 x 10 ³	15.33 x 10 ⁶	55.2	3.8	33.6	0.9	0.9
6	192.2 x 10 ⁶	64.5 x 10 ³	18.72 x 10 ⁶	155.4	12.2	41.2	1.2	1.2
4 Cats	226.7 x 10 ⁶	0	17.52 x 10 ⁶	19.3*	1.8	36.8	0.1	0.0
Worthingtons	600.2 x 10 ⁶	212.8 x 10 ³	56.83 x 10 ⁶	521.1	26.3	125.4	3.8	3.8
Caterpillars	226.7 x 10 ⁶	0	17.52 x 10 ⁶	19.3	1.8	36.8	0.1	0.0
Total	826.9 x 10 ⁶	212.8 x 10 ³	74.35 x 10 ⁶	540.4	28.1	162.2	3.9	3.8
Emission Rate Per 1,000 Engine Hours	Worthingtons			14.87	0.75	3.58	0.11	0.11
	Caterpillars			0.55	0.05	1.05	0.001	0.0

* Based on a 1.1 lb/hr emission rate

Revised 6/28/84
Revised 5/13/83

SECTION 2.0

CALCULATION OF EMISSION
INCREASES FOR PROPOSED
ADDITIONAL HOURS OF OPERATION

REGENCY SQUARE PROPERTIES
DUVAL COUNTY, FLORIDA

Assume:

1. Caterpillars operate 40% of engine hours when engines operate on dual fuel
2. Worthingtons operate 60% of engine hours when engines operate on dual fuel
3. Engines operate 80% of total engine hours on dual fuel
4. Engines operate 20% of total engine hours on diesel fuel
5. Two Caterpillar engines used for air conditioning compressors operate a total of 4000 hours per year (Full load)
6. Emissions from air conditioning Caterpillars at 100% capacity are the same as from generating Caterpillars at 100% capacity.

Emissions Calculation

1.0 Air Conditioning Units
 4000 total hours
 100% gas fuel

$$\begin{aligned}
 \text{NO}_x &= (4.0 \text{ thousand hours}) \times 0.55 \text{ lb}/1000 \text{ hrs (Table 2)} = 2.2 \text{ tpy} \\
 \text{HC} &= (4.0) \times 0.05 \text{ lb}/1000 \text{ hrs} = 0.2 \text{ tpy} \\
 \text{CO} &= (4.0) \times 1.05 \text{ lb}/1000 \text{ hrs} = 4.2 \text{ tpy} \\
 \text{SO}_2 &= (4.0) \times 0.001 \text{ lb}/1000 \text{ hrs} = <0.1 \text{ tpy} \\
 \text{PM} &= (4.0) \times 0 = 0.0 \text{ tpy}
 \end{aligned}$$

2.0 Generating Units
 27,000 hours total

2.1 Dual Fuel @ 80% of time
 $= 27,000 \times 0.8$
 $= 21,600 \text{ hr/yr}$

2.1.1 Worthingtons @ 60% of time
 $= 21600 \times 0.6$
 $= 12960 \text{ hr/yr}$

$$\begin{aligned}
 \text{NO}_x &= (12.96 \text{ thousand hrs}) \times 14.87 \text{ lb}/1000 \text{ hrs (Table 2)} = 192.7 \text{ tpy} \\
 \text{HC} &= (12.96) \times 0.75 = 9.7 \text{ tpy} \\
 \text{CO} &= (12.96) \times 3.58 = 46.4 \text{ tpy} \\
 \text{SO}_2 &= (12.96) \times 0.11 = 1.4 \text{ tpy} \\
 \text{PM} &= (12.96) \times 0.11 = 1.4 \text{ tpy}
 \end{aligned}$$

$$\begin{aligned}
 2.1.2 \text{ Caterpillars @ } 40\% \text{ of time} \\
 &= 21600 \times 0.4 \\
 &= 8640 \text{ hr/yr}
 \end{aligned}$$

$$\begin{aligned}
 \text{NO}_x &= (8.64 \text{ thousand hrs}) \times 0.55 \text{ lb/1000hrs (Table 2)} = 4.8 \text{ tpy} \\
 \text{HC} &= (8.64) \times 0.05 = 0.4 \text{ tpy} \\
 \text{CO} &= (8.64) \times 1.05 = 9.1 \text{ tpy} \\
 \text{SO}_2 &= (8.64) \times 0.001 = 0.01 \text{ tpy} \\
 \text{PM} &= (8.64) \times 0 = 0.0 \text{ tpy}
 \end{aligned}$$

$$\begin{aligned}
 2.2 \text{ Diesel fuel } 20\% \text{ of time} \\
 &= 27,000 \times 0.2 \\
 &= 5400 \text{ hr/yr (all Worthingtons)}
 \end{aligned}$$

$$\begin{aligned}
 \text{NO}_x &= (5.40 \text{ thousand hrs}) (6.40 \text{ lb/1000hrs - Table 1}) = 34.6 \text{ tpy} \\
 \text{HC} &= (5.40) \times 0.31 = 1.7 \text{ tpy} \\
 \text{CO} &= (5.40) \times 5.65 = 30.5 \text{ tpy} \\
 \text{SO}_2 &= (5.40) \times 1.75 = 9.5 \text{ tpy} \\
 \text{PM} &= (5.40) \times 1.89 = 10.2 \text{ tpy}
 \end{aligned}$$

$$\begin{aligned}
 2.3 \text{ Dual fuel } 100\% \text{ of time} \\
 \text{Worthingtons - } 60\% \text{ of hours} &= 27000 \times 0.6 = 16200 \text{ hr/yr} \\
 \text{Caterpillars - } 40\% \text{ of hours} &= 27000 \times 0.4 = 10800 \text{ hr/yr}
 \end{aligned}$$

$$\begin{aligned}
 \text{NO}_x &= 16.200 (14.87 - \text{Table 2}) + 10.800 (0.55 - \text{Table 2}) = 240.9 + 5.9 = 246.8 \text{ tpy} \\
 \text{HC} &= 16.200 (0.75) + 10.800 (0.05) = 12.2 + 0.5 = 12.7 \text{ tpy} \\
 \text{CO} &= 16.200 (3.58) + 10.800 (1.05) = 58.0 + 11.3 = 69.3 \text{ tpy} \\
 \text{SO}_2 &= 16.200 (0.11) + 10.800 (0.001) = 1.8 + 0 = 1.8 \text{ tpy} \\
 \text{PM} &= 16.200 (0.11) + 0 = 1.8 + 0 = 1.8 \text{ tpy}
 \end{aligned}$$

2.4 Generating Capacities

2.4.1 Dual fuel 80%

$$\begin{aligned}
 \text{Worthingtons} &= (2960 \text{ hrs}) (56.83 \times 10^6 - \text{Table 2}) / 8760 \times 4 \text{ total possible operating hrs} \\
 &= 21.02 \times 10^6 \text{ kw/yr}
 \end{aligned}$$

$$\begin{aligned}
 \text{Caterpillars} &= (8640 \text{ hrs}) (17.52 \times 10^6 - \text{Table 2}) / 4 \times 8760 \text{ total possible hours} \\
 &= 4.32 \times 10^6 \text{ kw/yr}
 \end{aligned}$$

2.4.2 Diesel 20%

$$\begin{aligned}
 \text{Worthingtons} &= (5400 \text{ hr}) (44.1 \times 10^6 - \text{Table 1}) / 4 \times 8760 \text{ total possible hours} \\
 &= 6.80 \times 10^6 \text{ kw/yr}
 \end{aligned}$$

2.4.3 Dual fuel 100%

$$\text{Worthingtons} = 21.02 (100/80) \times 10^6 = 26.28 \times 10^6 \text{ kw/yr}$$

$$\text{Caterpillars} = 4.32 (100/80) \times 10^6 = 5.40 \times 10^6 \text{ kw/yr}$$

2.5 Fuel Consumption

2.5.1 Dual fuel 80% of time

$$\text{Gas: Worthingtons} = [(12960 \text{ hrs}) / (4 \times 8760)] \times 600.2 \times 10^6 - \text{Table 2} \\ = 222.0 \times 10^6 \text{ ft}^3/\text{yr}$$

$$\text{Caterpillars} = [(8640) / (4 \times 8760)] \times 226.7 \times 10^6 - \text{Table 2} \\ = 55.9 \times 10^6 \text{ ft}^3/\text{yr}$$

$$\text{Diesel: Worthingtons} = [(12960) / (4 \times 8760)] \times 212.8 \times 10^3 - \text{Table 2} \\ = 78.71 \times 10^3 \text{ gal/yr}$$

2.5.2 Diesel fuel 20% of time

$$\text{Diesel: Worthingtons} = [(5400 \text{ hr}) / (4 \times 8760)] \times 3681.6 \times 10^3 - \text{Table 1} \\ = 567.4 \times 10^3 \text{ gal/yr}$$

2.5.3 Dual fuel 100% of time

$$\text{Gas: Worthingtons} = 222.0 \times 10^6 (100/80) = 277.5 \times 10^6 \\ \text{ft}^3/\text{yr}$$

$$\text{Caterpillars} = 55.9 \times 10^6 (100/80) = 69.9 \times 10^6 \\ \text{ft}^3/\text{yr}$$

$$\text{Diesel: Worthingtons} = 78.7 \times 10^3 (100/80) = 98.4 \times 10^3 \\ \text{gal/yr}$$

3.0 Calculation of Present Actual Emissions

Permitted hours of operation (AC16-40548) = 23,379 hr/yr
 Permitted emissions based on dual fuel firing 100% of time

Example Calculations

Engine #1

Actual hours of operation (normalized to total engine operating time of 23,379 hr/yr) = 2863 hr/yr

$$NO_x = (2863/8760) (67.3 \text{ tpy} @ 100\% - \text{Table 2}) = 22.0 \text{ tpy}$$

$$HC = (2863/8760) (4.4 - \text{Table 2}) = 1.4 \text{ tpy}$$

Engine #2

Actual operating hours = 3457 hr/yr

$$NO_x = (3457/8760) (110.6 \text{ tpy} @ 100\% - \text{Table 2}) = 43.6 \text{ tpy}$$

Summary (From FDER Calculations)

Engine	Operating Time (hr/yr)	Annual Emissions (tpy)				
		NO _x	HC	CO	SO ₂	PM
1	2863	19.9	1.3	7.2	0.2	0.2
2	3457	39.0	1.4	8.6	0.3	0.3
3	3295	62.4	2.0	8.3	0.3	0.4
4	1704	10.2	0.7	6.2	0.2	0.2
5	0	0	0	0	0	0
6	2249	35.1	2.8	9.4	0.3	0.3
9 Cats	9811	0.7	0.4	9.3	0.1	0
Total	23,379	167.3	8.6	49.0	1.4	1.4

42,381 50 SHEETS 5 SQUARE
 42,382 100 SHEETS 5 SQUARE
 42,383 200 SHEETS 5 SQUARE



Refer to FDER Calculations under memo dated 5/9/83

TABLE 3

PROPOSED INCREASES IN OPERATING RATES

REGENCY SQUARE PROPERTIES
DUVAL COUNTY, FLORIDA

	Engine(s)	Fuel	Annual Generating Capacity (kw)	Annual Operating Time (hrs)	Annual Pollutant Emission Rate (tons per year)				
					NOx	HC	CO	SO ₂	PM
Increase from firing dual fuel 80% of the time & diesel fuel 20% of the time.	4 Worthingtons	Dual Diesel	21.02 x 10 ⁶	12,960	197.2	9.7	46.4	1.4	1.4
			6.80 x 10 ⁶	5,400	34.6	1.7	30.5	9.5	10.2
	4 Caterpillars	Gas	4.32 x 10 ⁶	8,640	4.8	0.4	9.1	0.1	0.0
	2 Caterpillars (A/C)	Gas	---	4,000	2.2	0.2	4.2	0.1	0.0
Total			32.14 x 10 ⁶	31,000	238.8	12.0	90.2	11.1	11.6
Increase from firing dual fuel 100% of the time	4 Caterpillars	Dual	26.28 x 10 ⁶	16,200	240.9	12.2	58.0	1.8	1.8
			5.40 x 10 ⁶	10,800	5.9	0.5	11.3	0.0	0.0
	2 Caterpillars	Gas	---	4,000	2.2	0.2	4.2	0.0	0.0
Total			31.68 x 10 ⁶	31,000	249.0	12.9	73.5	1.8	1.8
De Minimus Emission Increase					250	250	250	250	250

REVISED 5/13/83
REVISED 6/28/84

TABLE 4

PROPOSED OPERATING CONDITIONS FOR ALL ENGINES;
EXISTING PLUS PROPOSED

REGENCY SQUARE PROPERTIES
DUVAL COUNTY, FLORIDA

Condition	Annual Generating Capacity (kw)	Annual Operating Time (hrs)	Annual Fuel Consumption		Annual Emissions (tpy)				
			Diesel (gal)	Gas (ft ³)	NOx	HC	CO	SO ₂	PM
Permitted/Actual	22.26 x 10 ⁶ (1)	23,379	78.39 x 10 ³	246.4 x 10 ⁶	167.3	8.6	49.0	1.4	1.4
Increase									
Dual Fuel 100%									
4 Worthingtons	26.28 x 10 ⁶	16,200	98.4 x 10 ³	277.5 x 10 ⁶	240.9	12.2	58.0	1.8	1.8
4 Caterpillars	5.40 x 10 ⁶	10,800	0	69.9 x 10 ⁶	5.9	0.5	11.3	0.0	0.0
2 Caterpillars	0	4,000	0	26.4 x 10 ⁶	2.2	0.2	4.2	0.0	0.0
Total With Dual Fuel 100%	53.94 x 10 ⁶	54,379	176,790	620.2 x 10 ⁶	416.3	21.5	122.5	3.2	3.2
Increase									
Dual 80% - Diesel 20%									
4 Worthingtons	27.82 x 10 ⁶	18,360	646.1 x 10 ³	222.0 x 10 ⁶	227.3	11.4	76.9	10.9	11.6
4 Caterpillars	4.32 x 10 ⁶	8,640	0	55.9 x 10 ⁶	4.8	0.4	9.1	0.1	0.0
2 Caterpillars	0	4,000	0	26.4 x 10 ⁶	2.2	0.2	4.2	0.1	0.0
Total With Dual 80% - Diesel 20%	54.40 x 10 ⁶	54,379	646,100	550.7 x 10 ⁶	406.1	20.6	139.2	12.4	13.0

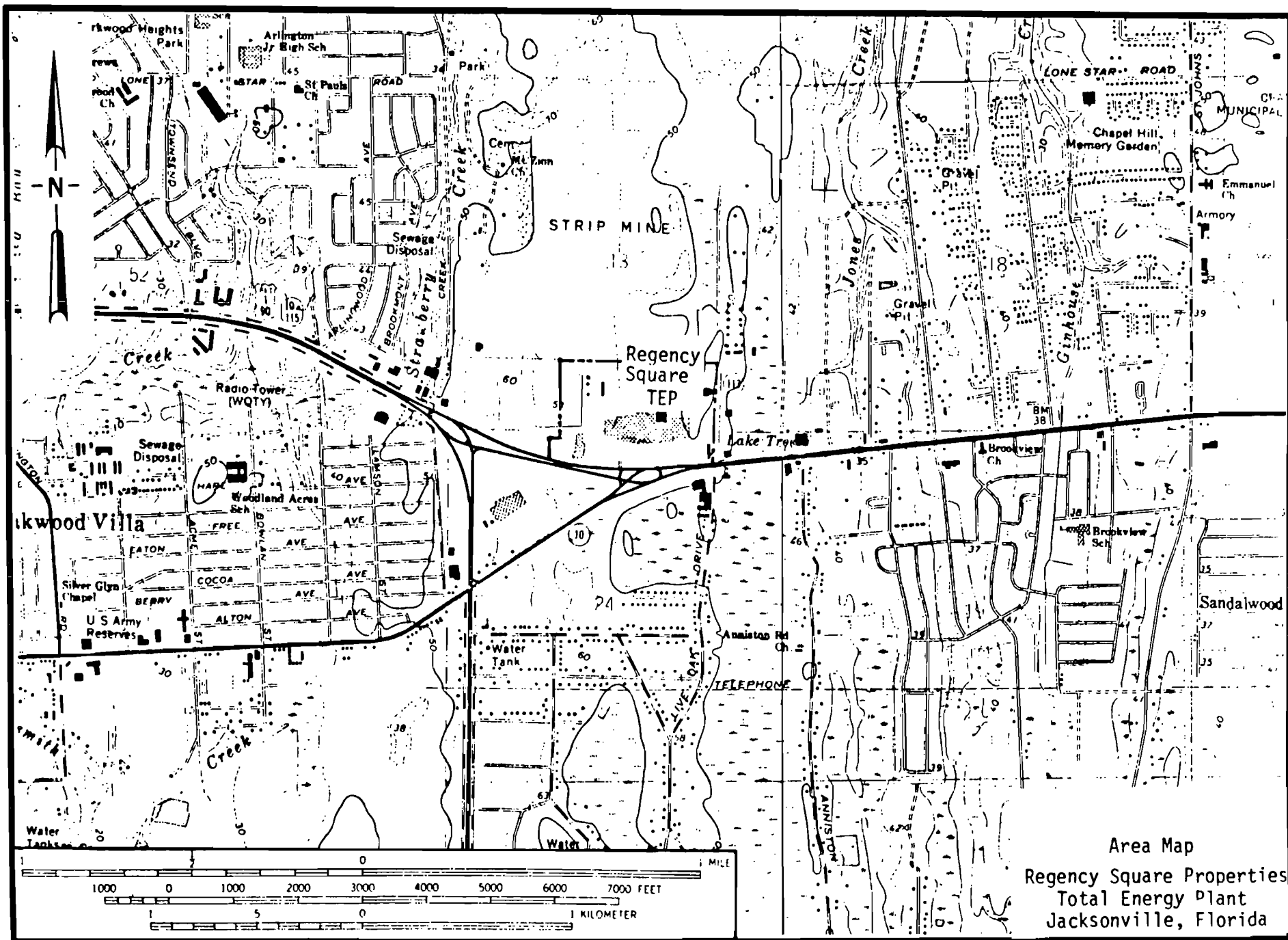
(1) FROM FDER CALCULATIONS.

REVISED 5/13/83
REVISED 6/28/84

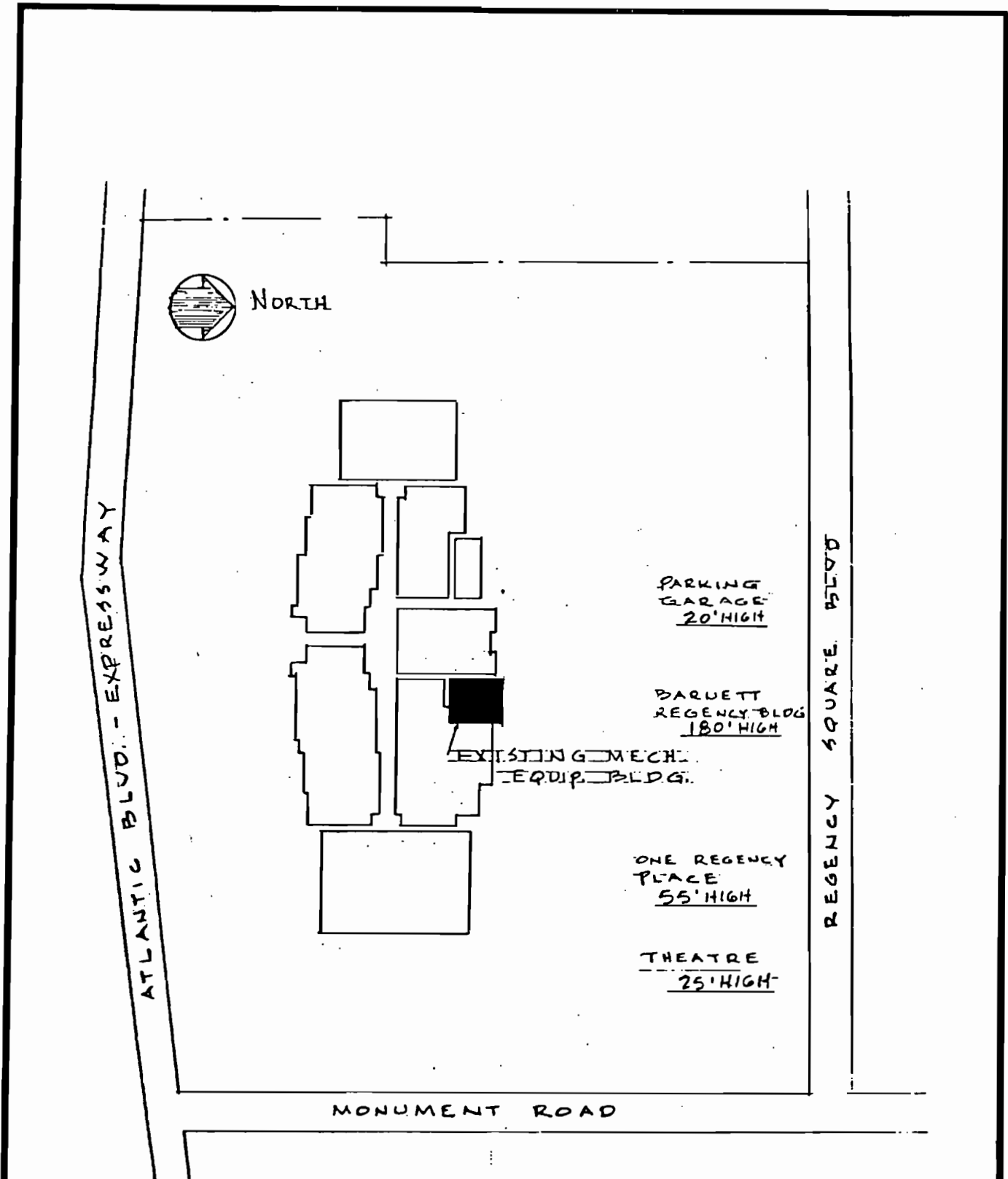
ATTACHMENT 2

RATED UNIT OPERATING PARAMETERS

Unit	Dual Fuel		100% Diesel	Brake Horsepower	Generating Capacity (kilowatt)	Btu Per (Kilowatt)
	Gas (ft ³ /hr)	Diesel (gal/hr)	(gal/hr)			
<u>Electric Power Generating Units</u>						
Worthingtons						
2	12,124	5.3	80	1,900	1,250	12,000
3	11,841	6.1	80	1,900	1,350	11,800
4	17,592	5.6	120	2,452	1,750	11,500
6	19,183	7.4	140	2,700	2,137	11,200
Caterpillars (4 Identical Units)						
	6,469	0.0	0	775	500	13,520
<u>Air Conditioning Chillers</u>						
Caterpillars (2 Identical Units)						
	6,469	0.0	0	775	N/A	N/A



Area Map
Regency Square Properties
Total Energy Plant
Jacksonville, Florida



Site Plan
Regency Square Properties
Total Energy Plant
Jacksonville, Florida

Scale: 1" = 400'