

AC 64-25610



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: Coal-Oil Mixing Facility New¹ Existing¹
APPLICATION TYPE: Construction Operation Modification
COMPANY NAME: FLORIDA POWER & LIGHT COUNTY: Volusia
Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Coal handling areas, coal pulverizer at Sanford Unit No. 4
SOURCE LOCATION: Street Barwick Road City Sanford
UTM: East 468340 North 3190380
Latitude 28° 50' 40" N Longitude 81° 19' 30" W
APPLICANT NAME AND TITLE: _____
APPLICANT ADDRESS: _____

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Florida Power & Light Company

I certify that the statements made in this application for a permit to construct/operate air pollution sources 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: [Signature]
Mr. W. J. Barrow, Jr., Asst. Manager of Environ. Name and Title (Please Type) Affairs
Date: 11/15/79 Telephone No. (305) 552-3561

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 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: [Signature]
M. Surabian
Name (Please Type)

(Affix Seal)

Bechtel Power Corporation
Company Name (Please Type)
15740 Shady Grove Road, Gaithersburg, Md. 20760
Mailing Address (Please Type)

Florida Registration No. 28250 Date: Nov. 8, 1979 Telephone No. 948-2700

¹See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

Please refer to Item 1 of Attachment A, Attachment B, Flow Diagram and Site Plan

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction 11/16/79 Completion of Construction 1/25/79

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.)

~~Cyclones and baghouse are integral part of the process (not a pollution control system.~~
 Cost of cyclones \$25,000
 Cost of baghouse \$125,000

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

None for coal-oil mixing facility

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes No

F. Normal equipment operating time: hrs/day 24; days/wk 7; wks/yr 17; if power plant, hrs/yr 2880; if seasonal, describe: Yes. This coal-oil mixing facility will be used for the duration of demonstration project. The period of demonstration test is limited to 120 days or 2880 hours of boiler operation on coal-oil mixture.

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

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

Attach all supportive information related to any answer of "Yes". Attach any justification 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		
Coal (Pulverizing and Pneumatic Conveying)	Particulate	100%	96,000 (Coal)	Pulverizer and Pneumatic Conveyor

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

- Total Process Input Rate (lbs/hr): 96,000 lb/hr coal to pulverizer
- Product Weight (lbs/hr): 96,000 lb/hr pulverized coal

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C.	Allowable ³ Emission lbs/hr	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	7.7	8.8	17-2.05(2) FAC E=17.31 P ^{0.16} lb/hr 0.031 gr/dscf Federal NSPS	32.16 (State) 7.7 (Federal)	7.7	8.8	From Baghouse to atmosphere

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)
4 Cyclones (one for each pulverizer)	*Pulverized coal particulate	80%	1.5 to 700	Vendor data
Baghouse (one)	*Same as above	99.96%	< 1.5 to 40	Regulatory Requirement and Vendor data

* Integral part of the process

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 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)

⁵If Applicable

E. Fuels (Not applicable to coal-oil mixture preparation facility)

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____
 Density: _____ lbs/gal Typical Percent Nitrogen: _____
 Heat Capacity: _____ BTU/lb _____ BTU/gal
 Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. Annual Average _____ Maximum _____

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

Not applicable

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

Vent Height: point Elevation of discharge 85 ft. Vent Diameter: Not available ft.
 Gas Flow Rate: About 40,000 28,850 dscfm ACFM Gas Exit Temperature: 150 °F.
 Water Vapor Content: 16.7 % Velocity: Not available FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ days/week _____

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) _____

Brief description of operating characteristics of control devices: _____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS (See attachments)

Please provide the following supplements where required for this application.

1. Total process input rate and product weight — show derivation.
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, 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 8½" 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 8½" 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 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

Not Applicable

- A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
 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: | 4. Capital Costs: |
| 2. Operating Principles: | 6. Operating Costs: |
| 3. Efficiency: * | 8. Maintenance Cost: |
| 5. Useful Life: | |
| 7. Energy: | |
| 9. Emissions: | |

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

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*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy*:
- 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*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy**:
- h. Maintenance Costs:
- 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:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:

*Explain method of determining efficiency above.

- 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*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- 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*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

a.

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

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

*Applicant 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.

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 on 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.

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

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.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

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

SECTION V - SUPPLEMENTAL REQUIREMENTS

1. Total process input rate and product weight

Maximum coal input rate to the boiler in coal-oil mixture	84,000 lb/hr
Design capacity of pulverizers	96,000 lb/hr
Number of pulverizers	4
Pulverizer capacity	24,000 lb/hr each

2. Pneumatic conveyor capacity

Pulverized coal separated by cyclone	96,000 lb/hr
Baghouse inlet loading = 0.2 x 96,000	80%
Moisture content at 100% saturation and 150°F	19,200 lb/hr
Transport air flow rate	16.7 percent
	40,000 acfm (at 150°F and 14.7psia)
	28,850 dscfm
Grain loading	77.6 gr/dscf
Allowable State of Florida emission rate, lb/hr = 17.31 P ^{0.16}	32.16 lb/hr
(P is process weight rate in TPH = 48) [F.A.C. 17-2.05 (2)]	
Allowable Federal emission rate	0.031 gr/dscf
(NSPS for "Coal Preparation Plant" thermal dryer)	
Compliance with the emission standards will be shown based on guaranteed baghouse performance	

3. Potential discharge

Baghouse for separation of pulverized coal from transport air can be reasonably expected to achieve minimum efficiency required to meet the Federal standards	0.031 gr/dscf or 7.7 lb/hr
---	----------------------------

4. Baghouse with minimum efficiency of 99.96 percent on coal dust will be used. Air to cloth ratio will be between 6 to 8 for the design air flow route (50,000 acfm). Cloth area required is between 6250 and 8333 square feet.

5. A. Required control device efficiency to meet the State of Florida [F.A.C. 17-2.05 (2)] emission standards

<u>Potential emissions - Allowable emissions</u> x 100 =	
Potential emissions	
$\frac{19,200 - 32.16}{19,200} \times 100$	99.83 percent

- B. Required control device efficiency to meet Federal NSPS

= $\frac{77.6 - 0.031}{77.6} \times 100$	99.96 percent
Emission rate = 19,200 (1-0.9996)	7.7 lb/hr

ATTACHMENT A

1. 120 days demonstration project to investigate the feasibility of firing coal-oil mixture at the existing oil-fired electric power plant will be carried out. Coal-oil mixture preparation facility involves unloading, pulverizing and mixing of coal with oil. Coal storage areas will be compacted and sprayed with water to reduce fugitive coal dust. Transport air carrying crushed coal from pulverizer is vented through cyclone and baghouse to minimize particulates emission to atmosphere.
2. The particulate emissions from baghouse which removes pulverized coal from coal-transport air are less than 100 tons/year. The baghouse is an integral part of the process and therefore potential emissions equal emissions from the baghouse. Emissions from coal-oil mixture are temporary in nature (2800 hours) and do not consume PSD increment. Although BACT is not required, the use of baghouse does represent BACT.
3. NSPS for coal preparation plants apply to this source. The NSPS limit discharge into the atmosphere from any thermal dryer gases which: 1) contains particulate matter in excess of 0.031 gr/dscf, 2) exhibit 20 percent opacity or greater. 20 percent opacity restrictions also apply to coal storage system (except for open storage pile), coal processing, conveying equipment, and coal transfer and loading system processing coal.

ATTACHMENT B

FLORIDA POWER & LIGHT COMPANY

SANFORD PLANT UNIT NO. 4

COM TEST FACILITY

DESCRIPTION OF PROJECT

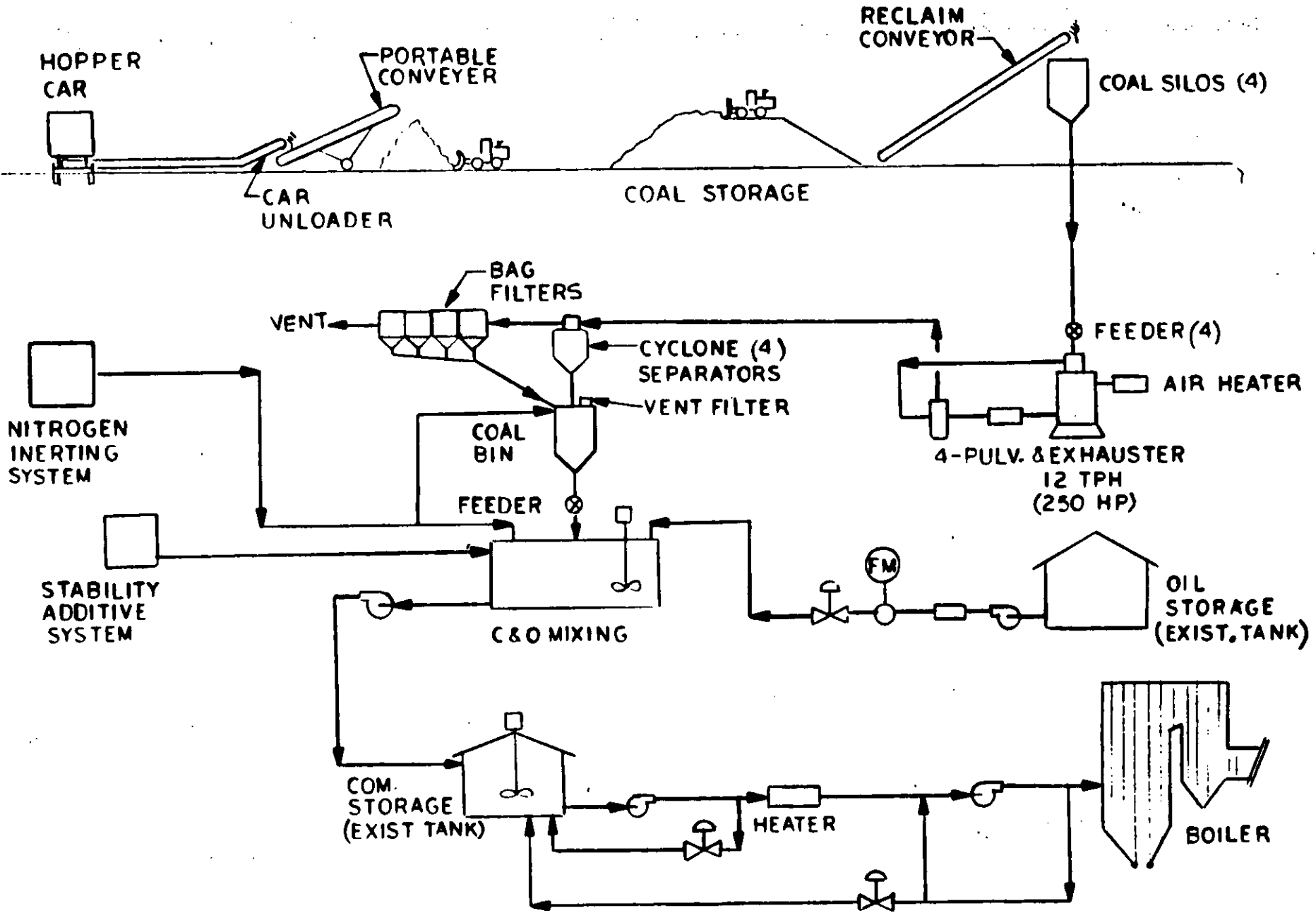
A Coal/Oil Mixture (COM) test facility will be constructed on FPL property along the west side of the Seaboard Coastline Railroad just north of Barwick Road and the Sanford Plant. The capacity of the test facility will be 12,200 bbl./day of COM with a maximum of 50% by weight coal/oil ratio.

A total of approximately 3,900 ft. of rail unloading spur will be installed, parallel to the existing tracks. Coal trains of up to 72 cars are expected. Undercar unloaders will be utilized to unload the coal cars. Mobile equipment will be utilized to move the unloaded coal to the storage pile (30,000 tons). A 36 car per day unloading rate has been targeted to minimize demurrage. Coal from the storage pile will be fed to the coal silos by either clamshell diggers or conveyors.

Coal will be pulverized to 80% passing through 200 mesh; it will be dried and mixed with fuel oil taken from storage tank "C" in an agitated mixing tank. COM from the mixing tank will be transferred to the COM storage tank (modified storage tank D). Storage tank "D" will be modified to install means of agitation and a tank heater capable of keeping the tank at approximately 125°F. A nitrogen inerting system will be utilized to inert equipment where there is a high potential for fire or explosion. A stability additive system will be provided to allow testing of commercially available additives.

The modifications required to the existing Sanford Plant facilities to support this test project include modifying the existing burners to accept COM, installing ash handling systems, installing specialized instrumentation for testing purposes, modifying the fuel oil lines and pumps, and miscellaneous associated work to support the test.

Because this is a temporary test facility to be engineered on an extremely short schedule, capital cost and lead times will be kept to a minimum by using minimum cost design and construction methods and by utilizing used, off the shelf and/or rental equipment where possible. It is recognized that this may result in a labor intensive system that might be costly to operate on a long term basis.

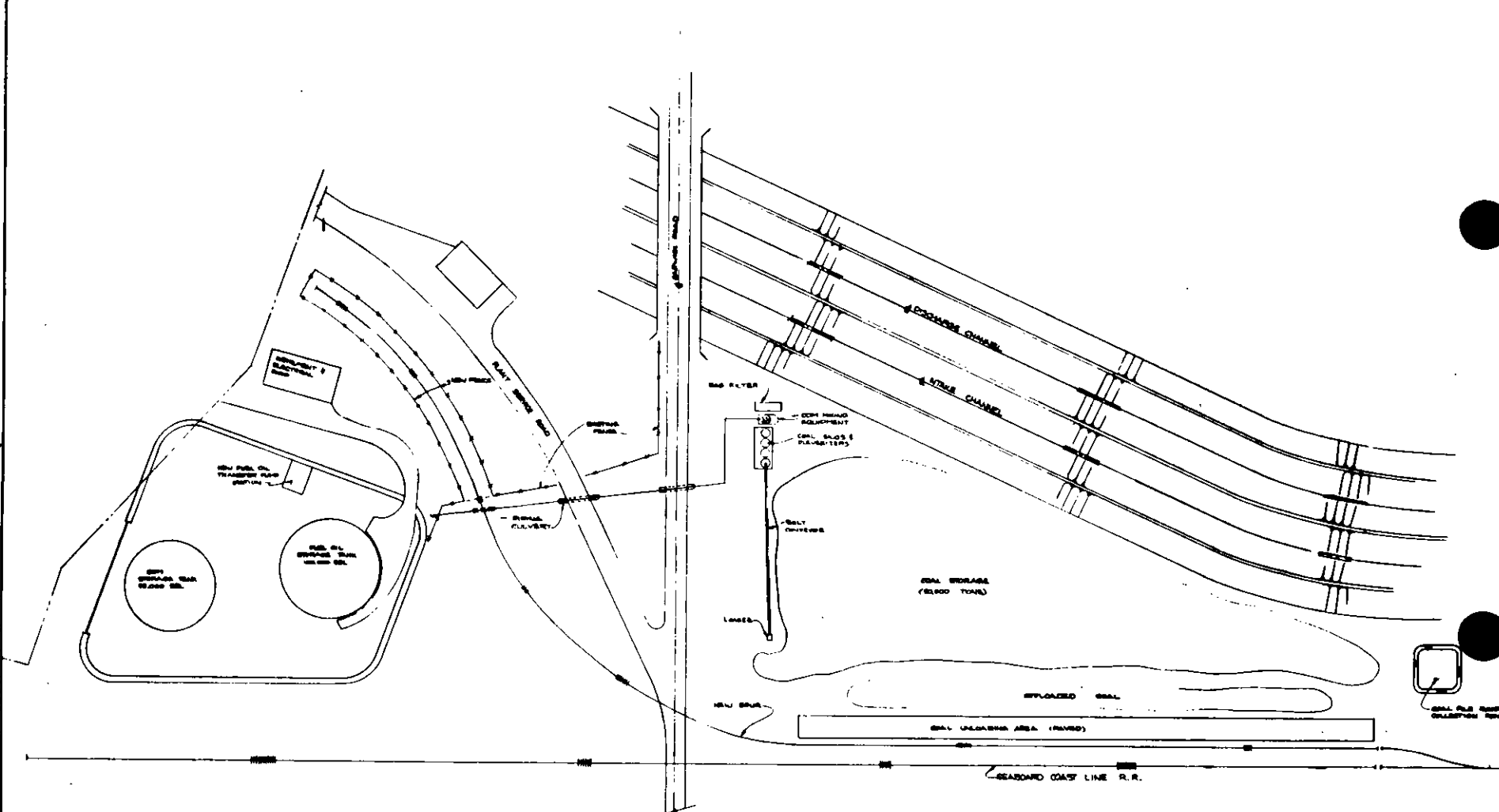


COM = COAL/OIL MIX

FLORIDA POWER & LIGHT Co.
SANFORD STATION
COAL/OIL MIX FACILITY

Section V Items 7 and 8 - SITE PLAN

SK-M-02



The drawing and the layout is subject to change without notice. It is the responsibility of the user to verify the accuracy of the information. BECHTEL is not responsible for any errors or omissions in this drawing.

DATE	DESCRIPTION	BY	CHKD
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC
12/15/70	ISSUED FOR CONSTRUCTION	J. W. MC	J. W. MC

BECHTEL
 CONSULTING ENGINEERS

FLORIDA POWER & LIGHT COMPANY
 SANFORD PLANT UNIT 4
 COAL/OIL MIXTURE TEST FACILITY
 SITE PLAN

JOB NO. 13700 DRAWING NO. SK-M-02


8 7 6 5 4 3 2



November 13, 1979

To Whom It May Concern:

This is to advise that Mr. W. J. Barrow, Jr., Assistant Manager of Environmental Affairs - Licensing and Environmental Planning Department, Florida Power & Light Company, is authorized to act as agent and representative for Florida Power & Light Company in applying for all air and water pollution source construction and operating permits for all Florida Power & Light Company power plants.


Robert W. Wall, Jr.
Senior Vice President