P.O. BOX 529100, MIAMI, FL 33152

FPL
FLORIDA POWER & LIGHT COMPANY

December 4, 1979

Mr. Steve Smallwood
Acting Bureau Chief
Bureau of Air Quality Management
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Mr. Smallwood:

In reference to your concerns expressed at the Sanford November 30, 1979 DER hearing on our proposed COM test facility, attached are our responses.

Sincerely,

W. J. Barrow, Jr.
Assistant Manager
Environmental Affairs

WJBjr/kb

Attachment

cc: Mary Clark
Vicki Tschinkel

TO: A. Kasprik

cc: B. F. Gilbert
W. J. Barrow

FROM: H. Causilla

ANSWERS TO SUPPLEMENTARY QUESTIONS FROM DER

(Given to Bechtel by W. J. Barrow
at the conclusion of the 11/30/79 Hearing)

1. Question: Control measures on unloading area

   Answer: Equipment utilized to unload coal cars will involve very low free-fall distances which will limit dust generation to below normal at transfer points. Because the purchased coal will be washed at the mine, the higher moisture content and reduced fines associated with washed coal should also act to inhibit dust generation.

2. Question: Control measures on reclaim conveyor to coal silos

   Answer: Reclaim equipment to the silo feeding conveyor will also involve very low free-fall distances. Top transfer point to silo conveyor will be enclosed. Again, the use of washed coal should act to inhibit dust generation.

3. Question: Control on coal silo vents

   Answer: Coal silos are open top, and as such there are no special provisions for venting.

4. Question: Fuel and capacity of air heater

   Answer: The pulverizer air heaters are direct natural gas fired units with a total rating of approximately 18 million btu/hr requiring 370 cfm of natural gas.

5. Question: Nitrogen inerting system

   a. Question: Used continuously or only for emergency?

      Answer: Nitrogen inerting system is provided for both continuous and intermittent inerting as follows:

Item	Continuous	Intermittent
Coal/oil mix tank	X	
Gravimetric feeder	X	
Pulverized coal storage bin	X	
Coal pulverizers		X

   b. Question: Do C&O mixing and storage tanks have vents? Filters?

      Answer: It is presently planned to vent the pulverized coal bin and the coal/oil mix tank to the bag filter through a mist eliminator. The coal oil mixture storage tank will be vented to atmosphere through the existing atmospheric vent. Since the coal and oil are intimately mixed prior to entering this tank, no fugitive dust will be emitted from this vent.

c. Question: If other than emergency use, why are vents not led back to baghouse?

Answer: See item b.

d. Question: Give operation details of vents - Flow - Filter space.

Answer: Design vent flows for the pulverized coal bin and the coal/oil mix tank are expected to be 20 cfm and 40 cfm respectively. The filter efficiency will be 99.9+% as stated in the application.

6. Question: Shouldn't estimate of annual emissions be 7.7 lb/hr x 2880 hrs = 11.088 T/yr, rather than 8.8 as given?

Answer: The 7.7 lb/hr of coal fines emitted from the bag filter will result in a total emission of 11.09 tons for the 120 day demonstration.

7. Question: Ash disposal?

Answer: Because of the increased quantities of ash generated when firing COM, temporary ash handling facilities will be provided. The ratings of these systems will be based on firing 50% COM (approximately 42 tons/hr of coal) and a maximum of 10% ash in the coal.

Bottom ash is expected to comprise 10% (maximum) of the total ash generated. A system rating of one ton/hr will be utilized to provide margin and to allow for some on-line maintenance of the system. Bottom ash will be collected in a hopper(s) and will be disposed of by sluicing to a pond or dewatering facilities. Material will be removed from the site by a third party.

Fly ash will be collected in the hoppers of the existing dust collector. A system rating of five tons/hr will be utilized to provide margin, and to allow for some on-line maintenance of the system. Fly ash will be collected and disposed of by one of the following schemes:

1. Fly ash will be pneumatically conveyed to a silo, loaded into trucks and utilized and/or disposed of by a third party. The ash removal system will be a closed loop system, such that any pollutant carryover will be injected into the boiler furnace.

2. Fly ash will be hydraulically conveyed to a pond. Material will be removed from the site by a third party.

8. Question: Describe coal dryer pulverizing process (is coal crushed or dried first, is coal screened or pneumatically sized?)

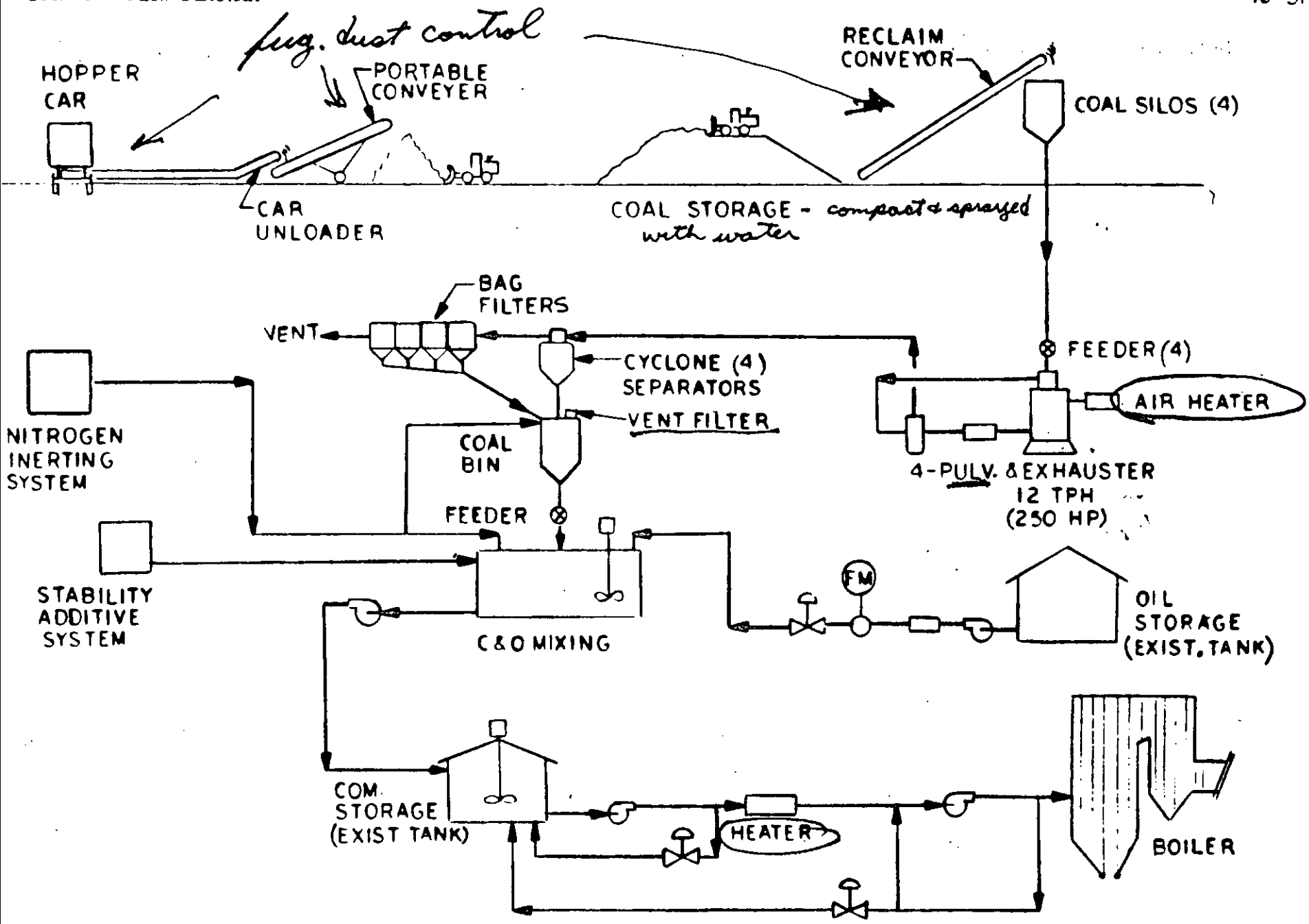
Answer: The coal pulverizing process is typical of that utilized in direct firing applications in a coal fired power plant. Coal is admitted to a bowl mill and is pulverized between a bowl and a grinding roll. Hot air admitted to the mill serves two functions. First, the finely divided coal particles are exposed to the hot air and the surface moisture is evaporated. Secondly, the velocity of the hot air stream conveys the pulverized coal through a size classifier and out of the pulverizer. The classifier is a centrifugal device and does not employ any screens.

Prelim. questions —
Transmitted by Steve Smallwood
to WJBarrow 11/30/79

FP&L Sanford [illegible]

1. Control measures on unloading areas.
2. " " " reclaim conveyor to coal piles
3. Control on coal pile vents.
4. Fuel & capacity of air heater
5. Nitrogen inerting system
a. Used continuously or only for emergency?
b. Does [illegible] tank have vent? Filtered?
c. If other than emergency use, why are vents not [illegible] to [illegible]?
d. Give [illegible] details [illegible]
Flow
[illegible]
6. Shouldn't [illegible] annual [illegible]
i.e. 7.7 [illegible] 58 [illegible]
rather [illegible]
7. Coal analysis?
Above questions [illegible] annual [illegible]
over 15 TPY [illegible]
[illegible]
[illegible]

Describe coal dryer pulverizing process (is coal crushed or dried first, is coal screened or pneumatically sized?)



COM = COAL/OIL MIX
12,200 bbl/day

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

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

November 29, 1979

W. J. Barrow, Assistant Manager
Environmental Affairs
P. O. Box 529100
Miami, Florida 33152

Dear Mr. Barrow:

This is to acknowledge receipt and transaction of your "Application to Construct an Air Pollution Source" fee check(s).

The permit number(s) assigned are as follows:

Permit # AC 25610	Coal handling and pulverizer, Sanford Unit #4.

If we may be of further assistance please call me at (904) 488-1344.

Sincerely,

M. G. Hodges
FDER BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 33520

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from FLA. POWER & LT. CO. (COAL OIL MIXING FACILITY, SANFORD) Date 11/13/79

Address MIAMI, FLA., 33152 (P.O. BOX 529100) Dollars $ —20⁰⁰

Applicant Name & Address W. J. BARROW, (NOT GIVEN) 305-552356)

Source of Revenue

Revenue Code 0101 Application Number AC25610

By M. Hodg

DEPARTMENT OF ENVIRONMENTAL REGULATION

DAILY CASH LISTING

DATE: November 30, 1979

DATE FINANCE & ACCOUNTING RECEIVED: _____

LISTER'S SIGNATURE: M. Hoch

SIGNATURE OF RECEIVER: _____

REMITTER	CHECK NUMBER	CHECK AMOUNT	REVENUE OBJECT CODE	APPLICATION NUMB
Florida Power and Light	388270 Account # 057513 S.E. 1st National Bank, Miami, Florida	$20.00	0101	AC 25610

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No 33520

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from _____ Date _____

Address _____ Dollars $ _____

Applicant Name & Address _____

Source of Revenue _____

Revenue Code _____ Application Number _____

By _____

THIS CHECK IS IN SETTLEMENT OF

FPL
FLORIDA POWER & LIGHT COMPANY
MIAMI, FLORIDA
GENERAL OFFICE FUND

No. 388270 63-5/660

1979 NOV 19

PAY
TO THE ORDER OF

FPL FEB 20 AM 8:00

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

80

$ 20.00

SOUTHEAST FIRST NATIONAL BANK
MIAMI, FLORIDA

⑆0660-00581⑆ ⑈05-751-3⑈

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Locin.:
To:	Locin.:
To:	Locin.:
From:	Date:

TO: Finance & Accounting
ATTN: Doris Crosby

FROM: M. G. Hodges MGH

DATE: November 30, 1979

SUBJ: Receipts for Applications to Construct Air Pollution Sources in Nonattainment Areas or Their Area(s) of Influence.

Attached are the following:

1 Checks @ $20.00 each

_____ Checks @ _____ each

Total amount enclosed $ 20.00 .

Receipt numbers:

33520 (AC 25610)

Certified Mail No. _____
Return Receipt Requested

Steve

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

November 27, 1979

Mr. W. J. Barrow
Assistant Manager
Florida Power and Light
Post Office Box 529100
Miami, Florida 33152

Dear Mr. Barrow:

The following is a summary of various points of information which we feel you need to address at the November 30, 1979 public hearing in Sanford on FP&L's variance request for test burning of various coal-oil mixtures in Unit #4 at the Sanford power plant.

As we discussed by phone last week, we are also suggesting various conditions and actions that appear to be appropriate to provide reasonable assurance that the air quality of the area is adequately protected should the variance be granted, and to provide for a means of adjusting the test program at a later date should that become necessary to meet the test objectives.

The Bureau intends to recommend approval of the variance request provided FP&L demonstrates that:

1. The test burns will not result in a violation of any ambient air quality standard or result in significant deterioration of air quality; and,

2. There are compelling economic and social reasons for conducting the test burns at this time and at this place.

In order to answer these questions and questions that the people of Sanford may have, we suggest that you be prepared to discuss at least the following points.

1. Why does FP&L need to conduct these test burns? Why cannot FP&L use the test results from other studies such as the tests on New England Power Service Corporation's Salem Harbor Unit #1, tests at the FPC Crystal River Plant; and/or proposed future tests at other Florida power plants which would be equipped with high efficiency particulate collection equipment?

2. If the tests do need to be conducted on a FP&L facility, why the Sanford plant and why is a year needed to complete the tests?

3. If the tests do need to be conducted at Sanford, why on Unit #4, that has the new low excess air oil burners, when Unit #5 is the same size and has the older excess air burners, and it generally requires more excess air to burn coal than to burn oil?

4. FP&L should be prepared to address establishment of an emissions cap for the test program for two reasons. First, the Environmental Protection Agency might well require a cap in reviewing any variance issued by the State as a revision to the State Implementation Plan. Second, a number of assumptions made in estimating the emission rate upon which the air quality impact analysis was based are subject to uncertainties. The following comments specifically address some of these uncertainties. The predicted ambient impacts of the proposed test burns depend upon the magnitude of the estimated increase in emissions due to burning coal. The emission estimates depend on the type of coal to be used and the amount of coal that is estimated to be needed to operate the boiler at full load while burning a 50/50 mixture (by weight) of the coal-oil mixture. The amount of coal needed depends on the maximum heat input rating of the boiler.

   The ambient air quality impact analysis submitted to the Department indicates that the maximum particulate emission rate for Unit #4, while burning a 50/50 coal-oil mixture, would be 4855 #/hr. At that emission rate, computer modeling predicts that the maximum increase in ambient particulate concentrations during any 24 hour period would be 37 ug/m^3 - the maximum that is allowed under both the State and Federal Prevention of Significant Deterioration (PSD) rules.

   When the maximum predicted impact of the test burn is combined with the predicted impacts of the baseline particulate sources in the area (under the same weather conditions) the maximum total ambient particulate concentration that is predicted

to occur in the area is 108 ug/m^3 against the ambient standard of 150 ug/m^3. Based on a maximum sulfur dioxide (SO_2) emission rate of 8511 #/hr., the maximum increase in ambient SO_2 concentrations is predicted to be 423 ug/m^3, 3 hr. average, against a maximum allowable 3 hr. PSD increment of 512 ug/m^3. The maximum total ambient SO_2 concentration (considering the impacts of baseline SO_2 sources in the area) is predicted to be 831 ug/m^3 against the 3 hr. ambient SO_2 standard of 1300 ug/m^3.

The maximum particulate emission rate of 4855 #/hr. is based on burning a 50/50 mixture of 13% ash coal (12,000 BTU/lb.), with existing oil (1.7% Sulfur #6 oil), to provide 3100 mmBTU/hr. heat input to the boiler. The existing boiler is permitted to operate at the rate of 3600 mmBTU/hr. heat input at full load.

Burning oil alone, the unit is estimated to result in a maximum particulate emission of 1054 #/hr., which represents meeting the interim 0.34 # particulate/mmBTU emission standard for oil with a very high asphaltene content. At a 50/50 mixture (by weight) approximately 103,333 #/hr. of oil would be burned to provide approximately 60% of the heat input. The balance of the heat input would be provided by approximately 103,333 #/hr. of coal to provide 3100 mmBTU/hr.

If it is assumed that the actual maximum heat input for Unit #4 is 3717 mmBTU/hr (calculated from reports to PSC) and that #6 oil has 18,000 BTU/lb then at full rating the existing oil guns would fire a maximum of 206,500 #/hr. of #6 oil to the boiler. If the coal has a heating value of 12,000 BTU/lb., then a 50/50 mixture (by weight) would have an apparent heating value of 15,000 BTU/lb. If the existing oil guns, when modified to inject the coal-oil mixture, can still inject the fuel mixture at a rate of 206,500 #/hr., the maximum heat rate to the boiler would be (3717) (15000/18000) or 3097 mmBTU, which is equivalent to derating the boiler by about 17%.

If 103,333 #/hr. of 13% ash coal is needed at maximum derated load, approximately 13433 #/hr. of coal ash will be injected into the boiler. The ESE report assumes that 80% of this ash is entrained in the exit gas from the boiler, the other 20% falls out and is

removed with the bottom ash, which is a generally accepted estimating figure for pulverized fuel fired boilers. The actual percent entrained could easily vary by 10-15%. If complete coal combustion is not achieved, part of the carbon in the coal will be discharged to the stack as part of the fly ash. Typical values range from 1-5% (or higher) for pulverized coal.

The ESE report also assumed that the existing multiclone would remove 60% of the coal fly ash. Multiclone efficiencies on ash can range from 40-85% so 60% appears to be a reasonably conservative assumption.

If there is 5% carbon in the ash and 80% of the ash goes to the mechanical collector, and the collector removes 60% of this, then (13433)(0.80)(1.05)(0.40) or 4514 #/hr. of coal ash would be discharged to the stack. If half the weight of the mixture is oil that emits 0.34 #/mmBTU of oil heat input, the oil would contribute 632 #/hr. for a total particulate emission of 5146 #/hr. maximum.

At 4855 #/hr. the maximum allowable 24 hr. particulate PSD increment is just equaled (based on the ESE modeling). If the existing quality of oil is used, the oil ash contribution should be less than 632 #/hr. If low ash coal is used, the coal ash emission would be less. If the oil guns, when modified, can not inject coal-oil at the same rate as oil alone, the boiler would be further derated, and the emission would be less. If the multiclone is more efficient than 60%, and maintained in good operating condition, the emission would be less.

If more than 80% of the coal ash is entrained in the exit gas from the boiler, the emission would be greater. If the coal ash contains more than 5% carbon, the emission would be greater. Both of these possibilities may occur since generally oil-fired boilers have shorter combustion passes in the boiler than do coal-fired boilers.

To provide reasonable assurance that the PSD particulate increment is not violated we have concluded that a maximum particulate emission cap is needed for Unit #4. We suggest a maximum of 4850 #/hr. particulate.

As noted above, there are various means available to stay under this limit. However, if for any reason, higher emissions occur from #4, some mitigating action can be taken because of the location and characteristics of #5.

Unit #5 has the same stack height and emission characteristics as Unit #4. The two units are located reasonably close together. From an air quality impact point of view, a pound of ash discharged from #5 has essentially the same impact as a pound discharged from #4. This, however, is not true of #3 since it has a shorter stack. A pound of ash from #3 would have a relatively greater impact and it would occur at a different place than the impact of #4 and #5.

Considering these factors, the Bureau could recommend acceptance of a maximum combined emission cap for Units #4 and #5 that would apply during coal-oil test burns. Based on the ambient impact analysis we would suggest a maximum of 5900 #/hr. for the combined total emission from both units, provided adequate test and operational data are provided to reasonably verify compliance with the two stack emissions cap. As you probably know, this type of "bubble" is usually not favored by regulatory agencies because of the increased complexity in verifying compliance. However, in this case, due to the nature of the variance request adequate data should be available without substantial modification of the proposed test program.

5. It should be noted that it is the Bureau's understanding that FP&L is agreeable to being limited to using 1.7% sulfur oil with the lowest asphaltene content available. If 2.5% sulfur oil were fired during the coal-oil test burn periods, previous ESE computer modeling indicates that the maximum allowable 3 hr. PSD increment for SO_2 would be violated.

6. FP&L has requested that the variance be for 120 "full-power days", not to exceed one year.

"Full-power day" needs to be defined in terms of some readily measurable units, if this concept is to be used. We suggest "Megawatts-hours generated" as an equivalent.

Specifically what does full-power mean in light of the probability that the test unit cannot be operated at design heat input during the test burns? What does day mean in this context; a day during which testing is conducted or a period of 24 hours? We suggest that full-power means the nominal maximum rated capacity under test conditions and that it be fixed at some constant value such as the nominal megawatts generated at a heat input of about 3000 mmBTU/hr; for example, 300 MW x 24 hours, or 7200 MWH generated as equivalent to a full-power day.

Is it FP&L's intent that only the time of testing be counted or the total time that coal is being fired? We suggest the latter.

It is also our understanding that regardless of the number of "full-power days" remaining unused, if any, the coal-firing and testing will be terminated not later than one year after the first test burn.

7. Since the nature of the proposed test is such that the results of the early testing phase may determine the nature of subsequent testing needed, we suggest that FP&L as a condition to obtaining the variance, develop and submit a preliminary detailed test plan to the Department for approval prior to firing any coal at the Sanford plant. Such plan should be similiar to the Preliminary Test Plan for New England Power Service Company Coal-Oil Combustion Project, prepared for the Department of Energy (DOE). It is our understanding that FP&L has a copy of that document and is preparing such a test plan.

   Any major changes to the submitted and approved plan would have to be approved by the Department prior to operating the plant or conducting tests in accordance with the modified plan.

8. To verify compliance with the emissions standards established for the test periods (see item 4) we suggest at least one full compliance test be conducted (a) during the initial coal-burn, (b) each 10 full-power days, thereafter, (c) each time the coal-oil ratio in the mixture is increased, (d) each time major repairs to the burners or the multiclone is required, and (e) anytime the Department has reason to believe that the interim emission standards may be violated.

9. FP&L should notify the Department in advance of the initial test burn and of all major test activities and of any incidents that result in or may have resulted in excess emissions.

10. FP&L should be prepared to discuss the company's position and intention with respect to installing high efficiency particulate collection equipment on any units that are to be fired with a coal-oil mixture subsequent to the conclusion of the Sanford test program.

11. It should be understood that (a) if an ambient air quality standard violation is detected that is related to the emissions from the power plant, the test will terminate; and (b) if the interim emission limits set to prevent significant deterioration of air quality are exceeded, the testing shall be suspended until the Department has reasonable assurance that those limits will be met during any subsequent testing.

If you have any questions, I can be contacted at 904/488-1344.

Sincerely,

Steve Smallwood
Acting Bureau Chief
Bureau of Air Quality
Management

SS:jr

cc: Vicki Tschinkel
William J. Townsend, Jr.
Mary Clark
W. E. Starnes
Larry George
Jim Estler
Alex Senkevich

TECO EPRI
additive
factor 5-7

(4) 400 mw - 24

9600 mega watt hours

(1 year limiting)

c/c *

(?)

1) another test on 800 mw unit. why?

Cook - why program (V.P.)

Boston - coal facility

Kaspuik - ESP

Andrew - Tesla

Leski - modeling

WHY? - reduce oil use - ok

Why can't use results of 2) other work? ok

ok other unit small; designed forced

9 - 460 } ok
4 - 800 }

3 or 4 year - ok

APC equipment needed, paid for buy & saving. ok

Ship's boiler incl. boiler crystal (FPC) Salem Harbor

(3) Why Seabrook oil secure storm back up regional capacity ok

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(5) Make coal temporary coal facility

* ? Can 12,500 barrels of oil now be injected to boiler

max 2% 12,500

% sulfur problem? Remodeling must be done

30,000 T coal storage

100 T/hr reclaim conveyor

12 TPH - pulverizer

80-85% cyclone 80% + 200 mesh + baghouse

---

* % carbon in ash

---

* need air permit for dry s/o.

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

BOB GRAHAM
GOVERNOR

JACOB D VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

November 21, 1979

W. J. Barrow
Florida Power and Light Company
P. O. Box 529100
Miami, Florida 33152

Dear Buzz:

In confirmation of our telephone conversation of November 21, 1979, re construction of a coal handling facility at your Sanford plant. It was agreed that preliminary site prepartion work, including installation of a culvert under a new road, driving of pilings and pouring of a concrete pad could begin as soon as necessary. This letter does not authorize installation or operation of any coal pulverizing equipment prior to inssuance of an air construction permit. It is also my understanding that no coal will be delivered to the site prior to permit issuance.

If you have any questions in this regard, please feel free to call.

Sincerely,

Mary

Mary F. Clark
Assistant General Counsel

MFC/dg

cc: William H. Green
Steve Smallwood
Victoria Tschinkel

P.O. BOX 529100, MIAMI, FL 33152

FLORIDA POWER & LIGHT COMPANY

November 19, 1979

Mr. H. G. Hodges
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: Air Operating Permit Application
FPL Coal-Oil Mixing Facility, Volusia County

Dear Mr. Hodges:

Per our telephone conversation today, enclosed please find FPL Check No. 388270 in the amount of $20.00 to cover the application fee for the subject permit.

Sincerely,

W. J. Barrow, Jr.
Assistant Manager
Environmental Affairs

WJBjr/MLR/kb

Enclosure

DER PERMIT APPLICATION TRACKING SYSTEM MASTER RECORD

FILE#0000000256410 CODE# DER PROCESSOR:SVEC DER OFFICE:TLH
FILE NAME:FLORIDA POWER & LIGHT DATE FIRST REC: 11/13/79 APPLICATION TYPE:AC
APPL NAME:BARROW, W.J. JR. APPL PHONE:(305)552-3561 PROJECT COUNTY:VO
ADDR: CITY:TAMPA ST:FL ZIP:
AGNT NAME:SURABIAN, M. AGNT PHONE:( )948-2700
ADDR:15740 SHADY GROVE ROAD CITY:GAITHERSBURG ST:MD ZIP:20760

ADDITIONAL INFO REQ: / / / / / / REC: / / / / / /
APPL COMPLETE DATE: / / COMMENTS NEC:Y DATE REC: / / DATE REC: / /
LETTER OF INTENT NEC:Y DATE WHEN INTENT ISSUED: / / WAIVER DATE: / /

HEARING REQUEST DATES: / / / / / /
HEARING WITHDRAWN/DENIED/ORDER -- DATES: / / / / / /
HEARING ORDER OR FINAL ACTION DUE DATE: / / MANUAL TRACKING DESIRED:
THIS RECORD HAS BEEN SUCESSFULLY ADDED
FEE PD DATE#1:11/13/79 $0020 RECEIPT#00933520 REFUND DATE: / / REFUND $
FEE PD DATE#2: / / $ RECEIPT# REFUND DATE: / / REFUND $
APPL:ACTIVE/INACTIVE/DENIED/WITHDRAWN/TRANSFERRED/EXEMPT/ISSUED:AC DATE:11/13/7
REMARKS:COAL PULVERIZER AND HANDLING FACILITY, SANFORD UNIT #4. LOCATED ON BARWICK ROAD, SANFORD. UTM = 468.342 E./ 3190.386 N. LAT/LON = 28-52-40 N. / 84-49-30 W. VOLUSIA CO.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 33520

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from FLA. POWER & LT. CO. / [illegible] Date 11/13/79

Address MIAMI, FLA. 33152 (P.O. BOX 529100) Dollars $ 20.00

Applicant Name & Address W. J. BARROW, JR. / [illegible]

Source of Revenue

Revenue Code 0101 Application Number AC64-[illegible]

By

11-29-1979

I am George Bastien of Bechtel Power Corporation, Gaithersburg, Maryland. Bechtel is responsible for design, construction and operation of the Coal/Oil Mixture (COM) preparation facility. The attached testimony includes a description of the COM facility from the coal unloading to COM delivery to the boiler, including fugitive dust emissions. A copy of my qualifications are appended to the attached testimony.

NAME G. F. BASTIEN

POSITION Mechanical Engineering Supervisor

EDUCATION BSCE, Worcester Polytechnic Institute
Post graduate study courses in mechanical engineering and nuclear engineering, Worcester Polytechnic Institute; Nuclear Power Engineering Course in conjunction with Combustion Engineering and MIT

SUMMARY

7 Years	Mechanical group supervisor, fossil-fueled power plants
6 Months	Project engineer, fossil-fueled power plant
3 Years	Mechanical design engineer, fossil-fueled power plants
1 Year	Mechanical group supervisor, nuclear power projects
3½ Years	Design engineer, testing and development of supercritical boilers

EXPERIENCE

Mr. Bastien is currently assigned as mechanical group supervisor on the 480 MW coal fired Vienna Unit 9 for Delmarva Power & Light Company

Previously, he was mechanical group supervisor on the Dickerson Particulate Control Project for Potomac Electrical Power Company. The project includes the installation of one 50% capacity particulate scrubber on each of two existing coal-fired boilers. He also was project engineer with responsibility for all engineering on the 130 MW combined cycle Dresser Station Repowering Unit for Public Service Indiana and mechanical group supervisor directing the design of all plant mechanical systems on the 400 MW oil-fired, base-loaded Edge Moor Unit 5 for Delmarva Power & Light Company.

In other Bechtel assignments, experience includes work on the 289 MW oil-fired Benning Unit 16 for Potomac Electric Power Company and the 400 MW oil-fired Montville Unit 6 for the Connecticut Light and Power Company. His responsibilities involved coordination with the boiler manufacturer and design of the mechanical systems relating to the boiler, feed supply, feedwater and combustion air supply. He also performed on the addition of the three gas turbine-generator units at the Missouri Avenue Station for Atlantic City Electric Company. He served as mechanical group supervisor on the 830 MW PWR Millstone Unit 2 for Northeast Nuclear Energy Company, and on the SNUPPS project, five 1150 MW units involving four sites for five utilities.

Prior to joining Bechtel, Mr. Bastien was employed by Combustion Engineering as an engineer in the research and development department on the design and field testing of coal-fired supercritical pressure boilers, and thermodynamic studies. He also spent some time on field assignments with the erection department and service department as part of the engineering training program..

REGISTRATION Registered Professional Engineer in Maryland

11/29/79

SANFORD UNIT NO. 4

COM TEST FACILITY

1.0 COAL UNLOADING STORAGE AND RECLAIM SYSTEM

1.1 System unloading design capacity is based on unloading a 16 to 20 car coal train with 100 ton cars in a target time of one day. Assuming unloading will only be conducted during daylight hours, this results in a mean unloading rate of 106 tons per hours, based on two-shift operation.

1.2 Maximum reclaim requirement is based on the COM Plant design rating of 12,000 bbl/day of 50% COM. This corresponds to approximately 42 tons/hour. Design reclaim capacity will be 100 tons per hour in order to provide surge capacity.

1.3 The system will be designed to handle clean, washed coal, with a minimum of fines, which has been crushed to minus 1 1/4 inches.

1.4 To minimize capital cost, silo storage will be kept to a minimum. (1 1/2 - 2 hours at COM plant design rating).

1.5 The coal storage pile will contain 30,000 tons of coal (approximately 30 days' storage). Provision will be made to collect the coal pile run-off.

1.6 Weighing of the coal will be at the mine, and no weigh facilities will be provided at the plant proper.

1.7 Fire protection will be accomplished utilizing water from existing local hydrants and from water trucks.

1.8 Coal Pile runoff will be collected in a pond for settlement and eventual disposal to an existing pond utilizing a portable pump.

1.9 To provide a location for unloading, a new spur will be installed parallel to the existing Seaboard Coastline Railroad tracks. This spur will start approximately 1670 feet north of Barwick Road. This is shown on Dwg C-001. This spur arrangement provides sufficient space to park one coal train (16-20 cars) to the north of Barwick Road, and to park twelve empty cars south of Barwick Road during unloading. Any additional cars will be stored on a nearby spur, perhaps at Benson Junction or Rand Yard.

1.10 Four (4) 75 ton/hr undercar unloaders will be utilized for a total instantaneous capacity of 300 tons/hr. The unloaders will be positioned approximately every 100 feet, and will simultaneously unload every other car of an 8-car string. Each unloader will discharge to a 50 ft. inclined conveyor rated at 100 ton/hr. Each conveyor will discharge to a small pile for removal with mobile equipment. To fully unload the first four cars will require repositioning of the train two or more times (random cars) to center each hopper bottom over the unloader. Car positioning will be accomplished utilizing a car puller. Upon completion of unloading of the first four cars, the unloaded coal will be moved west to the main storage pile with mobile equipment. The train will then be advanced approximately one car length, and a second group of four cars will be unloaded. Upon completion of unloading of this group of eight cars, the train will be advanced, and the eight empty cars will be stored on the spur on the south side of Barwick Road. A second group of eight cars can be unloaded similarly for a total of 16 cars for the day. Additional odd numbers of cars can then be unloaded to complete the trainload.

1.11 Coal will be reclaimed into the four coal silos from the south end of the coal pile. A reclaim hopper located near the main coal storage area will be fed by front end loaders. Coal from the reclaim hopper will be conveyed to the top of the silos by an inclined reclaim conveyor with a design capacity of 100 tons per hour. A magnetic separator will be provided at the downstream end of the reclaim conveyor. At the discharge end, this conveyor will feed coal onto a silo feeding conveyor. Filling of the first, second and third silos will be accomplished by adjusting three manual plows. The fourth silo will receive coal from the end discharge of the silo feeding conveyor.

1.12 Because coal will be unloaded along a 440-ft. section of the coal pile, it will be necessary to utilize mobile equipment to continuously shift inventory from the north to the south end of the pile where it will be within reach of the reclaim hopper.

1.13 Coal in the inactive portion of the coal storage area will be compacted to minimize the potential for fugitive coal dust emissions. Localized dust conditions will be controlled with suitable dust suppression agents.

2.0 COAL/OIL MIXING TRANSPORTATION AND STORAGE SYSTEM

2.1 The Coal/Oil Mixing, Transportation and Storage System is comprised of the following components:

2.1.1 Coal fed from the coal silos is metered to four pulverizers by four rotary feeders. Each feeder/pulverizer is rated at 10.5 tons per hour.

2.1.2 Primary air flow for the pulverizer is generated by an exhauster driven directly off the pulverizer gearbox.

2.1.3 Primary air temperature is raised to a temperature suitable for drying the coal in a direct fired gas air heater.

2.1.4 Dry pulverized coal is conveyed by the exhauster to four cyclone separators having an efficiency of approximately 80-85%.

2.1.5 Air and entrained coal fines from the cyclones are conveyed to a bag filter which separates the coal dust from the air stream with an efficiency of 99.9+%. An alarm will be provided to alert the operator to shut down the coal pulverizing equipment in case of dust collection system malfunction.

2.1.6 Pulverized coal from the bottom of the four cyclones and from the bag filter hoppers is fed by gravity through rotary airlocks to a single pulverized coal storage bin with a capacity of approximately 20 tons.

2.1.7 Pulverized coal from the storage bin is fed by a gravimetric feeder (maximum feed rate of 42 tons/hour) into the coal/oil mix tank. The coal/oil mix tank is a 12 foot diameter, 15 foot high tank with vertical turbine agitator to promote mixing. The tank has an approximate retention time of 30 minutes.

2.1.8 Oil will be fed to the coal/oil mix tank from existing fuel oil storage tank D (100,000 bbl) utilizing the existing fuel oil suction heaters and fuel oil pump transfer station.

2.1.9 Coal/oil mixture is transferred to the COM storage tank (existing fuel oil storage tank C, 55,000 bbl) via a new COM transfer pump station. Pump capacity will be approximately 300 gpm. Storage tank C will be modified to install a vertical turbine agitator and a tank heater suitable for maintaining the storage tank at 125°F.

2.1.10 A COM recirculation system from the COM storage tank back to the mixing tank is provided to facilitate varying the percent coal in the COM storage tank inventory. The capacity of the recirculation system will be approximately 300 gpm.

2.1.11 An inerting system will be provided to inhibit coal dust explosions. This will be accomplished by introducing nitrogen into system components to reduce the oxygen concentration of the resulting mixture below the flammability limit; i.e., the value below which ignition of the combustible dust in question cannot be initiated under the most severe ignition conditions expected.

The nitrogen inerting system will include a nitrogen storage tank, ambient air vaporizers, pressure reducing stations, and purge gas distribution piping system. The following equipment will be purged by nitrogen continuously or intermittently, as required by system operations.

a. Coal/oil mixing tank

b. Gravimetric feeder

c. Pulverized coal storage bin

d. Coal pulverizers

The nitrogen inerting system will be designed in accordance with the recommendations of the National Fire Protection Association (NFPA-69).

2.1.12 Instrumentation is provided to measure the quantity of coal and oil fed to the COM mixing tank. The quantity of COM delivered to the storage tank and to the boiler is measured.

3.0 BURNER FUEL SUPPLY SYSTEM

The burner fuel supply system will be comprised of the following components:

3.1 New burner fuel pumps (3 half capacity) will be installed adjacent to the COM storage tank. These pumps will be rated to match the heat input to the boiler, which results in an approximate rating of 250 gpm each.

3.2 Suction to these pumps will be provided from both the COM storage tank and from the Unit 4 metering tank. This will allow the new system to feed the new burners with either COM or No. 6 fuel oil.

3.3 Discharge from the new burner pumps will be connected into the existing burner piping and routed through the existing heaters and strainers to the new burner guns, bypassing the existing constant differential pumps.

3.4 A new steam atomizing system (approximately 25,000 lbs/hr) will be installed for the new burner guns.

4.0 ASH HANDLING SYSTEM

Because of the increased quantities of ash generated when firing COM, temporary ash handling facilities will be provided. The ratings of these systems will be based on firing 50% COM (approximately 42 tons/hr of coal) and a maximum of 10% ash in the coal.

4.1 Bottom ash is expected to comprise 10% (maximum) of the total ash generated. A system rating of one ton/hr will be utilized to provide margin and to allow for some on-line maintenance of the system. Bottom ash will be collected in a hopper(s) and will be disposed of by one of the following schemes:

4.1.1 Bottom ash will be pneumatically conveyed to a silo, loaded into trucks and utilized and/or disposed of by a third party.

4.1.2 Bottom ash will be sluiced to a pond or dewatering facilities. Material will be removed from the site by a third party.

4.2 Fly ash will be collected in the hoppers of the existing dust collector. A system rating of five tons/hr will be utilized to provide margin, and to allow for some on-line maintenance of the system. Fly ash will be collected and disposed of by one of the following schemes:

4.2.1 Fly ash will be pneumatically conveyed to a silo, loaded into trucks and utilized and/or disposed of by a third party.

4.2.2 Fly ash will be hydraulically conveyed to a pond.

5.0 FUGITIVE PARTICULATE EMISSIONS FROM COAL/OIL MIXING FACILITY

5.1 General

The sources of fugitive coal dust emissions are shown on Figure 1. Quantitative data on fugitive coal-dust emission from coal unloading, storing, conveying, transferring, etc., are very limited. The available emission factors for coal handling operations are, at best, rated below average to poor. However, fugitive coal-dust emissions can still be roughly estimated using these emission factors as presented in Table 1 (Reference 1). Estimates of fugitive emissions in Table 1 include particulates up to 100μm in size (Reference 1). A major proportion (~70%) of the particles settle out within a short distance from the source and the long range air quality impacts are, therefore, relatively insignificant. Although the proposed PSD regulations allow credit for reductions due to such control measures for the purpose of PSD review, no credit is taken for emission reductions from compacting, water sprays and the higher quality coal (washed and not easily friable) to be utilized at this facility.

5.2 Coal Unloading and Transferring

Due to the smaller free-fall distance to the car unloader, fugitive coal dust emissions due to this source are expected to be significantly less than those shown in Table 1 for Source 1 (Figure 1). The unloaders transfer (source 2) coal onto a conveyor belt which then stacks the coal on a temporary coal pile (source 3). Mobile equipment (source 4) moves the unloaded coal to a storage pile.

5.3 Coal Storage

Coal in the storage area will be compacted to minimize the potential for fugitive coal-dust emissions. Water will be sprayed, as necessary, to minimize fugitive coal-dust emissions. Emissions from the coal storage area due to vehicular movement, loading out operations and wind erosion are identified as source 5.

5.4 Coal Conveying and Transfer

Coal from the storage area will be fed to a single conveyor (source 6) which transports the coal to four coal silos. Source 7 identifies coal-dust emissions from coal silo charging.

5.5 Coal Pulverizer and Product Recovery

Coal from the coal silos is metered to the four pulverizers where it is ground and dryed by heated air. Dry pulverized coal from each pulverizer is conveyed by the exhausters to four cyclone separators having an efficiency of approximately 80%. Pulverized coal collected in each cyclone (9.6 tons/hour) is transferred to a coal bin. Air with entrained coal fines (2.4 tons/hr of coal) from each of the four cyclones is ducted to a bag filter which separates the coal dust from the air stream at an efficiency of about 99.9%+. Exhaust from the baghouse (40,000 acfm air at 150°F) contains emissions of less than 7.7 lb/hr of coal-fines.

5.6 Fugitive Emissions

Total uncontrolled fugitive emissions from the sources listed in Table 1 are about 45 tons over the demonstration period of less than one year. However, measures such as purchasing of washed coal, storage pile water sprays and compacting of storage piles will significantly reduce these emissions. Note that these fugitive emissions are temporary and will not continue after the demonstration period.

Reference

1. "Technical Guidance for Control of Industrial Process Fugitive Particulate Emissions," USEPA. EPA-450/3-77-010, March 1977

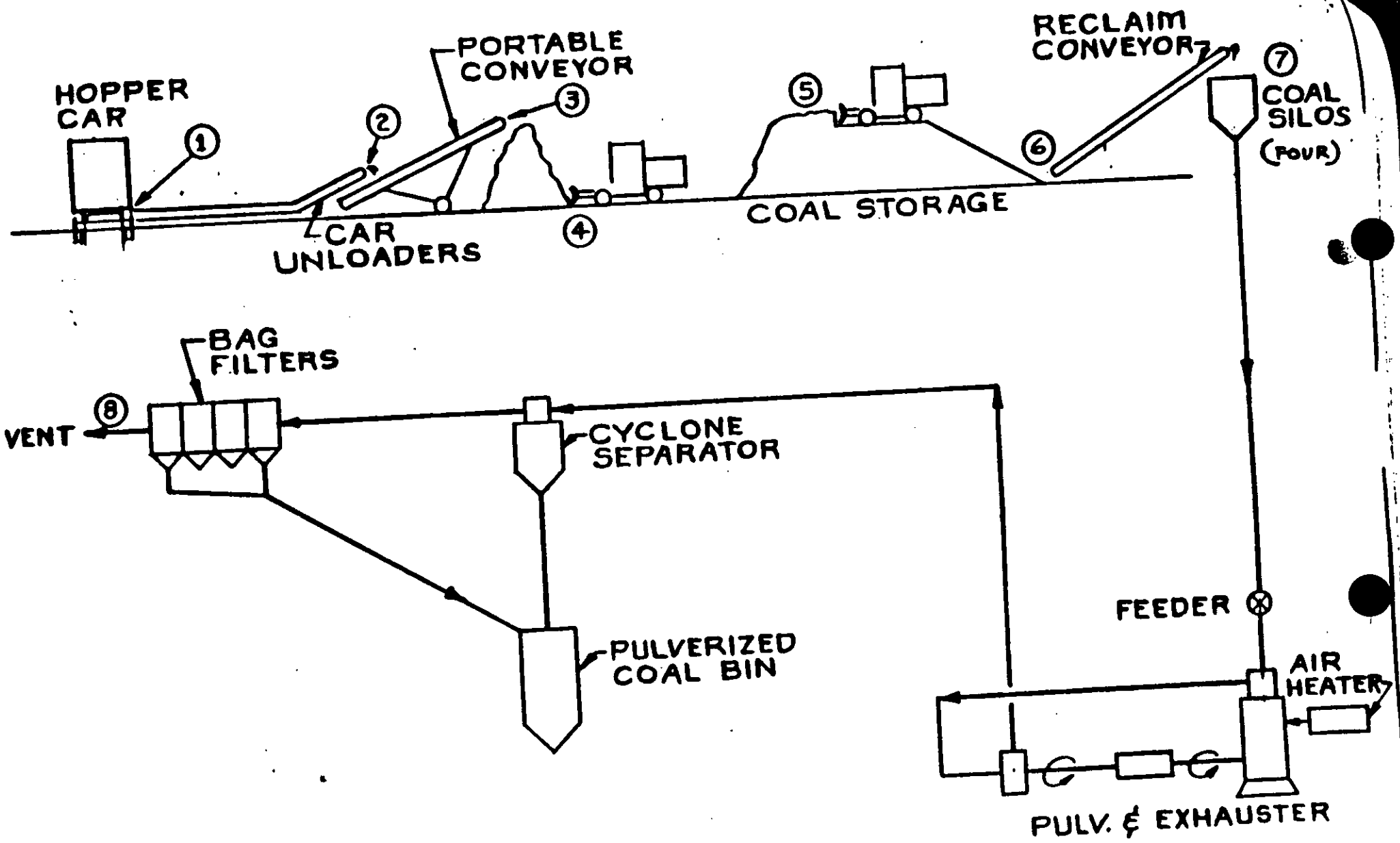

FIGURE 1

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

TABLE 1

FUGITIVE COAL - DUST EMISSION

Operation	Source No.	Uncontrolled Fugitive Emission Factor lb/ton Coal	Uncontrolled Emission tons/year
A. Coal unloading	1	0.1	6.00
B. Coal loading onto pile	3	0.044	2.64
Vehicular traffic	4, 5	0.096	5.76
Coal loading out	4, 5	0.055	3.30
Wind erosion	5	0.65	5.85
Coal conveying and transfer	2, 6	0.32	19.2
Coal charging	7	0.044	2.64
		Total	45.39

Assumptions

1. Source numbers are the potential emission points identified on process flow diagram in Figure 1.
2. Emission estimates are based on 120,000 tons coal to be used during the demonstration project.
3. Wind erosion emission factor is based on 18,000 tons coal pile for 12 month period.
4. Coal-fines (< 75μm) are estimated to be 2 percent, generally associated with the medium volatile coal.
5. Activity factors for loading, traffic, and load-out are assumed to be 0.7, 0.5, and 0.78 respectively (Ref. 1),
6. Thornthwaite's precipitation-evaporation index (PE) is assumed to be (Ref. 1).
7. Very small drop distance for unloading is assumed to result in 75% in fugitive emission.

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FLORIDA POWER & LIGHT COMPANY
PROPOSED COAL/OIL MIXTURE (COM) DEMONSTRATION PROJECT

Testimony of Michael C. Cook
Vice President Fuel Resources & Corporate Development

Introduction

Florida Power & Light Company is proposing a comprehensive test using a mixture of coal and oil as boiler fuel at the Company's Sanford Unit No. 4. The successful completion of this test would allow FPL to decrease its dependence on expensive imported fuel oil by substituting lower cost domestic coal, without forcing FPL's customers to bear the enormous cost burden of constructing new coal fired units.

Draft legislation proposed by the U.S. Department of Energy entitled "Power Plant Petroleum Conservation Act of 1979" calls for large petroleum users, those consuming more than 250,000 barrels annually, to reduce their petroleum consumption by the year 1990 to fifty percent (50%) of their average annual consumption in the base period of 1976 through 1978. This means that FPL would have to reduce its consumption to seventeen million barrels by 1990 or a 57% reduction from FPL's latest 12 month consumption level. Faced with the provisions of the already enacted Natural Gas Policy Act and the Powerplant and Industrial Fuels Use Act of 1978, FPL will also lose all of its natural gas supplies by 1988. FPL currently consumes natural gas equivalent to 14 million barrels of fuel oil, so the combined oil and gas reduction would be equivalent to 37 million bbls. of residual oil.

While the actual provisions of legislation or regulations mandating reduction of oil and gas use may change, the direction is clear: FPL will be required to substantially reduce its use of fuel oil as a boiler fuel.

Even if FPL were not faced with legislation mandating a reduction of oil and gas consumption, world supply conditions require that other more plentiful and less expensive boiler fuels be found. FPL's principal supplier of fuel oil has substantially reduced its commitment to provide high quality fuel oil. Extensive efforts to obtain additional supplies of high quality fuel oil under long term contract have met with only minimal success. Oil supplies are shrinking, oil quality is deteriorating and oil prices are going up. Should the world be faced with another "Iran", it is doubtful that there is enough petroleum supply capacity to make up the shortfall. The result may well be a curtailment of electric power production, with attendant economic, health and social hardships for the people of Florida.

Alternatives such as shale oil, synthetic fuels, solar energy, and the like won't be much help before the late 1990's in the quantities needed by FPL. It is for these reasons that FPL has embarked on an ambitious program to inventigate and test alternative boiler fuels. A successful test firing of a coal oil mixture would provide a near-term economical, method for FPL to reduce its dependence upon the dwindling supply of fuel oil.

Potential Benefits to FPL's Customers

If this proposed COM test firing in the Sanford Unit 4 shows that

COM can be burned without significantly affecting the efficiency or reliability of FPL's existing oil fired units, the potential exists for converting all of FPL's 400 MW and 800 MW units to burn COM. This conversion of 6800 MW of capacity could potentially result in an annual displacement of up to 16 million barrels of fuel oil by 1984, a 35% reduction in forecasted consumption.

The following schedule illustrates these potential savings:

FPL Fuel Use Forecast
(Thousands of Barrels)

Year	Forecasted Oil Use Without COM (1)	Forecasted Oil Use With Max. COM Conversion	Annual Oil Savings
1980	40,600	40,600	0
1981	43,700	43,700	0
1982	44,800	39,600	5,200
1983	44,900	34,500	10,400
1984	46,900	30,500	16,400

(1) Source: FPL 10 Year Power Plant Site Plan 1979-1988

The capital costs of modifying FPL's existing oil fired units to burn COM are currently extimated to be in the range of $25 million for each 400 MW unit and $40 million for each 800 MW unit. These costs are primarily for installation of electrostatic precipitators and for modifications to the existing burners to accommodate the COM. The estimated capital costs expressed in 1979 dollars are summarized as follows:

9	400 WM units @ $25 million	$225 million
4	800 MW units @ $40 million	160 million
	Total Conversion Cost	$385 million

Using a figure of $425 million (to allow 10% for contingencies) the annual revenue requirements would be approximately $78 million (assuming FPL's current 9.16 (after tax) allowed rate of return). At the present cost of coal and oil, the calculated savings of COM vs. No. 6 oil is in the range of $2.73 per barrel. The number of barrels of COM utilized in 1984 would be approximately 32 million thus yielding a savings of $87 million annually or $9 million more than would be required to support the capital carrying charges.

While these figures are very preliminary, they do indicate a promising potential for COM to save money for FPL's customers while assuring a much more reliable fuel supply.

Description of Project

The proposed COM test at Sanford will be the first test ever conducted on the use of coal-oil mixtures in a commercial power plant which was originally designed to burn oil. COM is not new. It was tested on ships' boilers during World War II. More recently, a number of experiments have been conducted in industrial boilers. While these experiments showed a number of problems in handling COM, none of those problems presented insurmountable obstacles.

Now COM is beginning to be tested in utility power plants. Florida Power Corporation successfully burned a small amount of COM for a few days in one of its units. And the Department of Energy is sponsoring a one-year test of COM at a New England Electric System

power palnt which is considerably smaller (80 WM) than FPL's Sanford Unit #4 (400 MW). In addition, both the Florida Power plant and the New England Electric plant were designed to burn coal. Successful tests there provide useful data, but won't really tell us whether COM will work on a long-term basis in FPL's plants.

The 400 MW plants on FPL's system were designed to be fueled with oil. However, their basic design does include certain features which may permit them to burn a coal-oil mixture. For example, most of the boilers have a V-bottom for ash collection. But the only way we can find out if COM will work is to try it; the art of coal combustion is just too complicated to get all the answers we need through paperwork analyses.

There are several reasons for selecting Sanford as the site for the COM test:

1. It is FPL's closest plant to U.S. coal regions, thus minimizing coal transportation problems.
2. There is adequate rail service to the plant, and sufficient room there for a coal pile and for the COM preparation facility.
3. It is in a region of the state where enough generating capacity exists to remove a 400 MW unit from regular service without sacrificing reliability of electric supplies.

The test envisioned in this project is equivalent to up to 120 days of full power operation on Sanford Unit #4. This is the basis on which FPL has applied for a variance from the Department of Environmental Regulation. The actual test program might last as long as one year.

A full power day is defined as 400 megawatts for 24 hours, or 9600 megawatt-hours. So 120 equivalent full power days is 1,152,000 megawatt-hours generated using COM as the fuel. This is the amount of plant operating history we believe will be needed to reasonably evaluate the effects of burning COM.

The actual power levels and operating periods will vary throughout the test period. There may be significant periods of downtime for evaluation and modifications. Thus, we have requested that the variance be in effect for one year after the testing begins.

The output of the plant will be measured on the units' continuous recording meter. The total amount of COM burned during the test program will not exceed the amount needed to generate 1,152,000 megawatt-hours of gross electrical output.

The purpose of the test is to determine the effect of a mixture approximately half oil and half coal on a boiler designed to burn oil under normal operating conditions. Sanford Unit #4 will burn approximately 15,000 barrels of No. 6 oil per day at full power (400 MW. However, since the unit under normal operating

would operate at approximately 67% of capacity, initial provisions have been made to produce COM at an average rate equivalent to 10,000 barrels per day of No. 6 oil. COM contains less BTU's per barrel than No. 6 oil, since coal contains less BTU's per barrel than oil. Therefore, the initial test program contemplates producing approximately 12,500 barrels of COM per day, with a total production of 1.5 million to 2.25 million barrels.

The type of oil we expect to use in the COM test will be the regular No. 6 oil now in use at Sanford. The oil to be used in Unit #4 will have a maximum sulfur content of 1.7%. We haven't yet selected the specific coal, but have a number of proposals under evaluation now. The coal specifications call for a sulfur content of no more than 2%, and a heat content of at least 12,500 BTU per pound. Thus, we expect the COM mixture to meet the normal plant emission limit of 2.75 lb. of sulfur oxides per million BTU of heat input. Particulates and opacity will, of course, unavoidably exceed normal limits, as described in our variance application.

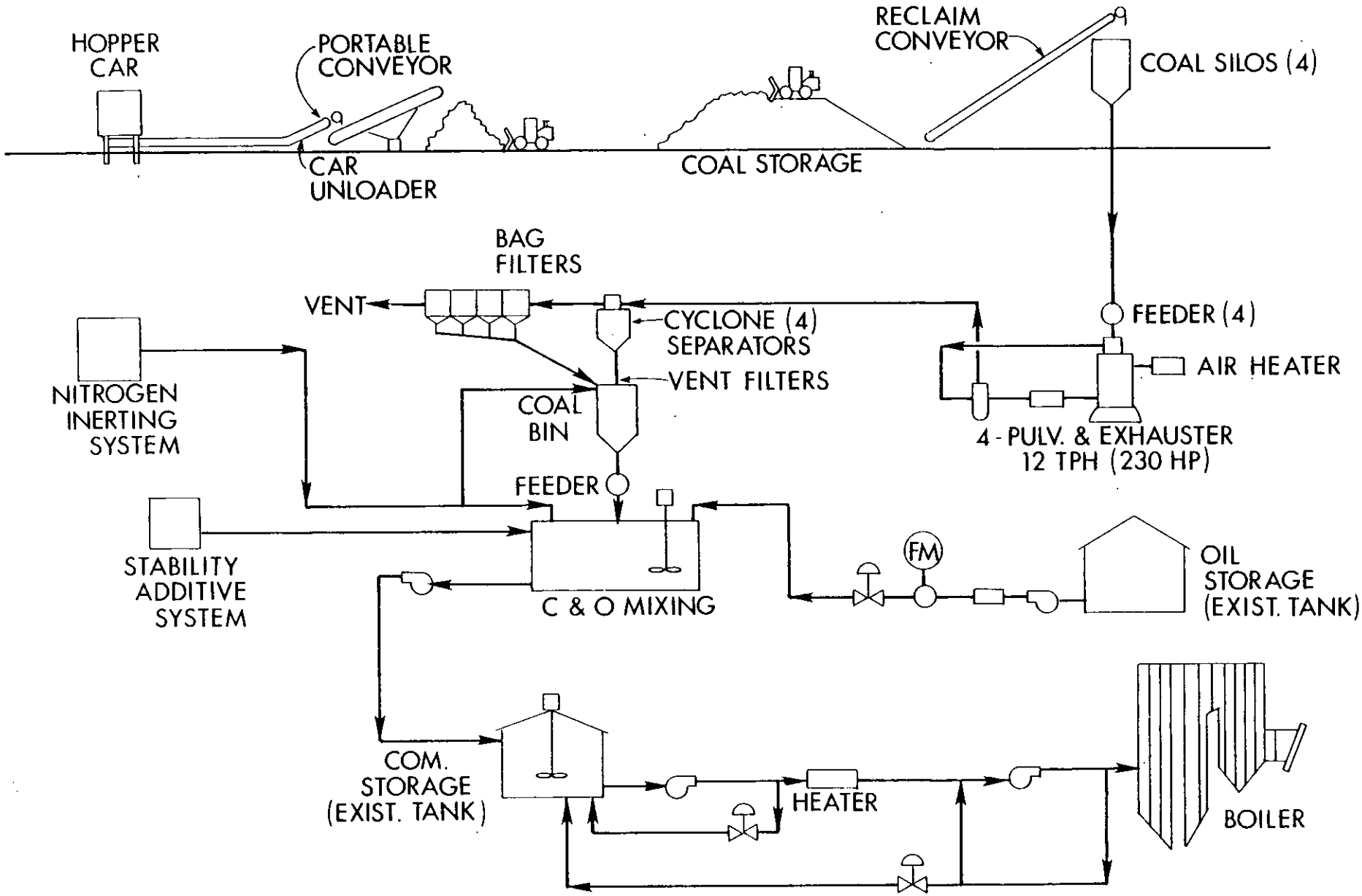
Since there are currently no sources of COM which can provide the quantities required to support this test program, the single largest component of this project's cost is designing, engineering and constructing a COM fuel preparation facility at the Sanford power plant site.

Test Program Scope

This program is principally aimed at proving if COM can be used in existing utility boilers designed for oil firing, without incurring a major economic penalty. The 120 effective full power burn days demonstration will determine if any boiler derating is necessary with COM, the effects of corrosion and erosion, environmental impacts, and the effects of COM on the fuel handling system. The test program could last as long as one year if multiple test periods are interspersed with periods for analysis and modifications.

Exhibits

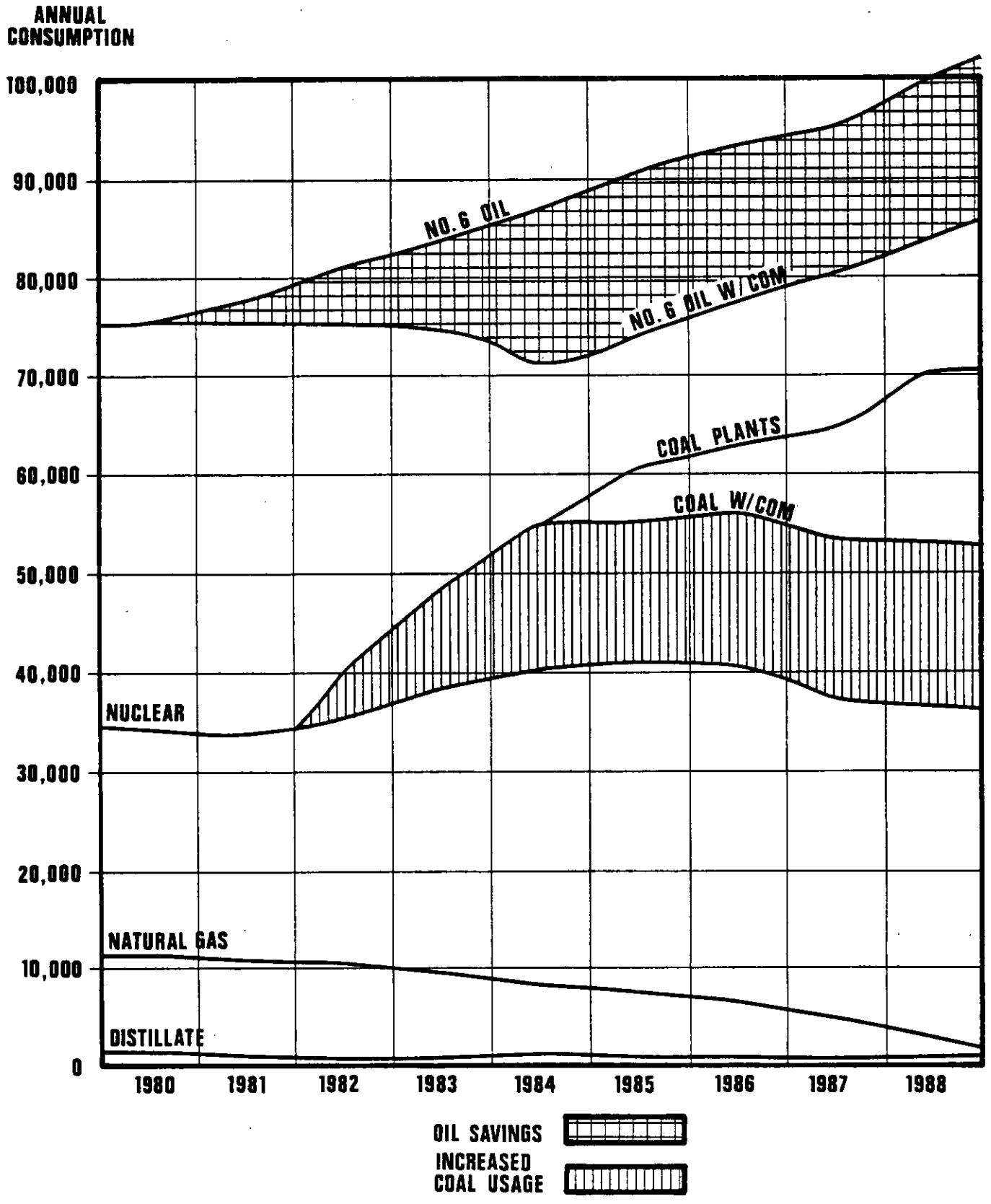
Attached are exhibits showing the schematic diagram for the COM preparation facility, forecasts of fuel use by FPL, and assumptions used in preparing this testimony.



COM = COAL/OIL MIX

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

FLORIDA POWER & LIGHT CO.
FUEL FORECAST
1980-1988
(THOUSANDS EQUIVALENT BARRELS)



FLORIDA POWER & LIGHT CO.
FUEL FORECAST
1980 - 1988
(THOUSANDS EQUIVALENT BARRELS)

YEAR	NUCLEAR	DISTILLATE	NATURAL GAS	COAL PLANTS	NO.6 OIL USAGE W/COM	COAL USAGE W/COM	NO. 6 OIL
1980	24,209	885	10,037	-	40,600	-	40,600
1981	24,209	540	10,010	-	43,700	-	43,700
1982	25,949	426	10,010	-	39,600	5,200	44,800
1983	29,905	457	9,232	-	34,500	10,400	44,900
1984	31,646	656	8,232	-	30,500	16,400	46,900
1985	33,386	558	6,916	4,180	30,000	16,000	46,000
1986	34,652	578	5,528	6,404	30,800	16,400	48,200
1987	32,911	506	3,893	12,268	30,800	16,400	47,200
1988	34,810	540	1,891	16,920	29,800	16,000	45,800

SOURCE: FPL 10 YEAR POWER PLANT SITE PLAN 1979-1988

(1) STEAM PLANTS ONLY

CONVERSIONS

NUCLEAR - 6.32 MM BTU = 1 EQ. BARREL OIL

COAL - 1 TON = 4 EQ. BARRELS OIL

NATURAL GAS - 6 6 MCF = 1 EQ BARREL OIL

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Assumptions Used In Calculations

1. 1 lb. of coal has 12,000 BTU's
2. Coal costs $60.00/ton delivered
3. No. 6 oil has 6.2 million BTU's/BBL.
4. No. 6 oil costs $22.50/BBL.
5. Test burn will be at an average rate per day of: 10,000 BBL of No. 6 oil
   (Equivalent to 67% capacity factor) 12,500 BBL of COM
6. Test will last 120 days @ 12,500 rate/day.
7. Total quantities burned will be:

   coal: 125,000 tons
   COM : 1.5million bbl

COM Project (Preliminary Estimate) Fuel Costs

	$/BBL
Coal - @ $60.00/Ton f.o.b. unloading facility	
165 lbs. of coal/BBL of COM mix =	$4.95
Oil - @ $22.50/BBL	
1/2 BBL =	$11.25
Total Cost Per BBL of COM	$16.20

Calculation of COM Fuel Cost/MM BTU

Coal = 12,000 BTU/lb	165 LBS = 1,980,000 BTU's	
Oil = 6.2 million BTU/BBL	1/2 BBL = 3,100,000 BTU's	
TOTAL BTU per BBL of COM	5,080,000 BTU's	
Total Cost/MM BTU of COM ($16.20 per BBL)		$3.19/MM BTU
Cost per MM BTU of No. 6 Oil ($22.50 per BBL)		$3.63/MM BTU
Estimated Cost Savings:	Per MM/BTU	$0.44/MM BTU
	Per BBL of #6 oil	$2.73/BBL

MICHAEL C. COOK

Michael Cook holds a Bachelor's degree in Chemical Engineering and a Masters degree in Business Administration from the City College of New York and has completed a one-year postgraduate course in Nuclear Science and Engineering at Argonne National Laboratory.

From 1960 to 1965 Mr. Cook was employed by the U.S. Atomic Energy Commission as a project engineer and contracting officer on a number of projects relating to nuclear power plants. From 1965 to 1967 Mr. Cook was a contract administrator for refinery and chemical plant projects in the Corporate Engineering Department of Mobil Oil Corporation. During the period from 1967 to March 1972 Mr. Cook was employed by various Wall Street brokerage firms and consulting firms, specializing in the energy industry.

Mr. Cook joined Florida Power & Light Company (FPL) in 1972. He served as Treasurer of FPL from 1972 to 1977. In that capacity he was responsible for the company's financing, financial relations, economic forecasting, and evaluating major commitments and business transactions contemplated by FPL, including those related to fuel procurement.

In July 1977 Mr. Cook was elected Vice President of FPL and assigned responsibility for Fuel Resources and Corporate Development. In that capacity he is now responsible for acquiring and managing all fuels needed to operate the Company's power plants. In addition, he oversees the Company's non-utility activities, such as their fuel exploration program. His main accountability is as the Contracting Officer for all FPL's fuel procurement.