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WOODY, C. O. Florida Power & Light Co.
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SUBJECT: Forwards response, addressing 10CFR51.52 re environ effects of transportation of fuel & waste per NRC request for info, util 870612 proposed license amend to permit replacement of spent fuel pool racks.

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DECEMBER 21, 1987

L-87-519

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Re: St. Lucie Unit 1
Docket No. 50-335
Spent Fuel Pool Rerack - Environmental Effects
of Transportation of Fuel and Waste

By letter L-87-245, dated June 12, 1987, Florida Power & Light Company (FPL) submitted a proposed license amendment to permit replacement of the spent fuel pool racks at St. Lucie Unit 1 to ensure that sufficient future capacity exists for storage of spent fuel.

In conversation between the NRC and FPL, the NRC Staff requested FPL address 10 CFR 51.52 concerning the environmental effects of transportation of fuel and waste as related to the rerack of the St. Lucie Unit 1 spent fuel pool.

Attached is FPL's response to this request.

If additional information is required, please contact us.

Very truly yours,

C. O. Woody
Executive Vice President

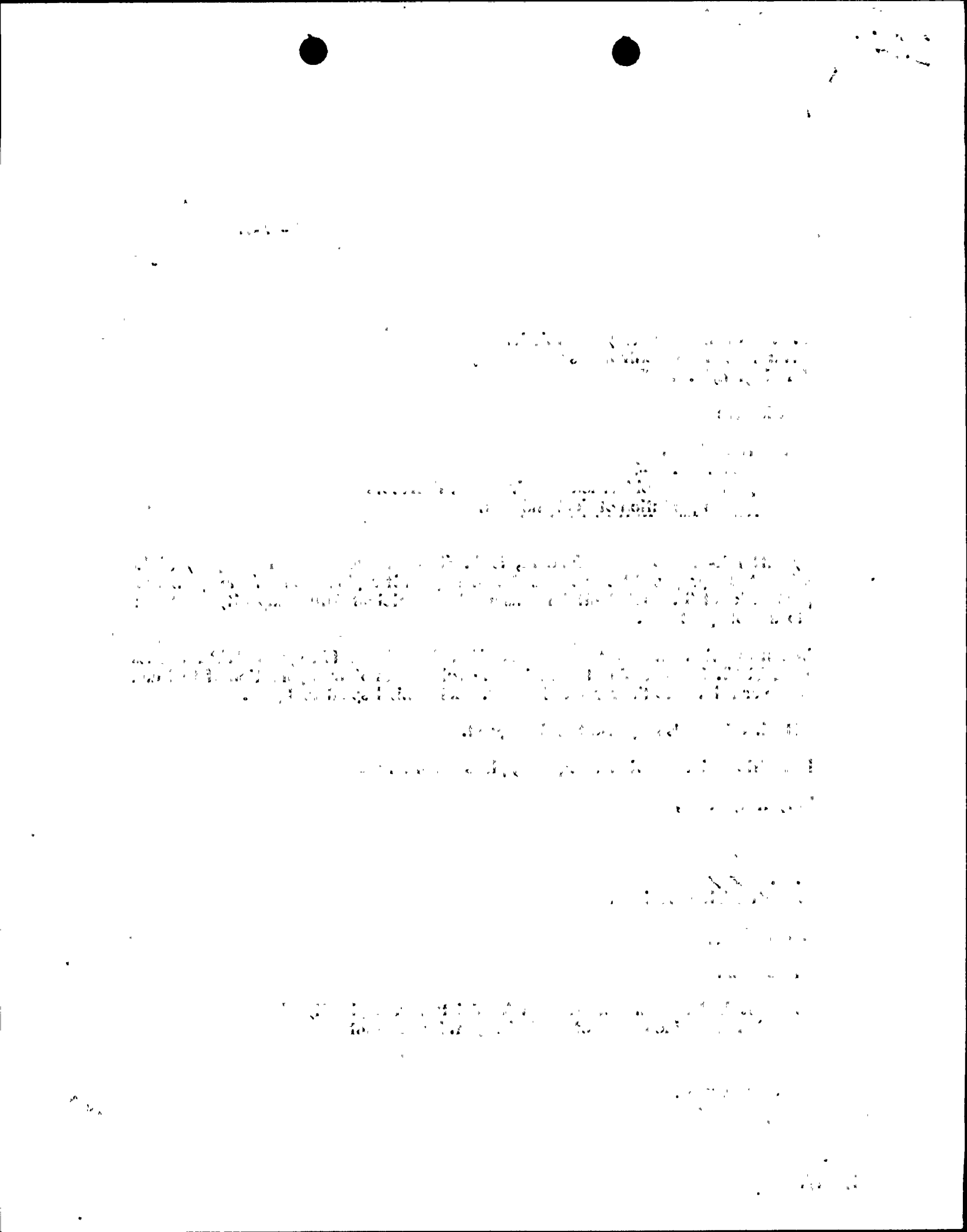
COW/EJW/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

A001
1/1

EJW1/031/1



Attachment

St. Lucie Unit 1

10 CFR 51.52 - "Environmental Effects of Transportation of Fuel and Waste"

By letter L-87-245, dated June 12, 1987, Florida Power & Light Company (FPL) submitted a request to replace the spent fuel pool racks at St. Lucie Unit 1 to ensure sufficient future capacity exists for storage of spent fuel. As discussed in 10 CFR 51.52, environmental reports prepared for construction permits for light-water-cooled reactors submitted after February 4, 1975 are required to contain a statement concerning transportation of fuel and radioactive wastes to and from the reactor. FPL submitted its application for a construction permit for St. Lucie Unit 1 in January 1969. The Staff's Final Environmental Statement related to the operation of St. Lucie Unit 1 was issued in June 1973.

The following summary discusses the six conditions of paragraph (a) of 10 CFR 51.52 concerning the transportation of fuel and radioactive wastes to and from the St. Lucie Unit 1 reactor.

1) The current reactor core thermal power for St. Lucie Unit 1 is 2700 megawatts.

2) The proposed maximum enrichment in Uranium - 235 for the St. Lucie Unit 1 fuel assemblies is 4.5 weight percent (w/o).

Although the proposed enrichment limit exceeds the value in 10 CFR 51.52 paragraph (a) (2), the higher enrichment can be shown to have a negligible effect on the environment during transportation to and from the reactor. With the higher enrichment, and corresponding improved fuel utilization, the total number of fuel assemblies loaded into the core over plant life decreases. This reduces the number of shipments to the site and so the environmental impact due to the unirradiated fuel remains unchanged or decreases.

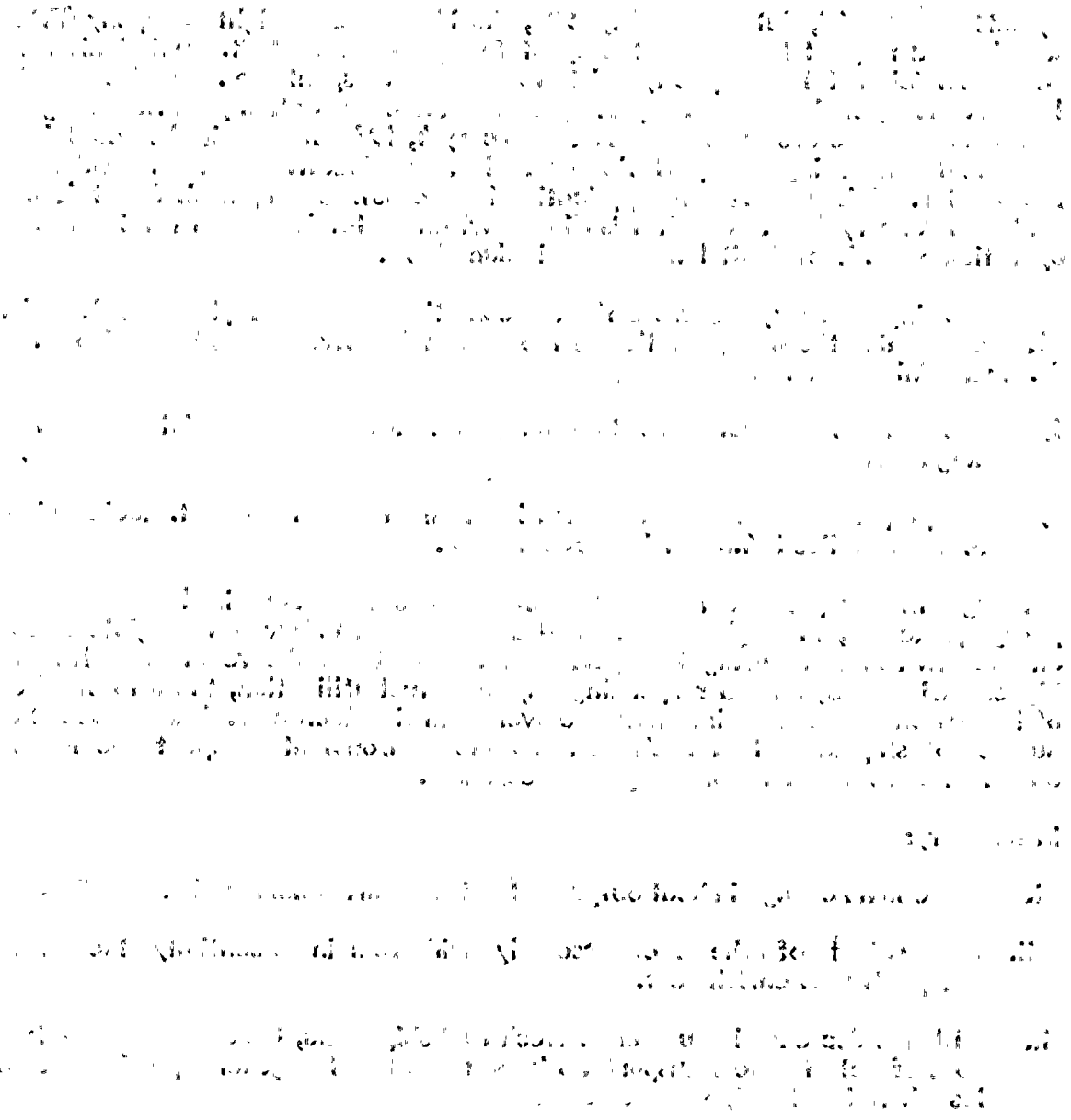
In summary:

i. There is no change in heat output with higher enrichment fuel assemblies.

ii. The weight of the fuel assembly will remain essentially the same irrespective of enrichment.

iii. With the decrease in number of fresh fuel shipments, the expected radiation dose effects to the transport workers as well as the general public become less than the already small effects.

EJW1/031/2



iv. The probability of a transportation accident resulting in a nuclear criticality is not credible due to the characteristics of the fuel assembly and the design of the containers to prevent criticality. Since licensed fresh fuel assembly containers satisfy this regulatory criticality requirement, the probability of radiological releases during transportation continue to remain low for fuel of higher enrichment.

The radiological impact pertaining to the transportation of irradiated 4.5 w/o U-235 fuel assemblies is mainly due to the burnup at the time of discharge (due to fission product buildup) rather than by initial enrichment. As is discussed below, the effective levels of radioactivity for the expected discharge burnups can be shown to be less limiting than the 33,000 MWD/MTU assumed in 10CFR 51.52 (a) (3) based on the cooling period used prior to offsite shipment.

3) The current average level of irradiation of the St. Lucie Unit 1 fuel assemblies is less than 42,000 megawatt-days per metric ton (MWD/MTU) and the cooling period after it is discharged from the reactor prior to transportation will be at least 120 days.

Although the average burnup level of the St. Lucie Unit 1 fuel assemblies exceeds the value in 10 CFR 51.52(a)(3), the additional cooling period before shipment reduces the significance of the higher average burnup. Based on the current progress in the development of a high level waste repository, most fuel assemblies will have decayed for several years prior to transportation. The effective levels of radioactivity of a fuel assembly with an average burnup of 42,000 MWD/MTU that has cooled several years can be shown to be less than a fuel assembly with an average burnup of 33,000 MWD/MTU that has cooled for 90 days.

4) With the exception of irradiated fuel, all radioactive waste shipped from the reactor is packaged and in solid form.

5) Unirradiated fuel is shipped to the reactor by truck; irradiated fuel will be shipped from the reactor either by truck, rail, or barge; and radioactive waste other than irradiated fuel is shipped from the reactor by truck or rail.

6) The Final Environmental Statement (FES) for St. Lucie Unit 1 assumed a core reload (i.e. 72 fuel elements per the FES) each year during normal operation. By February 1987, St. Lucie Unit 1 had completed seven fuel cycles which leads to an average fuel cycle of over 17 months.

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December 16, 1987

DOCKET NO(S). 50-335 and 50-389
Mr. C. O. Woody
Group Vice President
Nuclear Energy
FLorida Power and Light Company
Post Office Box 14000
Juno Beach, Florida 33408
SUBJECT:
ST. LUCIE UNITS 1 AND 2

The following documents concerning our review of the subject facility are transmitted for your information.

- ☐ Notice of Receipt of Application, dated _____.
- ☐ Draft/Final Environmental Statement, dated _____.
- ☐ Notice of Availability of Draft/Final Environmental Statement, dated _____.
- ☐ Safety Evaluation Report, or Supplement No._____ dated _____.
- ☐ Environmental Assessment and Finding of No Significant Impact, dated _____.
- ☐ Notice of Consideration of Issuance of Facility Operating License or Amendment to Facility Operating License, dated _____.
- ☒ Bi-Weekly Notice; Applications and Amendments to Operating Licenses Involving No Significant Hazards Considerations, dated ~~12/2/87~~ [*see page(s)*] _____.
- ☐ Exemption, dated _____.
- ☐ Construction Permit No. CPPR-_____, Amendment No. _____ dated _____.
- ☐ Facility Operating License No. _____, Amendment No. _____ dated _____.
- ☐ Order Extending Construction Completion Date, dated _____.
- ☐ Monthly Operating Report for _____ transmitted by letter dated _____.
- ☐ Annual/Semi-Annual Report- _____ _____ transmitted by letter dated _____.

Division of Reactor Projects-~~I~~/II
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc: See next page

OFFICE	LA/PD22						
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NRC FORM 318 (10/80) NRCM 0240

OFFICIAL RECORD COPY

December 12, 1987

Docket No. 50-335

Mr. C. O. Woody,
Group Vice President
Nuclear Energy
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408

Dear Mr. Woody:

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DMiller	

SUBJECT: RELIEF FROM INSERVICE INSPECTION REQUIREMENTS OF ASME CODE SECTION XI (TAC NO. 48622)

By letter dated October 29, 1986, you requested relief from various examination requirements of the ASME Boiler and Pressure Vessel Code, Section XI for the St. Lucie Plant, Unit No. 1. Your submittal was supplemented by letter dated January 21, 1987. By letter dated May 4, 1987, we informed you of our disposition of Relief Request No. 8, and stated that our review of your remaining relief requests would be the subject of future correspondence. We have now completed our review of the remaining relief requests.

Based upon the results of our review, we have determined that the remaining relief requests can be granted. Details concerning the relief requests and our evaluation of them are contained in the enclosed Safety Evaluation. For the subject reliefs, we have determined that the Code requirements are impractical and the granting of reliefs is authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the Code requirements were imposed on the facility.

The requests for relief comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations.

The reliefs from certain requirements of ASME Code Section XI are hereby granted as detailed in the enclosed Safety Evaluation.

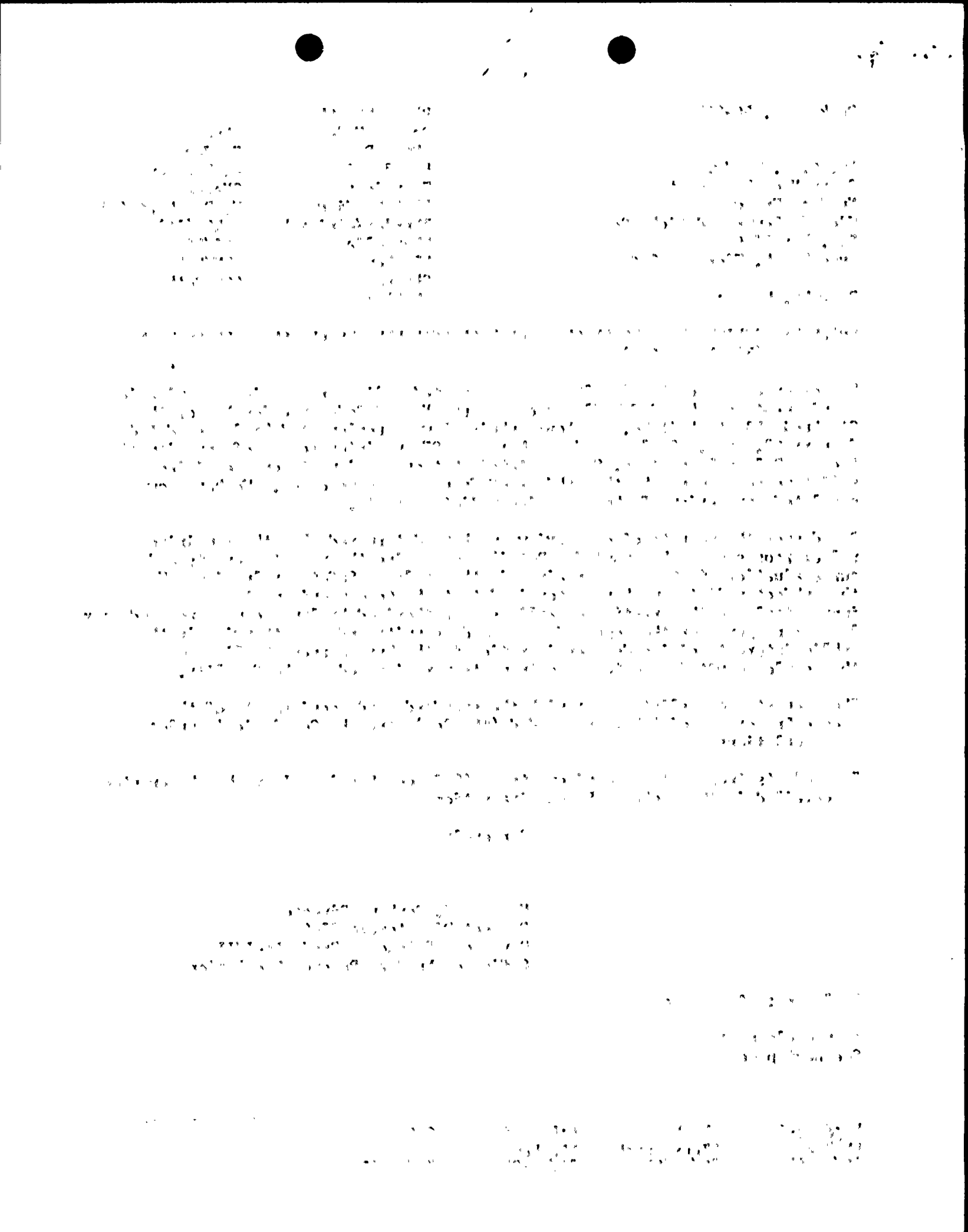
Sincerely,

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosure: As stated

cc w/enclosure:
See next page

LA:PDII-2	PM:PDII-2	D:PDII-2	OGC
DMiller	ETourigny:bg	HBerkow	RBonner
12/7/87	12/7/87	12/7/87	12/9/87



Mr. C. O. Woody
Florida Power & Light Company

St. Lucie Plant

cc:
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