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(TEMPORARY FORM)**

CONTROL NO: 1664

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FROM: Florida Power & Light Co. Miami, Florida Robert E. Uhrig		DATE OF DOC 2-7-75	DATE REC'D 2-14-75	LTR XXXXX	TWX	RPT	OTHER
TO: Mr. Edson G. Case		ORIG 3-signed	CC	OTHER	SENT AEC PDR <u>XXXX</u> SENT LOCAL PDR <u>XXX</u>		
CLASS	UNCLASS XXXXXX	PROP INFO	INPUT	NO CYS REC'D 3	DOCKET NO: 50-251		

DESCRIPTION:
Ltr trans the following:
*AGMED...
DURING...*

PLANT NAME: Turkey Point #4

ENCLOSURES:
Description of Cycle 2 Reload Fuel for Turkey Point Unit 4

FOR ACTION/INFORMATION 2-14-75 JGB

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 FLORIDA POWER & LIGHT COMPANY
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 WASHINGTON, D.C.

Mr. Edson G. Case, Acting Director
 Office of Nuclear Reactor Regulation
 U. S. Nuclear Regulatory Commission
 Washington, D. C. 20555

Dear Mr. Case:

Re: Turkey Point Plant Unit No. 4
 Docket No. 50-251
Description of Cycle 2 Reload Fuel

Florida Power & Light Company herein submits a description of the reload fuel for use in Turkey Point Unit 4 for Cycle 2 operation. Upon completion of Cycle 1 operation, expected about the later part of March, we plan to replace 52 Region 1 assemblies with Region 4 assemblies.

The fuel design parameters for Turkey Point Unit 4, Cycle 2 are summarized in Table 1. Other physical design aspects of Region 4 fuel assemblies are the same as Region 3, except the initial prepressurization level of Region 4 has been increased by 50 psi. Two of the Region 4 assemblies are removable rod type assemblies, each of which may have 12 special fuel rods containing advanced process fuel.

The mechanical design of the removable rod assemblies is identical to the design of the removable rod assemblies licensed for Carolina Power & Light Company (H. B. Robinson unit 2) and our Turkey Point Unit 3. It is comparable to the design of removable rod assemblies licensed for Virginia Electric Power (Surry Unit 1), Commonwealth Edison (Zion Unit 1), and Wisconsin Michigan Power Company/Wisconsin Electric Power Company (Point Beach Unit 1).

An evaluation (1) of the nuclear, thermal and hydraulic performance of these demonstration assemblies has shown them to be essentially the same as standard Region 4 fuel assemblies and thus, do not result in more limiting reactor conditions than a standard Region 4 assembly in the same location.



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February 7, 1975

Unit 4 system pressure will be increased from the Cycle 1 system pressure of 1900 psia to 2250 psia for Cycle 2. No clad flattening is predicted to occur during Cycle 2, based on the Westinghouse revised clad flattening model. (2) Accordingly, the limiting fuel residence time for Unit 4 is determined by Region 3 assemblies, and is 30,000 EFPH.

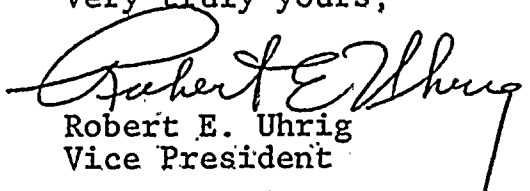
Table 2 compares the range of core physics parameters addressed in the safety analysis for Cycle 1 with those of Cycle 2. Table 3 lists the available shutdown margin in Cycle 2.

The control rod insertion limits for Cycle 2, two loop operation, are provided in Figure 1. The insertion limits for Cycle 2, three loop operation, are shown in Figure 2.

The accidents covered in the FSAR have been reviewed for the proposed Cycle 2 fuel and we conclude that the core reload will not make the consequences of these accidents more severe than the acceptable limits previously reported in the applicable safety analysis.

We shall be submitting, under separate cover, proposed changes to the Technical Specification to support the Cycle 2 reload.

Very truly yours,



Robert E. Uhrig
Vice President

REU:nch
Attach.

cc: Mr. Jack R. Newman



12/15/57

Table 1

Turkey Point Unit 4-Cycle 2
Fuel Assembly Design Parameters

<u>Region</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Enrichment (% U-235)	1.85	2.56	3.11	2.55
Density (% theoretical)*	93.88	92.71	92.14	95.00
No. of assemblies	1	52	52	52
Approximate burnup at beginning of Cycle 2 (MWD/MTU)	12300	15100	10050	0

*Regions 1,2, and 3 are as-built values; Region 4 is nominal value; however, a lower density of 94.5% theoretical was used in thermal evaluations.

Table 2
 Turkey Point Unit 4
 Kinetics Characteristics

	<u>FSAR (3)</u> (2250 psia)	<u>Cycle 1 (4)</u> (1900 psia)	<u>Cycle 2</u> (2250 psia)
Moderator Temperature Coefficient, ($\Delta\rho/o F$) $\times 10^4$	-3.5 to +0.3*	-3.5 to 0	-3.5 to 0
Doppler Coefficient, ($\Delta\rho/o F$) $\times 10^5$	-1.6 to -.1.0	-1.6 to -1.2	-2.6 to -1.0
Delayed Neutron Fraction, β_{eff} (%)	0.52 to 0.72	0.52 to 0.70	0.50 to 0.50
Prompt Neutron Lifetime (μsec)	14	14	14
Shutdown Margin	>1.77	>1.77	>1.77

*The positive coefficient does not occur at operating conditions.

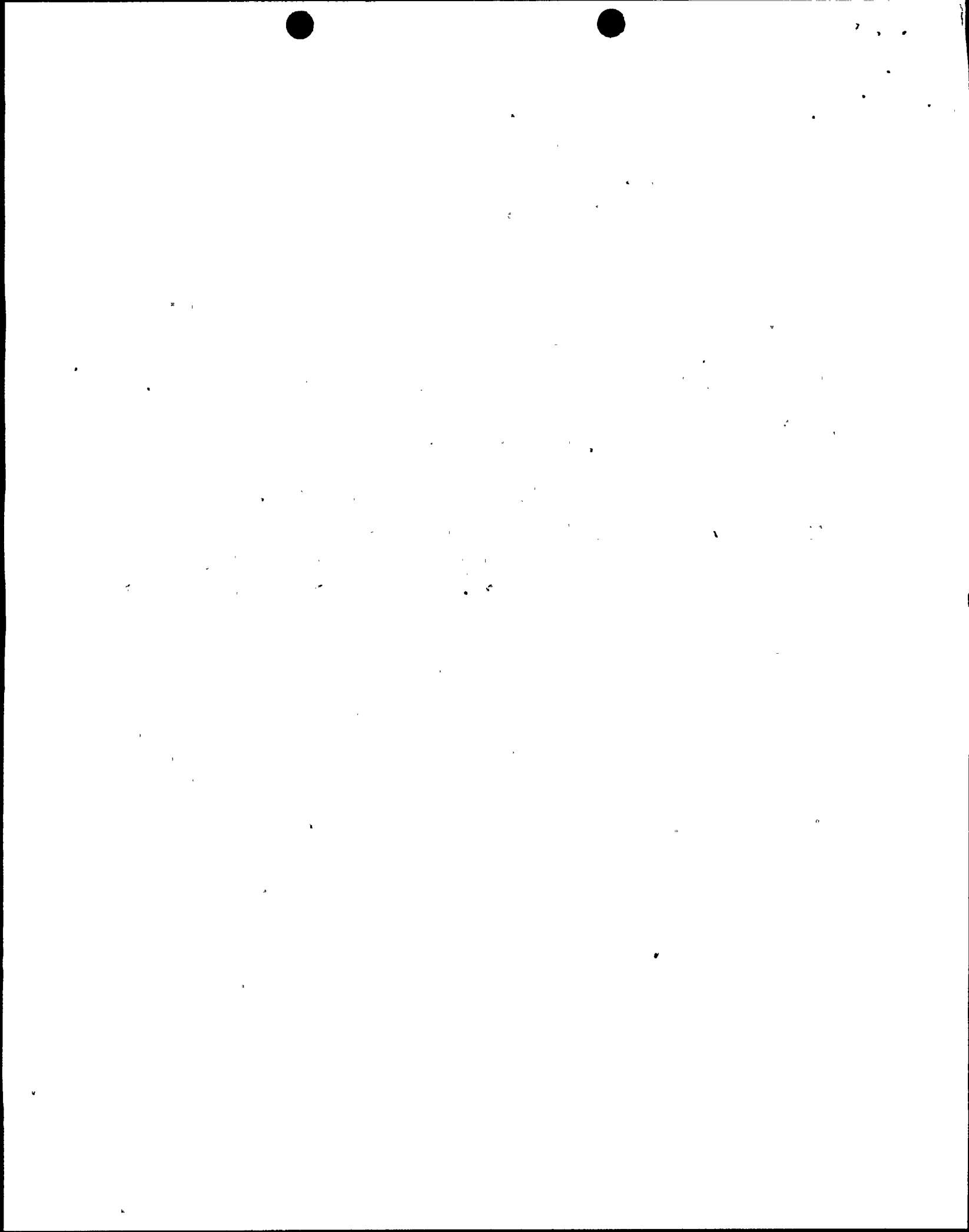


Table 3

Turkey Point Unit 4 - Cycles 1 and 2
END OF CYCLE Shutdown Requirements and Margins

<u>Item</u>	<u>Cycle 1</u>	<u>Cycle 2</u>
<u>Control Rod Worth at HZP ($\% \Delta \rho$)</u>		
All Full Length Rods Inserted	7.71	7.52
All Full Length Rods Inserted Less Worst Stuck Rod (F-14)	6.47	6.40
(1) Less 10%	5.82	5.76
 <u>Control Rod Requirements</u>		
Power Defect (Combined Doppler, T_{avg} , Void and Redistribution Effects)	3.07	2.74
Rod Insertion Allowance	0.70	0.70
(2) Total Requirement	3.77	3.44
Shutdown Margin ((1) - (2)) (%)	2.05	2.32
Required Shutdown Margin (%)	1.77	1.77

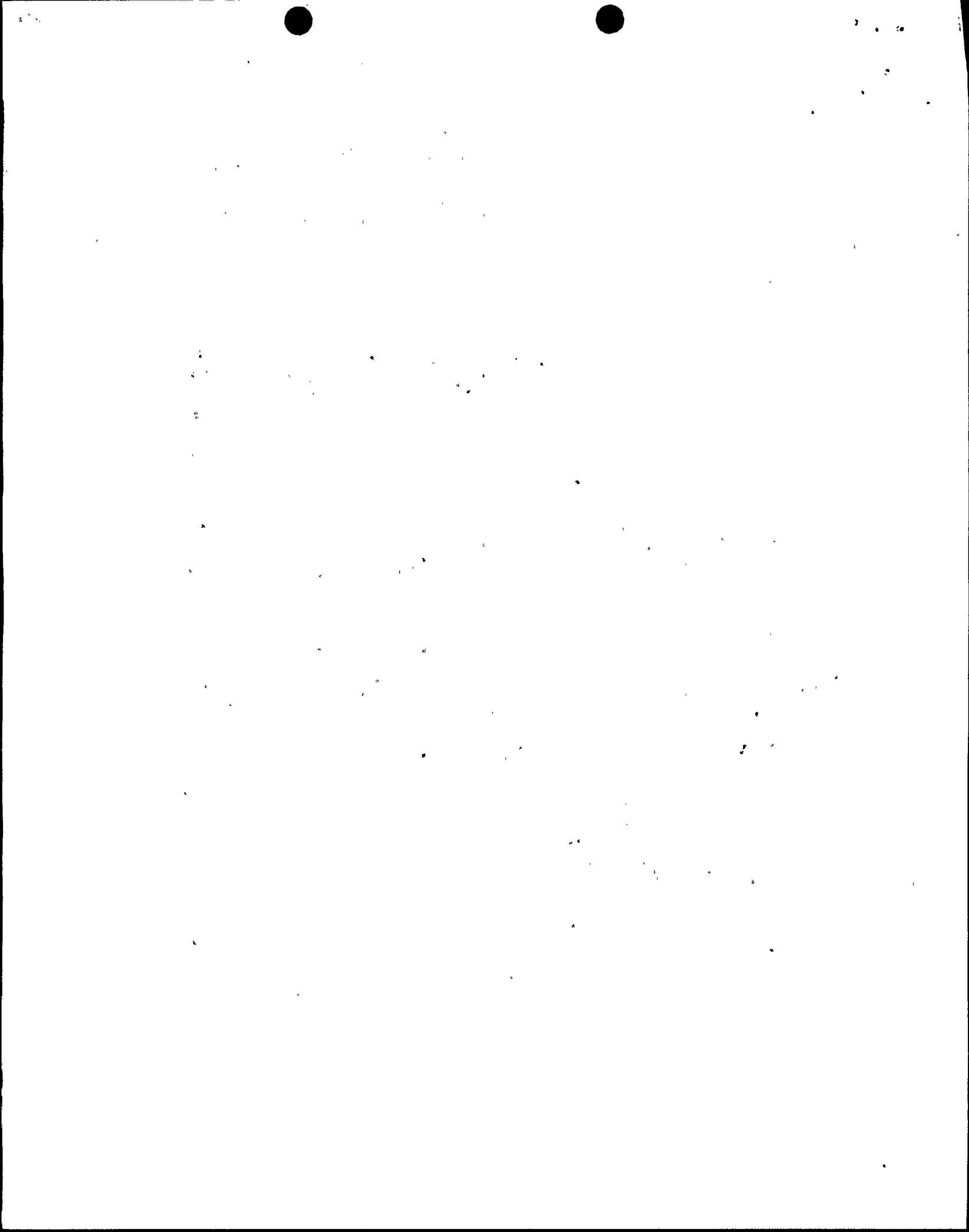
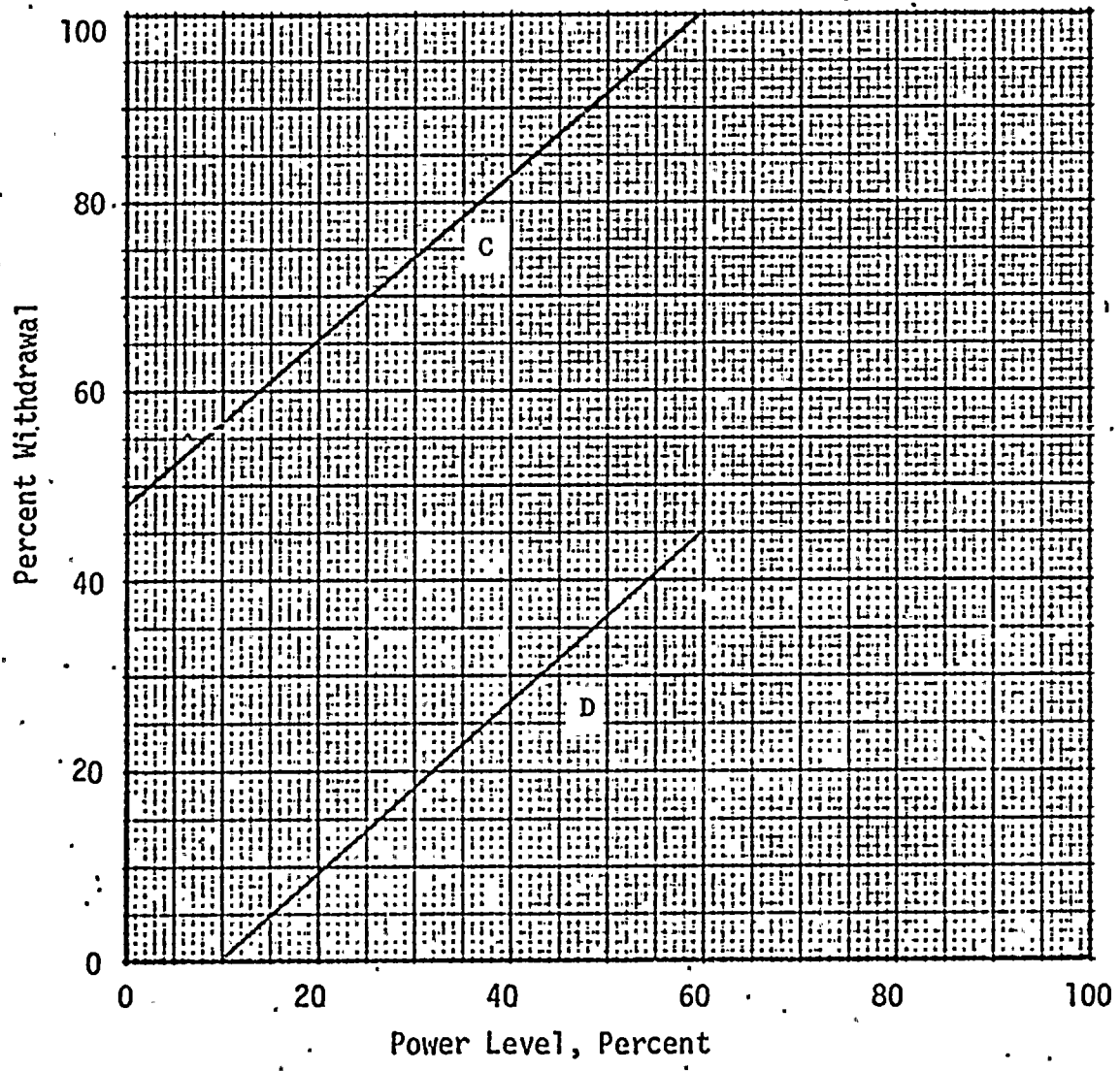


FIGURE 1

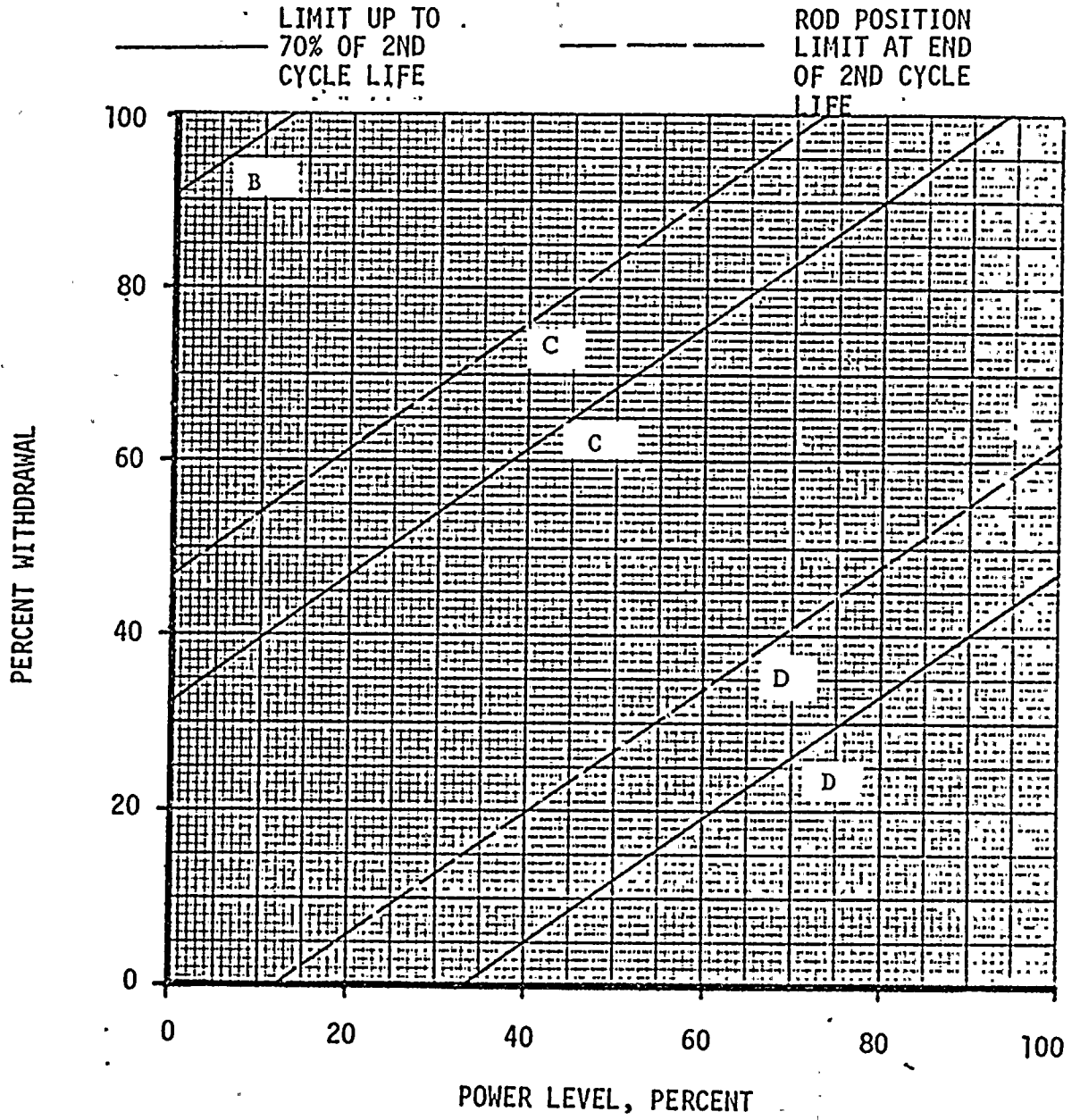
CONTROL GROUP INSERTION LIMITS
FOR UNIT 4 CYCLE 2
TWO LOOP OPERATION



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FIGURE 2

CONTROL GROUP INSERTION LIMITS
FOR UNIT 4 CYCLE 2
THREE LOOP OPERATION



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REFERENCES

1. "Irradiation of Demonstration Assemblies in Turkey Point Unit 4, WCAP-8461, January, 1975.
2. "Revised Clad Flattening Model", WCAP-8381, July, 1974.
3. "Final Safety Analysis Report", Turkey Point Units No. 3 and 4.
4. "Fuel Densification, Turkey Point Plant Units No. 3 and 4, Low Pressure Analysis", WCAP-8137, June, 1973.

