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IPN-01-049

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555-0001

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Core Operating Limits Report for Cycle 12

Dear Sir:

This letter transmits the Core Operating Limits Report (COLR) as required by Technical Specification 5.6.5. Attached is Indian Point 3 Plant Operating Procedure POP-2.3, Revision 10 that contains the core operating limits for Cycle 12. Initial criticality for Cycle 12 occurred on May 23, 2001. Indian Point 3 is making no commitments in this letter.

Very truly yours,

A handwritten signature in black ink, appearing to read "Robert J. Barrett".

Robert J. Barrett
Vice President, Operations
Indian Point 3 Nuclear Power Plant

cc: See next page

0001

cc: Mr. Hubert J. Miller
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ATTACHMENT I TO IPN-01-049

PLANT OPERATING PROCEDURE POP-2.3, REVISION 10

CORE OPERATING LIMITS FOR CYCLE 12

ENTERGY NUCLEAR OPERATIONS, INC
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286



Entergy
Nuclear Northeast

Procedure Use Is:

- Continuous
- Reference
- Information

Control Copy: INFO ONLY

Effective Date: 5/10/2001

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This procedure is TSR

**POP-2.3, Revision: 10
CORE OPERATING LIMITS FOR CYCLE 12**

Tom Gander TE Gander / 28-Apr-01
Writer Date

FF / 5-5-01
Reviewer Date

Approved By:
[Signature] / 5-10-01
Procedure Sponsor, DM/Designee Date

N/A
PORC Meeting Number



PARTIAL REVISION

REVISION SUMMARY

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1.0 REASON FOR REVISION

- 1.1 Revised to incorporate cycle 12 Core Operating Limits Report data provided by Westinghouse as part of the Cycle 12 Reload Safety Evaluation document.

2.0 SUMMARY OF CHANGES

- 2.1 Removed ITS gray shading (No Rev Bars).
- 2.2 Replaced Cycle 11 with Cycle 12 throughout procedure.
(Editorial - No Rev Bars)
- 2.3 Changed Table 4.1, Reactor Coolant System and Refueling Cavity Boron Concentration value for 5% $\Delta K/K$ from 1781 to 1832 ppm

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1.0 PURPOSE

- 1.1 This procedure establishes the cycle specific safety limits for the reactor fuel.
- 1.2 This procedure applies to cycle 12 fuel.

2.0 PRECAUTIONS AND LIMITATIONS

- 2.1 The data presented in this report applies to Cycle 12 Only and SHALL NOT be used for other operating cycles.
- 2.2 This data is applicable from completion of cycle 12 core reload until initiation of the cycle 13 core reload.

NOTE

The *Core Operating Limits Report (COLR)*, including any mid-cycle revisions or supplements thereto, shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

- 2.3 IF a part of this procedure is changed which affects information contained in the COLR {**Definition 5.1**}, THEN SUBMIT a copy of this approved procedure to the Site Licensing Manager for transmittal to the NRC per ITS: 5.6.5 {**Reference 6.1.1**}
- 2.4 COLR data is provided by Reactor Engineering per procedure RA-25, Control of Core Operating Limits Report.

3.0 PREREQUISITES

None

4.0 PROCEDURE

4.1 The following are Core Operating Limits for the cycle 12 reactor fuel:

**Table 4.1
CORE OPERATING LIMITS FOR CYCLE 12 REACTOR FUEL**

PARAMETER	VALUE	CORRESPONDING T.S.	APPLICABILITY
Hot Channel Factor at Rated Thermal Power, $F_Q(Z)$ (Measured via flux mapping)	2.42	3.2.1 (B.3.2.1 for mathematical formula, error tolerances, and measurement by flux mapping)	Mode 1
Height Dependent $F_Q(Z)$ Multiplier $K(Z)$, referred to as "fraction"	Refer to Attachment 2	3.2.1	Mode 1
Hot Channel Factor at Rated Thermal Power, $F_{\Delta H}^N$ for Vantage + for OFA and V5	1.635 1.59	3.2.2	Mode 1
Power Factor Multiplier for $F_{\Delta H} = PF_{\Delta H}$ $PF_{\Delta H}$ for $0.50 \leq P \leq 1.0$ $PF_{\Delta H}$ for $P < 0.5$	0.3 0.4	3.2.2	Mode 1
Equation for $F_{\Delta H}^N$ (Measured via flux mapping)	$F_{\Delta H}^N \leq F_{\Delta H}^{RTP} (1 + PF_{\Delta H} (1-P))$	3.2.2, B.3.2.2, B.2.1.1 for variable definitions and error tolerances	Mode 1
Axial Flux Difference Band Width	$\pm 5\%$ Refer to Attachment 3	3.2.3 ITS: 3.2.3	Mode 1 with Thermal Power > 15%

Table 4.1

CORE OPERATING LIMITS FOR CYCLE 12 REACTOR FUEL

PARAMETER	VALUE	CORRESPONDING T.S.	APPLICABILITY
Axial Flux Difference Envelope Limits at 90% power	-11%, +11% Refer to Attachment 3	3.2.3	Mode 1 with Thermal Power > 15%
Axial Flux Difference Envelope Increase for each 2% of rated thermal power < 90% RTP but ≥ 50% RTP	±1% Refer to Attachment 3	3.2.3	Mode 1 with Thermal Power > 15%
Shutdown Bank Insertion Limits	≥ 225 Steps withdrawn (Indicated)	3.1.5	Mode 1 Mode 2 with any Control bank not fully inserted. N/A during SR 3.1.4.2
Control Bank Insertion Limits	Refer to Attachment 1	3.1.6	Mode 1 Mode 2 with $K_{eff} \geq 1.0$ N/A during SR 3.1.4.2
Control Bank Overlap Pattern	Withdraw: A, B, C, D Insert: D, C B, A	3.1.6, B.3.1.6	Mode 1 Mode 2 with $K_{eff} \geq 1.0$
Control Bank Fully Withdrawn Position	230 Steps	3.1.6, B.3.1.6	Mode 1 Mode 2 with $K_{eff} \geq 1.0$
Shutdown Margin	≥ 1.3% $\Delta K / K$	3.1.1, 3.1.8	Mode 2 during physics tests Mode 2 with $K_{eff} < 1.0$ Modes 3, 4, 5

Table 4.1

CORE OPERATING LIMITS FOR CYCLE 12 REACTOR FUEL

PARAMETER	VALUE	CORRESPONDING T.S.	APPLICABILITY
Reactor Coolant System and Refueling Cavity Boron Concentration	More restrictive of : $\geq 1900 \text{ ppm}$ <u>OR</u> concentration that provides a $\text{SDM} \geq 5\% \Delta K/ K$ (SDM of $5\% \Delta K/ K = 1832 \text{ ppm}$)	3.9.1	Mode 6
Moderator Temperature Coefficient Limits Lower:	@ $300 \text{ ppm} \geq - 38.0 \text{ pcm}/^\circ\text{F}$ @ $60 \text{ ppm} \geq - 44.5 \text{ pcm}/^\circ\text{F}$ @ LCO $\geq - 47.0 \text{ pcm}/^\circ\text{F}$	3.1.3	Modes 1, 2, 3 for lower limit
Upper:	$\leq 0.0 \text{ pcm}/^\circ\text{F}$		Mode 1 and Mode 2 with $\text{Keff} \geq 1.0$ for upper limit

5.0 DEFINITIONS

- 5.1 **Core Operating Limits Report (COLR)** - the parts of this procedure which satisfy the requirements of T.S. 1.1, 5.6.5.

6.0 REFERENCES**6.1 Commitment Documents**

- 6.1.1 Technical Specification 5.6.5.

6.2 Development Documents

- 6.2.1 NRC Generic Letter 88-16
- 6.2.2 Indian Point 3 Cycle 12 Reload Safety Evaluation, March 2001
- 6.2.3 Technical Specification 3.1.1, 3.1.3, 3.1.5, 3.1.6, 3.1.8, 3.2.1, 3.2.2, 3.2.3, 3.9.1, B.2.1.1.
- 6.2.4 Technical Specification 1.1, 5.6.5.
- 6.2.5 NRC Safety Evaluation Report for T.S. Amendment 103.

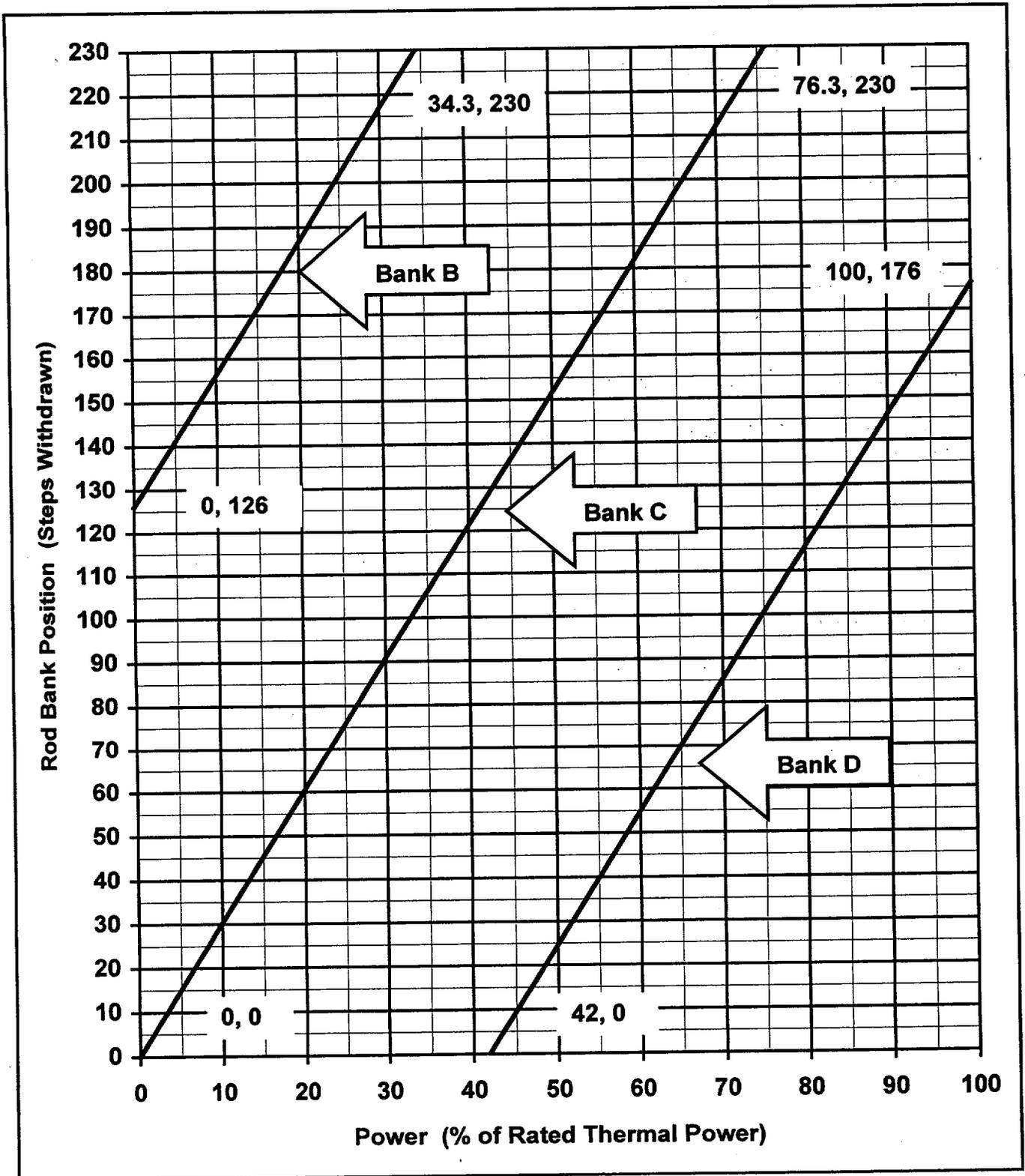
6.3 Interface Documents

RA-25, Control of Core Operating Limits Report

7.0 RECORDS AND DOCUMENTATION

None

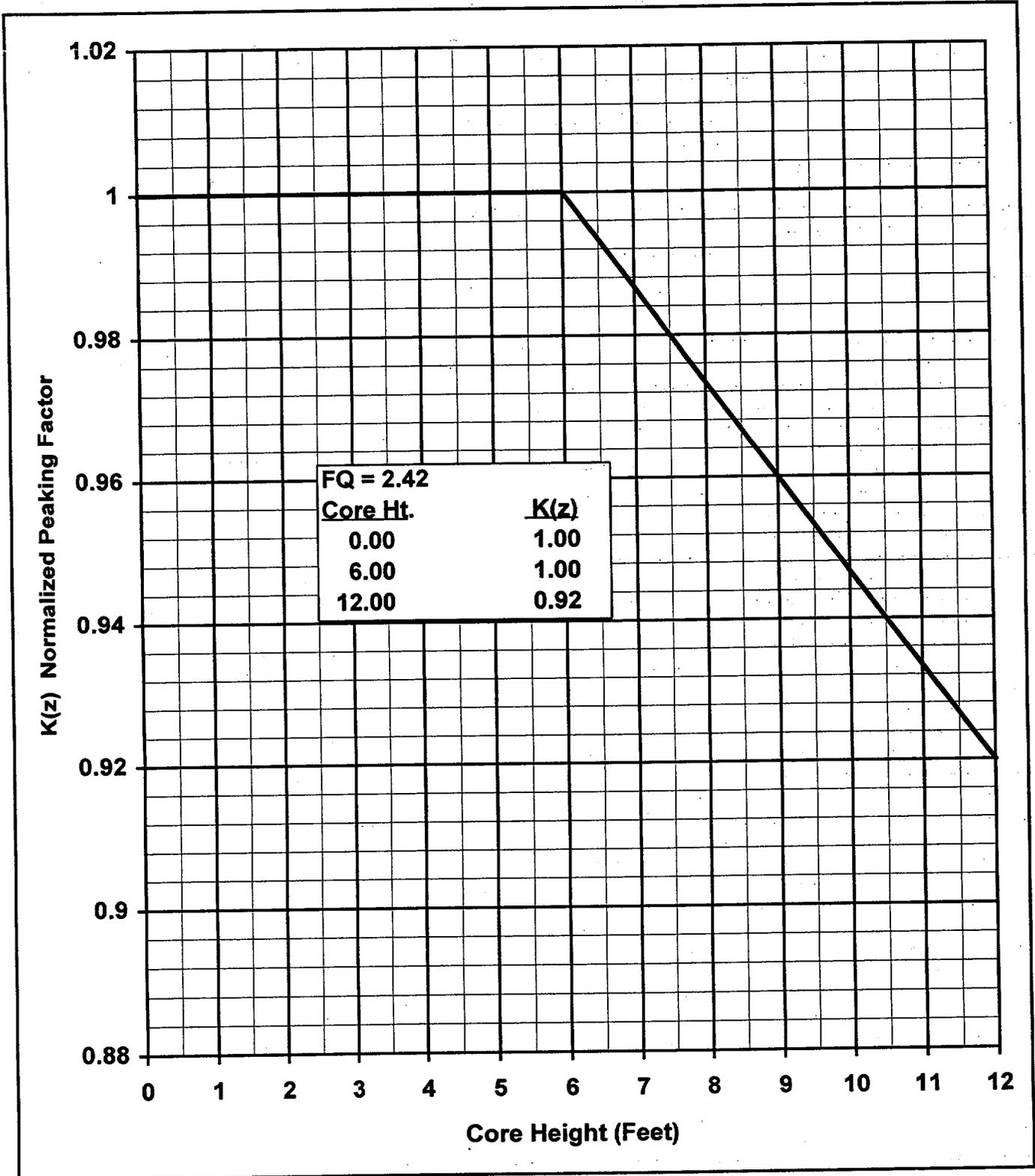
ATTACHMENT 1
CONTROL ROD INSERTION LIMITS vs RATED THERMAL POWER
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ATTACHMENT 2

K(z) NORMALIZED $F_Q(z)$ AS A FUNCTION OF CORE HEIGHT

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CORE OPERATING LIMITS FOR CYCLE 12

ATTACHMENT 3 AXIAL FLUX DIFFERENCE ENVELOPE LIMITS

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