VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

W. L. STEWART
VICE PRESIDENT
NUCLEAR OPERATIONS

March 4, 1986

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Lester S. Rubenstein, Director
PWR Project Directorate #2
Division of PWR Licensing-A
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Serial No. 85-655B
NO/EJL/acm
Docket No. 50-339
License No. NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 2
RELAXED POWER DISTRIBUTION CONTROL
CORE SURVEILLANCE REPORT FOR CYCLE 5

In our letter dated January 16, 1986 (Serial No. 655A), we requested an amendment, in the the form of changes to the Technical Specifications, to Operating License No. NPF-7 for North Anna Power Station Unit 2. These changes would allow us to implement Relaxed Power Distribution Control for North Anna Unit 2. Enclosed as Attachment 3 to that letter was the Core Surveillance Report for North Anna Unit 2, Cycle 4. The Core Surveillance Report provides information that is referenced by the proposed changes to the Technical Specifications.

As discussed with members of your staff, Unit 2 was shutdown for a refueling outage on February 20, 1986. Enclosed as Attachment 1 is the Core Surveillance Report for North Anna Unit 2, Cycle 5. This is being provided as additional information to our January 16, 1986 submittal. This report contains the appropriate information for the Cycle 5 core for Relaxed Power Distribution Control. The information in the report was developed in accordance with our topical report VEP-NE-1, "Relaxed Power Distribution Control Methodology and Associated FQ Surveillance Technical Specifications," for the Cycle 5 core.

Very truly yours,

W. L. Stewart

Attachment

1. North Anna Unit 2, Cycle 5 RPDC Core Surveillance Report for FQ=2.20

A001
1/1

cc: Dr. J. Nelson Grace
Regional Administrator
NRC Region II

Mr. Morris W. Branch
NRC Senior Resident Inspector
North Anna Power Station

Mr. Charles Price
Department of Health
109 Governor Street
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Mr. Leon B. Engle
NRC North Anna Project Manager
PWR Project Directorate #2
Division of PWR Licensing-A

Director, Office of Nuclear Reactor Regulation
Attention: Chief, Reactor Systems Branch
Division of PWR Licensing-A
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTACHMENT 1

NORTH ANNA UNIT 2, CYCLE 5

RPDC CORE SURVEILLANCE REPORT

FOR FQ = 2.20

NORTH ANNA UNIT 2 CYCLE 5 CORE SURVEILLANCE REPORT

This Core Surveillance Report is provided in accordance with Section 6.9.1.7 of the North Anna Unit 2 Technical Specifications.

The burnup-dependent Cycle 5 N(z) function for Technical Specification 4.2.2.2 is shown in Figures 1-3. N(z) was calculated according to the procedure of VEP-NE-1.

The N(z) function* will be used to confirm that the heat flux hot channel factor, FQ(z), will be limited to the Technical Specifications values of

$$FQ(z) \leq \frac{2.20}{P} K(z), \quad P > 0.5 \text{ and}$$

$$FQ(z) \leq 4.40 \; K(z), \quad P \leq 0.5.$$

The Cycle 5 Axial Flux Difference (AFD) limits for Technical Specification 3.2.1 are shown in Figure 4. These limits were calculated according to the methods of VEP-NE-1 and are the same as the cycle 4 limits.

The limits on Axial Flux Difference assure that the FQ(z) upper bound envelope is not exceeded during either normal operation or in the event of xenon redistribution following power changes.

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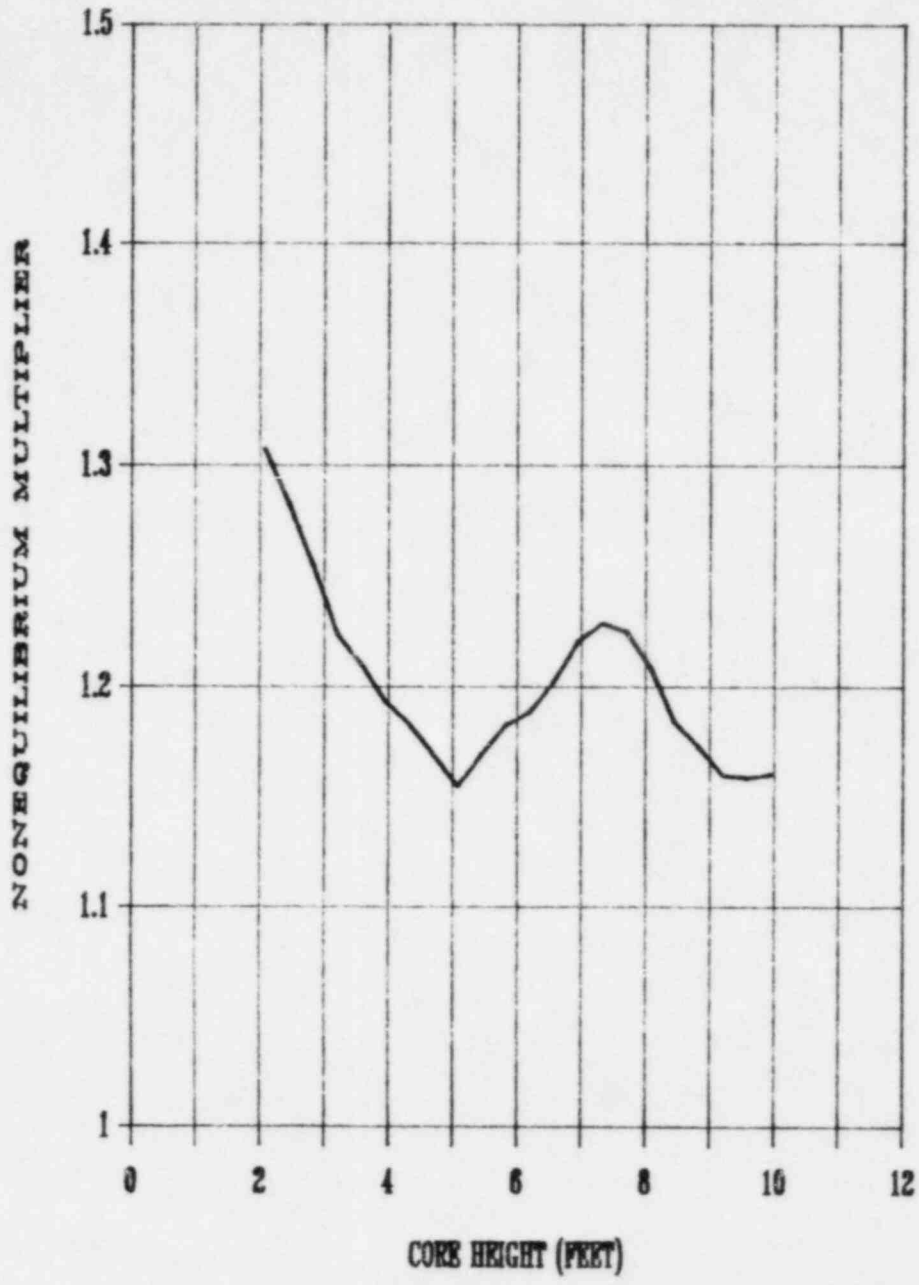
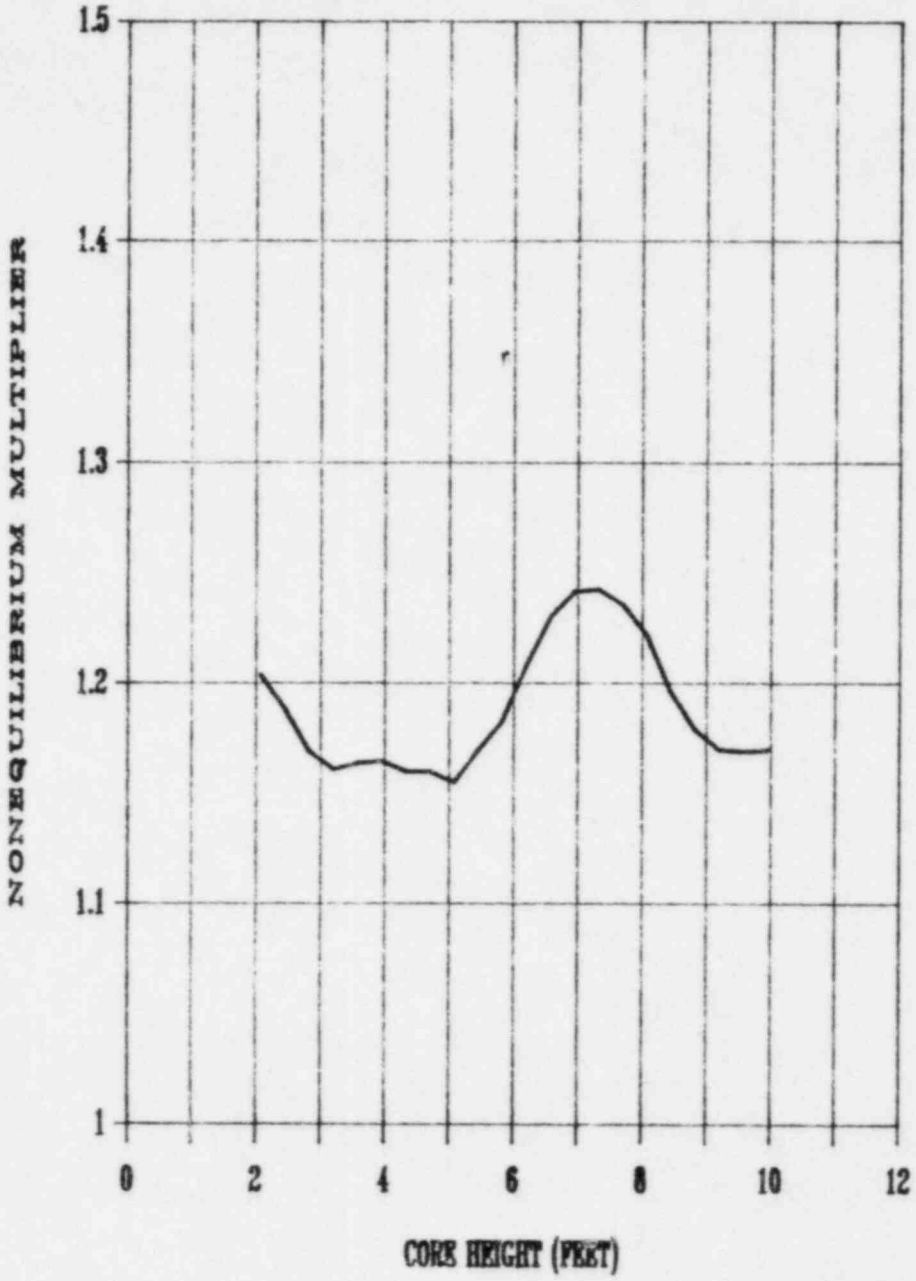
* The N(z) function, when applied to a power distribution measured under equilibrium conditions, demonstrates that the initial conditions assumed in the LOCA analysis are met, along with the ECCS acceptance criteria of 10CFR50.46.



N(Z) FUNCTION
NORTH ANNA UNIT 2 CYCLE 5
BURNUPS 0-7,000 MWD/MTU

HEIGHT (FEET)	N(Z)
0.19	.
0.56	.
0.94	.
1.31	.
1.69	.
2.06	1.308
2.44	1.283
2.81	1.255
3.19	1.224
3.56	1.210
3.94	1.193
4.31	1.183
4.69	1.169
5.06	1.155
5.44	1.170
5.81	1.183
6.19	1.189
6.56	1.203
6.94	1.221
7.31	1.229
7.69	1.225
8.06	1.209
8.44	1.184
8.81	1.173
9.19	1.160
9.56	1.159
9.94	1.161
10.31	.
10.69	.
11.06	.
11.44	.
11.81	.

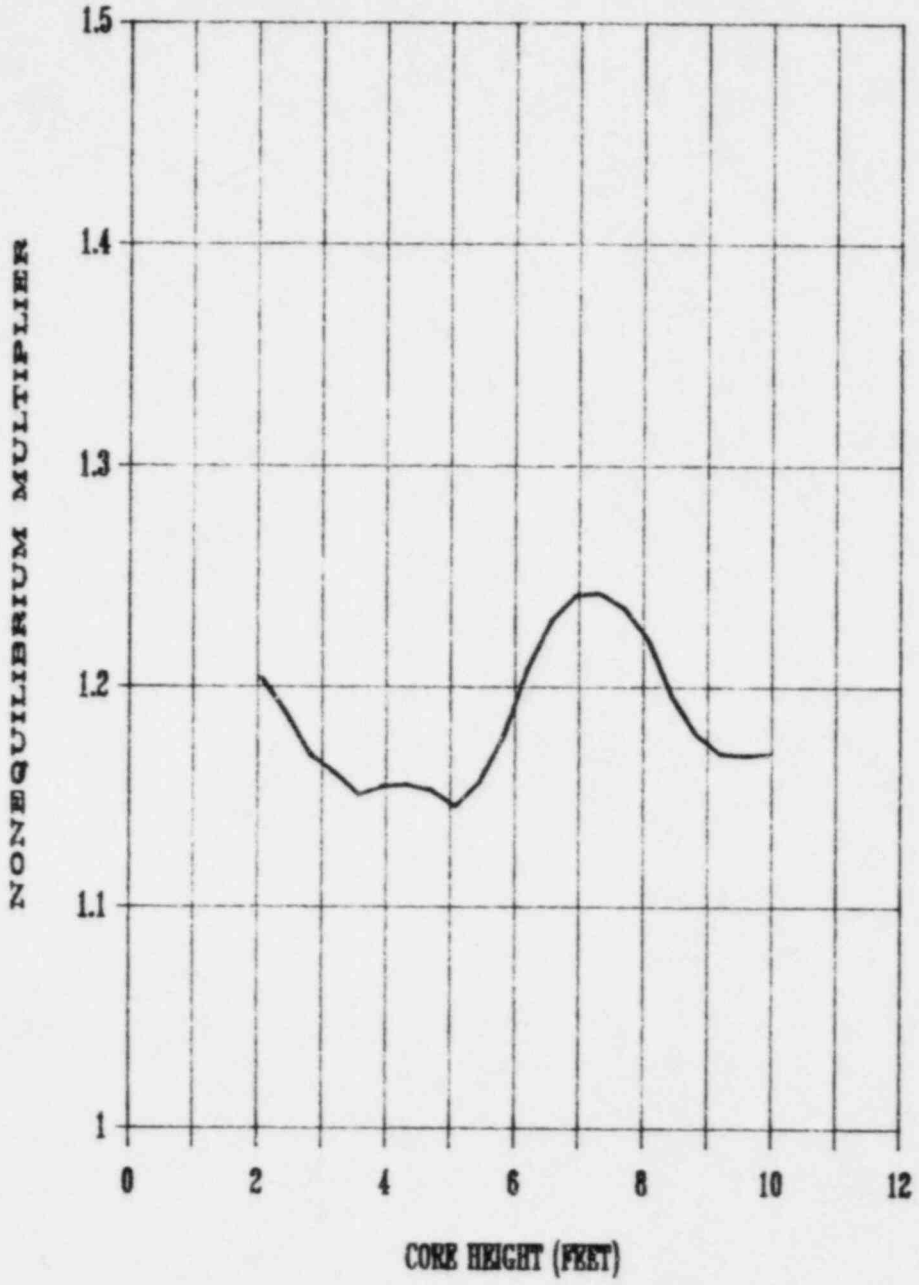
Figure 1 - N(Z) Function for N2C5 from 0-7000 MWD/MTU Burnup



N(Z) FUNCTION
NORTH ANNA UNIT 2 CYCLE 5
BURNUPS BETWEEN 7,000 AND 14,500 MWD/MTU

HEIGHT (FEET)	N(Z)
0.19	.
0.56	.
0.94	.
1.31	.
1.69	.
2.06	1.204
2.44	1.188
2.81	1.169
3.19	1.161
3.56	1.164
3.94	1.165
4.31	1.160
4.69	1.160
5.06	1.155
5.44	1.170
5.81	1.183
6.19	1.209
6.56	1.231
6.94	1.242
7.31	1.243
7.69	1.236
8.06	1.222
8.44	1.196
8.81	1.179
9.19	1.170
9.56	1.169
9.94	1.170
10.31	.
10.69	.
11.06	.
11.44	.
11.81	.

Figure 2 - N(Z) Function for N2C5 from 7000-14,500 MWD/MTU Burnup



N(Z) FUNCTION
NORTH ANNA UNIT 2 CYCLE 5
BURNUPS GREATER THAN 14,500 MWD/MTU

HEIGHT (FEET)	N(Z)
0.19	.
0.56	.
0.94	.
1.31	.
1.69	.
2.06	1.204
2.44	1.188
2.81	1.169
3.19	1.161
3.56	1.151
3.94	1.155
4.31	1.156
4.69	1.153
5.06	1.146
5.44	1.157
5.81	1.178
6.19	1.209
6.56	1.231
6.94	1.242
7.31	1.243
7.69	1.236
8.06	1.222
8.44	1.196
8.81	1.179
9.19	1.170
9.56	1.169
9.94	1.170
10.31	.
10.69	.
11.06	.
11.44	.
11.81	.

Figure 3 - N(Z) Function for N2C5 After 14,500 MWD/MTU Burnup

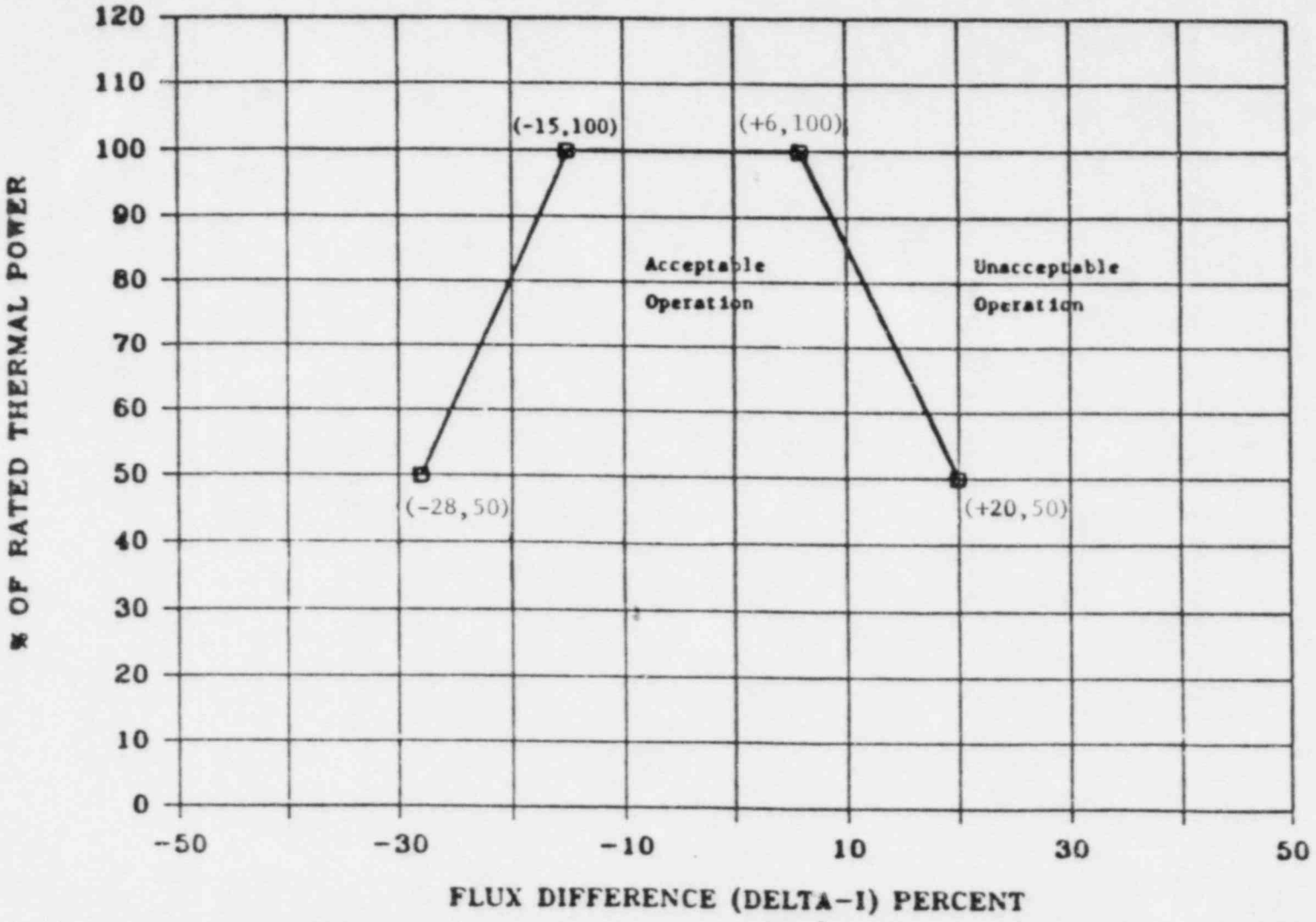


Figure 4 - Axial Flux Difference Limits as a Function of Rated Thermal Power for North Anna Unit 2 Cycle 5