



VERMONT YANKEE NUCLEAR POWER CORPORATION

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B.3.2.1
WVY 79-84

REPLY TO:
ENGINEERING OFFICE
TURNPIKE ROAD
WESTBORO, MASSACHUSETTS 01581
TELEPHONE 617-366-9011

July 27, 1979

United States Nuclear Regulatory Commission
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Office of Inspection and Enforcement
Mr. Boyce H. Grier, Director

- References:
- (1) License No. DPR-28 (Docket No. 50-271)
 - (2) USNRC Letter to VYNPC dated May 31, 1979; IE Bulletin 79-12, "Short Period Scrams at BWR Facilities".
 - (3) Letter, R. E. Engel (GE) to D. F. Eisehut (NRC), "NRC Concerns regarding worths of Drapped Control Rods During Reactor Startup with High Xenon", April 11, 1978.

Dear Sir:

Subject: Response to IE Bulletin 79-12; Short Period Scrams at BWR
Facilities

The referenced Bulletin cites several instances of BWR scrams due to high control rod notch worths during startup. Contributing to these scrams was the use of notch override during rod withdrawals. Although these scrams have little safety significance, steps will be taken to reduce the possibility of occurrence.

Vermont Yankee feels that these problems can best be eliminated by developing and utilizing rod withdrawal sequences which specifically minimize notch worths. These sequences will reduce reactivity insertions during all startup conditions. Two modifications to the sequences will be employed. Banked Position Withdrawal Sequence (BPWS) will be used prior to 50% control density (Rod Groups 1-4 fully withdrawn). In BPWS, Groups 3 and 4 are withdrawn in banks which flatten the flux distribution and preclude pulling high worth rods from high flux regions. Vermont

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Yankee has employed a form of BPWS since 1976 and has had no occurrence of short period scrams during startups. These sequences will be further modified to require single notch withdrawal during banking of rods from Position QA-12 in Groups 3 and 4. During startup from peak xenon conditions, criticality is likely to occur beyond the 50% control density configuration. To minimize notch worths beyond this point, the Reduced Notch Worth Procedures (RNWP) described in Reference 2 will be adapted for use at Vermont Yankee for all startup rod withdrawal sequences.

In addition, a number of other steps will be taken to further reduce the possibility of these scrams. They are described below in the responses to the specific items of NRC Bulletin 79-12 below.

Item 1

Providing an estimated critical position does not solve the problem of high notch worths which have led to scrams during startups. The inaccuracies in estimated critical positions coupled with the large reactivity effects of time varying xenon transients during startups lead to significant inaccuracies in reactivity. This, combined with the fact that many notches (and rods) encountered during startup are of very low worth, results in large potential errors in predicting an exact critical rod configuration at any one time in a startup.

Items 2 and 3

As described above, BPWS and RNWP will be utilized to minimize high notch worths during all Xe conditions. BPWS will require the use of single notch withdrawal on the high worth positions of rods in Groups 3 and 4. Procedures will contain cautions to the operator on the use of notch override. An effort will be made to identify rods (and notches) of potentially high worth. SRM's will be closely monitored during rod withdrawal to critical with two SRM's selected for trending at fast speed.

Item 4

Startup procedures will be modified to require a check of the "emergency rod in" switch. This check will be performed by fully withdrawing the first rod in the startup sequence then driving it full in using the "emergency rod in" switch.

Item 5

Operator training at Vermont Yankee has placed a great deal of emphasis on short period transients which have occurred at other plants. In addition, training addresses all important variables (core xenon,

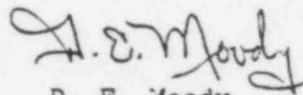
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moderator temperature, rod worth, etc.) that effect approaches to critical. Modification to procedures are also part of operator training. Future training in Hot Licensing and the requalification program will continue to address these areas.

Vermont Yankee feels the steps outlined herein will virtually eliminate the possibility for short period scrams on startup. Should you desire additional information, do not hesitate to call.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

A handwritten signature in dark ink, appearing to read "D. E. Moody", with a stylized flourish at the end.

D. E. Moody
Manager of Operations

RJW/sab

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