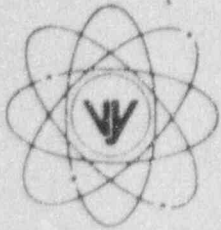


# VERMONT YANKEE NUCLEAR POWER CORPORATION



P.O. Box 157, Governor Hunt Road  
Vernon, Vermont 05354-0157  
(802) 257-7711

August 22, 1995  
BVY 95-92

U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

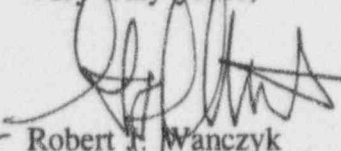
Attn: Document Control Desk

References: Operating License DPR-28  
Docket No. 50-271  
Reportable Occurrence No. LER 95-005, Supplement 1

Dear Sir:

As defined by 10 CFR 50.73, we are reporting the attached Reportable Occurrence as LER 95-005, Supplement 1.

Very truly yours,

  
for Robert J. Wanczyk  
Plant Manager

RJW/dm

cc: Regional Administrator  
USNRC  
Region I  
475 Allendale Road  
King of Prussia, PA 19406

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NRC Form 366 (5-92)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.
LICENSEE EVENT REPORT (LER)		

<b>FACILITY NAME (1)</b> VERMONT YANKEE NUCLEAR POWER STATION	<b>DOCKET NUMBER (2)</b> 05000271	<b>PAGE (3)</b> 01 OF 04
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**TITLE (4)** Shutdown Margin Test not Completed Prior to Conducting Control Rod Drive Maintenance due to a Misinterpretation of Technical Specifications

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NO.(S)
04	11	95	95	005	01	05	11	95	N/A	05000

<b>OPERATING MODE (9)</b>	N	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: CHECK ONE OR MORE (11)</b>								
		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)					
<b>POWER LEVEL (10)</b>	0	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)					
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER:					
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)					
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)						
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)						

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b> ROBERT J. WANCZYK, PLANT MANAGER	<b>TELEPHONE NO. (Include Area Code)</b> 802-257-7711
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**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	.....	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
NA					.....	NA				
NA					.....	NA				

<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>				<b>EXPECTED SUBMISSION DATE (15)</b>		<b>MO</b>	<b>DAY</b>	<b>YEAR</b>
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO			09	02	95	

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 4/11/95, with the plant shutdown for refueling, it was discovered that shutdown margin (SDM) testing, in accordance with Technical Specification (TS) 3.12.D, had not been completed prior to conducting Control Rod Drive (CRD) maintenance. The plant had just completed cycle 17 and was refueling for cycle 18.

This maintenance was performed prior to any fuel movement or core alterations from cycle 17. During the maintenance, only one control rod at a time was withdrawn from the core and maintenance performed on one mechanism at a time. The single rod refueling interlock was in effect during this maintenance activity providing protection against withdrawal of a second control rod.

Management was immediately informed of this event and a plant Event Report was generated. No additional CRD maintenance was performed following the discovery of this event.

The root cause of this event is a misinterpretation of the TS requirement. The TS states that a maximum of two non-adjacent control rods may be withdrawn for CRD maintenance provided a shutdown margin of 0.25% Δk is demonstrated, the reactor mode switch is locked in Refuel and Source Range Monitors (SRMs) are operable. TS 3.12.D was interpreted as not applicable to maintenance of one CRD.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

A formal root cause analysis has been performed for this event. The results of the analysis are provided in this supplemental Licensed Event Report (LER).

DESCRIPTION OF EVENT

An evaluation of Vermont Yankee Technical Specifications was undertaken in 1994 as a result of previous interpretation deficiencies (LER 93-05 and 94-06). The report generated by this evaluation, "Vermont Yankee Technical Specifications and Surveillance Implementing Procedures", dated 4/4/94, identified a potential TS compliance issue relating to SDM demonstration during CRD (EIS-AA) maintenance. At that time this was felt to not be a compliance issue and the item was tracked accordingly, at a lower priority. At the beginning of 1995 a Technical Specification audit was conducted which suggested a reevaluation of this item. A commitment was generated per Vermont Yankee procedure AP 0028 "Operating Experience Review and Assessment/Commitment Tracking" to review this issue. The commitment was generated on 2/22/95 and sent to Reactor Engineering with a due date of 5/1/95.

On 4/11/95 with the plant shutdown for a refueling outage, it was discovered during the review of this issue that required actions were not completed prior to performing maintenance on CRD's. During the review of this issue numerous other plants were consulted and Technical Specifications reviewed. As a result of these discussions with other plants, it became clear that Vermont Yankee was not in compliance with Technical Specifications.

Technical Specifications (TS) 3.12.D states that "[a] maximum of two non-adjacent control rods separated by more than two control cells in any direction, may be withdrawn from the core for the purpose of performing control rod and/or control rod drive maintenance" provided specific conditions are met. The bases for TS section 3.12.D only discuss the performance of CRD maintenance on two drives. The bases are silent as to the applicability of this specification for maintenance of a single CRD. This led to the belief that the specification only applied to maintenance on two CRD's simultaneously. TS 4.12.D.1 specifies that sufficient control rods shall be withdrawn prior to performing this maintenance, to demonstrate with a margin of 0.25% Δk, that the core can be made subcritical at any time during the maintenance with the strongest operable control rod fully withdrawn and all other operable rods fully inserted. As an alternative, TS 4.12.D.2 allows for a shutdown margin demonstration with a minimum of eight control rods surrounding the rod out of service fully inserted and electrically disarmed.

Contrary to this requirement, Vermont Yankee did not comply with TS 3.12.D and did not complete shutdown margin testing or electrical disarming of surrounding control rods prior to performing CRD maintenance during the 1995 and 1993 refueling outages. It was interpreted that the requirements of TS 3.12.D and 4.12.D were only applicable when two CRD's were being maintained simultaneously. These specifications were not thought to be applicable when maintenance was being performed on a single CRD with single-rod-out refueling interlock in effect to prevent withdrawal of a second rod. The documentation of this TS interpretation goes back to 1986. It is likely that this specification was not met during CRD maintenance for each outage since 1986.

During 1995 refueling outage CRD maintenance activities at Vermont Yankee, only one control rod at a time was removed from service for maintenance and the single-rod-out refueling interlock was in effect. This maintenance was performed with the reactor core in the cycle 17 configuration prior to any core alteration and with the original SDM demonstration for cycle 17 still valid. During start-up of cycle 17 adequate shutdown margin was demonstrated. However, during the 1993 outage a CRD was replaced following the cycle 17 core loading but, prior to the completion of the SDM demonstration for start-up of cycle 17.

No additional CRD maintenance was performed following the discovery of this event.

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CAUSE OF EVENT

The root cause of this event is a misinterpretation of the TS requirement. The TS states that a maximum of two non-adjacent control rods may be withdrawn for CRD maintenance provided a shutdown margin of 0.25%  $\Delta k$  is demonstrated, the reactor mode switch is locked in Refuel and SRMs are operable. With only one CRD withdrawn for maintenance and all other control rods fully inserted it was believed that a shutdown margin demonstration was not required.

A formal root cause analysis has been performed for this event and this supplemental LER provides the root cause.

ANALYSIS OF EVENT

During the 1995 refueling outage CRD maintenance activities at Vermont Yankee, only one control rod at a time was removed from service for maintenance and the single rod out refueling interlock was in effect. This maintenance was performed with the reactor core in the cycle 17 configuration prior to any core alteration. Upon start-up of cycle 17 adequate shutdown margin was demonstrated. Therefore, during the 1995 CRD maintenance period the core was never in an unanalyzed condition due to the lack of a shutdown margin demonstration. The control rod that was being maintained was withdrawn from the core and made inoperable. All other control rods were fully inserted and operable. Maintenance was performed on the one withdrawn and inoperable CRD. During all maintenance activities on the control rods the core was maintained in a subcritical condition with SDM in excess of Technical Specification requirements. In addition, the required SRM operability was maintained throughout the maintenance.

During the 1993 refueling outage, most of the CRD drive maintenance was performed prior to performing any core alterations and SDM was demonstrated at the beginning of cycle 16. However, one drive was replaced following fuel loading for cycle 17 but, prior to the cycle 17 SDM demonstration. The cycle 17 core loading had completed core verification and an analytical SDM of 1.301%  $\Delta k$  was calculated. During the cycle 17 start-up, a SDM of 1.266%  $\Delta k$  was demonstrated.

Based on the above, there was no threat to the health and safety of the public due to this event.

CORRECTIVE ACTIONS

Immediate Corrective Actions:

- 1) Management was immediately informed and a plant Event Report was generated. No additional CRD maintenance was performed following the discovery of this event.
- 2) On May 11, 1995 this event was reviewed with senior management at the daily plant managers meeting.

Short Term Corrective Actions:

- 1) Reactor & Computer Engineering Department training to review the specifics of this issue was conducted on May 15, 1995.
- 2) Applicable plant procedures will be revised, by August 1995, to require compliance with TS 3.12.D prior to the start of control rod and CRD maintenance. No CRD maintenance will be performed until these procedure revisions are in place.

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- 3) Vermont Yankee has completed a review of Technical Specifications, to ensure that all shutdown margin related requirements are addressed adequately in plant procedures.
- 4) A formal root cause analysis for this event was performed.

Long-Term Corrective Actions:

- 1) Prior to the next Control Rod Drive maintenance, appropriate guidance on the Technical Specification requirements will be developed. This guidance will be contained in plant procedures to ensure consistent application of the Technical Specifications occurs in the future.
- 2) Training will be held with the Operations and Reactor & Computer Engineering Departments to ensure SDM and SDM testing is completely understood. This training is expected to be completed by the end of 1995.
- 3) A formal process for initiating and tracking Technical Specification assessments and changes will be developed to ensure timely interpretation of Technical Specification questions. This will be completed by 12/31/95.
- 4) This event will be reviewed during upcoming ESP training sessions by January, 1996. Emphasis will be on the following:
  - \* the need to ask both why and why not type questions during reviews of TS issues.
  - \* the importance of contacting other plants and fully exploring all issues relating to a change in process.

ADDITIONAL INFORMATION

Two similar events, relating to the interpretation of Technical Specifications, were reported to the Commission as LER 93-05 and 94-06. The corrective actions taken in response to these events led to the discovery of this event.