VERMONT YANKEE
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October 22, 1998
BVY 98-152

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington D.C. 20555

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
Reportable Occurrence No. LER 98-23, Rev. 0

As defined by 10CFR50.73, we are reporting the attached Reportable Occurrence as LER 98-23, Rev.0 .

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Michael A. Balduzzi

Michael A. Balduzzi
Plant Manager

cc: USNRC Region I Administrator
USNRC Resident Inspector – VYNPS
USNRC Project Manager – VYNPS
VT Dept. of Public Service

IE22

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4) **Inadequate review of Engineering Design Change resulted in a Core Spray In-Service Testing Valve not being Properly Tested**

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 NUMBER
09	24	98	98	023	00	10	22	98	N/A	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR □: (Check one or more) (11)							
POWER LEVEL (10)	100		20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Michael A. Balduzzi	(802) 257-7711

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (12)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
NA						NA				
NA						NA				

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO				

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

On 9/24/98 at 1100 hours with the plant at 100% power, it was determined that the Core Spray valves V14-26A/B were not timed per the In-Service Testing Program (IST) in the stroke open position. This event is therefore reportable under 10CFR50.73(a)(2)(i) as a condition prohibited by Technical Specifications (TS). This requirement was recently added to the IST Program due to new minimum flow requirements of the Core Spray (CS) pumps. The new minimum flow requirements pertain to CS pump flows during small break accidents. The new flow requirements would be greater than that possible with the installed minimum flow valves/lines. Additional flow is available through the use of the CS Full Flow Test lines which are equipped with throttle type valves to control the flow rate. It should be noted that these valves have always been full stroke tested for operability but were never timed in the stroke open direction. This change was incorporated during the 1998 refueling outage by Engineering Design Change Request (EDCR) 97-420 which upgraded the CS and Residual Heat Removal System flow instrumentation loops.

The root cause of this event is attributed to an inadequate review of the subject EDCR for IST requirements. This resulted in a failure to include the requirement during implementation of the EDCR.

Immediate corrective actions included performance of a full-stroke open test of both valves in accordance with the IST requirements. This allowed a reference time to be established for each valve. Additionally, the IST Program and the CS surveillance procedure were revised to include the new requirements.

These valves, V14-26A/B, have been stroke tested at a regular interval in the past but not timed in the open direction during the testing. They have historically performed satisfactorily. As these valves have performed satisfactorily in the past and are now being timed in addition to the stroke test, the valves would have operated as required and this event did not increase the risk to the public health and safety.

EVENT DESCRIPTION

On 9/24/98 at 1100 hours with the plant at 100% power, it was determined that the Core Spray (EIIS = BM) valves V14-26A/B were not timed per the In-Service Testing (IST) Program in the stroke open position. This event is therefore reportable under 10CFR50.73(a)(2)(i) as a condition prohibited by Technical Specifications (TS).

This requirement was recently added to the IST Program due to new minimum flow requirements of the Core Spray (CS) pumps which results in these valves now being designated as valves with an open active safety function. Their new safety function is to be capable of being opened when an accident signal is present. The new minimum flow requirements pertain to CS pump flows during small break accidents. The new flow requirements are greater than that possible with the installed minimum flow valves/lines. Additional flow is available through the use of the CS Full Flow Test lines which are equipped with throttle type valves to control the flow rate. It should be noted that these valves have always been full stroke tested for operability but were never timed in the stroke open direction. This change was incorporated during the 1998 refueling outage by Engineering Design Change Request (EDCR) 97-420 which upgraded the CS and Residual Heat Removal System flow instrumentation loops.

CAUSE OF EVENT

The root cause of this event is attributed to an inadequate review of the subject EDCR for IST requirements. This resulted in a failure to include the requirement during implementation of the EDCR.

ANALYSIS OF EVENT

Two independent loops are provided as part of the CS System. Each loop consists of one 100% capacity centrifugal pump driven by an electric motor, a spray sparger in the reactor vessel above the core, piping and valves to convey water from the suppression pool to the sparger and the associated controls and instrumentation. System initiation is automatic upon receipt of accident signals.

The CS system provides protection to the core for a large break in the nuclear system when the High Pressure Coolant Injection (HPCI) System and the Reactor Core Isolation Cooling (RCIC) System are unable to maintain reactor vessel water level. This protection also extends to a small break in which the HPCI and RCIC are unable to maintain water level, and the Automatic Depressurization System (ADS) has operated to allow the pressure to decrease so that the low-pressure systems can provide core cooling.

Present vendor pump analysis has determined that for small breaks where the CS pumps run at a minimal flow, the installed minimum flow valves and lines are not of sufficient size to protect the pumps for long term operation. To correct this deficiency, an EDCR was written which utilized the CS Full Flow Test valves and lines to augment the minimum flow rate of the pumps to ensure their continued function.

The CS pumps can operate at the flow rate provided by the installed minimum flow valves for up to 4 hours without damage. Further operation requires increasing the minimum flow through the pump to prevent pump degradation.

Prior to this change to increase the minimum flow requirements, the CS pumps have performed satisfactorily. At no time were the pumps called upon to operate under accident conditions for long term. If this had occurred, the operators would have had approximately 4 hours in which to determine CS pump performance and take the appropriate actions to prevent damage to the pump. Additionally, the Low-Pressure Coolant Injection (LPCI) system would provide backup cooling to the core.

Although the In-Service Testing (IST) program does not test at throttled positions, the full open position of the valve would never be required to maintain minimum flow conditions for the CS pump. The IST program provides tests under established parameters to check for repeatability such that subsequent changes in the valve performance data would then note a possible decline in the valve performance. Since the valve now has a safety-function to open to some throttled position, a full-stroke timed open valve exercise test is required to determine any future degradation in the opening ability of the valve.

The valves were electrically cycled full open at the completion of the design change and quarterly thereafter. However, the stroke open times were not measured and no reference value was previously determined. The valves have never been observed to exhibit erratic or abnormal behavior when operated to the full open position. There is no TS or safety analysis time limit imposed on these valves to meet the safety open function imposed by the design change. Testing that is performed on these valves does verify that these valves have consistently been capable of achieving their full stroke open position when their respective motor operators were signaled to open the valve. The electric motor operator capability to provide this open function has been demonstrated at the required frequency.

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

Although the valves have not been timed in the past, they have been satisfactorily stroke tested which provides confidence that the valves would operate when required. Further, these are throttle type valves and are not relied upon to go full stroke open on any accident signal.

As these valves have performed satisfactorily in the past and are now being timed in addition to the stroke test, the valves would have operated as required and this event did not increase the risk to the public health and safety.

CORRECTIVE ACTIONS

Immediate

1. Immediate corrective actions included performance of a full-stroke open test of both valves in accordance with the IST requirements. This allowed a reference time to be established for each valve. This has been completed.
2. The IST Program and the CS surveillance procedure were revised to include the new requirements. This has been completed.

CORRECTIVE ACTIONS (Cont.)

Long Term

1. Review of the associated event report Root Cause Analysis will be used to heighten the awareness of the IST Program Coordinator and System Engineers to potential IST testing requirements in design changes and in Basis for Maintaining Operation (BMO) documents.

2. Review of the associated event report Root Cause Analysis will be used to heighten the awareness of the Design Engineers of changes in component safety-functions and possible impact to IST in design changes and BMO's.

ADDITIONAL INFORMATION

A similar event, LER 96-01dealt with components not included as required in the IST program.