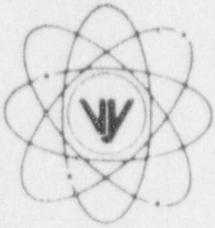


VERMONT YANKEE NUCLEAR POWER CORPORATION



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March 16, 1999
BVY 99-38

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 98-26 , Rev. 0

As defined by 10CFR50.73, we are reporting the attached Reportable Occurrence as LER 98-26, Rev. 0.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Michael A. Balduzzi
Plant Manager

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

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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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) VERMONT YANKEE NUCLEAR POWER CORPORATION	DOCKET NUMBER (2) 05000271	PAGE (3) 1 OF 4
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TITLE (4)
INADEQUATE EQUIPMENT CONTROL RESULTS IN REDUCED HPCI SYSTEM RELIABILITY

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
11	24	98	98	026	00	03	16	99	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)		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)		<input checked="" type="checkbox"/> OTHER			
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		VOLUNTARY REPORT			
20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		Specify in Abstract below or in NRC Form 366A				

LICENSEE CONTACT FOR THIS LER (12)

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

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO					

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

On 11/24/98, while performing monthly surveillance testing of the High Pressure Coolant Injection (HPCI) System low steam pressure isolation pressure switches, it was discovered that one of the four switches was isolated. The "D" pressure switch instrument isolation valve was discovered shut. This "as-found" alignment rendered the automatic injection feature less reliable than the intended configuration. Upon discovery of the out-of-position valve, the test technician informed the Station Shift Supervisor. The surveillance test was then completed satisfactorily and the system placed in the approved alignment. An investigation failed to conclusively identify a specific action that resulted in the valve being out of position. The as-found condition is indicative of a deviation from Vermont Yankee's equipment control procedures. The procedures controlling work that had been performed on the affected and adjacent instrumentation were reviewed. The subject procedures utilize independent verification for system valve alignment and restoration. VY is currently assessing related equipment control practices to identify opportunities for improvement. The pressure switch was discovered with its isolation valve shut and the sensor depressurized/tripped, fulfilling its specified function per plant Technical Specifications. However, continued operation with the 1/2 isolation signal sealed in increases the vulnerability of the HPCI system to an inadvertent isolation. A risk-based assessment of the effect of that increased vulnerability was performed. That assessment concluded that the net effect of the isolated pressure switch was a reduction of HPCI reliability of approximately 0.1%. Therefore this event presented no significant increase in risk to public health and safety.

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

EVENT DESCRIPTION

On 11/24/98, while operating at rated power, during the performance of monthly surveillance testing of the High Pressure Coolant Injection (HPCI, EIS = BT) System low steam pressure isolation pressure switches (EIS = PS), it was discovered that one of the four switches was isolated. The "D" pressure switch instrument isolation valve (EIS = ISV) was discovered shut with the pressure switch in the depressurized/tripped condition. Upon discovery of the out of position valve, the test technician informed the Station Shift Supervisor. The surveillance test was then completed satisfactorily and the system alignment returned to normal.

Subsequent investigation performed to determine the cause of the event was inconclusive. Of particular interest during the investigation were the details of work performed during a 10/23/98 replacement of the subject pressure switch.

The three technicians involved in the switch replacement, recall leaving the pressure switch in service, with its isolation valve open, following replacement and post-maintenance testing. The repair team recalled there having been a discussion with the Operations Department, which concluded that it was best to leave the pressure switch in service (aligned to sense steam supply pressure) following the post-maintenance surveillance test (PMT). In contrast, the work order documenting the work effort identifies that it was intended that the technicians isolate and depressurize the pressure switch following the PMT. The switch was to remain isolated until the cognizant Instrument and Controls Engineer directed the technicians to restore the switch to service. The subject work order identified that the restoration and the restoration verification were to be documented in the "notes" section of the work order.

The recollection of the repair technicians is that the work order step directing that the switch be isolated and depressurized had not been performed. The discussion with the Operations Department had preceded that step and the decision was made that the step to isolate and depressurize the switch was not required.

The pressure switch restoration is documented in the Work Order notes. However, because the sensing line isolation valve had not been closed and the switch not depressurized a verification of the restoration was not documented in the Work Order notes. Because the pressure switch restoration performance and verification were completed as part of the PMT for the switch replacement, the work crew considered documenting the verification in the work order notes unnecessary.

This was the last work performed upon the subject pressure switch prior to having found the switch isolated and depressurized.

CAUSE

The investigation failed to identify a root cause for the valve out of position.

The apparent cause is a breakdown in Vermont Yankee (VY) equipment control practices. VY procedures for controlling plant equipment had not been followed.

The specific instance (operator or technician action) where that non-compliance occurred could not be determined. However, it is presumed to have occurred during the pressure switch replacement activity.

ANALYSIS

The HPCI system provides and maintains an adequate coolant inventory inside the reactor vessel to prevent fuel clad conditions from exceeding 10CFR50.46 criteria as a result of postulated small breaks in the Nuclear System process barrier. A high-pressure system is needed for such breaks because the reactor vessel depressurizes slowly, preventing low-pressure systems from injecting coolant. The HPCI system includes a turbine-driven pump powered by reactor steam. The system is designed to accomplish its function on a short-term basis without reliance on station auxiliary power supplies other than the dc power supply.

The pressure switch, which is the subject of this report, senses reactor steam pressure. When reactor pressure reaches its low pressure trip setpoint (≥ 70 psig, per plant Technical Specifications) the pressure switch delivers a

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signal to the HPCI steam line isolation valve control circuitry to initiate an automatic closure of the two steam line isolation valves. The pressure switch input is one of four inputs to a one-out-of-two-twice isolation control logic. The affected pressure switch was replaced, tested, and then declared operable at 1100 on 10/23/98. The switch was found isolated and depressurized at 1340 on 11/24/98. It was then aligned and declared operable at 1425 on that same day. During the period when the pressure switch status was indeterminate, the HPCI back-up system (the Automatic Depressurization System, ADS, EISS = JE) was available. ADS operates as a back-up to HPCI by automatically lowering reactor plant pressure under conditions indicative of a loss of coolant where HPCI is unable to restore reactor water inventory. This enables the available low-pressure injection sources to provide the needed cooling. During the duration of this event the low-pressure injection systems were capable of performing their automatic make-up functions.

The failure of the switch (to its tripped condition) rendered the HPCI system more vulnerable to a spurious isolation signal than its normal configuration. A risk-based review of HPCI reliability with one-half of the low steam pressure isolation signal "sealed in" was performed. While in this configuration, a passive failure of either of two safety class pressure switches in the control logic would have resulted in a low steam pressure isolation of the HPCI steam supply isolation valves rendering the HPCI system unavailable. Based upon the review performed, the as-found condition lowered the overall HPCI system reliability (as modeled in the VY Individual Plant Examination) by approximately one tenth of one percent. This is not considered to be a significant reduction in system reliability. Therefore this event presented no significant increase in risk to public health and safety.

The HPCI system low steam supply pressure switch was in a condition permitted by TS in that it would deliver an isolation signal prior to plant steam pressure dropping below 70 psig. Further, the HPCI system remained capable of performing its design functions, consistent with its design bases. Therefore, this condition was determined not to be reportable under 10 CFR 50.73. However, due to the small, but quantifiable, reduction in the reliability of the HPCI system, and concerns for the equipment control issues involved, this voluntary report was deemed appropriate.

CORRECTIVE ACTIONS

Immediate Actions

1. A VY internal event report was initiated. A formal cause determination was performed, and corrective action recommendations presented to plant management. This action is complete.
2. The pressure switch calibration was completed and the isolation control circuitry returned to service. This action is complete.

Long Term Corrective Actions

1. Discussions were conducted with Operations and Electrical & Controls personnel during the investigation of this event. This has sufficiently raised the awareness of personnel relative to the particulars of this event and its significance to safe plant operation. This action is complete.
2. Electrical & Controls Maintenance Department practices for the restoration and verification of plant equipment, including those actions permitted to be performed concurrently, will be reviewed and improvements implemented as appropriate. The expected completion date is 10/01/99.
3. Maintenance Department management will provide clarification to departmental personnel relative to the conformance to Work Order step text. The expected completion date is 06/01/99.

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ADDITIONAL INFORMATION

Vermont Yankee reported the following similar events during the past five years.

Event Number	Date	Title
LER 98-20	07/14/98	Out of Position Isolation Valves Allow Degradation of Primary Containment Integrity
LER 97-18	09/18/97	. . . Four Unused One-inch Primary Containment Isolation Penetrations were out of Position.