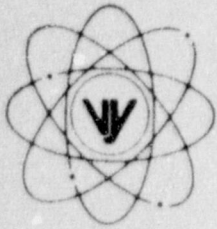


VERMONT YANKEE NUCLEAR POWER CORPORATION



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

November 5, 1998
BVY 98-151

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)
Licensee Event Report No. 98-20, Rev. 1**

As defined by Nureg 1022 rev. 1, Section 2.9, we are providing the attached Voluntary Report as LER 98-20, Rev. 1.

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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NRC Form 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION LICENSEE EVENT REPORT (LER)	APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/01 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.
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FACILITY NAME (1) VERMONT YANKEE NUCLEAR POWER STATION	DOCKET NUMBER (2) 05000271	PAGE (3) 01 OF 3
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TITLE (4) OFF-NORMAL SYSTEM ALIGNMENT FOLLOWING A PLANT TRIP WHICH INVOLVED THE LOSS OF A REACTOR WATER RECIRCULATION SYSTEM PUMP AND REACTOR WATER THERMAL STRATIFICATION RESULTS IN A SPURIOUS SHUTDOWN COOLING ISOLATION.

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)	
06	10	98	98	-- 19 --	01	10	22	98	N/A	05000	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: CHECK ONE OR MORE (11)								
POWER LEVEL (10)	00	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)	X OTHER					
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)						
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)		VOLUNTARY REPORT				

LICENSEE CONTACT FOR THIS LER (12)

NAME MICHAEL A. BALDUZZI, PLANT MANAGER	TELEPHONE NO. (Include Area Code) 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 EPIX	.....	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
A	AO	MG	G080	YES	.....	NA				
NA					.....	NA				

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

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

On 06/10/98 Vermont Yankee (VY) was in the process of completing a plant shutdown. As part of the plant cooldown procedure, the operating crew aligned the "B" Residual Heat Removal (RHR) System in preparation for shutdown cooling (SDC). The operating crew initiated SDC flow in accordance with plant procedures, starting the "B" RHR pump and throttling open valves in the injection path. Approximately 2 seconds after the start of the RHR pump, the system isolation occurred. The isolation (termed a Group IV isolation at VY) closes the SDC suction isolation valves in the RHR system. After verifying that the isolation operated properly, and that plant conditions did not require the isolation to be in effect, the isolation was reset. SDC was then successfully initiated using the "B" RHR pump. The time between the isolation and subsequent initiation was approximately 8 minutes. Engineering evaluations have previously identified that the VY RHR system was vulnerable to isolation signals during initial system start-up in the SDC mode due to the lack of a high point vent. This leaves the system susceptible to pressure transients as the piping fills during initial system startup. Pressure switches sensing the transient, will isolate the system should the pressure spike reach the setpoint of 100-150 psig. Changes in plant operating procedures and practices have been largely successful in preventing Group IV isolations since their implementation in early 1994. An off-normal system alignment present following the plant trip appears to have reduced the margin afforded by the 1994 procedure improvements. There were no indications of water hammer following system initiation, and the system was immediately available for restart and decay heat removal, therefore this event presented no significant increase in risk to public health and safety.

NRC Form 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98			
LICENSEE EVENT REPORT (LER)		ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.			
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

EVENT DESCRIPTION

On 06/10/98 VY was in the process of completing a reactor plant shutdown. As part of the plant cooldown procedure, the operating crew aligned the "B" Residual Heat Removal (RHR, EHS=BO) System in preparation for shutdown cooling (SDC). The plant was in an off-normal configuration, having experienced a loss of the "B" Reactor Recirculation pump (EHS=AO), due to a bearing failure. After flushing and aligning the system as prescribed by plant procedures, the operating crew initiated SDC flow by starting the "B" RHR pump and throttling open valves in the injection path.

The process used for initiation of SDC at VY was developed after extensive investigation of repeated similar isolations which occurred as SDC was initiated. The most recent isolation had occurred on 12/17/93, and was reported in VY LER 93-18. That LER documents the assessment of the conditions which led to the isolations of concern. The SDC startup process includes flushing and filling the RHR piping from both "hot" and "cold" sources. It also requires gradually increasing flow in the system to limit the potential for pressure spikes. The flushing and alignment steps were completed at 1000 hours.

Approximately 2 seconds after the start of the "B" RHR pump, the system isolation occurred (1001 hours). The Group IV isolation closes the SDC suction isolation valves in the RHR system. After verifying proper system response, and that plant parameters did not require the isolation to be in effect, the isolation was reset. SDC was then successfully initiated using the "B" RHR pump. The time between the isolation and subsequent initiation was approximately 8 minutes.

A review of plant parameters at the time of the event confirmed that the RHR system isolated due to a sensed high reactor system pressure. The signal which closed the SDC isolation valves is not a Primary Containment Isolation signal. It is a low pressure permissive designed to preclude aligning the low pressure RHR piping to the Reactor Pressure Vessel (RPV) while the RPV is at a pressure which would exceed the 150 psig design pressure of portions of the RHR suction piping. Actual reactor system pressure at the time of the event was less than 35 psig. Because the actuation signal was a non-ESF signal, and the safety function of the automatic closure (the overpressure protection of the RHR piping) had already been accomplished via plant depressurization, this event is being submitted as a voluntary report.

CAUSE OF EVENT

Engineering evaluations had previously identified that the VY RHR system was vulnerable to isolation signals during initial system start-up in the SDC mode due to the lack of a system high point vent. This leaves the system susceptible to pressure transients as the piping fills during initial system startup. System pressure switches sensing the pressure transient, will isolate the system should the pressure spike reach the isolation setpoint of 100-150 psig.

Changes in plant operating procedures and practices, implemented due to lessons learned from the 1993 event, have, until this point, been successful in preventing Group IV isolations since their implementation in early 1994.

The off-normal system alignment present following the plant trip appears to have reduced the margin to the system isolation setpoint afforded by the 1994 procedure improvements.

ANALYSIS OF EVENT

The systems potentially affected by this event include: the Primary Containment System, the Primary Containment Isolation System and the Residual Heat Removal System.

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The Primary Containment Isolation (PCIS, EIS=JH), and the Primary Containment System (PCS) work together to mitigate the radiological consequences of postulated accidents, ensuring that any radioactive materials released would be adequately retained and processed such that applicable radiological limits would be met. The Containment and Containment Isolation components actuated as designed, in response to the RHR system protective signal, establishing conditions consistent with their system safety functions.

The RHR System fulfills the following functions:

1. Removal of decay heat during and after plant shutdown.
2. Injection of water into the reactor vessel following a loss-of-coolant accident and depressurization rapidly enough to reflood the core and prevent fuel clad conditions from exceeding 10CFR50.46 criteria independent of other core cooling systems.
3. Removal of heat from the primary containment following a loss-of-coolant accident to limit the increase in primary containment pressure.

The VY FSAR specifically identifies that the automatic closure of the RHR Shutdown Cooling Isolation valves is not a primary containment isolation function. Rather, it is a feature designed to preclude overpressurization of the low pressure RHR system piping.

There were no indications of water hammer following system initiation which might be indicative of a transient of a magnitude which could challenge the RHR system's ability to perform its safety functions. The system isolation actuated as designed, sensing the system high pressure and isolating the RHR system from the presumed source. . .the reactor pressure vessel. The system was immediately available for restart in any of its operating modes, including SDC (decay heat removal). Therefore this event presented no significant increase in risk to public health and safety.

IMMEDIATE CORRECTIVE ACTIONS:

1. A VY internal event report was initiated to perform a formal cause determination and produce corrective action recommendations. This action is complete.
2. The operating crew took those measures prescribed by plant procedures for the containment isolation and then restored the system to operation. This action is complete.

LONG TERM CORRECTIVE ACTIONS:

1. VY will assess the current plant procedures controlling the initiation of shutdown cooling with the RHR system to determine if additional opportunities for improvement exist which could further reduce the frequency of nuisance isolations of the RHR system. The expected completion date is 08/01/99.
2. VY will determine if opportunities exist to improve the licensed operator training to better prepare operators for dealing with the conditions presented by this event. The expected completion date is 08/01/99.

ADDITIONAL INFORMATION:

Two similar events occurred at VY in 1993, VY LER 93-18. and 93-11.