



VERMONT YANKEE NUCLEAR POWER CORPORATION

P. O. BOX 157
GOVERNOR HUNT ROAD
VERNON, VERMONT 05354

April 13, 1991
VYV # 91-105

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

REFERENCE: Operating License DPR-28
Docket No. 50-271
Reportable Occurrence No. LER # 91-06

Dear Sirs:

As defined by 10 CFR 50.73, we are reporting the attached Reportable Occurrence as LER # 91-06.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

for 
Donald R. Reid
Plant Manager

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

9104190115 910413
PDR ADOCK 05000271
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EXPIRES 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY
WITH THIS INFORMATION COLLECTION REQUEST:
50.0 HRS. FORWARD COMMENTS REGARDING
BURDEN ESTIMATE TO THE RECORDS AND REPORTS
MANAGEMENT BRANCH (P-530), U.S. NUCLEAR
REGULATORY COMMISSION, WASHINGTON, DC
20555, AND TO THE PAPERWORK REDUCTION
PROJECT (3160-0104), OFFICE OF MANAGEMENT
AND BUDGET, WASHINGTON, DC 20603.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. (2)

0 5 0 0 0 2 7 1 0 1 OF 0 3

PAGE (3)

TITLE (4)

Loss of 'B' Loop Shutdown Cooling due to Pressure Switch Activation

EVENT DATE (5)

LER NUMBER (6)

REPORT DATE (7)

OTHER FACILITIES INVOLVED (8)

MONTH

DAY

YEAR

YEAR

SEQ. #

REV#

MONTH

DAY

YEAR

FACILITY NAMES

DOCKET NO.(S)

0 3

1 4

9 1

9 1

- 0 0 6

- 0 0 0

0 4 1

3 9 1

0 5 0 0 0

OPERATING

THIS REPORT IS SUBMITTED PURSUANT TO REQ'TS OF 10CFR 5: ONE OR MORE (11)

MODE (9)

N

20.402(b)

20.405(c)

X 50.73(a)(2)(iv)

73.71(b)

POWER

20.405(a)(1)(i)

50.36(c)(1)

50.73(a)(2)(v)

73.71(c)

LEVEL (10)

0 0 0

20.405(a)(1)(ii)

50.36(c)(2)

50.73(a)(2)(vii)

OTHER:

20.405(a)(1)(iii)

50.73(a)(2)(i)

50.73(a)(2)(viii)(A)

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)

NAME

TELEPHONE NO.

AREA

CODE

DONALD A. REID, PLANT MANAGER

8 0 2 2 5 7 - 7 7 1 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE

SYST

COMPNT

MFR

REPORTABLE

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CAUSE

SYST

COMPNT

MFR

REPORTABLE

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TO NPRDS

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TO NPRDS

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N/A

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N/A

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N/A

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SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED

MO

DA

YR

X YES (If yes, complete EXPECTED SUBMISSION DATE)

NO

SUBMISSION

DATE (15)

0 7

0 1

9 1

ABSTRACT (Limit to 1400 spaces, i.e., approx. fifteen single-space typewritten lines) (16)

On 03/14/91 at 0450 hours, with Reactor vessel cooldown in progress following a reactor scram on 03/13/91 (subject of Licensee Event Report 91-05), and with the "B" loop Residual Heat Removal (RHR)(B0*) system flushed and lined up for Shutdown Cooling, a Group 4 Primary Containment Isolation Signal (PCIS)(JM)* was received during two attempted starts of the "B" RHR pump. The Group 4 Isolation signal resulted in a trip of the "B" RHR pump and closure of Shutdown Cooling Suction Isolation valves. The second failed pump start attempt was initiated at 0455 hours. At 0504 hours, all isolations were reset a second time, the "D" RHR pump was successfully started on the "B" RHR loop. Shutdown Cooling remained in operation on the "B" RHR loop for the duration of the shutdown. The reactor was returned to critical on 03/18/91 at 0055 hours.

The root cause of this event is presently under investigation through our root cause/corrective action process and is being coordinated with other plants that had recent similar experiences. It is believed that the trips were a result of a pressure surge which resulted when the "B" RHR pump was started. Appropriate corrective actions will be initiated based upon the results of the investigation and will be reported to the commission in a supplemental LER.

*Energy Information Identification System (EIIIS) Component Identifier

EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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PROJECT (3160-0104), OFFICE OF MANAGEMENT
AND BUDGET, WASHINGTON, DC 20603.

UTILITY NAME (1)	DOCKET NO. (2)	LER NUMBER (3)				PAGE (4)	
		YEAR	SEQ. #	REV#			
VERMONT YANKEE NUCLEAR POWER STATION	0500271	91	-006	-00	02	OF	03

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

DESCRIPTION OF EVENT

On 03/14/91 at 0450 hours, with reactor vessel cooldown in progress following a reactor scram on 03/13/91 (subject of Licensee Event Report 91-05), and with the "B" loop Residual Heat Removal (RHR) system flushed and lined up for Shutdown Cooling, a Group 4 Primary Containment Isolation Signal (PCIS) was received during two attempted starts of the "B" Residual Heat Removal (RHR) pump. The Group 4 Isolation signal resulted in a trip of the "B" RHR pump and closure of Shutdown Cooling Suction Isolation valves. The second pump start attempt was initiated at 0455 hours. After the receipt of each isolation signal, Operations personnel reviewed PCIS Group 4 input parameters to determine the cause of the isolation. Parameters reviewed and found to be within setpoint limits included Reactor Pressure, Drywell Pressure, and Reactor level. Operators noted the momentary clearance of The Shutdown Cooling Permissive interlock coincident with the "B" RHR pump start. Operations personnel subsequently reset the PCIS isolation logic and reopened the Shutdown Cooling Isolation valves. At 0504 hours, after isolations were reset a second time, the "D" RHR pump was successfully started and remained in operation for the duration of the shutdown. No additional aberrations were noted in Shutdown Cooling during this period. The reactor was returned to critical on 03/18/91 at 0055 hours.

A subsequent evaluation was performed of the Shutdown Cooling Permissive Interlock annunciator alarm circuitry and computer trend data relevant to the "B" RHR pump starts. The alarm logic is controlled by two pressure switches which monitor Shutdown Cooling loop pressure. Both switches are remotely connected to the suction line of "B" Recirc. loop piping. The primary purpose of the switches is to protect low pressure RHR piping in the Shutdown Cooling loops by terminating Shutdown Cooling operation at a loop pressure above 130 psi and initiating a PCIS Group 4 isolation. Plant procedures administratively limit Shutdown Cooling operation to <100 psig. Prior to the attempted pump starts, reactor pressure was approximately 50 psig (Steam dome). There was no discernible change in reactor pressure before and after each failed pump start. However, computer data relevant to the PCIS Group 4 isolations confirmed that the Shutdown Cooling Permissive Interlock circuit had momentarily activated each time the "B" RHR pump was started. Based on the pressure switches installed location and an applied Head correction factor, a minimum 40 psi. pressure spike in the "B" loop Recirc. piping was necessary to trip the switches. Suspecting that one of the switches may have drifted out of calibration, setpoints of both switches were checked and found to be within limits.

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		YEAR	SEQ. #	REV#		
VERMONT YANKEE NUCLEAR POWER STATION	05000271	91	- 006	- 00	03	OF 03

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

CAUSE OF EVENT

The root cause of this event is presently under investigation. It is believed that the trips were a result of a pressure surge which resulted when the "B" RHR pump was started. The "B" RHR pump has been successfully started without isolation occurring during previous refueling periods. The exact reason for why the isolations occurred under the reactor conditions which existed on 03/14/91, is being investigated through our root cause/corrective action process. The lack of trips in the "B" RHR loop in the past is attributed to the use of the "A" RHR Shutdown Cooling loop first during a Reactor Cooldown. The plant operating procedure had been recently revised to establish Shutdown Cooling on the "B" loop first due to erosion concerns associated with the "A" RHR loop injection valve. The "A" RHR loop has not experienced tripping of the interlock pressure switches in the past. This is felt to be a result of the Reactor vessel buffering any pressure surge before it is sensed by the interlock switches which are located on the "B" Recirculation Loop.

ANALYSIS OF EVENT

The events detailed in this report had minimal safety implications.

1. The Primary Containment Isolation System (PCIS) operated as designed and isolated Shutdown Cooling upon sensing a high reactor pressure.
2. Reactor Depressurization and cooldown was maintained during the event using the Main Condenser. All other Emergency Core Cooling Systems were available to provide vessel cooling, if required.

CORRECTIVE ACTIONS

Immediate corrective actions included resetting the PCIS Group 4 isolation and restoration of shutdown Cooling on the "B" loop using the "D" RHR pump.

The investigation into the root cause of the event is continuing under our root cause/corrective action program. This investigation is expected to be completed by 06/01/91.

Appropriate corrective actions to preclude reoccurrence will be initiated based upon the results of the evaluation and will be reported to the commission in a supplemental LER.

ADDITIONAL INFORMATION

There have been no similar events of this type reported to the commission in the past five years.