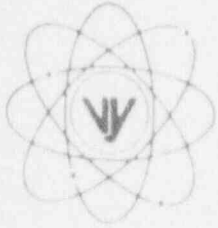


VERMONT YANKEE NUCLEAR POWER CORPORATION



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

April 29, 1994

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 94-005

Dear Sirs:

As defined by 10 CFR 50.73, we are reporting the attached Reportable Occurrence as LER 94-005.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Robert J. Wanczyk
Robert J. Wanczyk
Plant Manager

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

JE221

NRC Form 366 U.S. NUCLEAR REGULATORY COMMISSION (6-89)										APPROVED OMS NO. 3150-0104 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-350), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20603.																									
FACILITY NAME (1) VERMONT YANKEE NUCLEAR POWER STATION										DOCKET NO. (2) 0 5 0 0 0 2 7 1					PAGE (3) 0 1 OF 0 4																				
TITLE (4) SERVICE WATER SYSTEM CONFIGURATION OUTSIDE OF DESIGN BASES																																			
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)																					
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OPERATING MODE (9)		N		THIS REPORT IS SUBMITTED PURSUANT TO REQ'TS OF 10 CFR §: CHECK ONE OR MORE (11)																															
POWER LEVEL (10)		7		5		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)																	
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LICENSEE CONTACT FOR THIS LER (12)																																			
NAME															TELEPHONE NO.																				
ROBERT J. WANCZYK, PLANT MANAGER															AREA CODE 8 0 2 2 5 7 - 7 7 1 1																				
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																			
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SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)					MO DAY YR																				
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO					DATE (15)																				

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

On 2/9/94, the Fire Suppression Water Supply System was declared inoperable. Utilizing plant procedures, operators cross-connected the Station Service Water System with the Fire Suppression Water Supply System by opening valve SW-8. This put the plant outside of its design basis, as it has been determined that it may not have been possible to maintain adequate cooling flow to essential equipment following a design basis Loss of Coolant Accident concurrent with a Safe Shutdown Earthquake, failure of one diesel generator and the assumed failure of the non-seismic fire system.

The root cause of this event is inadequate design of the cross-connection portion of the Service Water System. Inadequate procedures were generated due to the inadequate design.

Valve SW-8 has been tagged shut to prevent re-opening. Procedural changes will be made to prevent recurrence of this event. Additional evaluations will be performed to determine if similar potential configurations exist elsewhere in the Service Water System.

NRC Form 366A U.S. NUCLEAR REGULATORY COMMISSION (6-89)		APPROVED OMS NO. 3150-0104 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-350), 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) TEXT CONTINUATION									
FACILITY NAME (1) VERMONT YANKEE NUCLEAR POWER CORPORATION	DOCKET NO (2) 05000271	LER NUMBER (6) <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">YEAR</th> <th style="width: 15%;">SEQ #</th> <th style="width: 15%;">REV #</th> </tr> <tr> <td>94</td> <td>005</td> <td>00</td> </tr> </table>	YEAR	SEQ #	REV #	94	005	00	PAGE (3) 02 OF 04
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94	005	00							

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

DESCRIPTION OF EVENT

One of the safety objectives of the Station Service Water (SW) System (EIS=BI) is to provide cooling water to systems and equipment required to operate under accident conditions. This objective is met through the following two safety design bases: 1) To provide a source of cooling water, both individually and in conjunction with the Residual Heat Removal (RHR) (EIS=BO) service water pumps, for core standby cooling system equipment required during accident conditions and 2) To supply a source of cooling water for the station standby diesel generators (EIS=EK). The Station SW System is a dual header system using two parallel headers to supply both the turbine and reactor auxiliary equipment. Each SW header supplies cooling water to a reactor building closed cooling water heat exchanger, RHR-core spray room ventilation coolers, a diesel-generator cooler, and a set of RHR SW pumps which supply water to the RHR heat exchangers. Cross-ties are provided between the Fire Protection System (EIS=KP) and the station SW system.

Technical Specification 3.5.D.1 requires both Station SW Subsystem loops to be operable whenever irradiated fuel is in the reactor vessel and reactor coolant temperature is greater than 212 degrees F. Reactor operation is allowed for 7 days with both Station SW Subsystems inoperable, provided that during such 7 days all other active components of the Alternate Cooling Tower Subsystem (EIS=BI) are operable.

The Fire Protection System is designed to provide fire protection for the station through the use of water, carbon dioxide, dry chemicals, foam, and detection and alarm systems. Water for the fire protection system is provided by two pumps, one electric motor-driven and one diesel-driven.

The Fire Protection System is not seismically designed except for small portions which are considered to be part of the structural boundary for the Station SW System. The Station SW System is designed such that those portions which are not seismically designed are capable of being isolated. With SW and Fire Protection Systems cross-connected by opening the SW-8 valve, failure of the fire protection piping would result in loss of service water through a 12" break in non-seismic piping. SW-8 may not be isolable in a period of time commensurate with ensuring diesel generator operability.

At 2105 on 2/9/94 while ascending in power (~75%), the electric fire pump started and then tripped. The diesel fire pump, which had been declared inoperable due to cold weather starting difficulties, also failed to start. The Fire Suppression Water Supply System was declared inoperable per Technical Specifications Section 3.13.B.3 at 2105. With this system inoperable it is necessary to establish a backup fire suppression water system within 24 hours. Towards this end, the SW-8 valve was opened to cross-connect the SW system with the Fire Suppression Water Supply System per procedures OP2181 and OP2186 from 0025 until 1558 on 2/10/94. Review of the SW design basis has determined that opening this valve caused the plant to be outside of its design basis. The review has determined that it would not be possible to isolate the SW-8 valve in a short enough time period to ensure an adequate supply of cooling water to the standby emergency diesel generators. This is of particular importance for the accident scenario consisting of a Loss of Coolant Accident (LOCA) concurrent with a Safe Shutdown Earthquake (SSE) and failure of one of the two diesel generators to start.

The potential for this condition has existed since original plant startup.

CAUSE OF EVENT

The root cause of this event is inadequate design of the cross-connection portion of the Service Water System. Inadequate procedures were generated due to the inadequate design. The SW-8 valve is normally closed and is only opened in accordance with plant procedures. The existing procedures failed to provide instructions for compensatory actions and the potential hazards of opening SW-8.

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ANALYSIS OF EVENT

When both fire pumps were declared inoperable at the same time on 2/9/94, the Shift Supervisor appropriately declared the Fire System inoperable. The Shift Supervisor notified the Operations Manager at 2115 that the Fire System was inoperable and they determined that a backup fire suppression water supply could be established per Technical Specifications 3.13.B.3.a by opening the SW-8 valve to cross-tie the SW system as required. The Shift Supervisor indicated that SW-8 was not opened at this time as it was recognized that this could potentially lead to a non-seismic SW branch line being unisolable during an SSE.

Shift turnover occurred at 0000 on 2/10. The new Shift Supervisor opened the SW-8 valve at 0025 per procedures OP2181 and OP2186. No explicit direction had been provided prohibiting opening this valve and the new shift was concerned about having the Fire Suppression Water Supply System inoperable. At 1558 on 2/10, the electric fire pump was started for testing and SW-8 was closed. Additional operability testing was performed at 1626. This led to declaration of operability for the electric fire pump at 1642 on 2/10. Therefore, the amount of time that the fire suppression water supply system was inoperable was less than 24 hours.

The event occurred on 2/10/94. On 3/30/94, a Potential Reportable Occurrence was issued when it was recognized by the plant that the SW design bases may not have been complied with. There was a delay between the date that the event occurred and the date that the event was recognized as being potentially reportable due to mis-communication and an assumption that operator action could have been taken to isolate the valve in an acceptable time frame.

As a mitigating circumstance, at the time of the event the Alternate Cooling Tower System was available. Per Technical Specification 3.5.D.1, reactor operation is allowed for 7 days after both SW subsystems are declared inoperable provided all active components of the alternate Cooling Tower Subsystem are operable.

The likelihood of the plant experiencing an SSE concurrent with a LOCA and failure of one diesel generator is small, particularly for the 16 hour period for which SW-8 was open. However, this condition did place the plant outside of its design basis and had the potential for not adequately providing essential cooling water.

CORRECTIVE ACTIONS

Short Term Corrective Actions -

Valve SW-8 has been administratively tagged closed since 3/24/94 to prevent operation of the valve. This will ensure that the valve is not opened unless appropriate compensatory actions are taken, i.e. an operator standing by in the area to ensure that this valve could be closed within an acceptable time frame.

Long Term Corrective Actions -

- 1) A design basis review of the SW system is being performed to re-establish the design bases for the SW system. It is expected that this will be completed by 12/31/94.
- 2) Reviews will also be performed to identify if any other procedural inadequacies are present which could configure the SW system outside its design bases. These reviews are expected to be completed in conjunction with Item 1.
- 3) Evaluations are ongoing to identify alternative backup fire suppression water supplies which will not impact SW system operability. It is expected that these evaluations will be completed by 8/1/94.

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ADDITIONAL INFORMATION

Modifications have since been made to the diesel fire pump to provide more reliable starting capabilities in cold weather.

This event was not previously identified or reported in any other LER.