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Ted C. Feigenbaum
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February 8, 1993

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Reference: Facility Operating License No. NPF-86, Docket No. 50-443

Subject: Licensee Event Report (LER) 93-02-00: "Potential Premature Opening of CBS
Sump Isolation Valves"

Gentlemen:

Enclosed please find Licensee Event Report (LER) No. 93-02-00 for Seabrook Station. This submittal documents an event which occurred on January 7, 1993. This event is being reported pursuant to 10CFR50.73(a)(2)(ii) and 10CFR50.72(a)(2)(v). This event was previously reported by North Atlantic as a non-emergency four hour report, pursuant to 10CFR50.72(b)(2)(iii), on January 8, 1993.

Should you require further information regarding this matter, please contact Mr. James M. Peschel, Regulatory Compliance Manager at (603) 474-9521 extension 3772.

Very truly yours,


Ted C. Feigenbaum

TCF:MDO/act

Enclosures: NRC Forms 366/366A

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cc: Mr. Thomas T. Martin
Regional Administrator
United States Nuclear Regulatory Commission
Region I
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Mr. Albert W. De Agazio, Sr. Project Manager
Project Directorate I-3
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LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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.

FACILITY NAME (1)
Seabrook StationDOCKET NUMBER (2)
05000443PAGE (3)
1 OF 4TITLE (4)
Potential Premature Opening of CBS Sump Isolation Valves

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
01	07	93	93	--002 --	00	02	05	93	FACILITY NAME	DOCKET NUMBER
										05000
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more)							
POWER LEVEL (10)	100	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
		20.405(a)(1)(i)		50.36(c)(1)		X 50.73(a)(2)(v)		73.71(c)	
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)		(Specify in	
		20.405(a)(1)(iv)	X	50.73(a)(2)(ii)		50.73(a)(2)(viii)		Abstract below	
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		and in Text,	
								NRC Form 366A)	

LICENSEE CONTACT FOR THIS LER (12)

NAME
Mr. James M. Peschel, Regulatory Compliance ManagerTELEPHONE NUMBER (Include Area Code)
(603)474-9521 ext. 3772

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X (If yes, complete EXPECTED SUBMISSION DATE).			5	10	93

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

On January 7, 1993, North Atlantic Operations personnel questioned whether performance of surveillance testing on the Refueling Water Storage Tank (RWST) [BP] level instrumentation, which tripped two level channels in Mode 1, was consistent with Technical Specifications. Evaluation has determined that the RWST level instruments were inoperable during performance of the surveillance testing. In addition, it has been determined that if a Safety Injection (SI) [JE] signal had occurred while the RWST level low-low bistables were tripped during surveillance testing, the Containment Building Spray (CBS) [BE] recirculation sump isolation valves would open earlier than previously analyzed. At that time it was postulated that the premature opening of the valves during a steam line break could potentially cause air binding of the CBS and Residual Heat Removal (RHR) [BP] pumps. Therefore, the event was reported to the NRC on January 8, 1993 pursuant to 10CFR50.72(b)(2)(iii).

The potential for the pumps to air bind is still being evaluated and will be provided to the NRC in a follow up report. Engineering evaluation has determined that a large loss of coolant accident (LOCA) occurring while two RWST level low-low bistables were in the tripped condition could have resulted in containment temperatures and pressures, and peak cladding temperatures which may not have been bounded by the current analyses.

The root cause of the event is failure to adequately recognize potential system interactions during abnormal configurations occurring during surveillance testing.

Corrective action was to revise the affected procedures to eliminate placing two RWST level channels in the tripped condition. In addition, North Atlantic will review surveillance procedures which provide a partial actuation of an ESF system to determine any potential safety implications. This event will also be reviewed and discussed by the operating crews and other select North Atlantic personnel.

There were no adverse safety consequences as a result of this event.

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TEXT CONTINUATION

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

On January 7, 1993, North Atlantic Operations personnel questioned whether performance of surveillance testing on the Refueling Water Storage Tank (RWST) [BP] level instrumentation, which tripped two level channels in Mode 1, was consistent with Technical Specifications. Evaluation has determined that the RWST level instruments were inoperable during performance of the surveillance testing. In addition, it was determined that if a Safety Injection (SI) [JE] signal had occurred while the RWST level low-low bistables were tripped during surveillance testing, the Containment Building Spray (CBS) [BF] recirculation sump isolation valves would open earlier than previously analyzed. It was postulated that the premature opening of the valves during a steam line break could potentially cause air binding of the CBS and Residual Heat Removal (RHR) [BP] pumps. Therefore, the event was reported to the NRC on January 8, 1993 pursuant to 10CFR50.72(b)(2)(iii). This event is now being reported pursuant to 10CFR50.73(a)(2)(i), (ii), and (v).

Background Information

At Seabrook Station, the Emergency Core Cooling System (ECCS) takes a suction from either the RWST or the CBS sump. The RWST is utilized as the borated water supply during the injection phase of an accident. When the supply of borated water in the RWST has been injected a transfer to the CBS sump is initiated. The transfer is accomplished with both automatic and manual actions.

The RWST level instrumentation has four loops which provide an input into the two out of four logic required to generate a RWST level low-low signal. When actuated, this signal in combination with an SI signal will automatically open the Train A and B CBS sump isolation valves.

Technical Specification Table 4.3-2 specifies that a Channel Calibration be performed on the RWST level low-low coincident with a SI logic at least once per eighteen months. This surveillance also verifies that when two out of four RWST level channels are at their low-low level setpoint that a RWST level low-low signal is generated. As previously stated, this signal in combination with an SI signal will automatically open both CBS sump isolation valves.

Event Description

On January 7, 1993, with the reactor at 100% power, a Channel Calibration was performed on the RWST level circuitry. While performing Surveillance Procedure IX1622.231, "L-930 Refueling Water Storage Tank Level Calibration", the Unit Shift Supervisor questioned the presence of the RWST level low-low alarm in Mode 1. This indicated that two RWST level channels were in a tripped condition. Instrumentation and Control Department supervision were contacted and the RWST level transmitters were returned to service from the tripped condition. It was later determined that even though the RWST level instruments were in their required safeguards condition the level channels were inoperable because they would permit the CBS sump suction valves to open at a level other than the RWST low-low level setpoint.

During a preliminary evaluation of the condition it was postulated that if an SI actuation due to a steam line break occurred simultaneously with two out of four RWST level channels being tripped that the Train A and Train B CBS sump isolation valves would automatically open with the potential to air bind the CBS and RHR pumps. This was determined to be a condition which alone may have prevented the fulfillment of the safety

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

function of structures or systems that are needed to remove residual heat and to mitigate the consequences of an accident. Therefore, a non-emergency four hour report was made to the NRC pursuant to 10CFR50.72(b)(2)(iii).

The potential to air bind the pumps is still being evaluated. The results of the evaluation will be provided to the NRC in a follow up report.

Engineering evaluation has determined that approximately eight minutes into a postulated large LOCA occurring with two RWST level channels tripped, the pressure from the CBS sump boosted by containment pressure would exceed the pressure from the RWST. This would result in the CBS pumps taking suction from the CBS sump prior to the normal time for transfer to the recirculation mode of emergency core cooling. The early suction from the CBS sump would result in an elevated containment spray temperature early in the accident sequence and reduced spray effectiveness for pressure control and heat removal. This could have resulted in containment temperatures and pressures, and peak cladding temperatures which may not have been bounded by the current analyses.

In addition, the premature transfer to the CBS sump would also result in the RHR pumps taking suction from the CBS sump earlier than analyzed. This would increase the temperature of the low head injection fluid. The consequences of the increase fluid temperature is a change to the reactor vessel reflood rate and a decrease of the decay heat removal effectiveness. The ultimate effect of the increased injection fluid temperature could be an increase in peak clad temperature.

Safety Consequences

There were no adverse safety consequences as a result of the event. Potential safety implications will be addressed in a follow up report which is scheduled to be submitted by May 10, 1993.

Root Cause

The root cause of the event is failure to adequately recognize potential system interactions resulting from an abnormal configuration during surveillance testing. The event represents a situation where the consequences of placing individual components in their safeguards configuration were not adequately reviewed in terms of the integrated system performance under postulated accident conditions.

Corrective Action

1. Station Procedures will be revised to eliminate performance of the two out of four RWST channels low-low logic testing in Modes 1-4. The logic testing will be performed during surveillance testing in Modes 5 and 6. The procedures are scheduled to be revised by February 26, 1993.
2. North Atlantic will review surveillance procedures which provide a partial ESF actuation, similar to IX1622.231, to determine if any similar potential safety implications exist. The review will include partial ESF actuations and integrated system operation under normal and accident conditions. The review is scheduled to be completed by May 28, 1993.

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3. North Atlantic Operations management will review this event, to include the placement of components in their safeguards configuration, with the operating crews. This review is scheduled to be completed by February 28, 1993.
4. Select personnel from Licensing, Operations, Technical Support, and Engineering will participate in a Station Operating Experience Review seminar. The seminar will discuss this event and the placement of components in their safeguards configuration. This seminar is scheduled to be completed by April 30, 1993.

Previous Occurrences

This is the first event of this type at Seabrook Station.

At the time of the event the plant was in Mode 1 at 100% power.

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