

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Millstone Nuclear Power Station Unit 3										DOCKET NUMBER (2) 0 5 0 0 0 4 2 3				PAGE (3) 1 OF 0 4										
TITLE (4) Failure to Adequately Determine and Measure Response Times																								
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 NAMES				DOCKET NUMBER(S)											
0	3	2	9	8	7	8	7	0	1	7	0	0	0	4	2	8	8	7	0	5	0	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																						
5		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)										
POWER LEVEL (10)		0 0 0				50.36(c)(1)				X 50.73(a)(2)(v)				73.71(c)										
		20.405(a)(1)(i)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)										
		20.405(a)(1)(ii)				X 50.73(a)(2)(i)				50.73(a)(2)(viii)(A)														
		20.405(a)(1)(iii)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)														
		20.405(a)(1)(iv)				50.73(a)(2)(iii)				50.73(a)(2)(ix)														
		20.405(a)(1)(v)																						
LICENSEE CONTACT FOR THIS LER (12)																								
NAME David T. McDaniel, Reactor Engineer										TELEPHONE NUMBER AREA CODE 2 0 3 4 4 7 - 1 7 9 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC														
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR								
YES (If yes, complete EXPECTED SUBMISSION DATE)												X NO												

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

On March 29, 1987 with the plant in COLD SHUTDOWN, Mode 5 (Reactor Coolant System ≤200 F, Reactor Subcritical) while performing a review of components in the response time testing program, the interlock between the Refueling Water Storage Tank (RWST) to Charging pump suction and Volume Control Tank (VCT) to Charging pump suction valves was examined. This interlock was not properly accounted for in the response time testing program. A review of the Technical Specification bases, and FSAR chapter 15 analysis determined that the valve interlock may not have been accounted for in the accident analysis. Discussions with the NSSS vendor, Westinghouse, confirmed that the current Technical Specification response time for Low Steamline Pressure, and the Steamline break analysis did not properly account for the valve interlock on the VCT/RWST outlet valves. On April 3, 1987 the NRC was notified of this event per 10CFR50.72(B)(2)(iii)D. The NRC subsequently granted a waiver of compliance on Technical Specifications. On April 6, 1987 a request for an emergency Technical Specification change was submitted to the NRC. The change was granted on April 9, 1987.

At no time was there any danger to the health and safety of the public, and at no time were the conclusions of the FSAR changed.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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Millstone Nuclear Power Station Unit 3	05000423	87	017	00	02	OF	04

TICKET (If more space is required, use additional NRC Form 388A's) (17)

I. Description of Event

On March 29, 1987 with the plant in COLD SHUTDOWN, Mode 5 (Reactor Coolant System ≤ 200 F, Reactor Subcritical) while performing response time testing per Technical Specification 4.3.2.2 it was determined that several components did not meet their Emergency Safeguards Features Actuation System (ESFAS) response times. On March 30 it was determined in a further review of the problem that many of the valves which did not meet the Technical Specification required response times were improperly added to the response time testing procedure in a revision of the procedure. As a result a review of components in the response time testing program was performed. During this review the interlock between the Refueling Water Storage Tank (RWST) to Charging pump and Volume Control Tank (VCT) to Charging pump suction valves was examined. It was determined that this interlock was not properly accounted for in the Response Time Testing Program. The charging pumps can take suction from one of two sources; the VCT, or the RWST. During normal operation the charging pumps supply water from the VCT as part of the Chemical and Volume Control System (CVCS) to the RCS for Reactor Coolant Pump (RCP) seal injection and return of letdown to the RCS. On a Safety Injection (SI) the two parallel valves in the RWST to charging pump suction line open. Once the RWST suction valves are open, a contact is made up which allows the two VCT outlet valves to close. This entire process takes about 22 seconds without a diesel generator start, and 32 seconds with a diesel generator start. The SI ECCS response time allowed for this in Technical Specification Table 3.3-5 item 4a Low Steamline Pressure is 12 seconds without a diesel generator start (signal generation plus valve stroke/pump start time) and 22 seconds with a diesel generator start (signal generation plus diesel start plus valve stroke/pump start times). The interlock on the charging pump suction valves exists to protect the charging pumps from running with the suction isolated. On an SI to protect against a Loss of Coolant Accident the closing of the VCT to charging pump suction valves within the Technical Specification response time limits is not required as the response time is a time to support delivery of cooling water to the core. As long as the charging pump can deliver water to the RCS, regardless of the water source, the assumptions of the accident analysis are met. For long term core cooling and shutdown considerations the VCT to charging pump suction valves must close. The closing of these valves is demonstrated per Technical Specification 4.8.1.1.2.f.6.B.

On an SI to protect against a Main Steamline break the limiting aspect of the response time is borated water delivery to the core, versus delivery of cooling water. As the suction head to the charging pumps from the VCT can be greater than the suction head from RWST there is a possibility that the charging pumps would not start to pump borated water from the RWST until the suction valves from the VCT are closed. As such the sequential operation of the RWST to charging pumps suction valves opening and the VCT to charging pumps closing should be response time tested. As the total time for both sets of valves to cycle is approximately 22 seconds without a diesel start and 32 seconds with a diesel start it was apparent that the response time limitations of Technical Specifications could not be met. On April 2, 1987, the Nuclear Steam Supply

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U.S. NUCLEAR REGULATORY COMMISSION

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

I. Description of Event (Continued)

System (NSSS) vendor, Westinghouse, was contacted and asked about the assumptions used in the Main Steamline break analysis with respect to the delivery of borated water to the core and the valve movement interlocks between the VCT and the RWST suction isolation valves. Westinghouse's review of the problem determined that, although the sequential operation of the RWST/VCT charging pump suction isolation valves was required per standard Westinghouse design, the Steamline Break Safety analysis assumed simultaneous operation of the valves. Westinghouse subsequently performed a sensitivity study on the Steamline Break analysis which showed that an increase in the Steamline Low Pressure SI ECCS response time could be done without changing the conclusions of the FSAR analysis. On April 3, 1987, Westinghouse responded with a recommendation that the response times in Technical Specification Table 3.3-5 item 4a be changed from 12 seconds without diesel generator start, and 22 seconds with diesel generator start, to 27 seconds without diesel generator start, and 37 seconds with diesel generator start.

II. Root Cause

The root cause of this event was inadequate procedures. The response time testing procedure which was originally performed in October and November of 1985 did not assume the sequential operation of the RWST and VCT to charging pump suction isolation valves.

In addition, the NSSS vendor failed to adequately account for the valve interlock that existed on the RWST and VCT isolation valves per the NSSS design when the Steamline Break analysis was performed. As such the response time numbers supplied to Northeast Utilities for inclusion into the Technical Specifications did not properly reflect this valve interlock.

III. Analysis of Event

The consequences of this event were that should an SI occur to mitigate the consequences of a Steamline Break the delivery of borated water to the core could have occurred 10 seconds later than assumed in the original FSAR accident analysis. Based upon sensitivity studies performed by the NSSS vendor it was determined that the delay in delivery of boron to the RCS has little effect on the mass/energy release inside or outside containment and that the Departure from Nucleate Boiling (DNB) design basis is still met. As such the conclusions presented in the FSAR remain valid. This event was originally reported to the NRC as a four hour report per Millstone administrative procedures as an item reportable per 10CFR50.73(a)(2)(i)(B) on March 29, 1987. On April 3, 1987 the event was reclassified and a second notification was made to the NRC per 10CFR50.72(B)(2)(iii)(D). This event is being reported per 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(2)(v)(D).

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IV. Corrective Action

1. As the corrective action a review was made to the response time test procedures to verify that all interlocks were properly being accounted for in the procedure, and that all equipment which should be accounted for was included in the procedure.
2. On April 3 a request for a waiver of compliance on Technical Specification 4.3.2.2 Table 3.3-5 item 4a was submitted to the NRC. On April 3, 1987 a waiver of compliance on Technical Specification 4.3.2.2 Table 3.3-5 item 4a was granted by the NRC until Midnight April 7, 1987.
3. On April 6, 1987 an emergency Technical Specification Change Request (Docket No. 50-423 B12493, E. J. Mroczka to U.S. NRC) was submitted to the NRC to increase the Response Time on the Low Steamline Pressure SI ECCS response time, Technical Specification Table 3.3-5 item 4a from 12/22 seconds to 27/37 seconds along with appropriate notes and modifications to the bases. On April 9, 1987 the change was approved by the NRC.
4. On April 13, 1987 Westinghouse issued a generic letter to all plants which could potentially be affected by this same problem.

V. Additional Information

There have been no previous events of this type.

ELIS CodesSystems

Reactor Coolant System - AB
High Pressure Safety Injection System - BQ
Chemical and Volume Control - CB
Engineered Safeguards Actuation System - JE

Components

Valve Control, Level - LCV
Charging Pump - P
Tank - TK

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

P.O. BOX 270
HARTFORD, CONNECTICUT 06101
(203) 666-6911

April 28, 1987

MP-10315

Re: 10CFR50.73(a)(2)(i)(B)
10CFR50.73(a)(2)(v)(D)

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

Reference: Facility Operating License No. NPF-49
Docket No. 50-423
Licensee Event Report 50-423/87-017-00

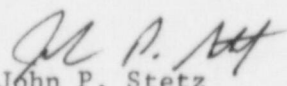
Gentlemen:

This letter forwards Licensee Event Report 87-017-00 which is required to be submitted within thirty days pursuant to 10CFR50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's Technical Specifications and 10CFR50.73(a)(2)(v)(D), any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

Yours truly,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station


BY: John P. Stetz
Unit 1 Superintendent
Millstone Nuclear Power Station

SES/DTM:mo

Attachment: LER 87-017-00

cc: Dr. T. E. Murley, Region I
J. T. Shedlosky, Senior Resident Inspector

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