



Northeast
Nuclear Energy

Rope Ferry Rd. (Route 156), Waterford, CT 06385

Millstone Nuclear Power Station
Northeast Nuclear Energy Company
P.O. Box 128
Waterford, CT 06385-0128
(203) 444-4300
Fax (203) 444-4277

The Northeast Utilities System
Donald B. Miller Jr.,
Senior Vice President - Millstone

Re: 10CFR50.73

June 9, 1994
MP-94-395

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

Reference: Facility Operating License No. DPR-21
Docket No. 50-245
Licensee Event Report 94-019-00

Gentlemen:

This letter forwards Licensee Event Report 94-019-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(v).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Donald B. Miller, Jr.
Senior Vice President - Millstone Station

BY: Fred R. Dacimo
Director - Millstone Unit 3

DBM/WL:dlr

Attachment: LER 94-019-00

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3
J. W. Andersen, NRC Acting Project Manager, Millstone Unit No. 1

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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 (MNB 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) Millstone Nuclear Power Station Unit 1	DOCKET NUMBER (2) 05000245	PAGE (3) 1 OF 3
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TITLE (4)
1-MS-5 & 6 and 1-FW-4 A & B Unable to Perform Design Function pre-RFO-14

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
05	10	94	94	019	00	06	09	94		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) R	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)										
POWER LEVEL (10) 000	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)(vi)			OTHER	
	20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(vii)(A)			(Specify in Abstract below and in Text, NRC Form 366A)	
	20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(vii)(B)				
20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Drexel N. Harris, Site Licensing	TELEPHONE NUMBER (Include Area Code) (203) 437-5903
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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
B	DB	ISV	L200	N					
B	BJ	INV	L200	N					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE)		NO		10	01	94

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

On May 10, 1994, at approximately 1500 hours with the plant in Shutdown Mode (170 degrees F and 0 PSIG), an engineering analysis determined Main Steam Line Drain Valves 1-MS-5 & 6 and Feedwater Coolant Injection Valves 1-FW-4A & B may have been unable to perform their safety function.

This conclusion was reached when as-found valve factors derived for valves 1-MS-5, 1-MS-6, 1-FW-4A and 1-FW-4B were found to meet their original design requirements, however EPRI and other industry data suggest that a higher valve factor (>.4) is more appropriate to ensure operability. These derived valve factors indicate the Motor Operated Valves (MOVs) would not have had sufficient thrust margin to provide reasonable assurance 1-MS-5 & 1-MS-6 would performed their intended safety function to close, or 1-FW-4A & 1-FW-4B to open.

During the Cycle 14 refueling outage, modifications were performed to 1-MS-5 and 1-MS-6 to increase their closing thrust capability to ensure the valves will isolate, based upon the most current industry data. Operating procedure changes were made to leave 1-FW-4A and 1-FW-4B in the open position at all times the Feedwater Coolant Injection System is required to be operable.

No safety system actuations were required and no safety consequences resulted from this event.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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 (MNB 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) Millstone Nuclear Power Station Unit 1	DOCKET NUMBER (2) 05000245	LER NUMBER (6)			PAGE (3) 02 OF 03
		YEAR 94	SEQUENTIAL NUMBER - 019 -	REVISION NUMBER 00	

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

I. Description of Event

On May 10, 1994, at approximately 1500 hours with the plant in Shutdown Mode (170 degrees F and 0 PSIG), an engineering analysis determined Main Steam Line Drain Valves 1-MS-5 & 6 and Feedwater Coolant Injection Valves 1-FW-4A & B may have been unable to perform their safety function.

This conclusion was reached when as-found valve factors derived for valves 1-MS-5, 1-MS-6, 1-FW-4A and 1-FW-4B were found to meet their original design requirements, however EPRI and other industry data suggest that a higher valve factor (>.4) is more appropriate to ensure operability. These derived valve factors indicate the MOV's would not have had sufficient thrust margin to provide reasonable assurance 1-MS-5 & 1-MS-6 would performed their intended safety function to close, or 1-FW-4A & 1-FW-4B to open.

During the Cycle 14 refueling outage, modifications were performed to 1-MS-5 and 1-MS-6 to increase their closing thrust capability to ensure the valves will isolate, based upon the most current industry data. Operating procedure changes were made to leave 1-FW-4A and 1-FW-4B in the open position at all times the Feedwater Coolant Injection System is required to be operable.

II. Cause of Event

The cause of the event was inadequate design. The original design closing thrust requirements for 1-MS-5 & 6 may not have provided sufficient margin to close following a postulated high energy line break outside containment. Similarly, the original design thrust requirements for 1-FW-4A & B may have been insufficient to open the valves to provide Feedwater Coolant Injection (FWCI) System operability.

III. Analysis of Event

This event is reportable pursuant to 10CFR50.73(a)(2)(v), any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

Generic letter 89-10 issued in June 1989 called for demonstrating and maintaining MOV operability. Demonstrating MOV operability requires a review of each MOV's design bases and verifying the capability to overcome a suitable valve factor. The valve factor is a characteristic of a valve for design bases conditions (i.e., DP, flow rate and temperature) used in the determination of thrust required to close or open a valve. In response to this GL, EPRI began the Performance Prediction Program (PPP) in order to provide the utility industry with information/data on what valve factors are appropriate with emphasis on non-testable valves such as "High Energy Line Break" isolation MOVs.

On December 1 & 2, 1993, NNECo received EPRI MOV valve factor data as part of re-issuance of NRC Information Notice 93-88. A screening process was developed to make an initial assessment of all MOV's considered as non-testable in high energy line break conditions. MOV's selected in this survey concluded the valve factors for some MOVs at Millstone Unit 1 were found to meet the original design requirements, however EPRI data suggested a higher valve factor (>.4) is more appropriate to ensure operability. Those valves determined to have a valve factor of (<.4) were declared inoperable and corrective action was taken. Further discussion of this issue is documented in LER 93-025 Revision 0. 1-MS-5 & 6, as well as 1-FW-4A & B, were excluded from this initial screening process, as these MOVs had been identified as dynamically flow testable.

Valves 1-MS-5 and 1-MS-6 are normally closed and are only opened during plant startup. 1-FW-4A & 1-FW-4B are normally opened and are only closed during startup conditions when feedwater to the reactor is provided by the 10% feedwater supply line.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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		YEAR 94	SEQUENTIAL NUMBER - 019 -	REVISION NUMBER 00	

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

The consequences of 1-FW-4A and 1-FW-4B failure to open during an accident would result in the inoperability of FWCI to mitigate the consequences of an accident. However, engineering analysis has determined FWCI need not be credited to mitigate any of the accidents defined in Chapter 15 of the UFSAR. All Chapter 15 accidents, where FWCI has been credited, can be mitigated by the Low Pressure Coolant Injection and Core Spray Systems.

The consequences of 1-MS-5 and 1-MS-6 failing to close during a LOCA inside containment would be the failure to isolate containment. However, integrity of the downstream main steam piping and closure of the turbine stop valves would minimize any containment leakage. Upon postulated failure of the downstream piping (i.e. steam line break outside containment), failure of 1-MS-5 & 1-MS-6 to close would result in the inability to isolate a break outside containment. In this scenario, emergency operating procedures would direct Operations to rapidly depressurize the Reactor Pressure Vessel by use of the safety relief valve/automatic pressure relief system and the Iso-Condenser system. After depressurization, the required closing thrust would be greatly reduced permitted the valves to close.

During RFO 14, a review of 1-MS-5 and 1-MS-6 for flow testing determined flow testing was impractical. These MOVs were then re-classified as non-testable. Dynamic test data obtained during RFO 14 for 1-FW-4A and 1-FW-4B could not be extrapolated to design bases conditions. These valves were also re-defined as not dynamically flow testable.

During RFO 14, a review of past operability of all remaining GL 89-10 non-testable valves, was performed based upon the as-found thrust values. For 1-MS-5 and 1-MS-6, a review of the as-found valve factors, based on the as-found torque switch settings, determined the MOVs were unable to overcome a valve factor of >.4 during past operating cycles. For 1-FW-4A and 1-FW-4B, analytical analysis was performed and determined a valve factor of .57 was appropriate. Based upon this analysis, the as-found thrust capability would indicate these MOVs were unable to overcome a valve factor of .57 during the past operating cycles.

IV. Corrective Action

1-MS-5 & 1-MS-6

The control wiring for 1-MS-5 & 6 were modified to utilize a close torque switch bypass control scheme to ensure sufficient margin is available to close under design basis conditions. As left VOTES testing demonstrated the MOVs are set properly.

1-FW-4A & B

Operating procedures were revised to ensure 1-FW-4A and 1-FW-4B are left open at all times when the FWCI system is required to be operable. A review of several design changes, to reduce the valve factor or increase the MOVs thrust capability, is on-going. Design changes will be implemented if found suitable.

An engineering review for past operability of all GL 89-10 MOV's prior to RFO 14, is on-going. This analysis is expected to be completed by 9/1/94.

V. Additional Information

- a) 1-MS-5 and 1-MS-6 are carbon steel 4" Velan Gate Valves with Limitorque SMB-00 operators.
- b) 1-FW-4A and 1-FW-4B are 14" carbon steel Walworth flex wedge gate valves with Limitorque SMB-3 operators.
- c) Previous similar events:
LER 93-025, Rev. 0