Northeast
Utilities System

Millstone Offices • Rope Ferry Rd., Waterford, CT

P.O. Box 128
Waterford, CT 06385-0128
(203) 447-1791

October 21, 1996

Docket No. 50-245
B15945

Re: 10CFR50.73(a)(2)(i)

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

This letter forwards Licensee Event Report (LER) 96-052-00, documenting an event that occurred at Millstone Nuclear Power Station, Unit No. 1 on September 20, 1996. This LER is submitted pursuant to 10CFR50.73(a)(2)(i).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

T. L. Harpster
Director - Nuclear Licensing

Attachment: LER 96-052-00

cc: H. J. Miller, Region I Administrator
T. A. Easlick, Senior Resident Inspector, Millstone Unit No. 1
J. W. Andersen, NRC Project Manager, Millstone Unit No. 1

IE22

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 1	05000245	1 of 4

TITLE (4)

1-IC-2 and 1-CU-3 Valves Unable to Close Within Stroke Time Limits During Prior Operating Cycles

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	20	96	96	052	00	10	21	96	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		20.2201(b)	20.2203(a)(2)(v)	[X] 50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	000	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Robert W. Walpole, MP1 Nuclear Licensing Manager	(860)440-2191

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)		EXPECTED SUBMISSION	MONTH	DAY	YEAR
[ ] YES (If yes, complete EXPECTED SUBMISSION DATE).	[X] NO				

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

On September 20, 1996, with the plant in COLD SHUTDOWN, it was discovered that Motor Operated Valves (MOVs) may not have been able to stroke closed within the stroke times that were specified in Millstone Unit No. 1 Technical Specifications during previous operating cycles. This condition was discovered during an engineering evaluation performed to address the recommendation of Information Notice (IN) 96-48 and its applicability to Generic Letter (GL) 89-10 MOV's at Millstone Unit No. 1. On September 20, 1996, this evaluation concluded that all GL 89-10 MOV's were currently operable and capable of performing their intended function. However, the past operabilities were to be determined. On October 16, 1996, it was determined that, during Cycle 15, the predicted stroke time for Outboard Isolation Condenser isolation valve 1-IC-2 would have been 25 seconds when applying the IN 96-48 recommendations to the MOV calculations for postulated worst case conditions. On October 17, 1996, it was also determined that the Cycle 15 predicted stroke time for Reactor Water Cleanup Auxiliary Pump Isolation Valve 1-CU-3 would have been 22.5 seconds. The previous Technical Specification stroke time limits were 24.0 and 20.0 seconds respectively for IC-2 and CU-3. Modification to IC-2 and installation of break detection system (relative to CU-3) have been performed subsequently that ensures that these valves would close within the current prescribed TRM stroke time limits of 26 and 27 seconds for IC-2 and CU-3 respectively. There were no consequences as a result of the event. This event relates to a historical violation of the Technical Specifications and is reportable pursuant to 10CFR50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's Technical Specifications.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)					PAGE (3)
		YEAR	SEQUENTIAL NUMBER			REVISION NUMBER	
Millstone Nuclear Power Station Unit 1	05000245	96	--	052	--	00	2 of 4

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

I. Description of Event

On September 20, 1996, with the plant in COLD SHUTDOWN, it was discovered that Motor Operated Valves (MOVs) may not have been able to stroke closed within the stroke times that were specified in Millstone Unit No. 1 Technical Specifications during previous operating cycles. The stroke time requirement has since been relocated to the Technical Requirements Manual (TRM).

This condition was discovered during an engineering evaluation performed to address the recommendation of Information Notice (IN) 96-48, "Motor Operated Valve Performance Issues," dated August 21, 1996, and its applicability to Generic Letter (GL) 89-10 MOV's at Millstone Unit No. 1. On September 20, 1996, this evaluation concluded that all GL 89-10 MOV's were currently operable and capable of performing their intended function. However, the past operabilities were to be determined. On October 15, 1996, it was discovered that during operating Cycle 15, Outboard Isolation Condenser (IC) isolation valve 1-IC-2 may have exceeded its specified stroke time. Subsequently, on October 16, 1996, it was also discovered that Reactor Water Cleanup (RWCU) Auxiliary Pump Isolation Valve 1-CU-3 may have exceed its specified stroke time during Cycle 15. On October 16, 1996, it was determined that, during Cycle 15, the predicted stroke time for IC-2 would have been 25 seconds when applying the IN 96-48 recommendations to the MOV calculations for postulated worst case conditions. On October 17, 1996, it was also determined that the Cycle 15 predicted stroke time for CU-3 would have been 22.5 seconds. The previous Technical Specification stroke time limits were 24.0 and 20.0 seconds respectively for IC-2 and CU-3. Modification to IC-2 and installation of break detection system (relative to CU-3) have been performed subsequently that ensures that these valves would close within the currently prescribed TRM stroke times. The current TRM stroke time limit for IC-2 and CU-3 are 26 and 27 seconds, respectively.

II. Cause of Event

The cause for the event was an inadequate historical design margin. The design of IC-2 and CU-3 had incorporated the use of running gear efficiency factors in the stroke time calculations. Incorporating more conservative efficiency factor throughout the stroke resulted in an estimate of stroke times beyond the previous Technical Specification limits.

III. Analysis of Event

This event relates to a historical violation of the Technical Specifications and is reportable pursuant to 10CFR50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's Technical Specifications, since during operating Cycle 15, IC-2 and CU-3 would not have closed within the stroke time prescribed previously in the Technical Specifications. Millstone Unit No. 1 Technical Specification 3.7.D.1 requires that primary containment isolation valves shall be operable during reactor power operating conditions. Prior to January 1995, the stroke time limits for the primary containment isolation valves were in the Technical Specifications. Afterwards, the stroke time limits were incorporated into the TRM, referenced in the plant's Technical Specifications.

Because the stroke time performance of a DC powered MOV is dependent on the load imposed to the motor, Northeast Nuclear Energy Company (NNECO) had developed a calculation, using the published running and pullout efficiency factors, to estimate a DC MOV stroke time under dynamic design basis conditions. Using these efficiencies, the calculations had shown that all DC MOV's at Millstone Unit No. 1 would have been

able to close under design basis conditions within the Technical Specifications stroke time limit during operating Cycle 15.

However, IN 96-48 questioned the use of published vendor supplier data for calculation of MOV thrust requirements. Information provided in IN 96-48 suggested that a motor application factor of 1.0 and established gear efficiency factors used in the MOV thrust calculations may not be conservative. The gear efficiency factor is specific to the actuator's gear ratio. Use of the motor application factor value of 1.0 is common to all MOV motors.

To address the recommendation of IN 96-48, an engineering evaluation was performed to determine what impact there may be on Millstone Unit No. 1's GL 89-10 MOV's. Preliminary calculations indicated that when a more conservative gear efficiency factor was included in the stroke time calculations, all GL 89-10 DC MOV's at Millstone Unit No. 1 were capable of performing their intended function currently. Modification to IC-2 and installation of break detection system (relative to CU-3) have been performed previously that ensures that these valves would close within the currently prescribed TRM stroke times. However, before the modifications, engineering calculations concluded that both IC-2 and CU-3 may not have closed within the prior Technical Specifications stroke time limits.

There were no safety consequences as a result of the event. The consequences of IC-2 closing in 25 seconds during an isolation condenser line break with regard to both Electrical Equipment Qualification (EEQ) profile and offsite dose calculations remain bound by the existing analysis provided in the UFSAR. The consequences of CU-3 closing in 22.5 seconds verses 20 seconds is that more mass and energy released in a case of postulated break in the RWCU line in the reactor building. This would have adversely impacted the offsite dose calculation and EEQ profile of the reactor building. However, the consequences would have remained bounded by the condition discovered and reported in LER 94-007, which dealt with a potential of a significant delay in break isolation.

IV. Corrective Action

Modifications during Refueling Outage 15 have already been performed to ensure that the IC-2 will close within the current prescribed stroke time limit of 26 seconds. With respect to CU-3, installation of the break detection system supported the change to the current TRM stroke time of 27 seconds. Calculations utilizing a more conservative gear efficiency indicate that the MOVs will still be able to perform its design basis function within the TRM prescribed stroke times.

V. Additional Information

Commitments

There are no commitments made within this letter.

Similar Events

LER 93-025	"Reactor Water Clean-Up Valves (1-CU-2 and 1-CU-3) Declared Inoperable"
LER 94-007	"Reactor Water Cleanup Break Isolation on Reactor Low Water Level"
LER 94-025	"Isolation Condenser Containment Isolation Valve Timing Failure"
LER 94-019	"1-MS-5 & 6, 1-FW-4A & B unable to perform design function pre-RFO14"

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)					PAGE (3)
		YEAR	SEQUENTIAL NUMBER			REVISION NUMBER	
Millstone Nuclear Power Station Unit 1	05000245	96	--	052	--	00	4 of 4

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

Manufacturer Data

1-IC-2 is a Crane Chapman 12-inch horizontally mounted solid wedge gate valve with a Limitorque SMB-2, 100 ft. lb. DC motor actuator.

1-CU-3 is a Crane Chapman 8-inch horizontally mounted solid wedge gate valve with a Limitorque SMB-1, 60 ft. lb. DC motor actuator.