

NORTHEAST UTILITIES



The Connecticut Light And Power Company
Western Massachusetts Electric Company
Holyoke Water Power Company
Northeast Utilities Service Company
Northeast Nuclear Energy Company

General Offices-Selden Street, Berlin Connecticut

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February 17, 1994
MP-94-124

DONALD B. MILLER, Jr.
SENIOR VICE PRESIDENT - MILLSTONE

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

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

Reference: Facility Operating License No. DPR-65
Docket No. 50-336
Licensee Event Report 94-001-00

Gentlemen:

This letter forwards Licensee Event Report 94-001-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(v), an event or condition that alone could have prevented the fulfillment of a safety function.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

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

DBM/EF:ljs

Attachment: LER 94-001-00

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2

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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) Millstone Nuclear Power Station Unit 2	DOCKET NUMBER (2) 05000336	PAGE (3) 1 OF 05
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TITLE (4)
Failure of Auxiliary Feed Regulating Valves to Meet Inservice Test Stroke Time

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	18	94	94	001	00	02	17	94		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) 1	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 100	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)
	20.405(a)(1)(f)			50.36(c)(1)			X 50.73(a)(2)(v)			73.71(c)
	20.405(a)(1)(f)			50.36(c)(2)			50.73(a)(2)(vi)			OTHER
	20.405(a)(1)(f)			50.73(a)(2)(f)			50.73(a)(2)(vii)(A)			(Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(f)			50.73(a)(2)(f)			50.73(a)(2)(vii)(B)			
20.405(a)(1)(v)			50.73(a)(2)(f)			50.73(a)(2)(k)				

LICENSEE CONTACT FOR THIS LER (12)

NAME William J. Temple, Site Licensing	TELEPHONE NUMBER (Include Area Code) (203) 437-5904
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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
X	BA	FCV	C635	Yes					

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 15 single-spaced typewritten lines) (16)

On January 18, 1994 at 1518 hours while the plant was operating in Mode 1 at 96% power, as part of an Auxiliary Feedwater (AFW) Pump surveillance, the Control Room operator stroked one of two Auxiliary Feedwater Regulating Valves (AFRVs) in the open direction. The valve failed to open for approximately 16 minutes. Noting the Inservice Test (IST) time requirement for these valves is 60 seconds, the valve was re-stroked and timed twice, resulting in normal operating times. The other AFRV was then stroked and timed twice, resulting in times of 60.3 and 60.4 seconds. Air supply pressure adjustments were made to both valves, and they were successfully retested to IST requirements within two hours and ten minutes after the initial failure.

The root cause of the 16 minute delay could not be immediately determined and is being investigated. However, it is considered to be attributed to debris or moisture in the valve positioner's bleed port. The slightly longer stroke time in the second valve's opening has been attributed to the higher than normal valve actuator air supply pressure. This increased quantity of air required additional time to bleed-off before the valve could open under spring pressure.

Although both valves operated normally after several ISTs, additional corrective action for the initial valve failure will include special valve performance testing by an outside testing vendor, replacement of the positioner bleed-off valve, and a valve internal inspection during the next refuel outage.

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

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

I. Description of Event

On January 18, 1994 at 1518 hours, while the plant was operating in Mode 1, 96% power, the Control Room Operator secured the Auxiliary Feedwater (AFW) pump and cycled one of two Auxiliary Feed Regulating Valves (AFRVs), 2-FW-43A, in the open direction. These actions were taken in accordance with surveillance test (SP 2610A) for one of the motor driven AFW Pumps. The AFRV valve failed to open for approximately 16 minutes. Noting that the In-service Test (IST) time requirement for these valves is 60 seconds, the Operator re-stroked and timed the valve twice, resulting in normal 45 to 46 second stroke times. The other AFRV, 2-FW-43B, was then stroked and timed twice, resulting in 60.3 and 60.4 seconds.

The immediate cause of the 16 minute 2-FW-43A delay in opening could not be positively identified and is the subject of an on-going investigation. It is suspected to be related to the positioner pilot valve.

The immediate cause of 2-FW-43B exceeding the IST stroke time was a higher than normal air supply pressure to the valve actuator. This excess air required additional time to vent off before the valve could open by spring pressure. The additional time was not reflected in the IST acceptance time.

The Operators also noted that under accident conditions the valve utilizes a separate vent path than that tested through the normal IST valve operation. Under normal operation, the valve vents air pressure from the actuator dome through the positioner, whereas under accident conditions, venting is through a solenoid dump valve (see attached sketch). This vent path is not tested by an IST. There were no immediate major operator actions other than to verify the correct IST valve stroke time and to attempt to verify the valves operability under the normal valve operating conditions. There were no automatic or manually initiated safety system responses as a result of this event.

II. Cause of Event

Action was taken immediately to determine the cause of the stroke time exceeding 60 seconds. Both valves were found to have higher than normal air supply pressure on the actuator. The inlet air supply regulators for 2-FW-43A and 2-FW-43B were set at 95 and 100 psig, respectively. Discussions with the valve vendor confirmed that no more than 70 psig should be required to obtain a Class 5 seal against the 1060 psig AFW Pump discharge pressure. This includes 15 psig to overcome the opening spring pressure and 3 psig to overcome packing loading. A search of valve maintenance history revealed that approximately one year ago, the valve inlet air supply pressure was increased to preclude suspected leakage past the valve seat, however, a thorough review was not completed at that time to determine affected documents. As confirmed through the valve vendor, the higher pressure was not a valve operation concern. However, the IST acceptance criterion was not increased to account for the additional valve actuator dome pressure bleed off time required. By 1728 hours both valve's inlet air supply pressures were corrected and both successfully passed the IST re-test. Subsequent review shows that 2-FW-43B should have been considered inoperable for two hours and ten minutes since stroke time had been greater than 60 seconds. The AFW flow path was satisfied during this period.

The root cause for the 2-FW-43B valve exceeding the 60 second IST criterion to open was the unreviewed increase in air supply pressure. The root cause for the initial delay in opening the 2-FW-43A valve remains under investigation, however, information to date indicates an obstruction in the air bleed-off path was occurring during the 16 minutes required to open the valve. The most probable location was the positioner's pilot bleed-off valve. This conclusion was reached based on the fact that, even after the valve began to move, the stroke time was excessive with no apparent valve binding. This leads to the conclusion that the air bleed-off was obstructed.

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III. Analysis of Event

Although neither valve's stroke time initially met IST criteria, the valves were originally considered OPERABLE. This was in part, because the IST was not the surveillance being conducted. AFW Pump surveillance SP 2610A was the ongoing test and contains no time requirement for the valves and therefore no direction pertaining to valve operability. Additionally, the Unit's Technical Specification was reviewed to determine if AFW was available to satisfy the Limiting Condition for Operation (LCO). Since the valves would open as required by the surveillance and no timing was necessary, the valves would provide a flow path to the steam generators for AFW flow. No specific LCO requirements or ACTION STATEMENT exists which address the operability of the AFW flow path. As stated above, it was also noted that the Quarterly IST method of venting was different than the vent path used for accident actuation. Initially, consideration was given to the fact that accident operation is not affected by the failure to meet the venting by positioner time requirements of the IST. Therefore, the valves would remain operable as the AFW flow path.

Based on event investigation, a determination was made that the potential existed for a brief time (less than 20 minutes) that both valves were inoperable due to not meeting IST program requirements. On 1/24/94 the Unit conservatively reported the event under 50.72(b)(2)(iii). A subsequent report was made on 1/27/94 which provided information concerning the determination that the valves would have met their safety function. There were no safety consequences associated with this event since the AFW system would have performed its safety function under accident conditions. During the IST performance air is vented from the valve actuator through a pilot bleed-off valve in the positioner. However, under accident actuation, air is vented through a quick opening solenoid dump valve (refer to sketch). The accident actuation vent path remained unaffected. This event is being conservatively reported under 50.73(a)(2)(v) due to an IST program interpretation.

IV. Corrective Action

Corrective action included resetting the inlet air supply pressure to both valves and performing successful IST surveillances on each. More frequent testing will be performed to gather additional assurance that the 2-FW-43A valve strokes properly.

Since a valve positioner bleed-off obstruction is the suspect method of failure, further investigation will be performed on valve 2-FW-43A. This investigation will include obtaining "as-found" information on positioner performance through special valve performance testing. This test will provide information on opening spring tension, packing loading, and stroke length and set.

Although the valve has operated normally after several ISTs, following this special valve performance testing, the 2-FW-43A positioner bleed-off valve will be replaced and bench inspected for indication of debris. Further corrective action will be taken as indicated by the performance testing results. As a minimum, the 2-FW-43A valve body internals will be inspected during the next refueling outage to verify that proper clearances are satisfied.

Additionally, to effectively demonstrate the functioning of all the safety related design features of the valves, the IST was changed to also include testing utilizing the accident condition vent path. The new test method will be performed as soon as the maintenance schedule permits.

As an action to prevent a recurrence of the air pressure adjustment without a review for documentation affect, I&C training will be notified of this event. Additionally, this PIR will be discussed at an I&C Department meeting.

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Other actions being taken to prevent recurrence include:

- An evaluation of a Technical Specification Change Request to include actions associated with loss of AFW flow path considerations.
- The IST program will be reviewed to determine effective testing of accident safety functions.
- Changes to current surveillance testing procedures are being evaluated to combine individual department surveillance programs with the IST program.

V. Additional Information

Similar LERs - None

EIS Codes

AFW Pumps: BA-P-T147 and BA-P-1075

AFRV: BA-FCV-C17

AFW System: BA

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