

# 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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December 28, 1992  
MP-92-1367

Re. 10CFR50.73

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 90-022-02

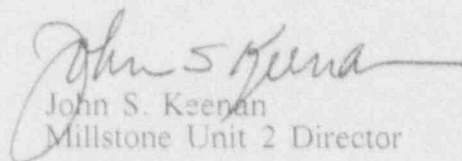
Gentlemen:

This letter forwards update Licensee Event Report 90-022-02.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace  
Vice President - Millstone Station

BY:   
John S. Keenan  
Millstone Unit 2 Director

SES/PB:amc

Attachment: LER 90-022-02

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)

Estimated burden per response to comply with this information collection request: 50.0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, 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) **0500033361** PAGE (3) **1 OF 3**

TITLE (4) **Service Water Headers Cross-Tied**

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		
1	1	1990	90	022	02	1	2	1992	0500033361		
									0500033361		

OPERATING MODE (9) **1** THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)

POWER LEVEL (10) <b>075</b>	20.402(b)	20.402(c)	50.73(a)(2)(iv)	73.71(b)
	20.405(a)(1)(i)	50.36(c)(1)	60.73(a)(2)(v)	73.71(d)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(ix)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
<b>Philipp Baumann, Engineer, Ext. 5211</b>	<b>203 447-1791</b>

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)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15) **052994**

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

On November 15, 1990, at 1330, with the plant in MODE 1 (75% power, 565°F, 2270 psig), Service Water header cross-tie valve, 2-SW-97A, was found open by a plant engineering technician performing a routine intake structure inspection. The control room was notified and an operator manually closed the valve. No emergency operations were performed. No equipment was cycled to its accident position. The cause of the event was the 2-SW-97A valve operator shifting position upon restoration of its instrument air supply, following maintenance on an unrelated intake structure air operated valve. This event is being reported pursuant to the requirements of paragraph 50.73(a)(2)(i), reporting any operation or condition prohibited by the plant's Technical Specifications.

Similar LERs: None.

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 Records and Reports Management Branch (p-530), U.S. Nuclear Regulatory Commission, Washington, DC 20555, 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)  0   5   0   0   0   3   3   6   9   0   -	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0   2   2	0   2	0   2	0   2	OF	0   3

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

I. Description of Event

On November 15, 1990, at 1330, with the plant in MODE 1 (75% power, 565°F, 2270 psig), Service Water header cross-tie valve, 2-SW-97A was found open by a plant engineering technician while performing a routine intake structure inspection. The control room was notified and an operator manually closed the valve. At the time, the plant was returning to service following refueling.

The Service Water (SW) system is configured with three supply pumps, the 'A', 'B', and 'C' and two supply headers, the A and B. The 'B' pump is the swing pump and can be aligned to either the A or B SW header. Cross-tie valves are situated between the 'A' and 'B' pumps (2-SW-97A) and between the 'B' and 'C' pumps (2-SW-97B) to facilitate the swing feature of the 'B' pump. Normal system operation has the 'A' pump on the A header and the 'C' pump on the B header with one of the cross-tie valves closed and the 'B' pump out of service.

At the time of the event, the plant was returning to service after a refueling outage. During the outage both of the cross-tie valves were removed from the piping system. The cross-tie valve in question, 2-SW-97A, was removed from the system, for the duration of the A and B header outages, so that one header at a time could be removed from service for repairs without affecting the seismic integrity of the remaining operable header. The other cross-tie valve, 2-SW-97B, was also removed from the system, for the duration of the B header outage, while the adjacent piping was replaced. Valve 2-SA-97B was re-installed during the B header outage. Valve 2-SW-97A was re-installed on October 30, 1990 after the Service Water system repairs were completed. This re-installation included the connection of electrical leads and instrument air tubing. Instrument air was restored to the valve. Due to an unrelated problem with the control board switches for 2-SW-97A and 2-SW-97B, control power was isolated. As a result, the remote control and indication from the control room for both cross-tie valves and the interlock feature between them was not operational. Subsequent to October 30, 1990, complete restoration of the controls and indication for valves 2-SW-97A and 2-SW-97B was hampered by necessary SW flow testing. After November 3, 1990, the restoration was precluded by the removal of the 'C' SW pump. Consequently, the valves were operated manually with local indication of their position throughout the period.

Operations Surveillance Procedure 2612C-1 was performed on October 30, 1990 which verified that valve 2-SW-97A was open since a flow path through the valve was required to support operation of the 'B' Service Water pump on the 'A' Service Water header. On November 2, 1990 the 'A' SW pump was returned to service on the 'A' SW header and the 'B' SW pump was switched to the 'B' SW header as directed by Operations Procedure OP 2326A. During these system iterations, the appropriate Operations Surveillance Procedures were performed. Also on November 2, 1990, a clearance was written to allow Maintenance to work on a separate valve. Instrument air was isolated to prevent operation of this valve while men were working on it. Isolating instrument air to it also isolated instrument air to 2-SW-97A. Work was completed and instrument air was restored on the following day, November 3, 1990. Upon restoration of instrument air, 2-SW-97A stroked open. This valve movement went unnoticed as the remote indication for 2-SW-97A was out of service. The PEO restoring the instrument air supply was in a different area of the intake structure while opening the instrument air isolation valve, and was not expecting any movement of 2-SW-97A or any other valves. On November 15, 1990, valve 2-SW-97A was found open thus identifying the cross-tieing of both Service Water facilities.

II. Cause of Event

The root cause of the event is equipment design deficiency. The valve control system operation, upon restoration from a loss of instrument air, does not maintain the valve in the as failed position. Review of vendor technical details on the solenoid valve and details of the pneumatic valve controls, which govern the position of 2-SW-97A, indicated that 2-SW-97A will remain in the position selected on a loss of either air or electrical power. However, the solenoid valve will shift upon restoration of instrument air causing the process valve to change position. This was confirmed by testing. It should be noted that the valve controls meet the design as described in the FSAR. The design deficiency is in the failure to consider the impact on valve response to the restoration of instrument air, after removal.

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 Records and Reports Management Branch (p-830), U.S. Nuclear Regulatory Commission, Washington, DC 20555, 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)  0   5   0   0   0   3   3   6   9   0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0   2   2	0   2	0   3	OF	0   3

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

III. Analysis of Event

This event is being reported pursuant to the requirements of paragraph 50.73(a)(2)(i), reporting any operation or condition prohibited by the plant's Technical Specifications.

With header cross-tie valve 2-SW-97A open, facility separation was not maintained. In this configuration, the SW system functioned as one common header instead of the two independent headers required by the Technical Specifications.

The longest amount of time that the header cross-tie valve, 2-SW-97A, could have been improperly positioned was from November 2, 1990 to November 15, 1990, or a total of approximately thirteen days. During this period the reactor plant was critical for the last seven days.

Review of the Design Basis Accident (DBA) response of the SW system indicates that it would not have performed its intended function. During the DBA it is assumed that only one Emergency Diesel Generator will start. With this being the case, one SW pump would be operating on two headers which is an unanalyzed thermo/hydraulic configuration.

If it is postulated that one of the headers were to break, the ability of the system to perform its intended function would have been lost since both pumps would have supplied water to the break. Only a minimal amount of cooling water would then be available for component heat removal.

IV. Corrective Action

The corrective action was to immediately reposition the cross-tie valve, 2-SW-97A, to maintain facility separation.

Action to prevent recurrence is as follows:

1. A design change for the valve control system was approved to modify the control features and eliminate unwanted valve action following a loss and subsequent restoration of instrument air. This change will be implemented during the end of Cycle 12 refuel outage.
2. The review of similar controls continues. Additional valves in the Reactor Building Closed Cooling Water system have been identified and the safety significance is being evaluated. Administrative controls are in effect to ensure proper restoration of air to these valves. The review will be complete and necessary changes will be implemented during the end of cycle 12 refuel outage.
3. Operations procedures have been revised and administrative controls implemented to provide information and cautions associated with the design features of valves that have this control feature.

V. Additional Information

There were no failed components.

Similar LERs: None.

EHS Code Identifiers:

BS-V-A499