

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

May 10, 1991

MP-91-406

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 91-011-00


Gentlemen:

This letter forwards Licensee Event Report 91-011-00 required to be submitted within thirty (30) days 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 mitigate the consequences of an accident, and 10CFR50.73(a)(2)(vii), any event where a single cause or condition caused two independent trains to become inoperable in a single system design to mitigate the consequences of an accident.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace
Director, Millstone Station

BY: 
Carl H. Clement
Millstone Unit 3 Director

SES/TGM:ljs

Attachment: LER 91-011-00

cc: T. T. Martin, Region I Administrator
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3
D. H. Jaffe, NRC Project Manager, Millstone Unit Nos. 1 and 3

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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, LP-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 3										LICENSEE NUMBER (2) 0 5 0 0 0 4 2 3				PAGE (3) 1 OF 0 3	
TITLE (4) Both Trains of High Pressure Safety Injection System Inoperable Due to Relief Valve Leakage															
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						
0 4	1 0	9 1	9 1	0 1 1	0 0	0 5	1 0	9 1	0 5 0 0 0 0 0 0 0 0 0 0						
OPERATING MODE (9) 3		THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)													
POWER LEVEL (10) 0 0 0 0		20.402(b)				20.402(c)				50.73(a)(2)(iv)				73.71(b)	
		20.405(a)(1)(i)				50.36(c)(1)				X 50.73(a)(2)(iv)				73.71(c)	
		20.405(a)(1)(ii)				50.36(c)(2)				X 50.73(a)(2)(iv)				OTHER (Specify in Abstract DRPA and in Text, NRC Form 366A)	
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(iv)(A)					
		20.405(a)(1)(iv)				50.73(a)(2)(b)				50.73(a)(2)(iv)(B)					
		20.405(a)(1)(v)				50.73(a)(2)(c)				50.73(a)(2)(v)					
LICENSEE CONTACT FOR THIS LER (12)															
NAME Terry G. McNatt, Engineer, Ext. 3592										TELEPHONE NUMBER AREA CODE 2 0 3 4 4 7 - 1 7 0 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	
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO			

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

On April 10, 1991, at 2225 hours with the plant at 0% power in Mode 3 (Hot Standby), 557 degrees Fahrenheit and 2250 psia, a safety injection system (SIH) relief valve lifted while performing a boundary valve leak test surveillance procedure. The valve did not reseal until the running "A" safety injection pump was stopped. The 79 gpm flowrate of the relief valve exceeded the 50 gpm assumed for passive failure of the safety injection system.

The root cause of the event is design deficiency. The setpoint for the relief valves was too close to the operating pressure of the system. The system has historically operated close to the relief valve setpoint. Pressure surges, valve manipulations, and surveillance testing have previously resulted in the lifting of system relief valves.

As immediate corrective action shift management declared the safety injection system inoperable. The "B" train relief valve, which was temporarily gagged to minimize failure during troubleshooting, was ungagged, and the "B" train was declared operable. The system design pressure was reanalyzed and the setpoint of the relief valves was increased to 2250 psia from 1765 psia. Both trains of the safety injection system were declared operable following the increase in setpoint for the "A" train and "B" train relief valves.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Estimated burden per response to comply with this information collection request: 60.0 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)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)
		YEAR	
		SEQUENTIAL NUMBER	
		REVISION NUMBER	
Millstone Nuclear Power Station Unit 3	0 6 0 0 0 4 2 3	9 1 0 1 1 0 0	0 2 OF 0 3

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

I. Description of Event

On April 10, 1991, at 2225 hours with the plant at 0% power in Mode 3 (Hot Standby), 557 degrees Fahrenheit and 2250 psia, the "A" train high pressure safety injection (SIH) relief valve (3SIH*RV8853A) lifted and did not reseal while performing leak testing of the SIH to RCS Loop 4 Hot Leg check valve (3SIH*V112) in accordance with the Reactor Coolant System (RCS) Pressure Isolation Valve Test surveillance procedure (SP 3601F.4). The relief valve lifted when the Test Line Isolation Valve (3SIH*AV8889C) was opened. This aligned the piping between check valves 3SIH*V112 and the RCS Loop 4 Hot Leg check valve (3RCS*V102) to the safety injection pump discharge piping which is protected from overpressurization by relief valve 3SIH*RV8853A. The 79 gpm flow rate of the relief valve exceeded the 50 gpm assumed for the passive failure of the safety injection system. Shift management declared both trains of the safety injection system inoperable and logged into Technical Specification 3.0.3. The "A" SIH pump was isolated from the "B" train. The temporary gagging device, previously installed on the "B" train relief valve (3SIH*RV8853B) to limit failures while investigating the lifting problems, were removed, and the "B" train was declared operable 2 hours and 15 minutes after invoking Technical Specification 3.0.3. At that time, Technical Specification 3.5.2.a was invoked with one of SIH operable. Both trains were declared operable at 1208 hours on April 13, 1991, following the resetting and testing of the "A" train and "B" train relief valves.

II. Cause of Event

The cause of the event is design deficiency. The setpoint for the relief valves was too close to the operating pressure of the system. The system has historically operated close to the relief valve setpoint. The pressure that the relief valve was subjected to during the performance of the surveillance procedure was in excess of the normal setpoint of 1765 psia. The gradual leakage through check valve 3RCS*V102, located on the safety injection line at the "C" reactor coolant loop, allowed the upstream pressure (between 3RCS*V102 and 3SIH*V112) to approach reactor coolant system pressure of 2250 psia. When valve 3SIH*AV8889C was opened per the procedure, the safety injection piping which included relief valve 3SIH*RV8853A was subjected to this higher pressure resulting in the lifting of the relief valve.

III. Analysis of Event

This event is being reported in accordance with 10CFR50.73(a)(2)(v), as an event or condition that alone could have prevented the fulfillment of the safety function of systems needed to mitigate the consequences of an accident, and, 10CFR50.73(a)(2)(vii), as an event where a single cause or condition caused two independent trains to become inoperable in a single system designed to mitigate the consequences of an accident. An immediate notification was made in accordance with 10CFR50.72(b)(2)(iii).

There were no significant safety consequences due to this event. The surveillance procedure was performed with the reactor shut down and the plant in Mode 3. Relief valve 3SIH*RV8853A shut when the "A" safety injection pump was stopped to lower the system pressure below the lift setpoint. For design basis accidents which require the safety injection pumps to operate, the relief valve would be subjected to pressures in the range of 1765 psia only at minimum flow conditions. At this pressure, the relief valve has been proven to relieve at approximately 40 gpm which is within the margin of the safety injection system.

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 (3150-0106), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Millstone Nuclear Power Station Unit 3	0500042391	0111	00	03	OF	03	

TEXT (if more space is required, use additional NRC Form 365A's) (17)

IV. Corrective Action

When the event occurred, shift management declared the safety injection system inoperable and invoked Technical Specification action 3.0.3. The failed "A" train relief valve (3SIH*RV8853A) was gagged shut. The temporary gagging device, previously installed on the "B" train relief valve (3SIH*RV8853B) to limit failures while investigating the lifting problems, was removed, and the "B" train of the safety injection system was declared operable following the removal of the gagging devices and Technical Specification 3.5.2.a was invoked. The system design pressure was reanalyzed and the setpoint of the "A" train and "B" train relief valves was increased to 2250 psia from 1765 psia based on the conclusion of the analysis.

A test procedure was written, approved, and performed that utilized the appropriate steps of the surveillance procedure to duplicate the conditions that existed when the relief valve lifted. Instrumentation was installed on the safety injection system to provide a trace of the actual pressure seen by the relief valve. The testing verified that the pressure in the system exceeded the relief valve setpoint pressure. The test procedure verified that other combinations of valve and pump manipulations did not subject the relief valves to pressures higher than their new lift setpoint of 2250 psia.

V. Additional Information

The safety injection system relief valves have had a history of lifting during surveillance testing. Previous procedure changes to minimize valve manipulations while the system was in operation appeared to have minimized relief valve lifting problem. There have been no previous similar events with the same root cause and underlying concerns.

EH&S CodesSystem

High Pressure Safety Injection System-BQ

Component

Relief Valve-RV