

# 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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March 9, 1993

MP-93-210

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

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 93-002-00


Gentlemen:

This letter forwards Licensee Event Report 93-002-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(vii).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace  
Vice President - Millstone Station

BY:   
Carl H. Clement  
Millstone Unit 3 Director

SES/RJM:ljs

Attachment: LER 93-002-00

cc: T. T. Martin, Region I Administrator  
P. D. Sweetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3  
V. L. Rooney, NRC Project Manager, Millstone Unit No. 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 (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 3 DOCKET NUMBER (2) 050004231 OF 04

TITLE (4) Common Mode Failure of Control Room Envelope Pressurization System

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	2	0	7	9	3	9	3	0	0	0	0
0	2	0	7	9	3	9	3	0	0	0	0

OPERATING MODE (9)	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)										
POWER LEVEL (10) 100	20.402(d)	20.402(c)	50.73(a)(2)(iv)	73.71(b)							
	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)							
	20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(vii)(A)								
	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	TELEPHONE NUMBER
Robert J. McDonald, Engineer, Ext. 4742	AREA CODE 203 447-1791

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)	MONTH	DAY	YEAR
X			0	5	0793

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

On February 7, 1993, at 1938 hours with the plant in Mode I at 100% power the A Train Control Room Pressurization System failed its 18 month pressurization surveillance test. On February 6th the B Train had initially failed its surveillance test. An investigation revealed two potential common mode failures and both trains were declared inoperable pending further investigation.

The first potential common mode failure is freezing of the pressure regulating valve caused by moisture in the air banks. The second common mode failure is pressure oscillations within the control room envelope which cause the differential pressure to periodically fall below the .125 in wg acceptance criteria for brief periods of time.

The immediate corrective action was to place the Control Room in filtered recirculation in accordance with Technical Specification 3.7.8.b. 1. The B Train surveillance was satisfactorily performed after a throttle valve was opened further. The air banks were purged and refilled with dry air to reduce the dewpoint. The long term corrective actions will be the subject of a continuing investigation and supplemental report.

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)	DOCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Millstone Nuclear Power Station Unit 3	0500042393	00	02	00	02	OF 04

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

I. Description of Event

On February 7, 1993, at 1938 hours with the plant in Mode I at 100% power (2250 psia and 587 degrees Fahrenheit), the A Train Control Room Envelope Pressurization System failed the 18 month pressurization surveillance test. On February 6, 1993, the B Train had initially failed (frozen pressure regulating valve) and then passed the second surveillance test. On February 11, 1993, both trains were declared inoperable based on a potential common mode failure of the system.

As immediate corrective action the control room envelope was placed in filtered recirculation in accordance with Technical Specification 3.7.8.b. 1.

The probable cause of the initial B train failure is high moisture content in the bottled air system. This moisture condensed and froze as the air expanded across the pressure control valve. After a short time the valve could no longer maintain a constant outlet pressure and the envelope pressure dropped off rapidly. The B Train air bank was purged and refilled with dry air and subsequent testing showed that the valve was able to maintain a near constant outlet pressure.

In addition, oscillations in the control building envelope pressure resulted in differential pressures dropping slightly below the acceptance criteria during retests. These dips occur on a cyclic basis 5 to 8 times over the one hour duration of the test and result in differential pressures slightly below the acceptance criteria for periods of thirty seconds to two minutes.

The A Train air bank also had a higher than expected moisture content (i.e. relatively high dew point) and also experienced similar oscillations in the control room envelope pressure which caused the differential pressure to drop below the acceptance criteria. After the bank was recharged with known dry air, the same oscillations occurred. At this time it does not appear that moisture was involved in the A Train failure.

In all tests conducted on both trains, the differential pressure stayed positive. The cause of and corrective action of these oscillations is being investigated and will be the subject of a supplemental report.

II. Cause of Event

The root cause of the initial B bank failure is moisture in the bottled air system which condensed and froze at the pressure regulating valve (3HVC-PCV68B), during system discharge. Samples of the air in the air bottles of both trains tested at dew points around minus 40 degrees Fahrenheit at atmospheric pressure, which corresponds to approximately 70 degrees Fahrenheit at 2250 psig. The moisture was introduced to the system at the compressors used to refill and charge the system. Excess moisture can enter the system due to improper blowing down of the condensate traps or from purifying cartridges which have exceeded their useful life. The system design does not include drying capabilities other than the moisture removal capacity of the compressors.

The root cause of the pressure oscillation event is unknown and is under investigation. Although the B Train passed the surveillance test after the throttle valve was opened further, subsequent tests on both the A and B Trains have experienced pressure oscillations resulting in temporary dips in the differential pressure of the control room to outside.

III. Analysis of Event

This event is being reported in accordance with 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 unknown source of pressure oscillations caused the control building envelope differential pressure to periodically drop below the acceptance criteria of .125 in wg. The dips are temporary and the control room pressure remains positive relative to outside.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Millstone Nuclear Power Station  
Unit 3

YEAR

SEQUENTIAL  
NUMBERREVISION  
NUMBER

0 5 0 0 0 4 2 3 9 3 - 0 0 2 - 0 0 0 3 OF 0 4

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

Excess moisture in the B air bank caused the pressure control valve to fail, resulting in loss of pressurization of the control room envelope during surveillance testing. The B Train was tested and failed on February 6, 1993. LCO Action Statement 3.7.8. a. 1 was entered for one train of Control Room Envelope Pressurization being inoperable. A subsequent retest after adjusting a throttle valve was satisfactory and the LCO exited.

On February 7, 1993 the A Train failed the surveillance test and was declared inoperable. LCO 3.7.8.a was entered for one train of Control Room Envelope Pressurization inoperable. On February 11, 1993, after an investigation determined a potential common mode failure the B Train was also declared inoperable. The control building envelope was placed in the filtered recirculation mode in accordance with Technical Specification LCO 3.7.8.b. 1.

Each train of the Control Room Envelope Pressurization System is designed to pressurize the control room envelope to .125 in wg or greater for one hour in the event of a Control Building Isolation (CBI) signal. After one hour the Emergency Filtration System is started and provides filtered air under a slight positive pressure to the control building envelope.

The Safety Significance of this event is low because filtered intake was always available and the control room pressure remained positive in all tests of the pressurization system.

IV. Corrective Action

The immediate corrective action after an investigation determined a potential common mode failure was to declare both trains of Control Room Envelope Pressurization System inoperable, enter LCO 3.7.8.b.1 and place the Control Building Emergency Filtration System into operation in the filtered recirculation mode.

The air banks were purged with dry air after the compressor purifier cartridges were replaced. The air banks were charged with air which tested at better than minus 60 degrees Fahrenheit dew point. The action to prevent recurrence is still under investigation and will be included in the supplemental report.

Subsequent testing on each train, which included monitoring pressure downstream of the pressure regulating valve, showed that the valves were working properly. Although the air banks appear to be discharging properly, pressure oscillations in the control room cause the differential pressure to periodically drop below the .125 in. wg. acceptance criteria. The cause of the pressure oscillations is being investigated and will be the subject of a supplemental report.

V. Additional Information

Licensee Event Reports submitted which discuss related events are as follows.

LER NumberTitle

92-004

Control Room Pressurization Valves Closed Due to Improper Verification

87-005

Control Room Pressurization Surveillance Failure Caused By  
Mispositioned Throttle Valve Due to Personnel Error

LER 3-92-004 documents an event where one train of the Control Room Envelope Pressurization system was isolated by the closure of two manual valves. The mispositioning of the valves was discovered during the performance of the monthly valve lineup surveillance. The root cause was improper self verification of valve position after a charging evolution. Corrective action was a program to stress the importance of self verification.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)  Millstone Nuclear Power Station Unit 3	DOCKET NUMBER (2)  0500042393	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		00	02	00	04	OF	04

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

LER 3-87-005 documents an event where the A Train of the Control Room Envelope Pressurization system failed the pressurization surveillance test because the throttle valve downstream of the pressure control valve was opened too far. The root cause was personnel error and procedure deficiencies. Corrective action was to place a tag on the throttle valve for each train which specifies the required procedurally controlled position of the valve. The incident was also reviewed by all operating personnel.

EHS CODESSystems

Control Room - VI

Components

Pressure Control Valve - PCV