

Northeast
Nuclear Energy

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Millstone Nuclear Power Station
Northeast Nuclear Energy Company
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The Northeast Utilities System

February 29, 1996

B15559

Re: 10CFR50.73(a)

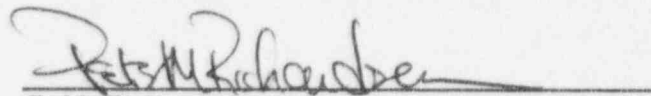
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Reference: Facility Operating License No. DPR-65
Docket No. 50-336
Licensee Event Report 96-004-00

This letter forwards Licensee Event Report 96-004-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY


P. M. Richardson
Director - Millstone Unit No. 2

pjl

Attachment: LER 96-004-00

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit No. 2
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
W. D. Lanning, Director, Millstone Assessment Team

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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 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 (IT
8 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.

FACILITY NAME (1)

Millstone Nuclear Power Station Unit 2

DOCKET NUMBER (2)

05000336

PAGE (3)

1 of 3

TITLE (4)

The Service Water Strainer Backwash System is Susceptible to Freezing Following a Loss of Intake Structure
Non-Vital Heating

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	08	96	96	004	00	02	29	96	FACILITY NAME	DOCKET NUMBER
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)										
OPERATING MODE (9)		1	20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)		100%	20.2203(a)(1)			20.2203(a)(3)(i)			<input checked="" type="checkbox"/> 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

Philip J. Lutzi, Nuclear Licensing

TELEPHONE NUMBER (Include Area Code)

(860)440-2072

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
B	BI	PSP							

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO
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EXPECTED
SUBMISSION

MONTH DAY YEAR

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

On January 31, 1996, at 1200 hours, with the plant in Mode 1 at 100% power, it was discovered that the service water strainer backwash system, which provides common service to both service water trains, is vulnerable to freezing, and therefore is susceptible to a common mode failure, if the non-vital intake structure heating system failed to operate. Subsequent to the discovery, a prompt report was initiated pursuant to the requirements of 10 CFR 50.72 (b)(1)(ii)(B). This LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(ii)(B), reporting of any condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

The apparent cause of this event was an inadequate original design that did not consider the effects of freezing conditions on the strainer backwash system.

Corrective actions consisted of procedural changes requiring operators to monitor the temperature in the intake structure and to initiate actions to prevent freezing when temperatures fall below 40 degrees. Additionally, a design change will be implemented to address the backwash system's susceptibility to freezing.

There were no automatic or manually initiated safety systems activated as a result of this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) Millstone Nuclear Power Station Unit 2	DOCKET NUMBER (2) 05000336	LER NUMBER (6)			PAGE (3) 2 of 3
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		96	-- 004 --	00	

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

I. Description of Event

On January 31, 1996, at 1200 hours, with the plant in Mode 1, at 100% power, it was discovered that the service water strainer backwash system, which provides common service to both service water trains, is vulnerable to freezing, and therefore is susceptible to a common mode failure, if the non-vital intake structure heating system failed to operate. Subsequent to the discovery, a prompt report was initiated pursuant to the requirements of 10 CFR 50.72 (b)(1)(ii)(B). This event was identified while investigating the January 8, 1996 event in which an ice plug blocked the discharge of the common strainer backwash line. This previous event was reported in LER 96-002 that was submitted to the NRC Staff on February 5, 1996.

The intake structure heating system consists of electric space heaters energized by a non-vital power system. A heating system failure, or loss of non-vital power following a Loss of Normal Power event in conjunction with freezing outdoor temperatures, could result in freezing conditions within the intake structure.

The backwash system is designed to automatically actuate when strainer differential pressure increases beyond a determined setpoint. At the backwash setpoint, the backwash valve opens and the strainer motor is energized to flush debris from the strainer. This debris is flushed through the backwash piping and discharged outside the intake structure. Freezing conditions within the intake structure have the potential to result in freezing of the instrumentation lines that control the initiation of the automatic backwash and provide the control room indication of high differential pressure conditions within the strainer. Additionally, loss of intake structure heating has the potential to cause ice blockage in the piping where stagnant water normally stands, at the outlet of each service water strainer. The formation of ice plugs has the potential to prevent flow in the backwash piping. Consequently, the strainers on both trains of the service water system could reach a high differential pressure and cause the service water system to be in a condition outside its design basis.

II. Cause of Event

The apparent cause of this event was an inadequate original design that did not consider the effects of freezing conditions on the strainer backwash system.

III. Analysis of Event

An investigation has concluded that the backwash system was never designed to operate in subfreezing temperatures following a loss of the non-safety related intake structure heating system. Freezing conditions in conjunction with a loss of intake structure heating could result in both a loss of control room indication of strainer differential pressure and the ability of the strainers to backwash. Subsequently, the strainers on both trains of the service water system could reach a high differential pressure and cause the service water system to be in a condition outside its design basis.

This event is being reported pursuant to the requirements of 10 CFR 50.73 (a)(2)(ii)(B), reporting of any condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

The safety significance of the strainer backwash system freezing, concurrent with a design basis event is high. However, the potential for such an event to occur is low, since compensatory measures are in place that will ensure the operability of strainer backwash during low temperature conditions.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) Millstone Nuclear Power Station Unit 2	DOCKET NUMBER (2) 05000336	LER NUMBER (6)			PAGE (3) 3 of 3
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		96	-- 004 --	00	

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

There were no automatic or manually initiated safety systems activated as a result of this event.

IV. Corrective Action

Following the discovery that the strainer backwash system is vulnerable to freezing, a temporary log was established to monitor the intake structure temperature every four hours so that a loss of intake structure heating is recognized before temperatures fall below freezing. The temporary log has since been replaced with a procedure change to operations form 2669A-1, "Unit 2 Turbine Building Rounds." The operations form provides the guidance for monitoring the intake structure temperature. After the discovery of low temperatures in the intake structure (below 40 degrees), freezing of the backwash piping will be prevented through either the restoration of heating, the application of portable space heaters or if heating can not be restored, by manually operating the strainers.

A design change will be implemented prior to October 15, 1996 that will replace the common discharge line with three independent backwash lines and locate the discharge points so that they will not be susceptible to outdoor weather conditions.

Additionally, a design change will be implemented to protect the function of the backwash strainer's differential pressure instrumentation during freezing conditions. This design change will be complete by October 15, 1996.

V. Additional Information

LER 96-002 reported that corrective actions had been implemented to prevent ice plugging at the open end of the backwash line where it discharges into the discharge trough. This corrective action consisted of removing a two foot long horizontal run of pipe which extended through the intake wall so that the backwash line would end inside the intake structure with a vertical discharge into the trough. Subsequent to this modification, it was discovered that the open end of the line was still susceptible to ice buildup. Although the ice buildup did not result in blockage of the backwash line, temporary corrective measures have been implemented to prevent ice buildup. These measures will remain in place for the remainder of this winter.

Similar Events

LER 96-002

Manufacturer Data

None