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

P.O. BOX 270
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Re: 10CFR50.73(a)(2)(i)

March 4, 1991
MP-91-194

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 91-002-00

Gentlemen:

This letter forwards Licensee Event Report 91-002-00 required to be submitted within thirty (30) days pursuant to 10CFR50.75(a)(2)(i), any operation or condition prohibited by the plant's Technical Specifications.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Director, Millstone Station

SES/NDH:ljs

Attachment: LER 91-002-00

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 No. 3

Set No
P91250347G
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NRC Form 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

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)	PAGE (3)
Millstone Nuclear Power Station Unit 3	0 5 0 0 0 4 2 3	1 OF 0 3

TITLE (4)
Setpoint Drift on Main Steam Safety Valves Due to Inadequate Design

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 2	9 1	9 1	- 0 0 2	- 0 0	0 3	0 4	9 1		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	3	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	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)	50.73(a)(2)(v)	73.71(c)
		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)	X 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)(viii)(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
	AREA CODE
Nelson Hulme, Senior Engineer, Ext. 5398	2 0 3 4 4 7 - 1 7 9 1

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	S B	R V	D 2 4 3	Y							

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 fifteen single-space typewritten lines) (16)

Between 0400 and 1600 hours on February 2, 1991, with the plant at 0% power in Mode 3 (Hot Standby), at 2250 psia and 548 degrees Fahrenheit, setpoint drift was identified while testing the Main Steam Safety Valves. Nine out of twenty valves failed the ± 1% tolerance band set by Technical Specification Table 3.7-3.

No immediate corrective action was necessary since the plant was in Hot Standby.

The cause of the safety valve setpoint drift is inadequate design. The safety valves do not maintain their setpoint within the ± 1% tolerance specified in Technical Specifications. The highest/lowest deviation observed was +2.1%/-2.4%. The setpoints on all of the failed safety valves were reset to Technical Specification requirement.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Millstone Nuclear Power Station Unit 3	0 5 0 0 0 4 2 3	9 1	— 0 0 2	— 0 0	0 2 OF 0 3

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

I. Description of Event

Between 0400 and 1600 hours on February 2, 1991, with the plant at 0% power in Mode 3 (Hot Standby), at 2250 psia and 548 degrees Fahrenheit, setpoint drift was identified while testing Main Steam Safety Valves. Nine of twenty valves failed the ± 1% tolerance band set by Technical Specification Table 3.7-3. No immediate operator action was required since the plant was in Hot Standby at the time the valves were being tested.

The valves were being tested per an approved Maintenance Surveillance procedure. On initial tests of the twenty valves, eight failed high and one failed low. The worst deviation observed on the valves that failed high was 2.1%. The valve that failed low had a deviation of 2.4%. All of the failed valves were reset to within the ± 1% tolerance.

II. Cause of Event

The cause of the safety valves drifting from their setpoints is inadequate design. Setpoint drift is an acknowledged occurrence that is documented industry wide, and has previously occurred at Millstone Unit 3. Investigations have been performed, and root causes have been postulated. However, the manufacturer has been unable to identify any specific cause for the drift.

III. Analysis of Event

This event is reportable in accordance with the requirements of 10CFR50.73(a)(2)(i). Plant Technical Specification 3.7.1.1, Table 3.7-3 requires all Steam Line Safety Valves to lift at ± 1% of their lift setting during plant operations. The lift setting pressure corresponds to ambient conditions of the valve at nominal operating temperature and pressure. It is assumed that the setpoint drift occurred on these valves sometime during plant operations since it was discovered soon after going into Hot Standby. The valves had been satisfactorily tested previous to this incident.

Evaluation of the initial setpoint results have determined that the as-found setpoints did not result in any adverse safety implications. The safety valves lifted within the lower pressure bounds analyzed for a Steam Generator tube rupture coincident with loss of offsite power, and the high pressure bounds of the Main Steam System design.

Setpoint drift on Main Steam Safeties has occurred in the past. This has been recognized by other utilities and, therefore, is not a problem unique to Millstone. Historical information provided by Nuclear Network and NPRDS entries has indicated a general concern that ± 1% safety valve tolerance is too restrictive. Millstone 3 is pursuing a relaxation of the ± 1% criteria in favor of a ± 3% tolerance.

IV. Corrective Action

The nine out-of-tolerance valves were reset to within the specified ± 1% tolerance.

V. Additional Information

Similar events concerning setpoint drift have occurred to the Pressurizer Safety Valves as well as the Main Steam Safety Valves. The following is a summary of the previously reported setpoint drift problems:

LER Number	Title
87-009	Early Lifting of Pressurizer Safeties for Undetermined Reasons
87-036	Setpoint Drift on Main Steam Safety Valves
89-010	Setpoint Drift on Main Steam Safety Valves Due to Unknown Causes
89-025	Lifting of Pressurizer Safeties Above the Allowed Tolerance

The following factors have been investigated as possible reasons for valve drift:

- Problems associated with the hydraulic assist device/test method.
- Disc/seat bonding which could cause high lift values.
- Relaxation of the spring material over a period of time at elevated temperatures that would result in the low lift values.

A direct contributor to the high safety valve lift pressures was the use of an erroneous spring constant for setpoint calculations. After a 10CFR21 notification from the manufacturer, Millstone Unit 3 personnel evaluated the effect of the error on the settings for the main steam safety valves. The result was a 2 to 7 psig increase in relief pressure when applied to the "as-left" values recorded during the previous safety valve surveillance. None of the safety valve settings exceeded the +1% tolerance allowed by the Technical Specifications. However, the increase in the actual "as- left" relief pressure settings resulted in the values being closer to the +1% tolerance and reduced the margin available for valve drift. This reduced margin indicates why 8 of the 9 valves exceeded the +1% tolerance during the most recent tests. The valves were reset using the correct spring constant. Also, more accurate digital test equipment, vice analog pressure gages, is currently being used, which should provide an increase in accuracy. The change in test method/measurement is expected to favorably affect future "as-found" results.

Disc/seat bonding was evaluated previously by Millstone Unit 3 personnel, and found not to be contributing to setpoint drift. Valves sent out to a repair facility for refurbishment have not displayed material defects in the seating surfaces which are indicative of disc bonding. Short term relaxation of spring materials also has been evaluated by Millstone Unit 3 personnel. The spring material utilized would start to relax due to material creep if temperatures were to exceed 700 degrees Fahrenheit. Test results have shown that 160 degrees Fahrenheit is the highest temperature seen by the springs. Furthermore, the manufacturer indicates spring relaxation would only occur over a time period of 10 to 20 years. Therefore, spring relaxation is not a factor in valve setpoint drift.

Based on the recurrence of setpoint drift on Main Steam Safety Valves, the need for a review of Main Steam Safeties setpoint tolerance has been identified. A recommended ± 3% tolerance is still being reviewed for Technical Specification implementation.

This event has been disseminated on Nuclear Network.

EIIS Codes

System	Component	Vendor
Main Steam System	Relief Valve - RV	Dresser (D243)