

NORTHEAST UTILITIES



The Connecticut Light And Power Company
Western Massachusetts Electric Company
Holyoke Water Power Company
Northeast Utilities Service Company
Northeast Nuclear Energy Company

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

March 7, 1991
MP-91-213

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 91-004-00

Gentlemen:

This letter forwards Licensee Event Report 91-004-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(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/TWL:mo

Attachment: LER 91-004-00

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 (p-630), 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) **0 5 0 0 0 4 2 3** PAGE (3) **1 OF 0 4**

TITLE (4) **Containment Leakage in Excess of Limits Due to 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	2	0	5	9	1	0	3	0	7	9	1	0 5 0 0 0 0 0 0 0 0 0 0

OPERATING MODE (9) **5** THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

20.402(b)	20.402(c)	50.73(a)(2)(iv)	70.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	70.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vi)	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)(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)(viii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME **Thomas W. Lyons, Engineering Supervisor - ISI, Ext. 4390** TELEPHONE NUMBER **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 NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
B	K	M 1 S V	F 1 3 0	Y					
B	B	P 1 S V	P 3 4 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) **0 5 1 5 9 1**

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

While shutdown in Modes 5 (Cold Shutdown) and 6 (Refueling) during the performance of Local Leak Rate Testing (LLRT), the "as found" leak rates for four Containment Isolation Valves exceeded the Technical Specification Type C and Bypass leakage limits of 0.6 L_a and 0.042 L_a.

The LLRT failures occurred on February 5, 1991 at 1331 (for 3RHS*MV8702A), February 7, 1991 at 2200 (for 3RSS*V6), February 10, 1991 at 2200 (for 3CDS*CTV91B), and February 19, 1991 at 1330 (for 3RSS*MOV23B). No immediate action was required.

Leakage past 3RHS*MV8702A is believed to be due to debris or boric acid crystals on the seating surface. The penetration was flushed with water and retested successfully. Leakage past 3RSS*V6 was due to improper seating caused by boric acid crystal precipitation on the seating surface. The valve seat was cleaned and an "as-left" LLRT was satisfactorily performed. Leakage past 3CDS*CTV91B was due to failure of an elastomer T-ring which had partially rolled out of its retaining groove. The T-ring was replaced and an as-left LLRT will be performed prior to startup. Leakage past 3RSS*MOV23B was caused by separation of the vulcanized rubber seat from the valve body mounting surface. The valve was removed from the system and has been sent to the manufacturer for overhaul. It will be reinstalled and retested prior to startup.

**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 (4-53), U. S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (if more space is required, use additional NRC Form 366A s) (17)

I. Description of Event

On February 5, 1991 at 1331, while at 0% power in Mode 5 (Cold Shutdown), during the third refueling outage, 40 psia and 95 degrees Fahrenheit, during the performance of Local Leak Rate Testing (LLRT), 3RHS*MV8702A had excessive leakage which prevented the desired test pressure from being reached. This "as found" undetermined leak rate exceeded the Technical Specification limit of 0.6 L_a. 3RHS*MV8702A is the outside containment Reactor Coolant System recirculation suction isolation valve to the "B" Residual Heat Removal Pump. No immediate action was required since the plant was shutdown.

On February 7, 1991 at 2200, while in Mode 5, at atmospheric pressure and 101 degrees Fahrenheit, 3RSS*V6 had excessive leakage which prevented the desired test pressure from being reached. This "as found" undetermined leak rate exceeded the Technical Specification limit of 0.6 L_a. 3RSS*V6 is the Containment Recirculation System (RSS) inside containment discharge check valve to the RSS Spray Header from the "B" RSS Pump. No immediate action was required since the plant was shutdown.

On February 10, 1991 at 2200, in Mode 5, at atmospheric pressure and 100 degrees Fahrenheit, 3CDS*CTV91B had excessive leakage which prevented the desired test pressure from being reached. This "as found" undetermined leak rate exceeded the Technical Specification bypass leakage limit of 0.042 L_a. 3CDS*CTV91B is the inside containment Reactor Plant Chilled Water System "B" Train isolation valve. No immediate action was required since the plant was shutdown.

On February 19, 1991 at 1330, in Mode 6 (Refueling), at atmospheric pressure and 96 degrees Fahrenheit, 3RSS*MOV23B had excessive leakage which prevented the desired test pressure from being reached. This "as found" undetermined leak rate exceeded the Technical Specification limit of 0.6 L_a. 3RSS*MOV23B is the outside containment suction valve to the "B" RSS Pump. No immediate action was required since the plant was shutdown.

II. Cause of Event

The root cause of the 3RHS*MV8702A leakage was improper valve seating prior to the LLRT (possibly due to debris or boric acid crystals on the seating surface). 3RHS*MV8702A is a 12 inch Westinghouse motor-operated gate valve.

The root cause of the 3RSS*V6 leakage was improper valve seating prior to the LLRT (due to precipitation of boric acid crystals on the seating surface). 3RSS*V6 is a 10 inch Walworth swing check valve.

The root cause of the leakage observed at 3CDS*CTV91B was failure of an elastomer T-ring which had partially rolled out of its retaining groove, apparently due to normal wear. 3CDS*CTV91B is a 10 inch Fisher Controls air-operated butterfly valve.

The root cause of the 3RSS*MOV23B leakage was separation of the vulcanized rubber seat from the valve body mounting surface. 3RSS*MOV23B is a 12 inch Henry Pratt motor-operated butterfly valve.

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-330), U. S. Nuclear Regulatory Commission, Washington, DC 20555, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503.

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

III. Analysis of event

These events are reportable under 10CFR50.73(a)(2)(i), as events or conditions prohibited by the Plant Technical Specifications. The undetermined leakage past the subject valves exceeded the limits allowed by plant Technical Specifications 3.6.1.2.b and c.

In the first event, containment integrity was maintained by verifying that the inside containment isolation valve, 3RHS*MV8702B, was operable and leak tight as verified by a satisfactory LLRT.

In the second event, containment integrity was maintained by verifying that the outside containment isolation valve, 3RSS*MOV20B, was operable and leak tight as verified by a satisfactory LLRT.

In the third event, containment integrity was maintained by verifying that the outside containment isolation valve, 3CDS*CTV38A, was operable and leak tight as verified by a satisfactory LLRT.

In the fourth event, containment integrity was maintained by the RSS System piping. The RSS System is a closed loop in which the RSS Pump takes suction from the Containment Sump and discharges back to containment. 3RSS*MOV23B, the "B" pump suction isolation valve, is a normally open valve which remains open during accident conditions. It does not serve as a containment boundary under accident conditions. The integrity of the RSS System piping was verified by conducting a satisfactory LLRT of the "B" RSS pump piping from the suction up to the discharge isolation valve, 3RSS*MOV20B.

Based on the previous discussion, these events posed no significant safety considerations.

IV. Corrective Action

No immediate corrective action was required by plant operators since the plant was shutdown.

As corrective action for the 3RHS*MV8702A leakage, the penetration was flushed with water and retested. This subsequent LLRT was successful. The flushing apparently dislodged the debris or boric acid which was preventing proper valve seating. Because of the satisfactory test, valve disassembly and inspection were deemed unnecessary. It should be noted that this piping had been drained, and that no problems were or have previously been identified on similar valves.

As corrective action for the 3RSS*V6 leakage, the valve was opened and inspected. The inspection results showed a boric acid buildup on the valve seat which prevented full disc-to-seat contact. The seat was cleaned, the valve reassembled, and an "as-left" LLRT was satisfactorily performed. Investigation into the cause of the boric acid buildup is still under way.

As corrective action for the 3CDS*CTV91A leakage, the valve was opened and inspected. The inspection results showed a failure of an elastomer T-ring, which had partially rolled out of its retaining groove, apparently due to normal wear. The T-ring was replaced, the valve reassembled using the revised maintenance procedures, and an "as-left" LLRT will be performed prior to startup. Investigation into several alternatives for action to prevent recurrence is currently ongoing.

As corrective action for the 3RSS*MOV23B leakage, the valve was opened and inspected. The inspection results showed a detachment of the vulcanized rubber seat from the valve body mounting surface. The rubber seat apparently has a limited installed life when used in an application where it is not constantly wetted. The valve was removed from the system and will be sent to the manufacturer for overhaul. It will be subsequently reinstalled and retested prior to startup. Investigation into several alternatives for action to prevent recurrence is ongoing.

Final valve inspection and retest results as well as any additional RF03 LLRT failures will be provided as required in a supplemental report by May 15, 1991.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

Estimated burden per response to comply with this information collection request: 50 D 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.

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TEXT (if more space is required, use additional NRC Form 366A-5) (17)

V. Additional Information

LERs 87-043, 89-011, and 89-012 discussed similar events of containment leakage in excess of limits due to valve leakage.

LERs 87-043 and 89-011 involved failures of 3CDS*CTV91B and 3CDS*CTV40B (respectively) which are sister valves to 3CDS*CTV91A. The previous event root causes were also identified as failure of elastomer T-rings which had rolled out of their retaining grooves. These events resulted in Maintenance procedure changes requiring detailed and exact installation procedures, bench stroking prior to installation, and valve cycling post-maintenance to ensure correct T-ring installation prior to retest. Neither of these previous failures exactly duplicated the mechanism of the current problem. The 87-043 event was the result of inadequate overhaul practices, and the 89-011 event was specifically attributed to a defect on the valve disc. The root cause of the current event appears to be normal wear on the T-ring surface.

LER 89-012 involved a failure of 3RSS*MOV23A which is a sister valve to 3RSS*MOV23B. The previous event root cause was also identified as a failure of the elastomer valve seating surface.

A review of the NPRDS data base identified eight other Fisher failures and five other Pratt failures similar to those in question. Failures of Fisher and Pratt butterfly containment isolation valve seating surfaces are not uncommon in the industry.

EIIS Codes

Systems

- Chilled Water System - KM
- Residual Heat Removal/Low Pressure Safety Injection System - BP
- Containment Recirculation System - BE

Components

- Isolation Valve - ISV
- Check Valve - V

Vendors

- Fisher Controls - F130
- Henry Pratt - P340
- Walworth Valves - W030
- Westinghouse - W351