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The Northeast Utilities System

Donald B. Miller Jr.,
Senior Vice President – Millstone

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

June 7, 1995
MP-95-183

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 95-009-02

This letter forwards Licensee Event Report 95-009-02 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(i) and 10CFR50.73(a)(2)(ii). This report is an update to Licensee Event Report 95-009-01.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Donald B. Miller, Jr.
Senior Vice President – Millstone Station

DBM/RLM:lfg

Attachment: LER 95-009-02

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3

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NRC Form 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 3	05000423	1 OF 8

TITLE (4) Containment Leakage in Excess of Technical Specification 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 NAME	DOCKET NUMBER
										05000
04	26	95	95	– 009 –	02	06	07	95	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	6	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	000		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
			20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
			20.405(a)(1)(iv)	X	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 (Include Area Code)
Robert L. McGuinness, Senior Engineer	(203) 447-1791 Ext. 6855

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

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 15 single-spaced typewritten lines) (16)

While in Mode 6 (Refueling) during the performance of Local Leak Rate Testing (LLRT), the "as found" leak rate for Containment Isolation Valves exceeded the Technical Specification Type C limit of $0.6L_a$ and Bypass Leakage limit of 0.042 L_a. No immediate action was required since the plant was shut down for refueling.

On April 26, 1995, at 1715 hours, the bypass leakage through containment isolation valves on the containment purge lines, combined with bypass leakage through a containment vacuum isolation valve, exceeded the Technical Specification limit. The initial indications are that the leakage through the purge valves was due to a deterioration of the resilient seat material. The cause of the deterioration is being investigated. As corrective action the seats for the containment purge isolation valves were replaced and adjusted. The valves were subsequently tested satisfactorily. Also, the containment isolation valve on the containment vacuum line was replaced during the current refueling outage with a butterfly valve, which is a better design for this application, to further reduce bypass leakage. This condition had low safety significance. If a worst-case single failure were assumed, the combined total of these identified bypass leakages would have slightly exceeded the Technical Specification bypass limit.

On May 2, 1995, the bypass leakage through containment isolation valves on the Reactor Plant Chilled Water (CDS) system, exceeded the Technical Specification limit. The cause appears to be an inadequate setting of the stop-travel limiter. The corrective action was to adjust the limiter and successfully retest the valves. This condition, not previously observed, had moderate significance. Although the CDS system is a closed loop system inside containment, a passive failure of the pipe inside containment during a LOCA, could have resulted in containment bypass leakage exceeding Technical Specification Limits.

On May 10, 1995, the leakage through a containment isolation valve on the low pressure Safety Injection (SIL) System exceeded the Technical Specification Type C limit of $0.6L_a$. Leakage past the valve is believed to be due to a body to bonnet gasket leak. The valve was disassembled, repaired, and retested successfully. This case had low safety significance. If a worst-case single failure were assumed the leakage would have been prevented by the pressurization of the Residual Heat Removal System.

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

I. Description of Event

On April 26, 1995, at 1715 hours, in Mode 6 (Refueling) at atmospheric pressure and 100 degrees Fahrenheit, the combined bypass leakage through isolation valves on three containment penetrations was found to exceed the Technical Specification Limit. The containment purge line isolation valves had excessive leakage during a Local Leak Rate Test (LLRT). This "as found" leak rate, when combined with recent "as found" bypass leakage through the isolation valves on the containment exhaust line and containment vacuum line, exceeded the Technical Specification bypass leakage limit of 0.042 L_a. No immediate action was required since the plant was shutdown.

- The containment purge supply line (42-inch) penetration (#86) has three isolation valves, one inboard (3HVU*CTV33A), one outboard (3HVU*CTV32A), and an additional outboard valve on a 30-inch branch line (3HVU*V5). The combined "as found" LLRT leakage through these three valves was 7,300 SCCM. The large isolation valves cannot be tested independently. However, the branch valve has been determined to have insignificant leakage. See Figure 1.

- The containment purge exhaust line (42-inch) penetration (#85) has one inboard valve (3HVU*CTV33B) and one outboard valve (3HVU*CTV32B). The combined "as found" LLRT leakage through these two valves was 7,820 SCCM. The valves cannot be tested independently. See Figure 2.

- The containment vacuum line (8-inch) penetration (#37) has one inboard valve (3CVS*AOV23) and one outboard valve (3CVS*V20). The "as found" LLRT leakage through the inboard valve was 27 SCCM, which maintained penetration integrity, while the outboard valve was found to have 11,970 SCCM leakage. See Figure 3.

On May 2, 1995, the bypass leakage through containment isolation valves on the Reactor Plant Chilled Water (CDS) system (10-inch line) penetration (#38) exceeded the Technical Specification limit during the LLRTs. The inboard valve (3CDS*CTV91A) had 52,900 SCCM leakage. The outboard valve (3CDS*CTV38A) combined with relief valve (3CDS*RV105A) had 52,800 SCCM leakage. See Figure 4.

On May 10, 1995, the containment leakage through inboard isolation check valve (3SIL*V6) on the low pressure Safety Injection System (6-inch) line penetration (#93) had excessive leakage which prevented the desired test pressure from being reached. This "as found" undetermined leak rate exceeded the Technical Specification limit of 0.6L_a. The "as found" LLRT leakage through the outboard isolation valve (3SIL*MV8809A) was 2,060 SCCM, which maintained containment integrity. No immediate action was required since the plant was shutdown. See Figure 5.

The attached Table 1 provides a summary of the leakage rates for the valves that had excess leakage and a comparison of the total to the Technical Specification Limit.

II. Cause of Event

The apparent cause of the excessive leakage through the 42-inch butterfly isolation valves on the purge supply and exhaust lines, was deterioration of the resilient valve seats. The cause of the deterioration is being investigated. It is believed that the cause is isolated to the current event, as this deterioration has not been observed in the past. The cause of the excessive leakage through the 8-inch outboard vacuum line valve was inadequate design. The valve is a hard-seated gate valve which historically had similar leakage, and, therefore, was replaced during the current refueling outage.

The cause of excessive leakage through the CDS 10-inch butterfly isolation valves appears to be inadequate setting of the valve actuators' stop-travel limiter. There was no significant leakage through the relief valve. Although the butterfly valves had passed their previous LLRT, it is now believed that they were probably not in their optimum seating position, and that with time and wear, their full closure capability became degraded.

The root cause of the 3SIL*V6 leakage appears to be a failed body to bonnet gasket.

III. Analysis of Event

The HVU/CDS condition and the CDS condition are reportable under 10CFR50.73(a)(2)(i)(B), as a condition prohibited by the Plant Technical Specifications. The combined leakage past the HVU/CDS valves in three penetration lines exceeded the bypass limit allowed by plant Technical Specification 3.6.1.2.c. Also, the leakage through the CDS isolation valves exceeded the bypass limit allowed by plant Technical Specification 3.6.1.2.c. The HVU/CDS condition was promptly reported April 26, 1995, as an event found while the reactor was shutdown, that had it been found while operating, would have resulted in a principal safety barrier being seriously degraded or in an unanalyzed condition that significantly compromises plant safety. An update May 19, 1995, reported that the CDS valves would be covered in the same LER. Thus, the conditions are also reported under 10CFR50.73(a)(2)(ii)(A).

- The combined leakage through all of the isolation valves on the 42-inch containment purge supply and exhaust lines was 15,120 SCCM. This total is below the current Technical Specification allowable bypass leakage, L_a of 20,633.9 SCCM. The purge valve leakage had low safety significance. The actual leakage through the penetrations, even assuming a single failure, would be even lower than 15,120 SCCM. This is because the penetration leakage is conservatively assumed to be equal to the sum of the redundant valve leakages, since they cannot be individually tested.

- The "as found" bypass leakage through the outboard containment vacuum isolation valve was 11,970 SCCM. This would have been limited by the operable inboard valve which was isolated to only 46.5 SCCM. A single failure of the inboard valve would have resulted in the combined total of these bypass leakages, slightly exceeding the Technical Specification Limit.

Both the inner (3CDS*CTV91A) and outer (3CDS*CTV38A) containment isolation valves had leakage in excess of Technical Specification bypass leakage limits. This event had moderate safety significance. The penetration is normally filled with water as part of a non-safety related closed loop chilled water system. Although the CDS system is a closed loop system inside containment, a passive failure of the system pipe inside containment during a LOCA, could have resulted in a containment bypass leakage of 52,900 SCCM, exceeding the Technical Specification bypass limit of 20,633.9 SCCM. The CDS valves passed their previous LLRT during the previous refueling outage, which was completed in the Fall 1993. It is not known at what point in the operating cycle the valve condition changed. This type of LLRT failure had not been previously experienced. However, it is possible that the excess leakage condition may have existed prior to discovery in May 1995.

The inboard (3SIL*V6) isolation valve leakage could not be determined. The actual leakage would have been limited by the outboard (3SIL*MV8809A) isolation valve which successfully passed an LLRT, with a leakage rate of 2,060 SCCM. A single failure of the outboard valve would have resulted in the combined total leakage exceeding the Technical Specification Limit. However, the line would be pressurized by the residual heat removal pumps, during an accident, whenever the RCS pressure drops below approximately 200 psig. The SIL valves passed their LLRT during the previous refueling outage. It is not known at what point in the operating cycle the valve condition changed.

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

IV. Corrective Action

The valve seats for the containment purge supply and exhaust line valves were inspected and two of the four valve seats were found to be somewhat worn. New seats were installed on all four 42-inch valves and they were tested satisfactorily. The valves are large diameter butterfly valves which require precision seating to maintain low leakage rates. These valve seats will continue to be replaced every other refueling or each refueling as needed, to maintain acceptable low leakage.

The containment vacuum line outboard isolation valve was replaced during the current refueling outage. The 8-inch hard seated gate valve was replaced with a soft seated butterfly valve, which is a better design for this application.

The corrective action for the CDS valves was to carefully reset the valve actuators' travel limiters while actively monitoring leakage to obtain the optimum seating position. The overhaul procedure for the actuators of these type of valves will be changed to improve the travel limiter adjustment methodology, based on this experience.

The SIL check valve was disassembled and inspected. The body to bonnet gasket was replaced. The freedom of movement of the valve disk was verified after the inspection. The valve was reassembled and subsequently retested satisfactorily prior to startup.

V. Additional Information

LER 91-004-01 discusses similar events of containment leakage in excess of Technical Specification limits due to containment isolation valve leakage.

EIIS Codes

Systems

Containment Ventilation System - VA

Chilled Water System - KM

Low Pressure Safety Injection - BP

Components

Isolation Valve - ISV

TABLE 1

Containment Bypass Leakage Data (in SCCM)

Penetration (No.)	Valve ID	As-Left (RFO4)	As-Found (RFO5)	As-Left (RFO5)
Containment Vacuum (37)	3CVS*V20[1]	9,000	11,970	82.7
Purge Exhaust (85)	3HVU*CTV33B 3HVU*CTV32B	1,900	7,820	138.1
Purge Supply (86)	3HVU*CTV33A 3HVU*CTV32A 3HVU*V5	20	7,300	664
Chilled Water (38)	3CDS*CTV91A 3CDS*CTV38A 3CDS*RV105A	512.0	52,900	1634.0
	Other Penetrations	1288.5	1428.6	1391.8
	Total	12,720.5	81,418.6	3910.6
	Allowable Limit (0.042 L_a)	20,633.9	20,633.9	20,633.9

Containment Type C Leakage Data (in SCCM)

Safety Injection (93)	3SIL*MV8809A	110.3	2,060.0	268.0
	3SIL*V6[(2)]	61.8	Undetermined	544
	3SIL*V7	20	134.2	134.2
	Other Penetrations	144,468.7	229,602.1	56,278.1
	Total	144,570.5	229,756.3	56,976.3
	Allowable Limit ($0.6L_a$)	294,800.2	294,800.2	294,800.2

Notes

(Containment integrity is maintained by the following valves):

	Valve ID	As-Left (RFO4)	As-Found (RFO5)	As-Left (RFO5)
(1)	3CVS*AOV23	27	46.5	49.4
	(Containment isolation valve associated with 3CVS*V20)			
(2)	3SIL*CV8890	20	20	20
	(Containment isolation valve associated with 3SIL*V6)			

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

Figure 1, Containment Purge Supply Penetration, #86

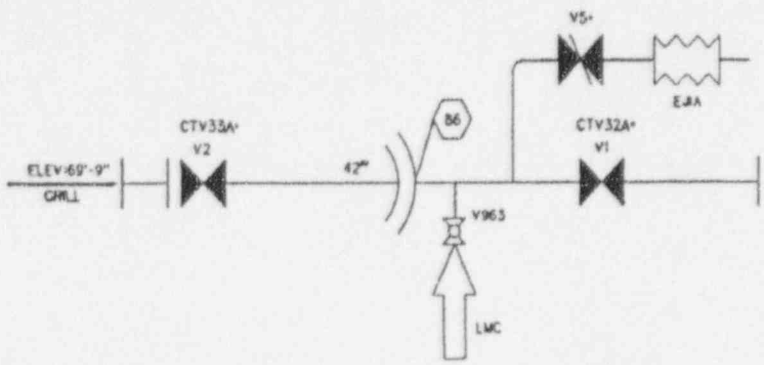


Figure 2, Containment Purge Exhaust Penetration, #85

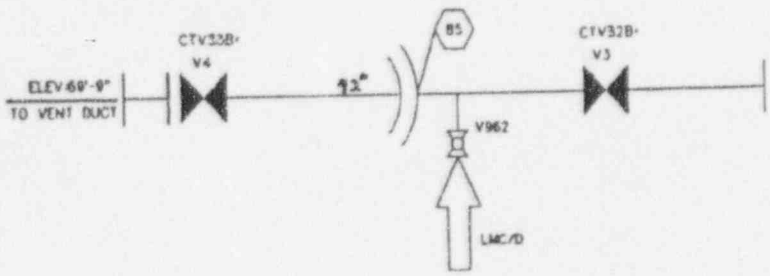
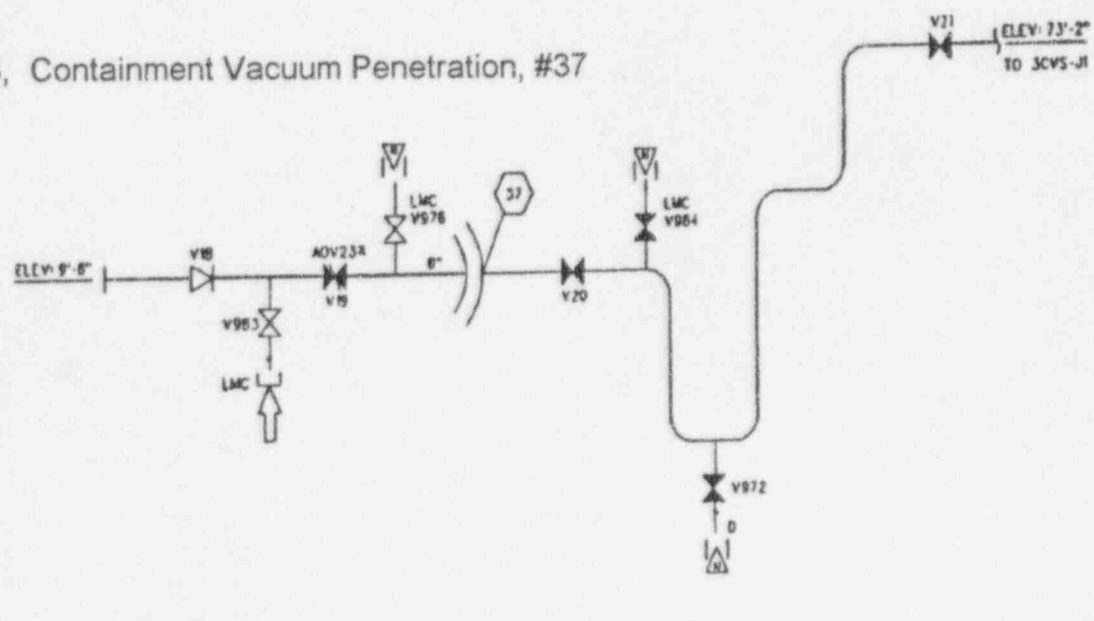


Figure 3, Containment Vacuum Penetration, #37



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U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

Figure 4, Chilled Water Penetration, #38

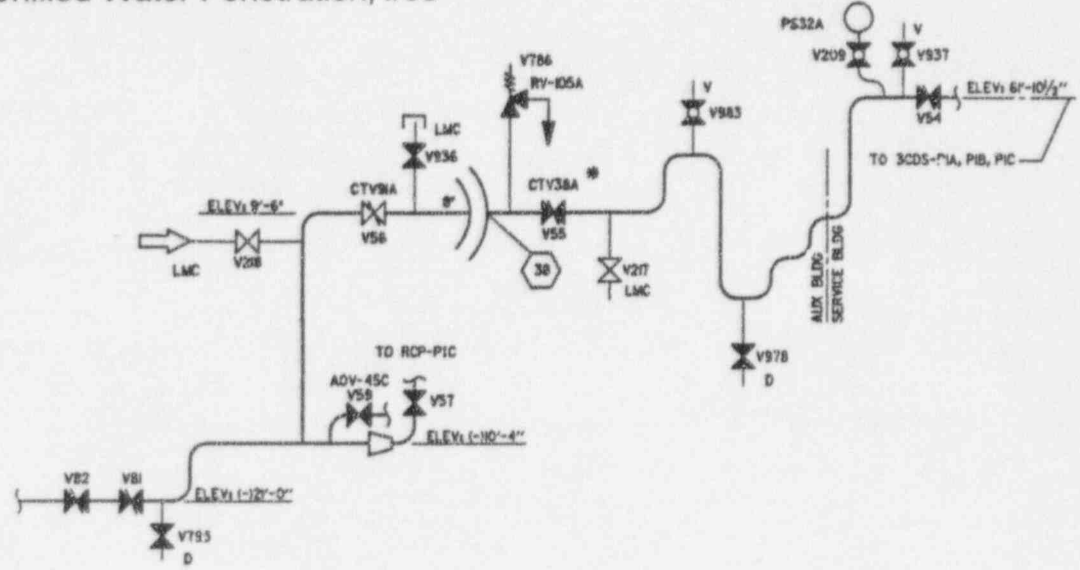

Figure 5, Low Pressure Safety Injection, #93