

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
HARTFORD, CONNECTICUT 06141-0270
(203)665-5000
October 25, 1993
MP-93-846

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

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

Reference: Facility Operating License No. DPR-21
Docket No. 50-245
Licensee Event Report 93-014-00

Gentlemen:

This letter forwards Licensee Event Report 93-014-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(ii).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Vice President - Millstone Station

SES/DNH:ljs

Attachment: LER 93-014-00

cc: T. T. Martin, Region I Administrator
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3
J. W. Andersen, NRC Acting Project Manager, Millstone Unit No. 1

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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 INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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 1	DOCKET NUMBER (2) 05000245	PAGE (3) 1 OF 03
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TITLE (4)
Potential Uninhabitability of the Control Room

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
09	23	93	93	014	00	10	25	93		05000
										05000

OPERATING MODE (9) N	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)										
POWER LEVEL (10) 100	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)	
	20.405(a)(1)(f)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)	
	20.405(a)(1)(g)			50.36(c)(2)			50.73(a)(2)(vi)			OTHER	
	20.405(a)(1)(h)			50.73(a)(2)(f)			50.73(a)(2)(vii)(A)			(Specify in Abstract below and in Text, NRC Form 365A)	
	20.405(a)(1)(i)			X 50.73(a)(2)(g)			50.73(a)(2)(vii)(B)				
20.405(a)(1)(j)			50.73(a)(2)(h)			50.73(a)(2)(v)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Drexel N. Harris, Site Licensing	TELEPHONE NUMBER (Include Area Code) (203) 437-5903
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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)

On September 23, 1993, at 1715 hours with the plant operating at 100% power (530 degrees Fahrenheit, 1030 PSIG), it was determined a previously discovered opening in the Standby Gas Treatment (SGT) Trains could potentially release radioactivity that would result in radiation levels in the control room greater than that established by the Millstone Unit 1 Updated Final Safety Analysis Report. Specifically, in the event of a postulated design basis loss of coolant accident with SGT operation, a 1/2 inch diameter opening downstream of the SGT fan could discharge radioactivity into an area that communicates with the control room. This condition could have rendered the control room uninhabitable.

The openings were plugged to preclude a potential discharge of radioactivity. No additional openings were found.

No safety systems were required to function as a result of this finding.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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FACILITY NAME (1) Millstone Nuclear Power Station Unit 1	DOCKET NUMBER (2) 05000245	LER NUMBER (6)			PAGE (3) 02 OF 03
		YEAR 93	SEQUENTIAL NUMBER 014	REVISION NUMBER 00	

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

I. Description of Event

On September 23, 1993, at 1715 hours with the plant operating at 100% power (530 degrees Fahrenheit, 1030 PSIG), it was determined a previously discovered opening in the Standby Gas Treatment (SGT) Systems Trains could potentially release radioactivity that would result in radiation levels in the control room greater than that established by the Millstone Unit 1 Updated Final Safety Analysis Report dose rate limit of 0.5 rem in any eight hour period following a design basis accident. Specifically, in the event of a postulated design basis loss of coolant accident (LOCA) with SGT operation, a 1/2 inch diameter drain port downstream of the SGT fan could discharge activity into the Heating and Ventilation and Air Conditioning (HVAC) room. This activity could migrate into the control room via the control room ventilation ductwork, which is located in the HVAC room. Assuming the design basis source term, the resulting high radioactivity levels in the control room could have caused the control room to become uninhabitable.

II. Cause of Event

The root cause of this finding has been determined to be a deficiency in the SGT design which did not assure the leak tightness of the system. A contributing factor is the SGT train relative to its location in the plant. In the event of a LOCA, the SGT system is used to filter iodine radioactivity from the air in the Reactor Building which leaks from the primary containment before releasing it to the environment. Under these conditions, the SGT train contains core noble gas activity and core iodine gas activity.

The SGT system was also designed with a drain port on the fan housing discharge to prevent the accumulation of condensation in the fan housing. The affects of the radioactivity being released through the drain port on the HVAC room equipment were not evaluated during the original plant design.

III. Analysis of Event

This event is being reported under 10CFR50.73(a)(2)(ii) which requires the reporting of any condition that was outside the design basis of the plant.

In the event of a LOCA, the SGT system is used to filter iodine radioactivity from the air in the Reactor Building which leaks from the primary containment before releasing it to the environment. The release of 12 scfm through the 1/2 inch diameter drain port would concentrate activity in the HVAC room and impact the control room operator doses.

The event postulated is the design basis LOCA, which requires the assumption that 25% of the core iodine activity and 100% of the core noble gas activity be released to the primary containment atmosphere. Under the design basis LOCA conditions, the primary containment is assumed to leak at the design leak rate of 1.2 weight % per day. Most of this leakage would be into the Reactor Building and a fraction would be through the Main Steam Isolation Valves into the main condenser. The leakage into the Reactor Building is processed by the SGT system which automatically initiates during a LOCA.

The SGT system is designed to reduce the iodine activity by a factor of 10 as it is filtered through the charcoal adsorbers. Based on this design criteria, about 1% of the remaining iodine activity is passed through the charcoal adsorbers and would be released through the drain port into the HVAC room at a rate of 12 scfm. Assuming a loss of normal power (LNP) during the LOCA event, power to the HVAC room ventilation system and the control room ventilation system would be load shed and would not automatically restart. Loss of HVAC room ventilation would create a buildup of iodines and noble gases in the HVAC room.

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		YEAR 93	SEQUENTIAL NUMBER 014	REVISION NUMBER 00	

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

When the control room ventilation system, located in the HVAC room, is restored in accordance with the LNP restoration procedure, the control room ventilation ductwork would develop a negative pressure upstream of the control room recirculation fan. This would result in an estimated inleakage of 1 scfm. This inleakage is sufficient to produce control room operator doses significantly greater than the Millstone Unit 1 Updated Final Safety Analysis Report dose rate limit of 0.5 rem in any eight hour period following a design basis accident.

The radiation levels in the HVAC room and control room have no affect on equipment operability. The electrical equipment in the HVAC room required to operate to mitigate a LOCA are presently environmentally qualified components that are bounded by the existing environmental qualification program or they are not susceptible to radiation degradation at the postulated radiation levels. The electrical equipment in the control room is not susceptible to radiation degradation at the postulated radiation levels.

Although the design basis accident conditions and assumptions conclude significant control room operator doses, the actual dose impact on the control room operator would be considerably less. The following summarizes the basis for this determination.

- Best estimate analysis for design basis LOCAs indicates little or no activity is expected to be released from the core.
- Primary containment leakage would be much lower than the design leak rate of 1.2 weight % per day (-0.14 weight % per day based on 'as left' penetration and containment leakage test data).
- Realistic SGT charcoal filter radioiodine removal efficiencies are a minimum of 99% (as required by Technical Specification 3.7.B.2.a) vice the DB LOCA assumption of 90% efficiency.
- The control room ventilation radiation monitor is an area radiation monitor (ARM) located outside the control room ventilation ductwork in the HVAC room. During restoration from the LNP, this ARM would be in the alarmed condition. In accordance with procedures, a radiation survey of the area would be required. This survey would most likely declare the HVAC room also uninhabitable. Since restoration of the control room ventilation system requires access to the HVAC room, the control room ventilation system would remain secured and the control room would remain unaffected by the radiation environment in the HVAC room. Alternate control room cooling methods utilizing temporary fans and opening doors would be pursued.

IV. Corrective Action

A technical evaluation to determine the acceptability of plugging the openings was performed. It concluded installation of the plugs would not adversely impact SGT System operation, and was also within the design basis of the SGT System. Therefore, the openings in the SGT system trains were plugged to preclude a potential discharge of radioactivity.

The leak tightness of the SGT train up to and including the charcoal filters is verified annually per Technical Specifications. The SGT system trains were also visually inspected for additional openings upstream of the charcoal filter and downstream of the charcoal filter where the openings were discovered. No additional openings were found.

V. Additional Information

None