

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Millstone Nuclear Power Station Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 3 6	PAGE (3) 1 OF 0 3
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TITLE (4)
Cracking Discovered in a Mechanical Plug From a Steam Generator Tube at MP2

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	3	20	8	9	004	0	4	19	0 5 0 0 0		
0	3	20	8	9	004	0	4	19	0 5 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)	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)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
John G. Resetar, Engineer X5411	AREA CODE: 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 NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
B	A B	P L U G	W3 5 1	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

Millstone 2 had made a decision to remove 4 mechanical tube plugs from Steam Generator (SG) No. 2 based on the fact that Westinghouse suspect problem heat treated plugs were installed at Millstone 2 and also based on the SG tube leak at North Anna 1. On 3/20/89 at 1015 hours, with the plant in cold shutdown (Mode 5), a visual inspection of a mechanical tube plug which had been removed from SG No. 2, line 78 row 74, showed indications of circumferential cracking at the top of the plug, above the expander. Since the plug, manufactured by Westinghouse, was marked with the heat number (NX3513) previously identified as being a heat which was suspected as being susceptible to primary water stress corrosion cracking, an immediate report was generated. There were no operator actions associated with this event since at the time of discovery, the Steam Generator was out of service for repair and testing. Suspect plugs in both SG No. 1 and SG No. 2 have been plugged with a leak limiting device which will prevent any plant safety problems or a repeat of the North Anna 1 incident. No further corrective action is required.

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

I. Description of Event

Millstone 2 had made a decision to remove 4 mechanical tube plugs from the Steam Generator (SG) No. 2 based on the fact that Westinghouse suspect problem heat treated plugs were installed at Millstone 2 and also based on the SG tube leak at North Anna 1. On 3/20/89 at 1015 hours, with the plant in cold shutdown (Mode 5), a visual inspection of a mechanical tube plug which had been removed from Steam Generator No. 2, line 78 row 74, showed indications of circumferential cracking at the top of the plug, above the expander. Since the plug, manufactured by Westinghouse, was marked with the heat number (NX3513) previously identified as being a heat which was suspected as being susceptible to primary water stress corrosion cracking, an immediate report was generated. There were no operator actions associated with this event since at the time of discovery, the Steam Generators were out of service for repair and testing.

II. Cause of Event

The root cause of the cracked plug has been generically described by Westinghouse as cracking induced by Primary Water Stress Corrosion Cracking (PWSCC). After examining the microstructure of various plugs, Westinghouse feels that some plugs exhibited minimal grain boundary carbides as a result of inadequate post manufacturing heat treating. Three suspect plug heats have been identified. The heat number of the failed plug is NX3513.

III. Analysis of Event

This event is being reported pursuant to the requirements of paragraph 50.73(a)(2)(ii) due to the degraded condition of the mechanical tube plugs.

In reviewing the safety consequences of this condition, it was originally determined that if cracking were to occur, a leak before break condition would exist. Based on the Technical Specification leakage limit requirements, a controlled shutdown would be initiated. After reviewing the North Anna Unit 1 incident, calculations were performed which showed that a plug top could be propelled up the tube causing a partial tube rupture event. Calculations were then performed utilizing a leak limiting device installed in the suspect tube plugs. The safety consequences of this event were reviewed with respect to the bounding conditions of a steam generator tube rupture event. It was determined that the plugs with the leak limiting devices installed in them created no safety concerns. This modification ensures that Technical Specification leakage limits and structural integrity margins of Regulatory Guide 1.121 are maintained.

There were no safety systems effected by this event.

IV. Corrective Action

The tube from which the cracked tube plug was removed was replugged with a new mechanical tube plug. Other affected tube plugs associated with the suspect heat were plugged with a leak limiting device. This "plug in plug" (PIP) device was torqued into the plug expander then tack welded to the bottom of the plug. This device was installed in all hot leg plugs that were suspected to be from heat lot NX3513. Westinghouse initially manufactured the plug lot in question in 1984. Millstone researched the QA records related to plugging programs since that time and found that the suspect plugs were installed in 1986, 1987 and 1988. Westinghouse testing and analysis has shown that the plug failure is very temperature dependent. As such, analysis was performed which eliminated the need to install the device in any cold leg plugs. A total of 446 PIPs were installed in the Millstone Steam Generators. All work was reviewed with resident and senior resident NRC inspectors.

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		YEAR 8 9	SEQUENTIAL NUMBER 0 0 4	REVISION NUMBER 0 0		

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

V. Additional Information

Plug
 Manufacturer: Westinghouse
 Model: 27 / C-E
 Size: 3/4 inch
 EISS Code: AB - PLUG - W351

Steam Generator
 EISS Code: AB - SG - C490

Similar Events: None

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 06414-0270
(203)665-5000

April 19, 1989
MP-12983
Re: 10CFR50.73(a)(2)(ii)

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

Reference: Facility Operating License No. DPR-65
Docket No. 50-336
Licensee Event Report 89-004-00

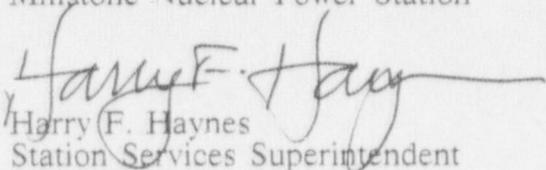
Gentlemen:

This letter forwards Licensee Event Report 89-004-00 required to be submitted within thirty (30) days pursuant to paragraph 50.73(a)(2)(ii).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

BY: 
Harry F. Haynes
Station Services Superintendent
Millstone Nuclear Power Station

SES/JGR:mo

Attachment: LER 89-004-00

cc: W. T. Russell, Region I
W. J. Raymond, Senior Resident Inspector

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