

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

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December 20, 1989
MP-13884

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

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 89-029-00

Gentlemen:

This letter forwards Licensee Event Report 89-029-00 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

A handwritten signature in cursive script that reads "Stephen E. Scace".

Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

SES/KJ:tjp

Attachment: LER 89-029-00

cc: W. T. Russell, 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

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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-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) Millstone Nuclear Power Station Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 4 2 3	PAGE (3) 1 OF 0 3
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TITLE (4)
Missed Axial Flux Difference Technical Specification Surveillance Due to Procedural Inadequacy

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		
1	1	2 0 8 9	8 9	0 2 9	0 0	1	2 2	0 8 9	0 5 0 0 0 0		
									0 5 0 0 0 0		

OPERATING MODE (9) 1	THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.402(d)	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)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(x)								

LICENSEE CONTACT FOR THIS LER (12)

NAME Keith Jensen, Engineer, Ext 5496	TELEPHONE NUMBER AREA CODE 2 0 3 4 4 7 - 1 7 9 1
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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

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)

At 0240 on November 21, 1989, with the plant operating at 90% power, plant operators determined that the Axial Flux Difference (AFD) monitoring program "Tilting Factors" was not operating correctly. Per Technical Specification 4.2.1.1.b, operators immediately began manual monitoring of AFD. The ensuing investigation revealed that Tilting Factors had been inoperable since 1355 on November 20, 1989. The program was restored to operable status at 0720 on November 21, 1989.

The time between AFD monitoring program inoperability and initiation of manual AFD monitoring was approximately 13 hours. A review of Power Range detector data for this period indicates that AFD did stay within the Technical Specification limits during this time. Since all Technical Specification limits were met, there was no significant impact on safety.

The root cause of this event was procedural inadequacy in that a software modification procedure did not specify adequate restoration guidelines. To prevent recurrence, a Computer Services Department Instruction will be written by March 1, 1990, to provide specific instructions on the implementation of, and restoration from, software modifications. In addition, Computer Operations personnel have been notified of this event and the need to include specific restoration guidelines.

**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-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) Millstone Nuclear Power Station Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 4 2 3	LER NUMBER (6)			PAGE (3)		
		YEAR 8 9	SEQUENTIAL NUMBER 0 2 9	REVISION NUMBER 0 0			

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

I. Description of Event

At 0240 on November 21, 1989, with the plant operating at 90% power at a temperature of 585 degrees Fahrenheit and 2250 psia, operations personnel noticed a disparity between the Axial Flux Difference (AFD) calculated by the plant process computer and the AFD indicated on Main Board 4. Since the AFD indication on Main Board 4 is received directly from the Power Range instrumentation, it was concluded that the computer program which calculates AFD, "Tilting Factors" was inoperable per Technical Specification 4.2.1.1.1.b. Operators immediately began logging AFD values. An ensuing investigation revealed that the Tilting Factors program had been inoperable since 1355 on November 20, 1989.

On November 20, 1989, Computer Operations began a modification to the Inadequate Core Cooling Monitor (ICCOM) software on the plant process computer. This software change required modifications to subroutine CDVALUE. This subroutine is also used by eight other programs on the plant process computer, including Tilting Factors. The Software Implementation Package (SIP) for this modification included guidance for restoring subroutine CDVALUE. However, the SIP included only a reference to a generic procedure for restoring the Load Modules the software runs on. Personnel performing the software change properly restored the Load Module to support the ICCOM software, but failed to properly restore the Load Module to support the Tilting Factors program.

"Tilting Factors" receives input from the Power Range detectors and computes Quadrant Power Tilt Ratio and Axial Flux Difference (AFD) each minute. The AFD is a measure of flux imbalance between the top and bottom of the core. The calculated AFD is then compared to the Technical Specification AFD limits. A Main Board annunciator will alarm if AFD moves outside these limits. The Tilting Factors program therefore performs the alarm function required by Technical Specifications. As a result of the failure to restore load Module LM, Tilting Factors failed "as is". No calculations were being performed, and the program outputs displayed to the operators stopped updating. The Main Board annunciator would not have alarmed on AFD outside the limits. When the AFD Monitoring Program is inoperable, Technical Specification Surveillance Requirement 4.2.1.1.1.b requires manual AFD monitoring and logging. This was not done, since the operators did not know that the program was inoperable.

At approximately 0650 on November 21, 1989, the operators informed Computer Services of the Tilting Factors problem. After investigation, the Load Module was correctly restored. Computer Services and Reactor Engineering confirmed correct program operation. Tilting Factors was therefore declared operable at 0720 on November 21, 1989.

II. Cause of Event

The inoperability of Tilting Factors was caused by procedural inadequacy. If the SIP had listed the specific Load Modules to be restored, the Tilting Factors Load Module would not have been overlooked in the restoration process.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	

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

III. Analysis of Event

This event is reportable in accordance with 10CFR50.73(a)(2)(i) as an operation or condition prohibited by the plant's Technical Specifications. Plant Technical Specification 4.2.1.1.b requires manual AFD monitoring and logging to be performed when the AFD monitor alarm is inoperable, and this was not done. No AFD logging occurred between 1355 November 20, 1989 and 0240 on November 21, 1989, a period of approximately 13 hours. Review of Power Range detector data for this period indicates that AFD did stay within the Technical Specification limits. In addition, the operators monitor AFD closely during power changes to maintain margin to the Technical Specification limits. Therefore there was no significant impact on safety, since no Technical Specification limits were exceeded.

IV. Corrective Action

Immediate corrective action was to manually monitor and log AFD. At 0720 on November 21, 1989, the Tilting Factors Load Module was properly restored and correct operation of the Tilting Factors program was verified. To prevent recurrence, a Computer Services Department Instruction will be written by March 1, 1990, to provide specific instructions on the implementation of and restoration from software modifications. In addition, Computer Services personnel have been notified of this event and the need to include specific restoration guidelines.

V. Additional Information

LER 86-026-00 documented an event where the AFD monitor was inoperable due to a computer failure. In LER 86-026-00 the root cause was a failure of personnel to realize the computer failure rendered the AFD monitor inoperable. As such, this event had a different root cause and action to prevent recurrence. Therefore the corrective action discussed in LER 86-026-00 would not have prevented this occurrence.

EIS Codes

System

Components

Computer System - ID

Alarm - ALM

Incore / Excore Monitoring System - IG

Computer - CPU