

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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February 8, 1990
Docket No. 50-423
A08442
Re: 10CFR2 Appendix C

Mr. W. T. Russell
Regional Administrator, Region 1
U. S. Nuclear Regulatory Commission
457 Allendale Road
King of Prussia, PA 19406

Reference: (1) E. C. Wenzinger Letter to E.J. Mroczka, Millstone 3
Routine Inspection 50-423/89-16, Dated
December 15, 1989.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Response to Notice of Deviation
Inspection Report 50-423/89-16

I. Introduction

In a letter dated December 15, 1989 [Reference (1)], the NRC transmitted the results of their routine resident inspection conducted at Millstone Unit No. 3 from August 29, 1989 to October 15, 1989. In its letter the staff identified one deviation. The deviation involved insufficient testing of the main steam isolation valve (MSIV) safety systems. The staff requested that Northeast Nuclear Energy Company (NNECo) provide a written explanation or statement describing corrective steps taken or planned, the results achieved, and the date when corrective action will be completed. Pursuant to the provisions of 10CFR2, Appendix C, NNECo hereby provides the following response to the Notice of Deviation contained in Reference (1).

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II. NNECo Response to Deviation

NNECo's response to the Notice of Deviation identified by the staff is set forth below:

A. Staff's Statement of The Deviation

"The Millstone Unit 3 Final Safety Analysis Report (FSAR), Chapter 1.8, Section 1.8 and Table 1.8-1 commits the licensee to full compliance to Regulatory Guide 1.118 (Periodic Testing of Electrical Power and Protection Systems), Revision 2, June 1978. Regulatory Guide 1.118, Paragraph C states, in part, that the requirements and recommendations for the periodic testing of electrical power and protective systems contained in the Institute of Electrical and Electronics Engineers (IEEE) Standard 338-1977 are considered acceptable by the NRC. The IEEE Standard 338-1977 Section 6.1 states, in part, operability of each redundant portion of the safety system shall be independently verified where practical during reactor operation. Tests which would interfere with normal or safe plant operation should be scheduled during plant shutdown periods. Furthermore, section 5.6 states, in part, functional tests may be supplemented by, but not replaced with, continuity checks to determine specific failure modes.

Contrary to the above as of October 15, 1989, the licensee did not comply with Regulatory Guide 1.118, Paragraph C as committed in the Millstone Unit 3 FSAR Chapter 1.8, Section 1.8 and Table 1.8-1, by not complying with the requirements and recommendations for the periodic testing of electrical power and protection systems in the IEEE Standard 338-1977. Contrary to IEEE Standard 338-1977 Section 6.1, the licensee did not independently verify the operability of each redundant portion of the main steam isolation valve (MSIV) safety system while conducting MSIV operational tests during plant shutdown periods. In addition, contrary to the IEEE Standard 338-1977 Section 5.6, the licensee performed continuity checks in lieu of operability checks of the MSIV system, to determine specific failure modes. Continuity checks that were performed did not provide adequate assurance that a MSIV will close in the required five seconds as specified in the plant Technical Specification 3.7.1.5, when only one of the two MSIV actuating systems is operable".

B. Background

Prior to December 29, 1989, Millstone Unit No. 3 did not independently verify the operability of each redundant portion of the MSIV safety system while conducting MSIV operability tests during plant shutdown periods.

Millstone Unit No. 3 performed full stroke testing during cold shutdown periods using nitrogen and during hot shutdown periods using steam. MSIV operability was demonstrated by recording the time required to fully close an MSIV. A stopwatch was used to record the time between switching the MSIV position switch to closed and receiving the MSIV closed indication on the main control board. The MSIV position switch actuates both safety trains simultaneously. The ability to test each safety train individually is not inherent to the MSIV design. In order to independently verify the operability of each MSIV safety train, the train not being tested must be physically blocked out of the actuation circuit so that the closure signal never reaches the MSIV solenoids.

The MSIV design philosophy specified the ability to stroke the MSIV closed during normal and accident conditions with the following criteria:

- * When electrical power is removed from both trains (de-energizing train A and B), the MSIV shall close in less than 5 seconds.
- * When electrical power is removed from only one train (de-energizing train A or B), the MSIV shall close in less than 5 seconds.

During cold shutdowns nitrogen is used in place of steam as the motive force. The MSIV design only supplies nitrogen to the B train. Therefore, the ability to test an MSIVs A train during cold shutdown is not available.

Millstone Unit No. 3 Technical Specification 3.7.1.5 requires each MSIV to be demonstrated operable by verifying full closure within 5 seconds. The Technical Specifications do not specify independent testing of the redundant portion of the MSIV safety systems.

C. Root Cause

The root cause of the subject Notice of Deviation was personnel error. Personnel developing the MSIV testing procedures did not identify the need to independently verify the operability of both redundant MSIV safety trains during plant shutdown periods. Contributing causes are as follows:

- * The MSIV design is a unique case on Millstone Unit No. 3.
- * The MSIVs are the only valves which have different operating characteristics for different trains.
- * The MSIV design does not provide for single train testing. A safety train must be physically blocked out of the actuation circuit to allow for single train full stroke testing.

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- * Millstone Unit No. 3 plant Technical Specifications do not specify the need to independently verify the operability of both redundant MSIV safety trains.

D. Corrective Action

The immediate corrective action of Millstone Unit No. 3 was to verify that a single MSIV safety train would independently close an MSIV within 5 seconds. Sulzer Brothers Limited, the MSIV manufacturer, confirmed that each safety train was designed to independently close the MSIV in less than 5 seconds. Sulzer also stated that MSIV hot functional tests were performed verifying that both safety trains independently closed the corresponding MSIV within 5 seconds.

On December 6, 1989, an inservice test was performed on the MSIVs to document the time required for each MSIV safety train to close its associated MSIV. The test verified that all MSIV safety trains independently closed their associated MSIV within 5 seconds.

E. ACTION TO PREVENT RECURRENCE

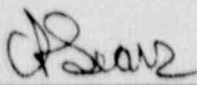
On December 29, 1989, as action to prevent recurrence of the subject Notice of Deviation, Millstone Unit No. 3 revised the "Main Steam System Valve Operability Tests" surveillance procedure. The revised test procedure independently verifies the operability of each redundant portion of the MSIV safety system during plant shutdown periods.

If you have any questions regarding the information contained in this letter, please contact us.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: E. J. Mroczka
Senior Vice President

BY: 

C. F. Sears
Vice President

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cc: D. E. Jaffe, NRC Project Manager, Millstone Unit No. 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1,
2, and 3

U.S. Nuclear Regulatory Commission
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