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

February 1, 1991

Docket No. 50-336
A09246
Re: 10CFR2.201

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Response to Notice of Deviation
NRC Region I Inspection No. 50-336/90-22

By letter dated December 28, 1990,(1) the NRC transmitted its Inspection Report No. 50-336/90-22 and associated Notice of Deviation. The deviation involves failure to test reactor protection channels and failure to operate the loose-parts monitor in accordance with Final Safety Analysis Report (FSAR) commitments. The Staff requested that Northeast Nuclear Energy Company (NNECO) respond to the Notice of Deviation within 30 days of the date of the notice. In a telephone conversation with Region I personnel on January 28, 1991, an extension was requested and subsequently granted. This extension was requested in order to ensure a quality response. NNECO hereby submits its response to the Notice of Deviation as Attachment 1.

NNECO trusts that the information provided herein fully addresses the NRC Staff's concerns regarding these issues. Please contact us if you have any questions.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

E. J. Mroczka
Senior Vice President

Attachment
cc: See next page

(1) C. W. Hehl letter to E. J. Mroczka, "NRC Region I Combined Inspection Nos. 50-245/90-20, 50-336/90-22, and 50-423/90-20," dated December 28, 1990.

JE01
1/1

cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

STATE OF CONNECTICUT)
) ss. Berlin
COUNTY OF HARTFORD)

Then personally appeared before me, E. J. Mroczka, who being duly sworn, did state that he is Senior Vice President of Northeast Nuclear Energy Company, a Licensee herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Licensee herein, and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Lorraine J. D'Amico
Notary Public
My Commission Expires March 31, 1993

Docket No. 50-336
A09246

Attachment No. 1

Millstone Nuclear Power Station, Unit No. 2

NRC Region I Inspection No. 50-336/90-22
Response to Notice of Deviation

February 1991

Millstone Nuclear Power Station, Unit No. 2
NRC Region I Inspection No. 50-336/90-22
Response to Notice of Deviation

A. Staff Statement of Deviation (first part)

"Final Safety Analysis Report (FSAR) section 7.2.2 states that the requirements of IEEE Standard 338-1971 will be met for the testing of reactor protection system (RPS) channels. IEEE Standard 338-1971 requires that tests be conducted by inserting a simulated signal "as close to the sensor as practicable." Licensee procedure SP 2401G was developed to meet the above commitments and provides the monthly functional test of RPS channels.

"Contrary to the above, as of November 15, 1990, the monthly functional tests for the RPS channels for reactor coolant system flow, reactor coolant pump speed and the zero power mode bypass interlock were not performed by inserting a simulated signal as close to the primary sensor as practicable."

Response

The Millstone Unit No. 2 FSAR Section 7.2.2 states that testing of reactor protection system (RPS) channels "meets the general requirements of IEEE 338-1971." We do not consider this to be a commitment to a literal interpretation of the IEEE guidance. The FSAR specifically addresses the RPS testing methodology currently being used.

The Millstone Unit No. 2 Technical Specification Section 1.10 states:

"A channel functional test shall be the injection of a simulated signal into the channel as close to the sensor as practicable to verify the OPERABILITY including the alarm and/or trip functions."

In the case of the RCS flow and RCP speed tests, the test signal is injected at the input to the RPS trip module. In some other functional test procedures, the test signal is introduced at the input to the SPEC 200 cabinet in lieu of the transmitter input. In these other procedures, the test signal is injected at the location that most effectively tests multiple functional units. In the case of the RCP speed and the RCS flow instrument loops, the RPS trip units are the only functional units in the loop that require functional testing.

NNECO's understanding is that the functional test is to determine that the functional aspects of a given channel are demonstrated to operate in a "go/no go" manner of assessment. Functional tests are not required to assess calibration accuracy. Channel checks provide the assurance that the overall instrument channel is providing an operable signal from

sensor to point of display. Calibration activities provide the necessary comparison of the system measurements to a traceable standard to address the issues of instrument accuracy and instrument drift.

FSAR Section 7.2.4 addresses the testing methodology. The fourth paragraph identifies how the channel check and functional test are performed and that proper overlap exists. This section supports the existing basis for why the functional test method and point of simulated signal injection are appropriate.

The first paragraph identifies IEEE Standard 338-1971 as a document that provides guidance for testing protection systems. Section 2.1 identifies that testing scope may be accomplished by several methods. One includes introducing and varying, as appropriate, a substitute input to the sensor of the same nature of the measured variable. Another is by cross-checking between outputs of channels that bear a known relationship to each other. In addition, Section 5.3.2(3) addresses testing when access to the sensor is not available, as is the case with these channels, and the use of simulated signals. Section 5.3.5 identifies that if a portion of a channel is not included in a test, its operability may be verified by comparing readings between channels which bear a known relationship to one another. NNECO believes that through the combined use of these methods, the test overlap is established as stated in the FSAR and is in full compliance with the intent of IEEE-338.

NNECO has reviewed the desirability of performing functional testing with the test signal being introduced into the channel at the earliest position of the control room loop. Since, in the present configuration of the bistables, operability is adequately verified, it is NNECO's position that the intent of IEEE 338-1971 is satisfied.

The proposed modification to the test would require the channel to be out of service for additional time. The potential for error in performing the more complex test would be increased. As additional components would be included, increases in the acceptance criteria tolerance would be required. This would result in a less precise assessment of the functional trip unit operability. In order for such a test method to improve or equal the existing testing process, calibration-type measurements and comparisons would have to be performed during the functional test. This is clearly not required by either the functional test definition or the IEEE standard.

NNECO has reviewed the need to functionally test the additional components in the instrument loops and has concluded that no additional demonstration of operability would be achieved nor additional functional attributes would be demonstrated by inserting the signals at a point earlier in the loop.

In summary, NNECO does not believe the current method of performing the functional RPS test deviates from statements in the FSAR or Millstone Unit No. 2 Technical Specifications. The point of insertion is consistent with respect to the FSAR, the referenced IEEE guidance, and the Technical Specifications.

B. Staff Statement of Deviation (second part)

"FSAR Section 7.5.7.4 states that during normal loose parts monitoring system operation, both loop magnetic recorders are in the record mode making an audio record of the output from each of the eight sensors on the primary coolant system. Licensee procedure OP-2387B Revision 2 was developed to meet the above commitment during normal system operations.

"Contrary to the above, as of November 8, 1990, at 2:00 p.m., the operating procedure OP-2387B was not being implemented in that magnetic recorders were not in service providing an audio record of output from the loose parts monitoring sensors."

Reason for Deviation

NNECO acknowledges that OP-2387B has not been fully implemented due to certain components of the system being considered out of service.

The Millstone Unit No. 2 loose-parts monitor (LPM) system has had a history of poor reliability. After the removal of the thermal shield in 1983, efforts were undertaken to improve its performance. OP-2387B was revised to include current guidance for use by operations. These efforts proved unsuccessful. In 1988, the status of the system was reviewed and the decision to pursue total replacement of the system was made since design of the system was outdated and inadequate, and neither of the 8-track style recorders function or are maintainable. Also, spare parts for the existing equipment are not available and in-containment repairs to the existing system are not considered appropriate due to the high radiation exposure required and the limited reliability of the existing design.

Corrective Actions

OP-2387B has been changed to address this deviation. The changes to OP-2387B included removal of any reference to tape or recorder manipulation and the requirement to listen to the audio output of all channels. Experience has shown that only specially trained individuals can discern any difference in the audio output and very little meaningful information can be gathered through this effort.

A 10CFR50.59 evaluation was performed to support the procedure change, with no resulting unreviewed safety questions.

Actions to Prevent Recurrence

A record of the operable channel output will be taken on a monthly basis using existing I&C test equipment. The records will be reviewed and trended by NNECO until the LPM system upgrade is completed at the end of the 1992 refuel outage.

Date of Full Compliance

The deviation has been resolved in the short term by the procedure change. A project assignment has been authorized to remove the old system, from RCS sensor to control room electronics, and install one of improved design, reliability, and maintainability. This project is currently planned for the 1992 refueling outage.