NORTHEAST UTILITIES

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 665-5000

June 6, 1991

Docket No. 50-423
B13834
Re: 10CFR50.90

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

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Proposed Revision to Technical Specifications
Hydrogen Recombiners

Pursuant to 10CFR50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend its operating license, NPF-49, by incorporating the changes identified in Attachment 1 into the Technical Specifications of Millstone Unit No. 3.

Background

In a letter dated March 2, 1990,(1) the NRC Staff issued Amendment No. 47 to NNECO for Millstone Unit No. 3. This amendment was issued in response to a license amendment request submitted by NNECO on November 2, 1989 and later supplemented on December 1, 1989. Amendment No. 47, in part, modified Technical Specification 4.6.4.2.b.4, "Electric Hydrogen Recombiners," to provide variable acceptance criteria for flow testing at different containment pressures. Specifically, the amendment added an acceptance curve to the Technical Specifications for flow rate through the hydrogen recombiners.

Since the issuance of Amendment No. 47, new technical information has been received from the blower manufacturer, M-D Pneumatics, which indicates that the flow versus containment pressure curve should be replaced by a series of equations for increased accuracy. These equations use actual inlet pressure, temperature, and pressure rise across the blowers to predict the blower flow rate. Thus, a considerably more accurate flow acceptance determination can be

(1) D. H. Jaffe letter to E. J. Mroczka, Issuance of Amendment, dated March 2, 1990.

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made. Therefore, in a letter dated January 18, 1991,[2] NNECO submitted an amendment request which would revise the surveillance requirements for the hydrogen recombiners based upon new technical information received from the blower manufacturer.

On March 26, 1991, as a part of the 18-month surveillance test, a functional test of the Millstone Unit No. 3 hydrogen recombiner (A) was performed using the acceptance criteria included in Technical Specification 4.6.4.2.b.4 (License Amendment No. 47). The test results indicated that the hydrogen recombiner was capable of delivering a flow rate of approximately 74.5 scfm at a containment pressure of 14.77 psia. This represents a failure to meet the acceptance criteria of Technical Specification Figure 3.6-2 which is a pressure dependent flow curve by approximately 2 scfm.

On March 29, 1991, when the same test was repeated, the hydrogen recombiner (A) passed the acceptance criteria of Technical Specification Figure 3.6-2. The hydrogen recombiner (B) failed the technical specification flow rate by only 2 percent when it was tested on April 2, 1991. Based on these test results, NNECO could not verify the operability of both the hydrogen recombiners using the acceptance criteria included in Figure 3.6-2. Therefore, on April 2, 1991, NNECO informed the Staff of the current situation and NNECO's plan to request that the NRC Staff process a license amendment on an emergency basis. In a letter dated April 5, 1991[3] and supplemented by a letter dated April 8, 1991,[4] NNECO proposed that the following footnote be added to Technical Specification Figure 3.6-2:

> "Until September 30, 1991, a flow rate of 72.4 scfm or greater at a pressure of 14.5 to 14.8 psia is acceptable in lieu of the values indicated by Figure 3.6-2."

NNECO, in that letter, also requested that pursuant to 10CFR50.91(a)(5), the proposed technical specification change be approved on an emergency basis. Emergency authorization was requested to permit timely resumption of Millstone Unit No. 3 operation from the third refueling outage. The NRC granted a Temporary Waiver of Compliance from the requirement of technical

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(2) E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission, "Proposed Revision to Technical Specification--Hydrogen Recombiners," dated January 18, 1991.

(3) E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission, "Proposed Revision to Technical Specification--Hydrogen Recombiners," Request for Authorization and Approval, dated April 5, 1991.

(4) E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission, "Proposed Revision to Technical Specifications--Hydrogen Recombiners, Request for Emergency Authorization and Approval," dated April 8, 1991.

Specification 4.6.4.2.b.4 on April 9, 1991 to allow Millstone Unit No. 3 to resume power operation following the third refueling outage. Subsequently, on April 22, 1991,[5] the NRC issued the requested amendment. The purpose of this letter is to propose a change to Technical Specification Section 4.6.4.2.b.4 as the footnote to Figure 3.6-2 is only applicable until September 30, 1991. Therefore, NNECO hereby proposes to amend its operating license, NPF-49, by incorporating the changes identified in Attachment 1 into the Technical Specifications of Millstone Unit No. 3.

Description of the Proposed Changes

The surveillance requirement, 4.6.4.2.b.4, for the hydrogen recombiner is proposed to be modified. Specifically the description of the gas temperature (Section 4.6.4.2.b.4) and the flow rate have been separated. A new Section 4.6.4.2.b.5 for flow rate verification has been proposed. Verification of these acceptance criteria (Section 4.6.4.2.b.4 and 4.6.4.2.b.5) will be performed concurrently. The existing surveillance requirement requires testing with a flow rate above the limit specified in Figure 3.6-2. Figure 3.6-2 was developed using generic information for this type of blower. As stated earlier, since the issuance of Amendment No. 47, new technical information was received from the blower manufacturer which indicates that the flow versus containment pressure curve should be replaced by a series of equations for increased accuracy. These equations use actual temperature and pressure to calculate the recombiner flow. The equations are too complex to be included in the body of the technical specifications, however, these equations will be incorporated into the revised surveillance procedure. The equations provided by the blower manufacturer are the basis for the test method provided in Attachment 2 and are the basis for the proposed new Section 4.6.4.2.b.5. This proposed new Section 4.6.4.2.b.5 would require that the 18-month functional test for the hydrogen recombiners be performed using containment air which will verify that a flow rate of at least 41.52 scfm at a containment pressure of 12.47 psia and 130°F could be obtained. This flow rate included in the technical specification is the required design flow rate 24 hours after a loss of coolant accident (LOCA) which will maintain the hydrogen concentration inside containment at a safe level (below 4 percent). This method of testing ensures a performance level for the hydrogen recombiners which meets the requirement of the design basis analysis. The analysis has included the effect of containment pressure, temperature, and relative humidity on blower performance and hydrogen concentration. However, the flow rate included in Technical Specification 4.6.4.2.b.5 does not include instrument error. The error margin due to instrument error will be incorporated in the surveillance procedure rather than the technical specifications. The amount of instrument error varies significantly over the operating flow and pressure range of the system. The variability of this error makes it difficult to place error

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(5) D. H. Jaffe letter to E. J. Mroczka, "Issuance of Amendment (TAC No. 79628)," dated April 22, 1991.

margin in the acceptance criteria without becoming overly conservative. Revisions are also being proposed to Bases Soction 4.6.2.4 to reflect these changes. In addition, the Technical Specification Index would then be revised to reflect deletion of Figure 3.6-2. The appropriate changes to the Millstone Unit No. 3 Final Safety Analysis Report will be made within six months once the Staff issues the license amendment.

Safety Assessment

Since issuance of Amendment No. 47, new technical information has been received from the blower manufacturer, M-D Pneumatics, which indicates that the flow versus containment pressure curve should be replaced by a series of equations. These equations use actual inlet pressure, temperature, and pressure rise across the blowers to predict the blower flow rate. Thus, a considerably more accurate flow acceptance determination can be made. The calculation of the acceptance criteria requires a complex calculation. The listing of the calculational details in the technical specifications would be inappropriate. As an alternative, the minimum flow performance of the recombiner blowers under post-LOCA conditions 24 hours after the event has been stated in the technical specifications. The ability of the blowers to deliver this flow rate will be confirmed by measuring the performance of the blowers and calculating the expected post-LOCA performance using the equations. The acceptance method will confirm that no unacceptable level of degradation has occurred in the blower performance. The accuracy range of flow measurement instrumentation has been incorporated into the acceptance criteria. This method of documenting acceptable blower performance will be incorporated into the revised surveillance procedure.

Changes to Section 4.6.4.2.b.4 provide a clarification of the surveillance and do not reduce the effectiveness of the technical specifications. The proposed new Section 4.6.4.2.b.5 does not modify any safety system components or their method of operation. The changes only modify the calculation method used to verify acceptable performance. The revised acceptance criteria is based on the required system performance as determined by the accident analysis. It continues to verify that the system can perform its design function.

The proposed changes to the surveillance requirement will ensure a performance level of hydrogen recombiners which will keep the containment hydrogen concentration below 4 percent when placed in service within 24 hours of a LOCA. Therefore, it is concluded that the LOCA and its consequences as analyzed remain valid.

Significant Hazards Consideration

NNECO has reviewed the proposed changes in accordance with 10CFR50.92 and concluded that the changes do not involve a significant hazards consideration. The basis for this conclusion is that the three criteria of 10CFR50.92(c) are

not compromised. The proposed changes do not involve a significant hazards consideration because the changes would not:

1. Involve a significant increase in the probability or consequences of an accident previously analyzed.

   The new proposed Section 4.6.4.2.b.5 will continue to verify the capability of the hydrogen recombiner to meet design basis analysis assumptions. The appropriate plant procedures are in place to ensure that the hydrogen recombiners are placed in service within 24 hours of a LOCA. Therefore, it is concluded that the LOCA and its consequences as analyzed remain valid. Since no physical modifications are proposed, the probability of a LOCA is not affected. The surveillance requirement related to verification of the gas temperature (Section 4.6.4.2.b.4) has been separated from the flow rate verification and this change does not reduce the effectiveness of the technical specifications. The change to the Technical Specification Index has no impact on the consequences or the probability of an accident previously analyzed.

2. Create the possibility of a new or different kind of accident from any previously analyzed.

   The proposed changes to Sections 4.6.4.2.b.4 and 4.6.4.2.b.5 and the Technical Specification Index do not impact the plant response to a LOCA.

   Since there are no changes in the way the plant is operated, the potential for an unanalyzed accident is not created, and no new failure modes are introduced.

3. Involve a significant reduction in the margin of safety.

   The proposed changes do not increase the consequences of any accidents as the hydrogen concentration is maintained below 4 percent. Also, none of the protective boundaries are affected. The performance level of the hydrogen recombiners assured by the proposed surveillance requirements along with the appropriate plant procedures maintain the margin of safety as defined in the existing and proposed technical specifications.

Moreover, the Commission has provided guidance concerning the application of standards in 10CFR50.92 by providing certain examples (March 6, 1986, 51FR7751) of amendments that are considered not likely to involve a significant hazards consideration. Although the proposed changes are not enveloped by a specific example, the changes would not involve a significant increase in the probability or consequences of an accident previously analyzed. The proposed surveillance requirement will ensure a performance level of the hydrogen recombiners which meets the requirements of the design basis analysis.

Based upon the information contained in this submittal and the environmental assessment for Millstone Unit No. 3, there are no significant radiological or nonradiological impacts associated with the proposed action, and the proposed license amendment will not have a significant effect on the quality of the human environment.

The Millstone Unit No. 3 Nuclear Review Board has reviewed and approved the proposed changes and has concurred with the above determinations.

Since the applicability of the footnote to Technical Specification Figure 3.6-2 expires on or before September 30, 1991, NNECO hereby requests the NRC Staff process and issue this proposed amendment by September 30, 1991, to be effective upon issuance.

Should the Staff request any additional information to process this request, NNECO remains available to promptly provide such information.

In accordance with 10CFR50.91(b), we are providing the State of Connecticut with a copy of this proposed amendment.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

E. J. Mroczka
Senior Vice President

cc: T. T. Martin, Region I Administrator
D. H. Jaffe, NRC Project Manager, Millstone Unit Nos. 1 and 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

Mr. Kevin McCarthy
Director, Radiation Control Unit
Department of Environmental Protection
Hartford, Connecticut 06116

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.

Notary Public

My Commission Expires March 31, 1993