**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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June 15, 1984

Docket No. 50-423
B11234

Director of Nuclear Regulatory Commission
Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Reference: (1) W. G. Counsil letter to B. J. Youngblood, Response to Core Performance Branch Draft SER Open Item CPB-9, dated May 11, 1984.

Dear Mr. Youngblood:

Millstone Nuclear Power Station, Unit No. 3
Revised Response to Core Performance
Branch Draft SER Open Item CPB-9

Attached is Northeast Nuclear Energy Company's (NNECO) revised response to Core Performance Branch DSER Open Item CPB-9 concerning postirradiation surveillance of fuel. Our original response transmitted via Reference (1), was revised as a result of a June 4, 1984 telephone conversation between your Mr. M. Dunenfeld and our Mr. J. L. Majewski in which Mr. Dunenfeld expressed concern that the response to CPB-9 did not address disposition of failed fuel as outlined in SRP Section 4.2, Paragraph II.D.3.



B001
1/1

The supplemental information provided in this revised response should fully resolve the Staff's concern and close DSER item CPB-9. If there are any questions, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY
et. al.

BY NORTHEAST NUCLEAR ENERGY COMPANY
Their Agent

W. G. Counsil

W. G. Counsil
Senior Vice President

W. F. Fee

By: W. F. Fee
Executive Vice President

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

Then personally appeared before me W. F. Fee, who being duly sworn, did state that he is Executive Vice President of Northeast Nuclear Energy Company, an Applicant herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Applicants herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

[signature]

Notary Public

My commission expires 3/31/88.

Open Items

Core Performance Branch (CPB)

CPB-9 Postirradiation Poolside Surveillance of Fuel (Draft SER Section 4.2.4.3)

It is stated in Section 4.2.4.5 of the FSAR that there are no plans to provide a specific in-service surveillance program on fuel for this plant.

A commitment to do visual examination of some discharged fuel assemblies from each refueling has not been made by the applicant. This is needed to satisfy the guidelines described in Paragraph II.D.3 of the SRP regarding the need for postirradiation surveillance.

Response (5/84)

Refer to revised FSAR Section 4.2.4.5.

equivalent to 1.4 times the load caused by the acceleration imposed by the control rod drive mechanism.

3. All rods are checked for integrity by the methods described in Section 4.2.4.2.3.

4. To ensure proper fitup with the fuel assembly, the rod cluster control, burnable poison, and source assemblies are installed in the fuel assembly and checked for binding in the dry condition.

   The RCCAs are functionally tested, following core loading but prior to criticality, to demonstrate reliable operation of the assemblies. Each assembly is operated (and tripped) one time at no flow/cold conditions and one time at full flow/hot conditions. In addition, selected assemblies, amounting to about 15 to 20 percent of the total assemblies are operated at no flow/operating temperature conditions and full flow/ambient conditions. Also, the slowest rod and the fastest rod are tripped 10 times at no flow/ambient conditions and at full flow/operating temperature conditions. Thus, each assembly is tested a minimum of 2 times or up to 14 times maximum to ensure the assemblies are properly functioning.

To demonstrate continuous free movement of the RCCAs and to ensure acceptable core power distributions during operations, partial movement checks are performed on every RCCA, as required by the technical specifications. In addition, periodic drop tests of the full length RCCAs are performed at each refueling shutdown to demonstrate continued ability to meet trip time requirements.

If an RCCA cannot be moved by its mechanism, adjustments in the boron concentration ensure that adequate shutdown margin would be achieved following a trip. Thus, inability to move one rod cluster control assembly can be tolerated. More than one inoperable rod cluster control assembly could be tolerated, but would impose additional demands on the plant operator. Therefore, the number of inoperable RCCAs has been limited to one.

4.2.4.4 Tests and Inspections by Others

If any tests and inspections are to be performed on behalf of Westinghouse, Westinghouse will review and approve the quality control procedures, inspection plans, etc., to be used to ensure that they are equivalent to the description provided in Sections 4.2.4.1 through 4.2.4.3 and are performed properly to meet all Westinghouse requirements.

4.2.4.5 Inservice Surveillance

Westinghouse has extensive experience with the use of 17 x 17 standard fuel assemblies in other operating plants. This experience is summarized in WCAP-8183 which is periodically updated to provide the most recent information on operating plants. CPB-9

Surveillance of fuel and reactor performance will be routinely conducted at Millstone 3. Methods will be employed during operation to detect the occurence of fuel rod failures as discussed in the response to DSER Open Item CPB-8.

CPB-9

As a minimum, a binocular visual examination of a sample number of fuel elements will be conducted during each refueling. Additional fuel inspections may be conducted depending on the results of operational monitoring and the visual examinations. ← INSERT 'A'

4.2.4.6 Onsite Inspection

Detailed written procedures are used by the station staff for the post shipment inspection of all new fuel and associated components, such as control rods, plugs, and inserts. Fuel handling procedures specify the sequence in which handling and inspection takes place.

Loaded fuel containers, when received onsite, are externally inspected to ensure that labels and markings are intact, internal humidity is unchanged and seals are unbroken. After the containers are opened, the shock indicators attached to the suspended internals are inspected to determine if movement during transit exceeded design limitations.

Following removal of the fuel assembly container in accordance with detailed procedures, the fuel assembly polyethylene wrapper is examined for evidence of damage. The polyethylene wrapper is then removed and a visual inspection of the entire bundle is performed.

Control rod assemblies are shipped in fuel assemblies and are inspected prior to removal of the fuel assembly from the container. The control rod assembly is withdrawn a few inches from the fuel assembly to ensure free and unrestricted movement. The exposed section is then visibly inspected for mechanical integrity, replaced in the fuel assembly and stored with the fuel assembly.

4.2.5 References for Section 4.2

Appendix A, "Hafnium" to Reference 2, 1980.

O'Donnell, W.J. and Langer, B.F. 1964. Fatigue Design Basis for Zircaloy Components. Nuclear Science and Engineering, 20, 1-12.

Stephan, L.A. 1970. The Effects of Cladding Material and Heat Treatment on the Response of Waterlogged $UO_2$ Fuel Rods to Power Bursts. IN-ITR-111.

WCAP-7800, Revision 4-A, 1975. Nuclear Fuel Division Quality Assurance Program Plan.

WCAP-8183 (Latest Revision). Iorii, J.A. and Skaricka, J. Operational Experience with Westinghouse Cores.

WCAP-8218 P-A (Proprietary) and WCAP-8219-A (Non-proprietary) 1975. Hellman, J.M. (Ed). Fuel Densification Experimental Results and Model for Reactor Application.

WCAP-8236 (Proprietary) and WCAP-8288 (Non-proprietary) 1973. Gesinski, L. and Chiang, D. Safety Analysis of the 17 x 17 Fuel Assembly for Combined Seismic and Loss-of-Coolant Accident.

## INSERT A

These inspections may be performed by one or more means available at the time through commercial contractors as judged necessary by plant management. Northeast Nuclear Energy Company has experience with sipping, ultrasonic examination and high magnification photography. To the extent practicable, leaking fuel assemblies/rods will be excluded from the operating cores.