

NORTHEAST UTILITIES



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December 12, 1983

Docket No. 50-336
B10968

Director of Nuclear Reactor Regulation
Attn: Mr. James R. Miller, Chief
Operating Reactors Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

References: (1) W. G. Counsil letter to J. R. Miller, dated September 15, 1983.

(2) E. J. Mroczka letter to T. E. Murley, dated July 1, 1983.

Millstone Nuclear Power Station, Unit No. 2
Thermal Shield Damage Recovery Program
Final Report

The Millstone Unit No. 2 nuclear steam supply system vendor informed Northeast Nuclear Energy Company (NNECO) in late March, 1983 of reactor internals degradation at a plant similar in design and operation to Millstone. Specific details of the degradation in the thermal shield and thermal shield support system were disseminated to NNECO and other licensees at a meeting with the NRC Staff on April 12, 1983. At that time, NNECO informed the Staff of plans for an extended refueling and maintenance outage commencing on May 28, 1983 during which detailed examination of the reactor vessel, and its internals, was scheduled.

The core support barrel and thermal shield assembly were removed from the reactor vessel on June 30, 1983 and at that time it was apparent that damage to the thermal shield support system had occurred. Preliminary notification of this damage was made by Reference (1).

Representatives of NNECO met with the Staff on July 21, 1983 to discuss the reactor vessel internals inspection results and to outline preliminary plans supporting return to power operation. The thermal shield damage necessitated the removal of the component from the core support barrel, and evaluations of operation without the thermal shield. Reference (2) elaborated on the plans and schedules for removal of the thermal shield and return to power operation. The analytical efforts planned to support continued operation were also outlined.

After removing the thermal shield from the core support barrel, NNECO performed extensive nondestructive examination of the core support barrel to determine the extent, if any, of damage to the component. These inspections were completed on October 30, 1983. NNECO met with the Staff on November 9, 1983 to present the results of the core support barrel inspections and to

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outline the plans and schedules for return to power operation of Millstone Unit No. 2. At that time, we also outlined to the Staff the documentation which NNECO would provide before startup.

The attached report provides the basis and supporting information for return to power operation of Millstone Unit No. 2 and fulfills our commitment made to the Staff at the November 9, 1983 meeting. A draft of this report was provided to the Millstone Unit No. 2 Project Manager on November 23, 1983.

The contents of the report include the following:

Chapter 1	Summary and Chronology of Events
Chapter 2	Reactor Internals Review
Chapter 3	Pressurized Thermal Shock
Chapter 4	Nondestructive Examination Techniques
Chapter 5	Nondestructive Examination Inspection Results
Chapter 6	Failure Mechanism Analysis Program
Chapter 7	Reactor Internals Stress Analysis and Core Support Barrel Structural Integrity
Chapter 8	Safety Analyses
Chapter 9	Inspection and Monitoring

Information has been included in the attached report which was not available for presentation at the November 9, 1983 meeting. Specifically, during a review of the examination results, an additional non-through-wall crack was identified on lug 4 of the core support barrel as discussed in Chapter 5 of the attached report. NNECO reinspected all thermal shield support lugs with ultrasonics to verify the inspection results provided to the Staff on November 9, 1983. No additional indications were identified. The non-through-wall crack has been repaired as discussed in Chapter 7.

Chapter 6 provides a discussion of the failure mechanism analysis program, in which NNECO has participated with the Florida Power and Light Company. The similar design and operating characteristics between Millstone Unit No. 2 and St. Lucie Unit 1 permit the application of the pertinent results and conclusions of the analysis performed for St. Lucie Unit 1 to Millstone Unit No. 2. Although some plant specific evaluations are ongoing, NNECO does not expect the results to alter the conclusion documented in Chapter 6 regarding the failure mechanism attributable to the Millstone Unit No. 2 thermal shield damage.

Chapter 8 of the attached report discusses potential effects on the fuel from additional bypass flow which will result from the core support barrel repairs. Flow tests and vibration analyses have been conducted to confirm the integrity of the fuel under the flow conditions expected as a result of the core support barrel repairs.

A detailed test report will be submitted as Appendix A to this document to supplement the information provided in Chapter 8. NNECO expects to provide this information to the Staff by the end of this year.

As was documented to the Staff on November 9, 1983 no license amendments are required to support plant startup without a thermal shield and with the core support barrel as repaired. NNECO recognizes the fact that current heatup and cooldown curves of Section 3/4.4.9 in the Technical Specifications will no longer be applicable for the time period specified due to increases in neutron fluence at the reactor vessel without a thermal shield. Revised curves have been prepared as discussed in Chapter 3 and a license amendment will be requested to incorporate the new curves into the Millstone Unit No. 2 Technical Specifications.

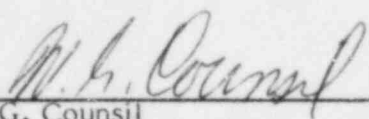
It is NNECO's position that the analyses presented herein include the appropriate conservatisms and that continued operation of Millstone Unit No. 2 is prudent and justified. The attached report is currently being reviewed pursuant to 10 CFR 50.59 with no unreviewed safety question identified to date. The Millstone Unit No. 2 Plant Operations Review Committee (PORC) and Nuclear Review Board (NRB) have also reviewed the attached report and concur with this determination. As such, NNECO is providing this document for the Staff's information. A final determination regarding 10CFR 50.59 will be docketed by December 22, 1983.

The current date for plant heatup is January 3, 1984. Refueling of the reactor is presently ongoing to support this schedule.

We trust you find this information satisfactory. As is always the case, my Staff remains available to assist you in any way in this matter.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY


W. G. Council
Senior Vice President