October 5, 1993

Docket No. 50-423

Mr. John F. Opeka
Executive Vice President, Nuclear
Connecticut Yankee Atomic Power Company
Northeast Nuclear Energy Company
Post Office Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Opeka:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. M87092)

The Commission has issued the enclosed Amendment No. 83 to Facility Operating License No. NPF-49 for Millstone Nuclear Power Station, Unit No. 3, in response to your application dated July 30, 1993.

The amendment increases the volume requirements of the boric acid storage system of Technical Specification 3.1.2.6 in order to meet the requirements of the redesigned core for Cycle 5 operation.

A copy of the related Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by:

Vernon L. Rooney, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 83 to NPF-49
2. Safety Evaluation

cc w/enclosures:
See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

DOCKET NO. 50-423

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 83
License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Northeast Nuclear Energy Company, et al. (the licensee), dated July 30, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 83 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, to be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Director
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 5, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 83

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove	Insert
3/4 1-18	3/4 1-18
B 3/4 1-3	B 3/4 1-3
B 3/4 1-3a	B 3/4 1-3a

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 As a minimum the following borated water source(s) shall be OPERABLE as required by Specification 3.1.2.2:

a. A Boric Acid Storage System with:

1) A minimum borated water usable volume of 21,802 gallons,

2) A boron concentration between 6300 and 7175 ppm, and

3) A minimum solution temperature of 67°F.

b. The refueling water storage tank (RWST) with:

1) A minimum contained borated water volume of 1,166,000 gallons,

2) A boron concentration between 2700 and 2900 ppm,

3) A minimum solution temperature of 40°F, and

4) A maximum solution temperature of 50°F.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With the Boric Acid Storage System inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least the limits as shown in Figure 3.1-4 at 200°F; restore the Boric Acid Storage System to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

BORATION SYSTEMS (Continued)

MARGIN from expected operating conditions of equivalent to that required by Figure 3.1-5 after xenon decay and cooldown to 200°F. The maximum boration capability (minimum boration volume) requirement is established to conservatively bound expected operating conditions throughout core operating life. The initial RCS boron concentration is based on a minimum expected hot full power or hot zero power condition (peak xenon). The final RCS boron concentration assumes that the most reactive control rod is not inserted into the core. This set of conditions requires a minimum usable volume of 21,802 gallons of 6300 ppm borated water from the boric acid storage tanks or 1,166,000 gallons of 2700 ppm borated water from the refueling water storage tank (RWST). A minimum RWST volume of 1,166,000 gallons is specified to be consistent with ECCS requirement.

With the RCS temperature below 200°F, one Boron Injection System is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single Boron Injection System becomes inoperable.

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps except the required OPERABLE pump to be inoperable below 350°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The boron capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN of 1.3% $\Delta k/k$ after xenon decay and cooldown from 200°F to 140°F. This condition requires either a usable volume of 4100 gallons of 6300 ppm borated water from the boric acid storage tanks or 250,000 gallons of 2700 ppm borated water from the RWST. The unusable volume in each boric acid storage tank is 1300 gallons.

The contained water volume limits include allowance for water not available because of discharge line location and other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.0 and 7.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The minimum RWST solution temperature for MODES 5 and 6 is based on analysis assumptions in addition to freeze protection considerations. The minimum/maximum RWST solution temperatures for MODES 1, 2, 3 and 4 are based on analysis assumptions.

BORATION SYSTEMS (Continued)

The OPERABILITY of one Boron Injection System during REFUELING ensures that this system is available for reactivity control while in MODE 6.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that: (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 83

TO FACILITY OPERATING LICENSE NO. NPF-49

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By letter dated July 30, 1993, the Northeast Nuclear Energy Company (the licensee), submitted a request for changes to the Millstone Nuclear Power Station, Unit No. 3 Technical Specifications (TS). The requested changes would increase the volume requirements of the boric acid storage system of Technical Specification (TS) 3.1.2.6 in order to meet the requirements of the redesigned core for Cycle 5 operation.

2.0 EVALUATION

The Cycle 5 core has been redesigned due to assembly re-caging. Re-caging involves removing the top nozzle assembly, bottom nozzle assembly and fuel rods from each assembly. The fuel rods are then "re-caged" in new skeletons having ZIRLO guide thimbles and instrumentation tubing and Zircaloy-4 mid-grids and intermediate flow mixers (IFMs). The existing top and bottom nozzle assemblies are re-used on the re-caged fuel assemblies. The re-caging resulted in shuffling 80 of the 193 fuel assemblies in the original Cycle 5 loading pattern. The redesign is necessary to prevent grid-to-grid fretting that can come about from a flow-induced vibration as experienced by other similar plants, namely Salem and Beaver Valley.

As a result of this new loading pattern, many of the core physics characteristics also have changed, which produces larger boron concentration swings from Modes 1 and 2 to Modes 4 and 5. Although these swings are small, the licensee finds that they are sufficient to use up the small amount of margin available in the original calculation. The proposed amendment is consistent with the increased requirements as defined in the Millstone Unit 3 Cycle 5 Redesign Reload Safety Evaluation (RSE), dated July 1993 and performed by Westinghouse.

The licensee has performed evaluations of the effect of the proposed increase in volume requirements of the boric acid storage system. Specifications for Modes 1 through 4 require that enough boric acid be contained in the boric acid system to borate the plant to hot shutdown (Mode 4) and cold shutdown

(Mode 5) from either Mode 1 or 2. The reconfiguration of the core required an increase in the amount of boric acid to satisfy these mode changes.

The proposed change will increase the required volume in the boric acid storage system in Modes 1 through 4 from 21,020 gallons to 21,802 gallons, affecting TS 3.1.2.6 and its basis. The revised wording to the basis reflects the fact that full power and end-of-life conditions are not necessarily the most limiting conditions, consequently, the licensee introduced wording for a variety of possible limiting conditions.

The licensee conducted its redesign analysis in accordance with NRC-approved methodology (WCAP-9273-NP-A). The redesign is the result of grid-to-rod fretting findings at Salem and Beaver Valley. In the redesign, the once-burned fuel assemblies located on the baffle were relocated inboard and fresh fuel assemblies were re-caged. The core reconfiguration made it necessary to increase the minimum limit of borated water storage. Existing storage tanks are designed to accommodate the increase in volume, and no hardware changes or change in functioning of equipment are required.

The Millstone Unit 3 Redesign RSE demonstrated that the core reload will not adversely affect the safety of the plant. The RSE documents that the probability and consequences of accidents previously evaluated in the Final Safety Analysis (FSAR) and plant system analysis (PSA) has not been increased by the redesign. Further, the redesign does not create new accidents that have not already been addressed in the FSAR.

The RSE analysis shows that the margin of safety, as defined in the Basis to the Millstone 3 TS, has not been reduced. In all the postulated accidents analyzed, it was found that the effects were accommodated within the conservatism of the initial assumptions used in the previously applicable safety analyses. The redesign changes do not adversely affect the safety analyses for loss-of-coolant accident (LOCAs) or other accidents. The analysis also indicated that the Cycle 5 reload will meet all applicable design criteria and ensure that all pertinent licensing basis acceptance criteria are met.

The staff has reviewed the effects of the proposed increase in the volume requirements of the boric acid storage system in order to meet the requirements of the redesigned core for Cycle 5 operation and concludes that all pertinent safety criteria are satisfactorily met.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 43928). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Attard

Date: October 5, 1993