Martin L. Bowling
Recovery Officer - Millstone
Northeast Nuclear Energy Company
c/o Ms. Patricia A. Loftus
Director - Regulatory Affairs
P. O. Box 128
Waterford, CT 06385

April 9, 199

SUBJECT: ISSUANCE OF AMENDMENT - MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3 (TAC NO. MA0070)

Dear Mr. Bowling:

The Commission has issued the enclosed Amendment No. 158 to Facility Operating License No. NPF-49 for the Millstone Nuclear Power Station, Unit No. 3, in response to your application dated November 11, 1997.

The amendment allows Northeast Nuclear Energy Company to credit soluble boron for maintaining k_{eff} at less than or equal to 0.95 within the spent fuel pool rack matrix following a seismic event of a magnitude greater than or equal to an operating basis earthquake.

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

Sincerely,
Original signed by:
James W. Andersen, Project Manager
Special Projects Office - Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures:
1. Amendment No. 158 to NPF-49
2. Safety Evaluation

cc w/encls: See next page

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

April 9, 1998

Mr. Martin L. Bowling
Recovery Officer - Millstone
Unit No. 2
Northeast Nuclear Energy Company
c/o Ms. Patricia A. Loftus
Director - Regulatory Affairs
P. O. Box 128
Waterford, CT 06385

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cc w/encls: See next page

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. 158
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 November 11, 1997, 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. 158 , 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 issuance, to be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Phillip F. McKee
Deputy Director for Licensing
Special Projects Office
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 9, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 158

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

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

Remove	Insert
3/4 9-1a	3/4 9-1a
3/4 9-16	3/4 9-16
B 3/4 9-1	B 3/4 9-1
-	B 3/4 9-1a *
B 3/4 9-8	B 3/4 9-8
-	B 3/4 9-9

*Overflow page - no change

BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1.2 The boron concentration of the Spent Fuel Pool shall be maintained uniform and sufficient to ensure that the boron concentration is greater than or equal to 1750 ppm.

Applicability

Whenever fuel assemblies are in the spent fuel pool.

Action

a. With the boron concentration less than 1750 ppm, initiate action to bring the boron concentration in the fuel pool to at least 1750 ppm within 72 hours, and

b. With the boron concentration less than 1750 ppm, suspend the movement of all fuel assemblies within the spent fuel pool and loads over the spent fuel racks.

SURVEILLANCE REQUIREMENTS

4.9.1.2 Verify that the boron concentration in the fuel pool is greater than or equal to 1750 ppm every 72 hours.

3/4.9.13 SPENT FUEL POOL - REACTIVITY

LIMITING CONDITION FOR OPERATION

3.9.13 The Reactivity Condition of the Spent Fuel Pool shall be such that k_{eff} is less than or equal to 0.95 at all times.

APPLICABILITY: Whenever fuel assemblies are in the spent fuel pool.

ACTION: With k_{eff} greater than 0.95:

a. Borate the Spent Fuel Pool until k_{eff} is less than or equal to 0.95, and

b. Initiate action to correct the cause of the misplaced/dropped fuel assembly, if required, and

c. Following the drop of a load on the spent fuel racks, with fuel in the fuel rack location, close and administratively control the opening of dilution pathways to the Spent Fuel Pool until Boraflex in the Spent Fuel Pool is determined to be within design, and

d. Following a seismic event of Operating Basis Earthquake (OBE) magnitude or greater:

   1) Close and administratively control the opening of dilution pathways to the Spent Fuel Pool until Boraflex in the Spent Fuel Pool is determined to be within design.

   2) Notify the Commission of the action taken for Spent Fuel Reactivity control as part of the report required by Specification 4.3.3.3.2.

SURVEILLANCE REQUIREMENTS

4.9.13.1 Ensure that all fuel assemblies to be placed in Region II of the spent fuel pool are within the enrichment and burn-up limits of Figure 3.9-1 by checking the fuel assembly's design and burn-up documentation.

4.9.13.2 Following a seismic event of Operating Basis Earthquake (OBE) magnitude or greater, perform an engineering evaluation to determine that k_{eff} is less than or equal to 0.95 and that soluble boron is not required for control of k_{eff} in the Spent Fuel Pool. Pending completion of engineering evaluation, take action as required for k_{eff} being greater than 0.95.

4.9.13.3 Following the drop of a load on the Spent Fuel Racks, with fuel in the fuel rack location, perform an engineering evaluation to determine that k_{eff} is less than or equal to 0.95 and that soluble boron is not required for control of k_{eff} in the Spent Fuel Pool. Pending completion of engineering evaluation, take action as required for k_{eff} being greater than 0.95.

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. The value of 0.95 or less for K_{eff} includes a 1% Δk/k conservative allowance for uncertainties. Similarly, the boron concentration value of 2600 ppm or greater includes a conservative uncertainty allowance of 50 ppm boron. The 2600 ppm provides for boron concentration measurement uncertainty between the spent fuel pool and the RWST. The locking closed of the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portion of the RCS. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water.

3/4.9.1.2 Boron Concentration in Spent Fuel Pool

During normal Spent Fuel Pool operation, the spent fuel racks are capable of maintaining K_{eff} at less than or equal to 0.95 in an unborated water environment due to the geometry of the rack spacing and the presence of Boraflex neutron absorber in the spent fuel racks. Seismic analysis has shown that there is a possibility that the Boraflex absorber could degrade following a seismic event greater in magnitude than an Operating Basis Earthquake (OBE). At least 1500 ppm boron in Spent Fuel Pool is required in anticipation that a seismic event could cause a loss of Boraflex integrity. If, in addition to a loss of Boraflex, a single misplaced fuel assembly is postulated, then a minimum of 1750 ppm boron is required. The 1750 ppm boron concentration requirement bounds conditions for a loss of all Boraflex in the fuel racks.

The boron requirement in the spent fuel pool also ensures that in the event of a fuel assembly handling accident involving either a dropped or misplaced fuel assembly, the K_{eff} of the spent fuel storage rack will remain less than or equal to 0.95.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the safety analyses.

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity conditions during CORE ALTERATIONS.

3/4.9.10 and 3/4.9.11 WATER LEVEL - REACTOR VESSEL and STORAGE POOL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

3/4.9.12 FUEL BUILDING EXHAUST FILTER SYSTEM

The limitations on the Fuel Building Exhaust Filter System ensure that all radioactive iodine released from an irradiated fuel assembly and storage pool water will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing. The heater kW measured must be corrected to its nameplate rating. Variations in system voltage can lead to measurements of kW which cannot be compared to the nameplate rating because the output kW is proportional to the square of the voltage. The filtration system removes radioiodine following a fuel handing or heavy load drop accident. Noble gases would not be removed by the system. Other radionuclides would be scrubbed by the storage pool water. Iodine-131 has the longest half-life: ~8 days. After 60 days decay time, there is essentially negligible iodine and filtration is unnecessary.

3/4.9.13 SPENT FUEL POOL - REACTIVITY

The limitations described by Figure 3.9-1 ensure that the reactivity of fuel assemblies introduced into Region II are conservatively within the assumptions of the safety analysis.

Administrative controls have been developed and instituted to verify that the enrichment and burn-up limits of Figure 3.9-1 have been maintained for the fuel assembly.

During normal Spent Fuel Pool operation, the spent fuel racks are capable of maintaining k_{eff} at less than 0.95 in an unborated water environment due to the geometry of the rack spacing and the presence of Boraflex neutron absorber in the spent fuel racks. Due to radiation induced embrittlement, there is a possibility that the Boraflex absorber could degrade following a seismic event. At least 1500 ppm boron in the Spent Fuel Pool is required in anticipation that a seismic event could cause a complete loss of all Boraflex. If, in addition to a loss of Boraflex, a single misplaced fuel assembly is postulated, then a minimum of 1750 ppm boron is required. The 1750 ppm boron concentration requirement bounds conditions for a loss of all Boraflex in the fuel racks.

The action requirements of this specification recognize the possibility of a seismic event which could degrade the Boraflex neutron absorber in the spent fuel racks. Seismic analysis has shown that there is a possibility that the Boraflex absorber could degrade following a seismic event greater in magnitude than an

3/4.9.13 SPENT FUEL POOL - REACTIVITY (continued)

Operating Basis Earthquake (OBE). The action statement specifies that following a seismic event at the OBE level or greater, which is approximately one-half the Safe Shutdown Earthquake (SSE) level, action will be taken to determine the condition of the Boraflex. Once a seismic event of greater than or equal to an OBE has occurred, then the boron in the Spent Fuel Pool will be credited to maintain k_{eff} less than or equal to 0.95. The specification requires that dilution paths to the Spent Fuel Pool be closed and administratively controlled until the racks can be inspected and the condition of the Boraflex can be determined. The specification also assumes that piping systems external to the Spent Fuel Pool are mounted such that they remain leak tight following an earthquake up to the level of an SSE, or will not direct water into the Spent Fuel Pool should they leak, or have been isolated from flow to prevent leakage into the Spent Fuel Pool.

3/4.9.14 SPENT FUEL POOL - STORAGE PATTERN

The limitations of this specification ensure that the reactivity conditions of the Region I storage racks and spent fuel pool k_{eff} will remain less than or equal to 0.95.

The Cell Blocking Devices in the 4th location of the Region I storage racks are designed to prevent inadvertent placement and/or storage of fuel assemblies in the blocked locations. The blocked location remains empty to provide the flux trap to maintain reactivity control for fuel assemblies in adjacent and diagonal locations of the STORAGE PATTERN.

STORAGE PATTERN for the Region I storage racks will be established and expanded from the walls of the spent fuel pool per Figure 3.9-2 to ensure definition and control of the Region I/Region II boundary and minimize the number of boundaries where a fuel misplacement incident can occur.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 158

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 November 11, 1997, the Northeast Nuclear Energy Company, et al. (the licensee), submitted a request for changes to the Millstone Nuclear Power Station, Unit No. 3 Technical Specifications (TS). Specifically, TS 3.9.1.2 would (1) be revised to require that the spent fuel pool (SFP) boron concentration be maintained greater than or equal to 1750 ppm whenever fuel assemblies are in the SFP, and (2) require sampling of the SFP every 72 hours to ensure the boron concentration is greater than or equal to 1750 ppm, and that if the boron concentration is found to be less than 1750 ppm, the boron concentration must be restored to at least 1750 ppm within 72 hours. TS 3.9.13 would be revised to require that the licensee isolate and administratively control the opening of dilution pathways to the SFP in the event of an Operating Basis Earthquake (OBE) or load drop onto the top of the spent fuel racks and to perform an engineering evaluation (e.g., blackness testing) to determine whether soluble boron is required to control k_{eff} in the SFP.

2.0 BACKGROUND

Spent fuel from operation of the Millstone Unit 3 reactor is stored in a 61,600 ft^3 pool cooled by two 100 percent redundant trains of SFP cooling. Each train of SFP cooling contains a pump and heat exchanger capable of maintaining the SFP coolant below 150 °F under full core offload conditions. The SFP cooling system is qualified to seismic Category I and Safety Class 3. The SFP cooling system is instrumented with high and low level alarms and a high fuel pool temperature alarm that indicate locally and in the control room. SFP level is observed during operator rounds (Millstone Unit 3 currently uses 8-hour shifts). The licensee typically maintains an SFP boron concentration of 2700 ppm, although the current TS requires a minimum boron concentration of 800 ppm.

During normal SFP operation, spent fuel storage racks are capable of maintaining k_{eff} no greater than 0.95 in an unborated water environment due to the geometry of the rack spacing and the presence of the Boraflex neutron absorber. The recently performed analysis by the licensee has indicated that after a seismic event exceeding the OBE level, the Boraflex neutron absorber, used in the spent fuel racks for reactivity control, may be degraded to the point that it ceases to perform its design function.

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Boraflex consists of boron carbide particles embedded in a silicon matrix. Panels of this material are attached to the cell walls in the spent fuel racks by means of stainless steel wrappers. When these Boraflex panels are exposed to radiation fields for an extended period of time, the material undergoes two types of degradation: at first it shrinks, causing formation of gaps in the Boraflex panels and later, with higher radiation doses accumulated, it becomes brittle. The licensee's analysis has shown that this brittle material will break during a seismic event and the spacing between the wrapper and the Boraflex panel is not tight enough to prevent its movement within the wrapper. As a result, its neutron absorbing capability becomes curtailed.

In the current design basis for the existing spent fuel racks, it is assumed that following a seismic event, the Boraflex neutron absorber remains intact and it can be credited in determining k_{eff}. However, since the results of the licensee's recent analysis have indicated that Boraflex will degrade, no credit for its presence can be taken. Therefore, the licensee proposed to increase the minimum soluble boron requirement in TS 3.9.1.2 to 1750 ppm to compensate for Boraflex degradation.

3.0 EVALUATION

The current Millstone Unit 3 TS 3.9.1.2 requires SFP boron concentration be maintained greater than or equal to 800 ppm. This was previously determined to be sufficient to maintain k_{eff} less than or equal to 0.95, even in the event of a fuel handling or misloading event. Since the licensee has determined that a postulated seismic event greater than an OBE can cause extended Boraflex degradation, the seismic event is a more limiting accident condition and a higher concentration of boron is needed to maintain k_{eff} less than or equal to 0.95. Therefore, the licensee proposed to increase the minimum soluble boron requirement in TS 3.9.1.2 to 1750 ppm. In addition to the proposed change in boron concentration, the licensee is also modifying TS 3.9.1.2 to (1) require sampling of the SFP every 72 hours to ensure the boron concentration is greater than or equal to 1750 ppm, and that if the boron concentration is found to be less than 1750 ppm, the boron concentration must be restored to at least 1750 ppm within 72 hours, and (2) reflect that the TS is applicable whenever fuel assemblies are in the pool. In addition, the licensee proposed a revision to TS 3.9.13 that requires the licensee to isolate and administratively control the opening of dilution pathways to the SFP in the event of an OBE or load drop onto the top of the spent fuel racks and to perform an engineering evaluation (e.g., blackness testing) to determine whether soluble boron is required to control k_{eff} in the SFP.

3.1 Dilution of the SFP

The licensee performed an evaluation to determine whether any piping in the fuel handling building could cause a dilution of the SFP following a seismic event greater than an OBE. The licensee identified fire protection, hot water heating, hot water preheating, domestic water, component cooling, and a portion of the roof drain as systems having piping in the fuel handling building near the SFP. An engineering evaluation of these systems revealed that, with the exception of portions of the hot water preheating system and the roof drain system, piping in these systems are leak tight and meet the licensee's commitment to seismic II/I criteria up to and including a Safe Shutdown Earthquake. The evaluation was performed consistent with the original design criteria for seismic II/I piping as documented in Section 3.9.2 of the Millstone Unit 3 Safety Evaluation Report, No. 4. In its letter of November 11, 1997, the licensee committed to eliminate piping in the hot water preheating system and the roof drain system as dilution sources by modifying the hot water preheating system piping to meet seismic II/I criteria and by isolating that portion of the roof drain system piping that runs in the vicinity of the SFP. These commitments have since been completed.

Portions of systems in the fuel building but not in the vicinity of the SFP were evaluated to determine whether leakage from these systems following a seismic event greater than an OBE could dilute the SFP. The licensee determined that some piping may leak following a seismic event greater than an OBE, but that the leakage would not reach the SFP due to the refueling building floor drains and the elevated curbs surrounding the SFP. Therefore, this leakage was not considered a possible dilution source for the SFP.

The licensee's evaluation concludes that the SFP can be maintained in a safe condition by requiring the presence of boron in the SFP following a seismic event to compensate for the potential loss of Boraflex. The licensee ensures that at least the minimum required concentration of boron is present in the SFP by sampling every 72 hours and after makeup from nonborated sources. The staff finds that the combination of TS-controlled SFP minimum boron concentration, the 72-hour sampling requirements, alarms, and operator rounds should adequately detect a dilution event prior to the SFP reaching a boron concentration of 1750 ppm during system operation.

Should a seismic event greater than or equal to an OBE occur, the licensee's evaluation has determined that (1) the piping in the vicinity of the SFP, with the completed modifications, will be leak tight and is therefore not a dilution source, and (2) leakage from other piping in the fuel handling building that may not be leak tight will not reach the SFP. The proposed TS changes also require that an engineering evaluation be performed to determine whether the Boraflex in the spent fuel racks has degraded due to the seismic event. This requirement will provide early indication of Boraflex degradation, confirmation that soluble boron is controlling SFP k_{eff}, and that increased attention to activities that may dilute the SFP boron concentration is necessary.

The staff finds that the proposed TS controls will maintain SFP boron concentration at or above 1750 ppm. An SFP boron concentration of at least 1750 ppm will ensure k_{eff} is maintained less than or equal to 0.95 following a seismic event.

3.2 Effects of Increased Boron Concentration

The proposed increase in the minimum dissolved boron concentration from 800 ppm to 1750 ppm may affect performance of the SFP in two ways: it may increase corrosion of the SFP materials and it may reduce its capability to retain radioactive iodine, released from the damaged fuel to the SFP water. The licensee addressed both these cases in its November 11, 1997, submittal.

The licensee determined that all the metallic components in the Millstone Unit 3 SFP are fabricated from Type 300 series stainless steels, high nickel alloys such as Inconels, and Zirconium alloys such as Zircaloy-4 or ZIRLO. All these materials are corrosion resistant in acidic environments and it is not expected that they will experience any corrosion problems when, due to a higher concentration of boric acid in the SFP, pH will decrease from approximately 5.0 to 4.7. In addition, the normally maintained concentration of boron in the SFP is higher than the required minimum. Typically, this concentration is about 2700 ppm and past experience has indicated that it has not caused any corrosion of the SFP components. Therefore, an increase in the minimum boron concentration from 800 ppm to 1750 ppm will not cause any corrosion problems.

One of the functions of the SFP is to contain the radioactive iodine, which may be accidentally released from the damage fuel. Retention of iodine in the SFP water is pH dependent and lower pH favors its release to the environment. The licensee addressed this concern by referring to NRC Safety Guide 25, which recommends a value of 100 for the iodine decontamination factor

(DF) be used in the SFP safety analyses. However, the tests performed with boric acid solutions having a pH between 5.0 and 4.3 indicated that a DF as high as 760 could be achieved and the value of 100 is, therefore, a very conservative estimate. Since at 2700 ppm of boron pH stays above 4.3, the increase of minimum boron concentration from 800 ppm to 1750 ppm will not cause the DF for SFP to exceed the value used in the existing SFP safety analyses. Therefore, the proposed increase of boron concentration will not cause any excessive release of iodine to the environment.

The staff evaluated the effects of this increased boron concentration on corrosion of the SFP components and on the release of radioactive iodine to the environment. The staff concludes that the analysis performed by the licensee provides an acceptable justification for its claim that higher boron concentration will not affect safety-related functions of the SFP.

3.3 SFP Reactivity

During normal SFP operation, the storage racks are capable of maintaining k_{eff} less than or equal to 0.95 in an unborated water environment due to the geometry of the rack spacing and the presence of the Boraflex neutron absorber. However, due to radiation induced embrittlement, there is a possibility that the Boraflex absorber could degrade following a seismic event greater in magnitude than an OBE. The licensee has, therefore, reanalyzed the reactivity of the SFP by taking credit for some of the soluble boron in the pool water to maintain the spent fuel rack k_{eff} less than or equal to 0.95. Because of the difficulty in predicting the final configuration of the Boraflex following a seismic event greater than an OBE, the reanalysis conservatively assumed that there was no Boraflex in the storage racks.

Westinghouse performed a criticality analysis for this degraded condition and determined that 1500 ppm of soluble boron is required to maintain k_{eff} at less than or equal to 0.95 with no credit for any Boraflex and with a loss of SFP cooling resulting in boiling conditions in the SFP. If, in addition to the above, a single misplaced fuel assembly is postulated, then a minimum of 1750 ppm boron is required. Therefore, the licensee has proposed to increase the minimum soluble boron requirement in TS 3.9.1.2 to 1750 ppm. In addition, the TS would be revised to reflect that it is applicable whenever fuel assemblies are in the pool, that if the boron concentration is less than 1750 ppm it must be restored to at least 1750 ppm within 72 hours, and that the boron concentration must be verified to be at least 1750 ppm every 72 hours.

Based on the fact that the proposed value of 1750 ppm is well below the 2700 ppm of soluble boron typically present in the pool, and that if all Boraflex is lost and a concurrent fuel assembly handling accident involving either a dropped or misplaced fuel assembly occurs, the k_{eff} of the spent fuel storage racks will remain less than or equal to 0.95, the proposed changes are acceptable.

3.4 Overall

Based on (1) the TS controls that maintain SFP boron concentration of at least 1750 ppm under normal operations, (2) the determination that higher boron concentration will not effect the safety-related functions of the SFP, (3) the results of the licensee's evaluation of the systems with piping capable of diluting the SFP following a seismic event of a magnitude greater than an OBE, and (4) the TS actions following an OBE or drop of a load on the spent fuel racks, the staff concludes that the proposed changes to Millstone Unit 3 TS 3.9.1.2 and 3.9.13 are acceptable and ensure that SFP k_{eff} is maintained less than or equal to 0.95.

The staff notes that the licensee stated that this a temporary condition, which is not expected to go beyond the year 2001. The licensee stated that they will replace spent fuel storage racks containing Boraflex prior to the start of the eighth operating cycle. The licensee expects to perform the rack replacement during the seventh operating cycle, which is currently scheduled for years 1999-2001.

4.0 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.

5.0 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 and changes surveillance requirements. 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 (62 FR 63980 dated December 3, 1997). 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.

6.0 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 Contributors: C. Gratton
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Date: April 9, 1998

cc:

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