June 22, 198

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

SUBJECT: ISSUANCE OF AMENDMENT - MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2 (TAC NO. MA1554)

Dear Mr. Bowling:

The Commission has issued the enclosed Amendment No. 217 to Facility Operating License No. DPR-65 for the Millstone Nuclear Power Station, Unit No. 2, in response to your application dated April 13, 1998.

The amendment changes the Technical Specifications (TSs) by adding a new TS 3.5.5, "Emergency Core Cooling Systems - Trisodium Phosphate (TSP)." The TSP surveillance requirements in TSs 4.5.2.c.3 and 4.5.2.c.4 are relocated to new TS 3.5.5 as TSs 4.5.5.1 and TS 4.5.5.2, respectively. Also, the amount of TSP is increased, the surveillance requirements are modified, a new limiting condition of operation is included, and the applicable TS Index pages and Bases sections are updated to reflect the changes.

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:

Daniel G. McDonald, Jr., Senior Project Manager Special Projects Office - Licensing Office of Nuclear Reactor Regulation

Docket No. 50-336

Enclosures: 1. Amendment No. 217 to DPR-65 2. Safety Evaluation

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UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 22, 1998

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Docket No. 50-336

Enclosures: 1. Amendment No. 217 to DPR-65 2. Safety Evaluation

cc w/encls: See next page

Millstone Nuclear Power Station Unit 2

CC:

Mr. B. D. Kenyon (Acting) Chief Nucler Officer - Millstone Northeast Nuclear Energy Company P.O. Box 128 Waterford, CT 06385

Citizens Regulatory Commission ATTN: Ms. Susan Perry Luxton 180 Great Neck Road Waterford, CT 06385

Deborah Katz, President Citizens Awareness Network P. O. Box 83 Shelburne Falls, MA 03170

The Honorable Terry Concannon Co-Chair Nuclear Energy Advisory Council Room 4035 Legislative Office Building Capitol Avenue Hartford, CT 06106

Mr. Evan W. Woollacott Co-Chair Nuclear Energy Advisory Council 128 Terry's Plain Road Simsbury, CT 06070

Little Harbor Consultants, Inc. Millstone - ITPOP Project Office P. O. Box 0630 Niantic, CT 06357-0630

Mr. Daniel L. Curry Project Director Parsons Power Group Inc. 2675 Morgantown Road Reading, PA 19607

Mr. Don Schopfer Verification Team Manager Sargent & Lundy 55 E. Monroe Street Chicago, IL 60603 Attorney Nicholas J. Scobbo, Jr. Ferriter, Scobbo, Caruso, Rodophele, PC 1 Beacon Street, 11th Floor Boston, MA 02108

Mr. J. P. McElwain Recovery Officer - Millstone Unit 2 Northeast Nuclear Energy Company P. O. Box 128 Waterford, Connecticut 06385



UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

NORTHEAST NUCLEAR ENERGY COMPANY

THE CONNECTICUT LIGHT AND POWER COMPANY

THE WESTERN MASSACHUSETTS ELECTRIC COMPANY

DOCKET NO. 50-336

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. **217** License No. DPR-65

- 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 April 13,1998, 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. DPR-65 is hereby amended to read as follows:
 - (2) <u>Technical Specifications</u>

The Technical Specifications contained in Appendix A, as revised through Amendment No. 217, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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: June 22, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 217

FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

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	
VI	VI	
XII	XII	
3/4 5-5	3/4 5-5	
	3/4 5-9	
B 3/4 5-1	B 3/4 5-1	
	B 3/4 5-3	

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BASES

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MILLSTONE - UNIT 2 0366

XII Amendment No. \$\$, \$9, 72, 194, 153, 185, 217

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

10. Verifying that the following valves are in the indicated position with power to the valve operator removed:

<u>Valve Number</u>	Valve Function	<u>Valve Position</u>
2-SI-306	Shutdown Cooling Flow Control	Open
2-SI-659	SRAS Recirc.	Open*
2-SI-660	SRAS Recirc.	Open*
2-CH-434	Thermal Bypass	Closed**

- b. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:
 - 1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and
 - 2. Of the areas affected within containment at the completion of containment entry when CONTAINMENT INTEGRITY is established.
- c. At least once per 18 months by:
 - 1. Verifying automatic interlock action of the shutdown cooling system from the reactor coolant system by ensuring that with a simulated reactor coolant system pressure signal greater than or equal to 300 psia the interlock prevents the shutdown cooling system suction valves from being opened.
 - 2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
 - 3. DELETED
 - 4. DELETED

3/4 5-5

Amendment No. 7, 45, 52, 101, 101, 217

^{*}To be closed prior to recirculation following LOCA. **2-CH-434, a manual valve, shall be locked closed.

EMERGENCY CORE COOLING SYSTEMS

TRISODIUM PHOSPHATE (TSP)

LIMITING CONDITION FOR OPERATION

3.5.5 The TSP baskets shall contain \geq 282 ft³ of active TSP.

APPLICABILITY: MODES 1, 2, and 3

ACTION:

. +

With the quantity of TSP less than required, restore the TSP quantity within 48 hours, or be in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours.

SURVEILLANCE REQUIREMENTS

- 4.5.5.1 Verify that the TSP baskets contain \geq 282 ft³ of granular trisodium phosphate dodecahydrate at least once per 18 months.
- 4.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of borated water at least once per 18 months.

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

BASES

3/4.5.1 SAFETY INJECTION TANKS

The OPERABILITY of each of the RCS safety injection tanks ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the safety injection tanks. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on safety injection tank volume, boron concentration and pressure ensure that the assumptions used for safety injection tank injection in the accident analysis are met.

The limit of one hour for operation with an inoperable safety injection tank minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional safety injection tank which may result in unacceptable peak cladding temperatures.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two separate and independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single failure consideration. Either subsystem operating in conjunction with the safety injection tanks is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest RCS cold leg pipe downward.

The ECCS leak rate surveillance requirements assure that the leakage rates assumed for the system outside containment during the recirculation phase will not be exceeded.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the accident analyses are met and that subsystem OPERABILITY is maintained. The purpose of the HPSI and LPSI pumps differential pressure test on recirculation ensures that the pump(s) have not degraded to a point where the accident analysis would be adversely impacted. The actual inputs into the safety analysis for HPSI and LPSI pumps differential pressure (discharge-suction) when running on recirculation are 1209 and 150 psi, respectively. The acceptance criteria in the Technical Specifications were adjusted upward to account for instrument uncertainties and drift.

EMERGENCY CORE COOLING SYSTEMS

BASES

3/4.5.5 TRISODIUM PHOSPHATE (TSP)

The trisodium phosphate (TSP) dodecahydrate stored in dissolving baskets located in the containment basement is provided to minimize the possibility of corrosion cracking of certain metal components during operation of the ECCS following a LOCA. The TSP provides this protection by dissolving in the sump water and causing its final pH to be raised \geq 7.0. This determination assumes the RCS, the SI tanks, and the RWST are at a maximum boron concentration of 2400 ppm and the BASTs are at a maximum boron concentration of 3.5 weight percent.

The requirement to dissolve a representative sample of TSP in a sample of borated water provides assurance the stored TSP will dissolve in borated water at postulated post-LOCA temperatures. This test is performed by submerging a representative sample of 0.6662 ± 0.0266 grams of TSP from one of the baskets in containment in 250 + 10 milliliters of water at a boron concentration of 2482 \pm 20 ppm, and a temperature of 77 \pm 5°F. Without agitation, the solution is allowed to stand for four hours. The liquid is then decanted, mixed, and the pH measured. The pH must be \geq 7.0. The representative TSP sample weight is based on the minimum required TSP mass of 12,042 pounds, which at the manufactured density corresponds to the minimum volume of 223 ft³ (The minimum Technical Specification requirement of 282 ft³ is based on 223 ft³ of TSP for boric acid neutralization and 59 ft³ of TSP for neutralization of hydrochloric and nitric acids.), and the maximum sump water volume (at 77°F) following a LOCA of 2,046,441 liters, normalized to buffer a 250 \pm 10 milliliter sample. The boron concentration of the test water is representative of the maximum possible concentration in the sump following a LOCA. Agitation of the test solution is prohibited during TSP dissolution since an adequate standard for the agitation intensity cannot be specified. The dissolution time of four hours is necessary to allow time for the dissolved TSP to naturally diffuse through the sample solution. In the containment sump following a LOCA, rapid mixing will occur, significantly decreasing the actual amount of time before the required pH is achieved. The solution is decanted after the four hour period to remove any undissolved TSP prior to mixing and pH measurement. Mixing is necessary for proper operation of the pH instrument.



UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 217

TO FACILITY OPERATING LICENSE NO. DPR-65

NORTHEAST NUCLEAR ENERGY COMPANY

THE CONNECTICUT LIGHT AND POWER COMPANY

THE WESTERN MASSACHUSETTS ELECTRIC COMPANY

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

10 INTRODUCTION

By letter dated April 13, 1998, the Northeast Nuclear Energy Company, et al. (the licensee), submitted a request for changes to the Millstone Nuclear Power Station, Unit No. 2 Technical Specifications (TSs). The requested changes would: (1) Increase the amount of trisodium phosphate dodecahydrate (TSP) stored in the baskets located in the containment sump and used to control the acidity/alkalinity (pH) of the sump solution after a loss-of-coolant accident (LOCA); (2) Reduce the size of the TSP sample used for verifying its solubility and buffering capability (LOCA); (3) Add a new TS 3.5.5, "Emergency Core Cooling System - Trisodium Phosphate (TSP)," to the TS that contains a limiting condition for operation (LCO) specifying the action to be taken in restoring the TSP quantity if it becomes less than required for satisfactory pH control; (4) Relocate surveillance requirement (SR) 4.5.2.c.3 to TS 3.5.5 as SR 4.5.5.1 and add the requirement for verification of the amount of TSP in the sump baskets; (5) Relocate SR 4.5.2.c.4 to TS 3.5.5 as SR 4.5.5.2 and specify verification frequency of the solubility and buffering capability of TSP; and (6) Relocate specific details of testing for solubility and buffering capability from SR 4.5.2.c.4 to the associated TS Bases Section 3/4.5.5.

2.0 **EVALUATION**

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While performing calculations necessary to evaluate an extended fuel cycle, the licensee found that 110 cubic feet of TSP, specified in SR 4.5.2.c.3, is not sufficient to meet the licensing basis requirement to maintain the post-LOCA sump water pH equal to or higher than 7. The licensee performed a new analysis that included the experimental determination of pH for different concentrations of TSP and accounted for the presence of hydrochloric and nitric acids in the post-accident environment. The analysis concluded that 282 cubic feet of TSP is required in order to maintain sump water pH at a value higher than 7. The staff verified the licensee's analysis and found it to be acceptable.

TS 4.5.2.c.4 in the current TSs requires verification solubility and buffering action of TSP by taking a 0.35 ± 0.05 lbs sample from the containment baskets, immersing it for 4 hours in

 50 ± 5 gallons of borated water at $180 \pm 10^{\circ}$ F and measuring the resulting solution's pH. The licensee proposes to reduce the amount of TSP to 0.6662 ± 0.0266 grams and dissolve it in 250 ± 10 milliliters of borated water at $77 \pm 5^{\circ}$ F. The staff found the modification proposed by the licensee acceptable because in both cases the ratio of TSP to borated water remains the same and the lower solution temperature causes TSP to dissolve at a lower rate, which makes the test more conservative.

The licensee added TS 3.5.5 to the plant's TSs to make them more consistent with the guidance provided in NUREG - 1432, Rev. 1, "Standard Technical Specifications for Combustion Engineering Plants," dated April 1995 (STS-CE). This TS contains an LCO that specifies when the quantity of TSP in the sump baskets is less than required, it should be restored to its specified value in 48 hours or the plant be in MODE 3 within 6 hours and in MODE 4 within an additional 6 hours. The staff found this proposed change acceptable because it is a new requirement that controls the amount of TSP in the sump baskets.

The licensee relocated SR 4.5.2.c.3, which requires verification of a minimum volume of TSP in sump baskets, to TS 3.5.5 as SR 4.5.5.1. The minimum volume of 282 cubic feet was specified and verification time of once per 18 months was added. This change makes the SR consistent with the STS-CE. The staff found this proposed change acceptable.

The licensee relocated SR 4.5.2.c.4, which requires verification of the TSP solubility and buffering capability, to TS 3.5.5 as SR 4.5.5.2 and moved the detailed description of the test to the associated TS Bases 3/4.5.5. The proposed changes are consistent with the STS-CE by adding verification time of once every 18 months to the SRs. The staff found these proposed changes acceptable.

3.0 <u>SUMMARY</u>

The staff has evaluated the proposed TSs for post-accident control of pH solution in the containment sump in Millstone Nuclear Power Station, Unit 2. These proposed changes consist of increasing the amount of TSP stored in the containment sump, reducing the size of the TSP sample used to determine solubility and buffering capability, and adding several editorial changes to make the plant's TSs consistent with the STS-CE. On the basis of the preceding evaluation, the staff finds that the proposed changes are acceptable because they upgrade the operability of the plant by improving the post-accident pH control of sump water and make the TSs more consistent with the STS-CE.

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 (63 FR 25114 dated May 6, 1998). 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 <u>CONCLUSION</u>

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: K. Parczewski

Date: June 22, 1998