



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. NPF-86
NORTH ATLANTIC ENERGY SERVICE CORPORATION
SEABROOK STATION, UNIT NO. 1
DOCKET NO. 50-443

1.0 INTRODUCTION

By application dated June 16, 1995, North Atlantic Energy Service Corporation (North Atlantic) proposed an amendment to the Appendix A Technical Specifications (TS) for the Seabrook Station, Unit 1 (Seabrook). The proposed amendment would change the minimum boron concentration specified for the refueling water storage tank (RWST) in Limiting Condition for Operation (LCO) in TS 3.1.2.5 and would replace the minimum specified concentration for boron with an acceptable range of boron concentration for the RWST and the accumulators in the LCOs for TS 3.1.2.6, 3.5.1.1, and 3.5.4.

The changes in boron concentration are required to assure that sufficient negative reactivity remains available to offset the design increase in positive core reactivity beginning with Cycle 5. The increase in positive core reactivity is due to the increased cycle length core design.

2.0 EVALUATION

Starting with Cycle 5, the duration of the Seabrook operating cycle will be increased causing a design increase in the positive core reactivity. To assure that sufficient negative reactivity remains available, North Atlantic determined that the boron concentration in borated water sources must be increased. The borated water systems affected are the refueling water storage tank (RWST) for all Modes of operation and the emergency core cooling system (ECCS) accumulators when required to be operable.

With an increase in the boron concentration, there is the concern that boron precipitation will occur in the core. Therefore, North Atlantic proposes to change the post-loss-of-coolant-accident (post-LOCA) recirculation initiation time from the current 18 hours to 9 hours. This appears in Section 6.3 of the Seabrook Final Safety Analysis Report and in Emergency Response Procedures E-1. North Atlantic determined that for recirculation initiation at 9 hours there is sufficient hot leg recirculation flow to remove decay heat.

North Atlantic also has evaluated the sodium hydroxide (NaOH) inventory in the Spray Additive Tank (SAT) based on the proposed increase in boron concentration. The inventory assures an acceptable pH range for the solution

recirculated in the containment after a LOCA. North Atlantic's evaluation determined that a change in the NaOH inventory was not required.

The proposed TS changes are:

TS 3.1.2.5 Borated Water Sources - Shutdown

North Atlantic has proposed to change the RWST boron concentration to 2700 ppm. This value exceeds the predicted shutdown margin requirements for Cycle 5 and other future cycles. The proposed change is consistent with the following proposed TS changes.

TS 3.1.2.6 Borated Water Sources - Operating

North Atlantic has proposed to change the boron concentration in the RWST to the range of 2700 to 2900 ppm. This range exceeds the predicted shutdown margin requirements for Cycle 5 and other future cycles.

TS 3.5.1.1 - Accumulators

North Atlantic has proposed to change the boron concentration to a range of 2600 to 2900 ppm. The proposed upper limit on the boron concentration in the Accumulators ensures that the boron solubility limit will not be approached in these volumes.

TS 3.5.4 RWST - Boron Injection System

North Atlantic has proposed to introduce an upper and lower limit for the boron concentration in the RWST during Modes 1 through 4. The proposed range of 2700 to 2900 ppm is applicable to Cycle 5 and future cycles. North Atlantic asserts that the upper limit ensures that the boron solubility limit will not be approached in this volume.

North Atlantic proposed these changes to the concentrations in the borated water sources based on approved analysis methodology. North Atlantic asserts that these changes (1) exceed the predicted shutdown margin requirements for Cycle 5 and future cycles, (2) ensure that the pH range remains acceptable during post-LOCA recirculation, (3) ensure that the boron solubility limit will not be approached in the RWST, and (4) ensure that following a LOCA the switch from cold-leg to hot-leg recirculation at 9 hours is acceptable. The staff has reviewed North Atlantic's submittal, and based on North Atlantic's findings, the staff finds the aforementioned TS changes acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Hampshire and Massachusetts State officials were notified of the proposed issuance of the amendment. The State officials 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 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 (60 FR 39442). 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.

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Date: September 14, 1995