North Atlantic

North Atlantic Energy Service Corporation
P.O. Box 300
Seabrook, NH 03874
(603) 474-9521, Fax (603) 474-2987

The Northeast Utilities System

Ted C. Feigenbaum
Senior Vice President &
Chief Nuclear Officer

NYN- 95074

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United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Reference: Facility Operating License No. NPF-86, Docket No. 50-443

Subject: Change to Technical Specification Bases Section 3/4.9.1, Refueling Boron Concentration

Gentlemen:

This letter transmits changes to the Seabrook Station Unit No. 1 Technical Specification Bases for the Refueling Boron Concentration (Bases Section 3/4.9.1). The changes were made pursuant to the requirements of 10 CFR 50.59, and are being provided for the Staff's information. The changes to Bases Section 3/4.9.1 were made to incorporate a slightly modified version of the Bases discussion in Revision 1 of NUREG 1431, Westinghouse Standard Technical Specifications. The purpose of this Technical Specification Bases change is to provide enhanced Bases utilizing NUREG-1431 "Standard Technical Specifications Westinghouse Plants," for Technical Specification 3.9.1, "Boron Concentration" and the related MODE 6 Technical Specifications.

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Regulatory Compliance Manager, at (603) 474-9521, extension 3772.

Very truly yours,

Ted C. Feigenbaum

TCF:jmpjr/sm

Enclosure

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cc: Mr. Thomas T. Martin
Regional Administrator
U.S. Nuclear Regulatory Commission Region I
475 Allendale Road
King of Prussia, PA 19406

Mr. Albert W. De Agazio, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. John Macdonald
NRC Senior Resident Inspector
P.O. Box 1149
Seabrook, NH 03874

Mr. George L. Iverson, Director
New Hampshire Office of Emergency Management
107 Pleasant Street
Concord, NH 03301

I. INTRODUCTION AND ANALYSIS/EVALUATION OF PROPOSED CHANGES

A. Introduction

The purpose of this Technical Specification Bases change is to provide enhanced Bases, utilizing the guidance of NUREG-1431 Revision 1, Westinghouse Standard Technical Specifications, dated April 7, 1995. It is the intent that the Bases change provided in Section IV will also clarify the limitations on "positive reactivity changes" in ACTION statements for Technical Specifications applicable in Mode 6.

B. Analysis/Evaluation

The safety analysis for boron dilution events assume an initial RCS boron concentration which is equal to the refueling boron concentration. During refueling the RWST is drained to fill the refueling volumes. There are also Technical Specifications that impose limitations on "positive reactivity changes" in certain circumstances. It is the position of this Bases change that transferring water to the refueling volumes that is borated to greater than or equal to the refueling boron concentration is acceptable because it will ensure the reactor remains subcritical in accordance with the Bases for this Technical Specification. Likewise, lower temperature water may be added to the refueling cavity. Thus, for example, operations with the plant in Mode 6 such as, the flooding of the refueling volumes with water supplied from the RWST is acceptable provided that the RWST boron concentration is greater than or equal to the required refueling boron concentration.

The attached Bases change provides a general background on boron concentration as it applies during refueling operations. Specifically, the boron concentration ensures the more restrictive of the following reactivity conditions are met:

1. A k_{eff} of 0.95 or less, or
2. A boron concentration of greater than or equal to 2000 ppm

The attached Bases change provides a discussion of applicable safety analyses. It states that the reactivity condition of the core is consistent with the initial conditions assumed for the boron dilution accident in the accident analysis and is conservative for Mode 6. It also states that during refueling, the water volume in the spent fuel pool, the transfer canal, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes.

The attached Bases change also describes that CORE ALTERATIONS and positive reactivity changes (including actions to reduce boron concentration) are contingent upon maintaining the unit in compliance with the LCO. This means that borated water being added to the refueling volumes of a lower boron concentration than contained in these volumes is acceptable provided that the most restrictive of $k_{eff} \leq 0.95$ or the specified refueling boron concentration is maintained. This is acceptable because the Bases change states that positive reactivity changes are contingent upon maintaining the unit in compliance with the LCO.

The attached Bases change also states that the temperature of water added to the refueling volumes can be lower than the temperature in those volumes (within the operability limits of the RWST in Mode 6). This is acceptable because the accident analyses in Mode 6 are based on maintaining the refueling boron concentration.

The Updated Safety Analysis Report (UFSAR) Section 9.1.4 describes the refueling operations and discusses significant points associated with the operation. In general, the preparations for refueling operations include borating and cooling down the Reactor Coolant System as required by Technical Specifications. Specifically, the UFSAR describes that refueling procedures will include a step that requires that the refueling water and reactor coolant contains greater than or equal to the refueling boron concentration. This concentration, together with the negative reactivity of control rods, is sufficient to keep the core approximately 5% $\Delta k/k$ subcritical during the refueling operations. It is also sufficient to maintain the core subcritical in the unlikely event that all of the Rod Cluster Control Assemblies are removed from the core.

The UFSAR Chapter 15, Section 4, describes postulated faults which could result in reactivity and power distribution anomalies. Section 15.4.6.1 specifically describes credible scenarios by which the reactor coolant system boron concentration may be inadvertently reduced to the point where shutdown reactivity may be challenged. The boron dilution event is classified as an ANS Condition II incident, a fault of moderate frequency.

The dilution analysis for refueling operations assumes initial conditions for RCS boron concentration. The initial conditions are included in the safety analysis for each operating cycle and these initial conditions conservatively assumes a maximum boron concentration to lose all shutdown margin, which is also well below the refueling boron concentration. The results of these analyses conclude that for a dilution event during refueling, sufficient time is available from when the shutdown monitor alarm actuates until a loss of shutdown margin exists. During this time control room operators will be alerted of such a condition and allowed sufficient time to intervene.

II. PROPOSED SCHEDULE FOR ISSUANCE

North Atlantic requests NRC issuance of the changes to Technical Specification Bases 3/4.9.1 by November 1, 1995 in support of the upcoming refueling outage.

III. MARKUP OF PROPOSED CHANGES

The enclosed markup pages reflect the currently issued version of Technical Specification Bases.