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NYN-93051

April 8, 1993

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

Attention: Document Control Desk

References: (a) Facility Operating License No. NPF-86, Docket No. 50-443
(b) North Atlantic Letter NYN-92027 dated March 13, 1992, "Licensee Event Report (LER) 92-02-00: Non-Conservative Technical Specification Value," T. C. Feigenbaum to USNRC

Subject: Licensee Event Report (LER) 92-02-01: Non-Conservative Technical Specification Value

Gentlemen:

Enclosed please find Licensee Event Report (LER) No. 92-02-01 for Seabrook Station. This submittal supplements LER 92-02-00 and provides additional information regarding an event that was identified on February 12, 1992 and that was reported on March 13, 1992 pursuant to 10CFR50.73(a)(2)(v) and 10CFR50.73(a)(2)(i).

Should you require additional information regarding this matter, please contact Mr. James M. Peschel, Regulatory Compliance Manager, at (603) 474-9521, extension 3772.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Ted C. Feigenbaum", is written over a horizontal line.
Ted C. Feigenbaum

TCF:JMP/act

Enclosure: NRC Form 366 and 366A

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United States Nuclear Regulatory Commission
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April 8, 1993
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) SEABROOK STATION										DOCKET NUMBER (2) 0 5 0 0 0 4 4 3										PAGE (3) 1 OF 0 5																																			
TITLE (4) Non-Conservative Technical Specification Value																																																							
EVENT DATE (5)										LER NUMBER (6)										REPORT DATE (7)										OTHER FACILITIES INVOLVED (8)																									
MONTH			DAY			YEAR				YEAR			SEQUENTIAL NUMBER			REVISION NUMBER			MONTH			DAY			YEAR				FACILITY NAMES										DOCKET NUMBER(S)																
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POWER LEVEL (10) 1 0 0										20.402(b)										20.405(c)										50.73(w)(2)(iv)										73.71(b)															
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NAME Mr. James M. Peschel, Regulatory Compliance Manager, ext. 3772																				TELEPHONE NUMBER AREA CODE 6 1 0 3 4 7 4 - 1 9 5 2 1																																			
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On February 12, 1992 at 1405 it was determined that the existence of a non-conservative value in Technical Specification 4.5.2h.3) and in Station implementing procedures created a condition that could have prevented the fulfillment of the safety function of the Residual Heat Removal (RHR) System relied upon to remove residual heat or mitigate the consequences of an accident. This condition was reported to the NRC as a four hour report on February 12, 1992 at 1612 pursuant to the requirements of 10CFR50.72(b)(2)(iii)(B) and (D).

A value of 2828 gpm rather than 3868.4 gpm was included in the Technical Specifications as the acceptance value for the sum of the RHR injection line flow rates for Surveillance Requirement 4.5.2h.3).

North Atlantic Energy Service Corporation (North Atlantic) determined that on November 11, 1989 the RHR "B" train was tested per Station Procedure ES-89-1-18, "Residual Heat Removal Injection Flow Verification Following Installation of Section Check Valves Per 87DCR311," and a flow rate of less than 3868.4 gpm was accepted. However, North Atlantic has determined through a review of completed tests that the RHR system was always capable of greater than 3868.4 gpm of RHR injection flow if the system had been actuated to provide ECCS flow and that the plant was never in an unanalyzed condition nor in a condition outside its design basis.

North Atlantic subsequently determined during a review of Technical Specification inputs supplied by Westinghouse that Figure 2.1-1, "Reactor Core Safety Limit - Four Loops in Operation," does not accurately depict the loci of points which form the basis for the figure.

Corrective actions include the submittal of Technical Specification change requests and the verification of Technical Specification values supplied to North Atlantic by Westinghouse.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/96

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
SEABROOK STATION	0500044392	—	002	—	01	02	OF 05

TEXT (If more space is required, use additional NRC Form 366A (2) (17))

Description of Event

On February 12, 1992 at 1405 it was determined that the existence of a non-conservative value in Technical Specification 4.5.2h.3) and in Station implementing procedures created a condition that could have prevented the fulfillment of the safety function of the Residual Heat Removal (RHR) System relied upon to remove residual heat or mitigate the consequences of an accident. This condition was reported to the NRC as a four hour report on February 12, 1992 at 1612 pursuant to the requirements of 10CFR50.72(b)(2)(iii)(B) and (D).

During a routine review of Station Procedure OX1413.05, "RHR Cold Shutdown Testing", which performs a full-stroke exercise of the RHR pump discharge check valves and associated cold leg injection check valves, an inconsistency was noted between the procedure's acceptance value and that of Technical Specification 4.5.2h.3). The procedure contained a value of 4350 gpm for RHR injection flow while the Technical Specification value was 2828 gpm for RHR injection flow.

North Atlantic requested that Westinghouse review the Emergency Core Cooling System analysis to determine if the RHR flow rate used in the analysis was consistent with the value provided in Technical Specification 4.5.2h.3). Westinghouse notified North Atlantic on August 27, 1991 that 2828 gpm is the appropriate value for flow through three of the four RHR injection lines and that the correct value for flow through four RHR injection lines is 3868.4 gpm and this should be the Technical Specification value. Westinghouse also stated that the inconsistency would not constitute a significant safety issue since Westinghouse procedure TAC-02, "Low Head Safety Injection Test Procedure" required that each RHR subsystem be able to deliver a minimum of 3868.4 gpm, and as long as the plant initially satisfied the TAC-02 procedure requirements and had not made any flow altering modifications the RHR system is assured of meeting the 3868.4 gpm flow requirement.

North Atlantic has determined based on its review of preoperational test records that system flowrates were satisfactory.

During the development and review of a proposed Technical Specification change to revise the value of 2828 gpm to 3868.4 gpm it was determined that the non-conservative value of 2828 gpm was utilized as an acceptance value for post modification testing performed in 1989 related to the installation of check valves in the suction lines to the RHR pumps from the Refueling Water Storage Tank and the Containment Emergency Sump. In this case the RHR injection lines from the RWST were tested per Station Procedure ES-89-1-18, "Residual Heat Removal Injection Flow Verification Following Installation of Suction Check Valves per 87DCR311". The "A" train was tested in September 1989 and the "B" train was tested in November 1989 with the accepted flow values being 4012 gpm for the "A" train and 3776 gpm for the "B" train. The test was performed injecting into the loops with the Pressurizer vented to atmosphere and flow to the Reactor Coolant System (RCS) throttled to ensure that it exceeded the 2828 gpm acceptance value but did not overflow the RCS. Upon discovery of the acceptance of the non-conservative value, North Atlantic reviewed additional test records and determined that on September 10, 1991 during the first refueling outage the RHR system was tested per Station Procedure EX1804.039, "ECCS System Injection Check Valve Testing" which verified system flow rates as 5013 gpm for the "A" train and 4696 gpm for the "B" train. This procedure was performed to verify ECCS check valve operability with the reactor vessel head off and was not performed pursuant to Technical Specification 4.5.2h.3). However, the flow rates obtained for both trains exceeded 3868 gpm verifying that no operability concern or design basis concern exists.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1) SEABROOK STATION	DOCKET NUMBER (2) 0500044392	LER NUMBER (6)			PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 366A (17))

North Atlantic determined that the existence of the non-conservative value in the Technical Specifications and in the related implementing procedures created a condition whereby a plant modification that restricted RHR injection flow capability could have been implemented and accepted with less than adequate RHR injection flow rates. This condition then could have prevented the fulfillment of the RHR safety function relied upon to remove decay heat or mitigate the consequences of an accident. Therefore, North Atlantic reported this condition to the NRC as a four hour report pursuant to 10CFR50.72(b)(2)(iii)(B) and (D).

The condition was reported soon after it was identified that a value less than the Technical Specification revised value (3868.4 gpm) had been accepted. The original inconsistency in values was questioned by an engineer in the Technical Support organization on May 14, 1990 but it was not until February 6, 1992, during the review of the proposed Technical Specification change, that it was determined that a value less than the revised Technical Specification value had been accepted as a test result. Once this condition was identified it was reviewed and the reporting determination was made.

North Atlantic subsequently performed a detailed review of the appropriate Technical Specification inputs supplied by Westinghouse that were not verified during a previous audit of Westinghouse by Yankee Atomic Electric Company (YAEC). This review identified no additional values that could not be verified as appropriate for Seabrook Station based upon the Westinghouse design documentation. However, it was determined that the curves of Figure 2.1-1, "Reactor Core Safety Limits - Four Loops in Operation," do not accurately depict the loci of points which form the basis for the figure. As an example, the value of T_{avg} at 1960 PSIA for 100% of Rated Thermal Power from the Westinghouse design data is 605.0°F while the curve from Figure 2.1-1 (copy attached as Figure 1) depicts a value of approximately 606.5°F.

Safety Consequences

There were no adverse safety consequences as a result of this event.

The RHR system was always OPERABLE per the Technical Specifications and was capable of performing its ECCS design function if called upon to do so. The RHR system flowrate was verified through testing, prior to plant operation and again on September 10, 1991, that it would deliver injection flows greater than those required by the ECCS analysis. The potential did exist for a plant modification which reduced the RHR injection flow capability to be implemented and accepted with a flow value less than the ECCS analysis required value. However, no such modifications were made to the plant.

The inaccuracies in Figure 2.1-1 did not create a condition that allowed a safety limit to be exceeded. The normal operation of the plant is controlled by Operations Department procedures which control T_{avg} to $\pm 4^\circ\text{F}$ of the T_{avg} program and a nominal 587°F and maintain Reactor Coolant System Pressure between 2205 psig and 2265 psig. The Reactor Protection System includes the overtemperature ΔT trip and the overpower ΔT trip which would have tripped the reactor, prior to the safety limits of Figure 2.1-1 being approached. These trip setpoints are set such that a reactor trip occurs before the safety limit values of Figure 2.1-1 are reached and are designed to provide positive assurance that the Departure from Nucleate Boiling Ratio of 1.30 is not exceeded.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Root Cause

1. RHR Injection Flow

During the development of the Seabrook Station Technical Specifications the non-conservative value for RHR injection flow was entered into the draft Technical Specifications. The original draft Technical Specifications were based upon the Westinghouse Standard Technical Specifications (STS), Revision 3. This version of the draft Technical Specifications was formatted to provide acceptance values for RHR injection flow through three loops and through four loops. The 2828 gpm value was correctly listed for three loop flow while a separate number was to be provided for four loop flow.

Subsequent drafts of the Technical Specifications were provided in the STS Revision 4 format and the flow for RHR injection through four loops was incorrectly listed as 2828 gpm due to administrative error. This error was carried through the final review of the Technical Specifications and was included in the version issued with Operating License No. NPF-56, which was in the STS Revision 5 format.

The actual cause for the discrepancy in the RHR injection flow values has not been determined, but it is attributed to personnel error in the Technical Specification certification process. During the review and certification process, a table of the Technical Specification values was compiled by YAEC for North Atlantic. This table was reviewed by North Atlantic, Westinghouse, United Engineers and Constructors and YAEC and the discrepancy was not identified. In addition, YAEC performed an audit of the Westinghouse calculations that formed the basis for the Technical Specification values. This audit, which sampled approximately 10% of the Technical Specification values, did not identify any discrepancies, however, the audit did not specifically include Surveillance Requirement 4.5.2h.3).

2. Figure 2.1-1

Figure 2.1-1, which was created from the loci of points provided by Westinghouse, was drawn by North Atlantic personnel during the development of the Technical Specifications in 1986. The original draft figure included the existing curves on a grid with 20°F graduations. The nonconservative curves were not identified during the Technical Specification review process. The actual cause for the discrepancy has not been determined, but it is attributed to personnel error in the Technical Specification certification process.

Corrective Actions

Surveillance Requirement 4.5.2h.3) is only performed during shutdowns after modifications are made to the RHR system that alter the system flow characteristics. A Technical Specification change was developed and submitted to the NRC on October 22, 1992 to revise the value for Surveillance Requirement to at least 3868.4 gpm.

A review of Station procedures was performed to identify and revise any procedures that utilize the RHR injection flow acceptance value of 2828 gpm. This review identified no incorrect procedures and was completed in September 1992.

A revision was made to the Station Information Report (SIR) Procedure to require that an SIR be initiated if information is identified that calls into question the adequacy of any value

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specified in the Technical Specifications. This procedure revision was issued on December 16, 1992.

A detailed review was performed of appropriate Technical Specification inputs supplied by Westinghouse, that were not reviewed in the 1986 YAEC audit, to validate the numbers that exist in the current Technical Specifications. There were no additional values identified that could not be verified as appropriate for Seabrook Station by applicable Westinghouse design documentation. However, the curves provided in Figure 2.1-1 do not accurately depict the Westinghouse tabular data upon which the figure is based.

North Atlantic will submit a License Amendment Request to the NRC to revise Technical Specification Figure 2.1-1 to reflect the Westinghouse supplied design data.

Plant Conditions

At the time of the identification of this condition the plant was in MODE 1 and operating at 100% power.

Previous Occurrences

This is the first event of this type at Seabrook Station.