ENCLOSURE 2 TO NYN-92081

New Hampshire Yankee

SEABROOK STATION UNIT 1

Facility Operating License NPF-86
Docket No. 50-443

Supplement 1 to License Amendment Request No. 92-01
RTD Bypass System Elimination

This License Amendment Request is submitted by New Hampshire Yankee pursuant to 10CFR50.90. The following information is enclosed in support of this License Amendment Request:

- Section I - Introduction and Description of Proposed Changes
- Section II - Markup of Proposed Changes
- Section III - Retype of Proposed Changes
- Section IV - Safety Evaluation of Proposed Changes
- Section V - Determination of Significant Hazards for Proposed Changes
- Section VI - Proposed Schedule for License Amendment Issuance and Effectiveness
- Section VII - Environmental Impact Assessment

Sworn and Subscribed
to before me this
19th day of June, 1992

Tracy A. DeCredico
Notary Public

TRACY A. DeCREDICO, Notary Public
My Commission Expires October 3, 1995

Bruce L. Drawbridge
Executive Director Nuclear Production

1. Introduction and Description of Proposed Changes; Supplement 1 to License Amendment Request 92-01

A. Introduction

The purpose of Supplement 1 to License Amendment Request 92-01 is to propose changes to the Seabrook Station Technical Specifications associated with a plant design change (DCR 90-03) that will eliminate the Resistance Temperature Detector (RTD) Bypass System which is currently used for the measurement of narrow range Reactor Coolant System (RCS) hot leg and cold leg temperatures. The design change will remove the RTD Bypass System piping and install new thermowell mounted fast response RTDs in the hot leg and cold leg piping. The replacement RTD/thermowell combination meets the functional and qualification requirements of the existing RTDs mounted in the bypass piping. Additional instrumentation is added to process and average the new hot leg temperature inputs. The cold leg and average hot leg temperature signals are input to the existing reactor protection and reactor control systems. Changes in the Westinghouse methodology for treating hot and cold leg streaming, technical differences in the instrumentation, and allowance for operation with one hot leg RTD inoperable have resulted in a change in instrumentation uncertainties. The proposed Technical Specification changes reflect these differences in the instrumentation uncertainties associated with the new temperature measurement system and delete requirements for verification of RTD bypass loop flow.

Additionally, the proposed Technical Specification changes modify the requirements for the performance of a precision heat balance which is used to determine RCS flow rate and to normalize the RCS flow instrumentation. The current Technical Specification requirements specify that the precision heat balance must be performed prior to operation above 75% of rated thermal power after each fuel loading. Westinghouse has recommended that the precision heat balance be performed above 90% of rated thermal power to minimize measurement uncertainties that are exacerbated at lower power levels. New Hampshire Yankee is, therefore, proposing a change to its Technical Specifications to require that the precision heat balance for determination of RCS flow rate be performed prior to exceeding 95% of rated thermal power.

New Hampshire Yankee has also proposed to increase the Reactor Coolant System flow rate requirement of Technical Specification Limiting Condition for Operation (LCO) 3.2.5 from the current value of 391,000 gpm to a new value of 392,000 gpm to reflect the increase in flow measurement uncertainty as documented in WCAP-13181. The proposed 2.4% flow measurement uncertainty value includes an additional penalty of 0.1% flow to account for undetected feedwater venturi fouling as stated in the Bases for Technical Specification 3/4.2.5.

The elimination of the RTD Bypass System has been implemented by numerous licensees with Westinghouse Nuclear Steam Supply Systems. New Hampshire Yankee is aware of the following licensees which have eliminated the RTD Bypass System:

Duke Power Company (Catawba 1/2, McGuire 1/2)
Duquesne Light Company (Beaver Valley 1/2)
Florida Power & Light Company (Turkey Point 3/4)
Houston Lighting & Power Company (South Texas Project 1/2)
New York Power Authority (Indian Point 3)
Tennessee Valley Authority (Sequoyah 1/2)
Wolf Creek Nuclear Operating Corporation (Wolf Creek)
Northeast Utilities (Millstone 3)
Carolina Power & Light (H.B. Robinson)
South Carolina Electric & Gas (V.C. Summer)
Alabama Power Company (Farley 1, Farley 2 scheduled for Spring 92)
Georgia Power Company (Vogtle 1, Vogtle 2 scheduled for Spring 92)

Westinghouse has prepared a licensing report for NHY in support of the elimination of the RTD Bypass System at Seabrook Station. The Westinghouse licensing report WCAP-13181, "RTD Bypass Elimination Licensing Report for Seabrook Nuclear Station" (Proprietary) is enclosed in Section VIII. Yankee Atomic Electric Company (YAEC) has also evaluated the RTD Bypass System elimination relative to containment response, Steam Generator Tube Rupture and Boron Dilution events. The YAEC evaluation conclusions and documentation are discussed in Section V.

B. Description of Proposed Changes

License Amendment Request 92-01 and Supplement 1 thereto propose changes to the following Technical Specifications:

1. Table 2.2-1, "REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS," Pages 2-4, 5, 7, 8, and 10

   Technical Specification Table 2.2-1 terms associated with instrumentation uncertainty (TA, Z, S, allowable value, and associated notes) have been revised due to technical differences in the RTD instrumentation, differences in the Westinghouse methodology for treating hot leg and cold leg streaming and allowance for operation with one hot leg RTD inoperable. All values have been rounded to the nearest 0.1% in accordance with the latest Westinghouse format.

   The value for the K_6 term in the overpower ΔT trip setpoint calculation was increased (conservative direction). K_6 is a penalty term that reduces the overpower ΔT trip setpoint when Tavg is above the nominal Tavg. The setpoint when operating at or below the nominal Tavg is determined by a constant, K_4, in the overpower ΔT trip setpoint calculation.

   The value of the K_6 term in the overpower ΔT trip setpoint calculation was increased as stated above. The overpower ΔT trip is intended to limit transient overpower during Condition 1 and 2 overpower transients/operator errors to 118% power. As discussed in UFSAR section 4.3.2.2f and 4.4.2.11f, limiting overpower to 118%

ensures that peak fuel rod linear heat generation rates during such an occurrence will not exceed the linear power for prevention of fuel centerline melting. The K_6 term of the overpower ΔT trip is a penalty term that reduces the trip setpoint when T_{avg} is above the nominal T_{avg}. An increase in K_6, is therefore a change in the conservative direction. The need to modify K_6 is explained below.

The overpower ΔT trip setpoint when operating at or below the nominal T_{avg} is determined by the K_4 constant of the overpower ΔT trip setpoint equation. The increase in the instrumentation uncertainties associated with removal of the RTD Bypass System results in an increase in the safety analysis limit value for K_4. This increase is reflected by the increase in the Technical Specification TA value for overpower ΔT (the safety analysis limit value for K_4 corresponds to the nominal K_4 value plus the fractional full power ΔT equivalent of the Technical Specification TA value). Accommodation of the increased instrumentation uncertainty by increasing the safety analysis limit value for K_4 allows the Technical Specification value for the nominal K_4 setpoint to remain unaffected by the removal of the RTD Bypass System.

The increase in the safety analysis limit for K_4 was accommodated in the analysis by reducing margin available in the fit of the overpower ΔT trip setpoint equation to the 118% power loop ΔT data at average temperatures less than or equal to the nominal T_{avg}. The increase in the safety analysis limit for K_4 however necessitated an increase in the K_6 penalty term in order to maintain the trip setpoint at or below 118% for a range of average temperatures greater than the nominal T_{avg}. The proposed increase in the Technical Specification value for K_6 ensures that the 118% power limit will be protected at all average temperatures.

Since the overpower ΔT trip with the modified setpoints will continue to ensure that the 118% overpower limit is protected for all ranges of operation, there is no decrease in the margin of safety.

2. 3/4.2.5, "DNB PARAMETERS," Page 3/4 2-10

The current Technical Specification Surveillance Requirement 4.2.5.3 specifies that the precision heat balance must be performed prior to operation above 75% of rated thermal power after each fuel loading. Westinghouse has recommended that the precision heat balance be performed above 90% of rated thermal power to minimize measurement uncertainties that are exacerbated at lower power levels. New Hampshire Yankee has therefore proposed a change to Surveillance Requirement 4.2.5.3 to require that the precision heat balance for determination of RCS flow rate be performed prior to exceeding 95% of rated thermal power.

New Hampshire Yankee has also proposed to increase the Reactor Coolant System flow rate requirement of Technical Specification Limiting Condition for Operation 3.2.5c from the current value of

391,000 gpm to a new value of 392,000 gpm to reflect the increase in flow measurement uncertainty as documented in WCAP-13181. The proposed 2.4% flow measurement uncertainty value includes an additional penalty of 0.1% flow to account for undetected feedwater venturi fouling as stated in the Bases for Technical Specification 3/4.2.5.

3. Table 4.3-1, "REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS," Pages 3/4 3-9 and 13

Note 12, relating to verification of RTD bypass loop flow rate, has been deleted since the RTD Bypass System is being eliminated.

4. BASES 3/4.2.5, "DNB PARAMETERS," Page B 3/4 2-4

As discussed above, NHY has proposed to increase the DNB parameter limit on RCS flow rate from the current value of 391,000 gpm which includes 2.1% measurement uncertainty to 392,000 gpm which includes 2.4% measurement uncertainty. The revised value for RCS flow measurement uncertainty has been reflected in the BASES for Technical Specification 3/4.2.5.

New Hampshire Yankee notes that the deletion of the Technical Specification for the Low RCS Tavg coincident with reactor trip feedwater isolation Functional Unit (Table 3.3-4, Functional Unit 6.b) that was recommended in WCAP-13181 will be addressed in a future license amendment request.