August 13, 1991

Docket No. 50-443

Mr. Ted C. Feigenbaum, President
and Chief Executive Officer
New Hampshire Yankee Division
Public Service Company of New Hampshire
Post Office Box 300
Seabrook, New Hampshire 03874

Dear Mr. Feigenbaum:

SUBJECT: ISSUANCE OF AMENDMENT NO. 5 TO FACILITY OPERATING LICENSE NO. NPF-86 - SEABROOK STATION, UNIT NO. 1 (TAC NO. 79625)

The Commission has issued the enclosed Amendment No. 5 to Facility Operating License No. NPF-86 for the Seabrook Station Unit 1. This amendment is in response to your application of December 14, 1990, as supplemented by letter dated April 24, 1991, June 14, 1991, and July 15, 1991.

This amendment revised the Technical Specifications for Seabrook Station Unit 1 involving permitting a safety injection (SI) pump to be made operable in operating modes 5 and 6.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by Allen Johnson
for Gordon Edison

Gordon Edison, Senior Project Manager
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 5 to License No. NPF-86
2. Safety Evaluation

cc w/enclosures:
See next page

OFC	:LA:PDI-3	:PM:PDI-3	:OGC	:PD:PDI-3	:
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DATE	:7/29/91	:7/29/91	:8/5/91	:8/13/91	:

COMMENT SEE ATTACHED MEMO

OFFICIAL RECORD COPY
Document Name: SEABROOK AMDT 79625

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

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Division of Reactor Projects - I/II
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1. Amendment No. 5 to License No. NPF-86
2. Safety Evaluation

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Atomic Safety and Licensing Board Panel Docket
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, ET AL.*

DOCKET NO. 50-443

SEABROOK STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. NPF-86

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:

   A. The application for amendment filed by the Public Service Company of New Hampshire (the licensee), acting for itself and as agent and representative of the 11 other utilities listed below and hereafter referred to as licensees, dated December 14, 1990 as supplemented by letters dated April 24, 1991, June 14, 1991, and July 15, 1991, 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 set forth in 10 CFR Chapter I;

   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.

*Public Service Company of New Hampshire is authorized to act as agent for: Canal Electric Company, The Connecticut Light and Power Company, EUA Power Corporation, Hudson Light & Power Department, Massachusetts Municipal Wholesale Electric Company, Montaup Electric Company, New England Power Company, New Hampshire Electric Cooperative, Inc., Taunton Municipal Light Plant, The United Illuminating Company, and Vermont Electric Generation and Transmission Cooperative, Inc., and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

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. NPF-86 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 5 , and the Environmental Protection Plan contained in Appendix B are incorporated into Facility License No. NPF-86. PSNH shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented prior to restart from the first refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Susan Shankman, Acting Director
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 13, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 5

FACILITY OPERATING LICENSE NO. NPF-86

DOCKET NO. 50-443

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 area of change. Overlap pages are provided for continuity.

Remove	Insert
3/4 4-34	3/4 4-34
--------	3/4 4-34a*
3/4 4-35	3/4 4-35
3/4 5-10	3/4 5-10
B 3/4 4-16	B 3/4 4-16
B 3/4 4-17	B 3/4 4-17
B 3/4 5-2	B 3/4 5-2

*Donotes new page

PRESSURE/TEMPERATURE LIMITS

PRESSURIZER

LIMITING CONDITION FOR OPERATION

3.4.9.2 The pressurizer temperature shall be limited to:

a. A maximum heatup of 100°F in any 1-hour period,

b. A maximum cooldown of 200°F in any 1-hour period, and

c. A maximum spray water temperature differential of 320°F.

APPLICABILITY: At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.2 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown. The spray water temperature differential shall be determined to be within the limit at least once per 12 hours during auxiliary spray operation.

LIMITING CONDITION FOR OPERATION

3.4.9.3 The following Overpressure Protection Systems shall be OPERABLE:

a. In MODE 4 when the temperature of any RCS cold leg is less than or equal to 329°F; and in MODE 5 and MODE 6 with all Safety Injection pumps inoperable:

1) Two residual heat removal (RHR) suction relief valves each with a setpoint of 450 psig +0, -3 %; or

2) Two power-operated relief valves (PORVs) with lift setpoints that vary with RCS temperature which do not exceed the limit established in Figure 3.4-4, or

3) The Reactor Coolant System (RCS) depressurized with an RCS vent area of greater than or equal to 1.58 square inches.

b. In MODE 5 and MODE 6 with all Safety Injection pumps except one inoperable:

1) The Reactor Coolant System (RCS) depressurized with an RCS vent area equal to or greater than 18 square inches.

APPLICABILITY: MODE 4 when the temperature of any RCS cold leg is less than or equal to 329°F; MODE 5 and MODE 6 with the reactor vessel head on.

ACTION:

a. In MODE 4, MODE 5 and MODE 6 with all Safety Injection pumps inoperable:

1) With one PORV and one RHR suction relief valve inoperable, either restore two PORVs or two RHR suction relief valves to OPERABLE status within 7 days or depressurize and vent the RCS through at least a 1.58-square-inch vent within the next 8 hours.

2) With both PORVs and both RHR suction relief valves inoperable, depressurize and vent the RCS through at least a 1.58-square-inch vent within 8 hours.

3) In the event the PORVs, or the RHR suction relief valves, or the RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.8.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs, or the RHR suction relief valves, or RCS vent(s) on the transient, and any corrective action necessary to prevent recurrence.

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

b. In MODE 5 and MODE 6 with all Safety Injection pumps except one inoperable:

1) With the RCS vent area less than 18 square inches, immediately restore all Safety Injection pumps to inoperable status.

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by:

a. Performance of an ANALOG CHANNEL OPERATIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required OPERABLE and at least once per 31 days thereafter when the PORV is required OPERABLE;

b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 months; and

c. Verifying the PORV isolation valve is open at least once per 72 hours when the PORV is being used for overpressure protection.

4.4.9.3.2 Each RHR suction relief valve shall be demonstrated OPERABLE when the RHR suction relief valves are being used for cold overpressure protection as follows:

a. For RHR suction relief valve RC-V89 by verifying at least once per 72 hours that RHR suction isolation valves RC-V87 and RC-V88 are open.

b. For RHR suction relief valve RC-V24 by verifying at least once per 72 hours that RHR suction isolation valves RC-V22 and RC-V23 are open.

c. Testing pursuant to Specification 4.0.5.

4.4.9.3.3 The RCS vent(s) shall be verified to be open at least once per 12 hours* when the vent(s) is being used for overpressure protection.

*Except when the vent pathway is provided with a valve(s) or devices(s) that is locked, sealed, or otherwise secured in the open position, then verify this valve(s) or device(s) open at least once per 31 days.

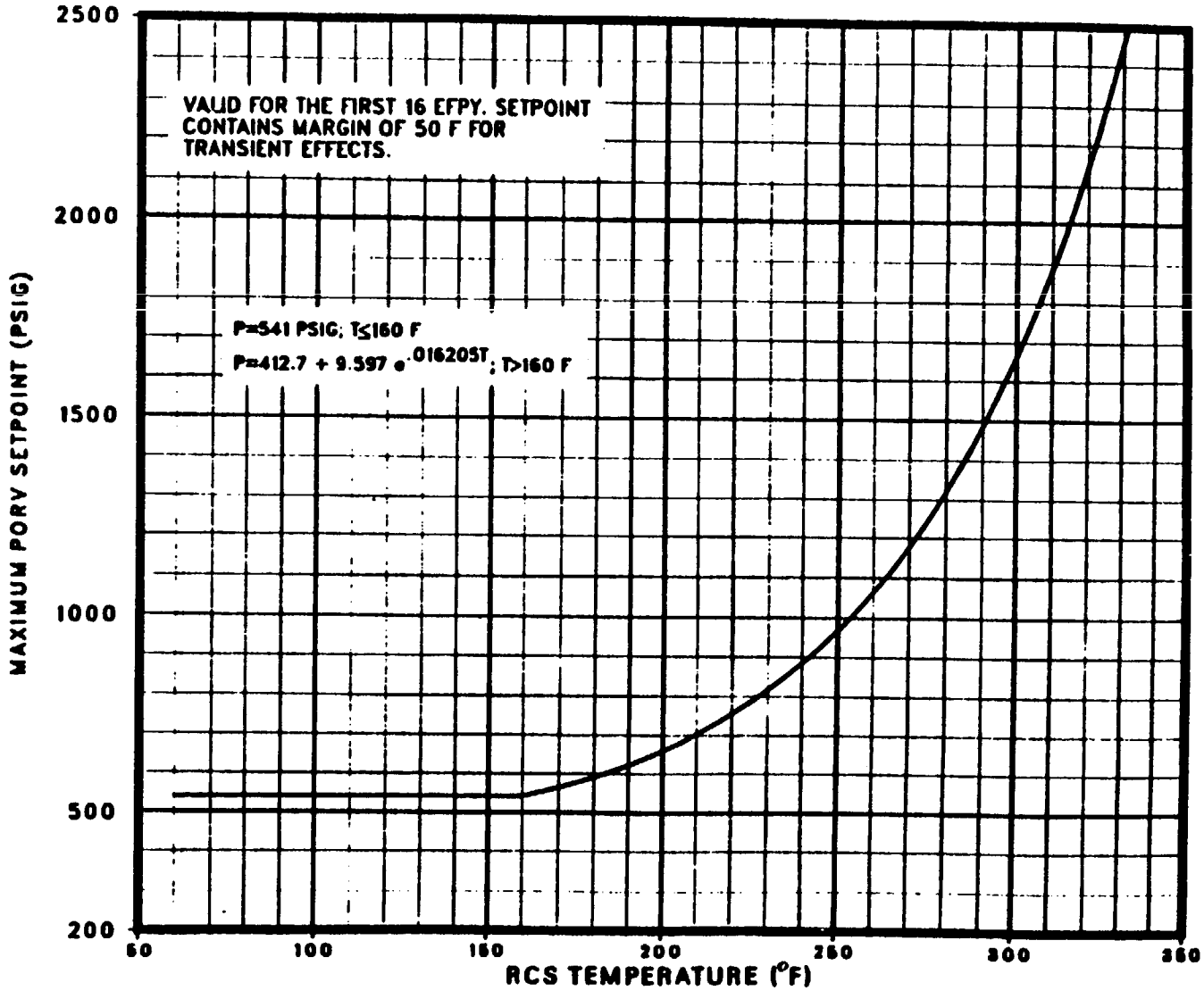

FIGURE 3.4-4 RCS COLD OVERPRESSURE PROTECTION SETPOINTS

ECCS SUBSYSTEMS - T_{avg} LESS THAN 350°F

SURVEILLANCE REQUIREMENTS

4.5.3.1.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable requirements of Specification 4.5.2.

4.5.3.1.2 All centrifugal charging pumps and Safety Injection pumps, except the above allowed OPERABLE pumps, shall be demonstrated inoperable* by verifying that the motor circuit breakers are secured in the open position within 4 hours after entering MODE 4 from MODE 3 or prior to the temperature of one or more of the RCS cold legs decreasing below 325°F, whichever comes first, and at least once per 31 days thereafter.

*An inoperable pump may be energized for testing or for filling accumulators provided the discharge at the pump has been isolated from the RCS by a closed isolation valve with power removed from the valve operator, or by a manual isolation valve secured in the closed position.

EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS - T_{avg} EQUAL TO OR LESS THAN 200°F

LIMITING CONDITION FOR OPERATION

3.5.3.2 As a minimum, the following number of Safety Injection pumps shall be inoperable:

a. Two when the RCS vent area is less than 18 square inches.*

b. One when the RCS vent area is equal to or greater than 18 square inches.

APPLICABILITY: MODE 5 and MODE 6 with the reactor vessel head on.

ACTION:

With fewer than the required number of Safety Injection pumps inoperable, restore all pumps required to be inoperable, to inoperable status within 4 hours.

SURVEILLANCE REQUIREMENTS

4.5.3.2 All Safety Injection pumps required to be inoperable shall be demonstrated inoperable by verifying that the motor circuit breakers are secured in the open position at least once per 31 days.

*An inoperable pump may be energized for testing or for filling accumulators provided the discharge at the pump has been isolated from the RCS by a closed isolation valve with power removed from the valve operator, or by a manual isolation valve secured in the closed position.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION

The OPERABILITY of two PORVs, or two RHR suction relief valves, or an RCS vent opening of at least 1.58 square inches ensures that the RCS will be protected from pressure transients which could exceed the limits of Appenix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 329°F. Either PORV or either RHR suction relief valve has adequate relieving capability to protect the RCS from overpressurization when the transient is limited to either: (1) the start of an idle RCP with the secondary water temperature of the steam generator less than or equal to 50°F above the RCS cold leg temperatures, or (2) the start of a centrifugal charging pump and its injection into a water-solid RCS.

The Maximum Allowed PORV Setpoint for the Cold Overpressure Mitigation System (COMS) is derived by analysis which models the performance of the COMS assuming various mass input and heat input transients. Operation with a PORV Setpoint less than or equal to the maximum Setpoint ensures that Appendix G criteria will not be violated with consideration for: (1) a maximum pressure overshoot beyond the PORV Setpoint which can occur as a result of time delays in signal processing and valve opening; (2) a 50°F heat transport effect made possible by the geometrical relationship of the RHR suction line and the RCS wide range temperature indicator used for COMS; (3) instrument uncertainties; and (4) single failure. To ensure mass and heat input transients more severe than those assumed cannot occur, Technical Specifications require lockout of both Safety Injection pumps and all but one centrifugal charging pump while in MODES 4, 5, and 6 with the reactor vessel head installed and disallow start of an RCP if secondary coolant temperature is more than 50°F above reactor coolant temperature. Exceptions to these requirements are acceptable as described below.

Operation above 350°F but less than 375°F with only centrifugal charging pump OPERABLE and no Safety Injection pumps OPERABLE is allowed for up to 4 hours. As shown by analysis, LOCAs occurring at low temperature, low pressure conditions can be successfully mitigated by the operation of a single centrifugal charging pump and a single RHR pump with no credit for accumulator injection. Given the short time duration and the condition of having only one centrifugal charging pump OPERABLE and the probability of a LOCA occurring during this time, the failure of the single centrifugal charging pump is not assumed.

Operation below 350°F but greater than 325°F with all centrifugal charging and Safety Injection pumps OPERABLE is allowed for up to 4 hours. During low pressure, low temperature operation all automatic Safety Injection actuation signals except Containment Pressure - High are blocked. In normal conditions, a single failure of the ESF actuation circuitry will result in the starting of at most one train of Safety Injection (one centrifugal charging pump, and one Safety Injection pump). For temperatures above 325°F, an overpressure event occurring as a result of starting two pumps can be successfully mitigated by

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

operation of both PORVs without exceeding Appendix G limit. A single failure of a PORV is not assumed due to the short duration that this condition is allowed and the low probability of an event occurring during this interval in conjunction with the failure of a PORV to open. Initiation of both trains of Safety Injection during this 4-hour time frame due to operator error or a single failure occurring during testing of a redundant channel are not considered to be credible accidents.

Operation with all centrifugal charging pumps and both Safety Injection pumps OPERABLE is acceptable when RCS temperature is greater than 350°F, a single PORV has sufficient capacity to relieve the combined flow rate of all pumps. Above 350°F two RCPs and all pressure safety valves are required to be OPERABLE. Operation of an RCP eliminates the possibility of a 50°F difference existing between indicated and actual RCS temperature as a result of heat transport effects. Considering instrument uncertainties only, an indicated RCS temperature of 350°F is sufficiently high to allow full RCS pressurization in accordance with Appendix G limitations. Should an overpressure event occur in these conditions, the pressurizer safety valves provide acceptable and redundant overpressure protection.

When operating below 200°F in MODE 5 or MODE 6, Technical Specification 3.5.3.2 allows one Safety Injection pump to be made OPERABLE whenever the RCS has a vent area equal to or greater than 18 square inches. Cold overpressure protection in this configuration is provided by the 18 square inch or greater mechanical opening in the RCS pressure boundary. This mechanical opening is larger in size than the 1.58 square inch opening required for normal overpressure protection and is of sufficient size to ensure that the Appendix G limits are not exceeded when an SI pump is operating in MODE 5 or MODE 6. Additionally, when operating in a reduced inventory condition, the larger vent area limits RCS pressure during overpressure transients to reduce the possibility of adversely affecting steam generator nozzle dams. When the reactor has been shut down for at least 7 days, the larger vent area also enhances the ability to provide a gravity feed to the RCS from the Refueling Water Storage Tank in the unlikely event that the CCP and SI pumps were unavailable after a loss of RHR.

The Maximum Allowed PORV Setpoint for the Cold Overpressure Mitigation System will be revised on the basis of the results of examinations of reactor vessel material irradiation surveillance specimens performed as required by 10 CFR Part 50, Appendix H.

3/4.4.10 STRUCTURAL INTEGRITY

The inservice inspection and testing programs for ASME Code Class 1, 2, and 3 components ensure that the structural integrity and operational readiness of these components will be maintained at an acceptable level throughout the life of the plant. These programs are in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).

Components of the Reactor Coolant System were designed to provide access to permit inservice inspections in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, 1983 Edition and Addenda through Summer 1983.

3/4.4.11 REACTOR COOLANT SYSTEM VENTS

Reactor Coolant System vents are provided to exhaust noncondensible gases and/or steam from the Reactor Coolant System that could inhibit natural circulation core cooling. The OPERABILITY of least one Reactor Coolant System vent path from the reactor vessel head and the pressurizer steam space ensures that the capability exists to perform this function.

The valve redundancy of the Reactor Coolant System vent paths serves to minimize the probability of inadvertent or irreversible actuation while ensuring that a single failure of a vent valve, power supply, or control system does not prevent isolation of the vent path.

The function, capabilities, and testing requirements of the Reactor Coolant System vents are consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plant Requirements," November 1980.

BASES

3/4.5.1 ACCUMULATORS

The OPERABILITY of each Reactor Coolant System (RCS) accumulator 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 accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

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

The accumulator power-operated isolation valves are considered to be "operating bypasses" in the context of IEEE Std. 279-1971, which requires that bypasses of a protective function be removed automatically whenever permissive conditions are not met. In addition, as these accumulator isolation valves fail to meet single-failure criteria, removal of power to the valves is required.

The limits for operation with an accumulator inoperable for any reason except an isolation valve closed minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures. If a closed isolation valve cannot be immediately opened, the full capability of one accumulator is not available and prompt action is required to place the reactor in a mode where this capability is not required.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two 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 accumulators 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. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period.

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and safety injection pumps except the required OPERABLE charging pump to be inoperable in MODES 4 and 5 and in MODE 6 with the reactor vessel head on provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV or RHR suction relief valve.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

When the RCS has a vent area equal to or greater than 18 square inches, one Safety Injection pump may be made OPERABLE when in MODE 5 or MODE 6 (below 200°F). When operating in this configuration, cold overpressure protection is provided by the mechanical vent opening, equal to or greater than 18 square inches, that is required to be present in the RCS boundary prior to making the SI pump OPERABLE. This required RCS vent area and the surveillance requirement to verify the presence of the RCS vent area provides assurance that a mass addition transient can be relieved and that adequate cold overpressure protection is provided.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance Requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5.4 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank (RWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 8.5 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 5 TO FACILITY OPERATING LICENSE NO. NPF-86

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

SEABROOK STATION, UNIT 1

DOCKET NO. 50-443

1.0 INTRODUCTION

The current Technical Specification (TS) 3.5.3.2 requires that all safety injection pumps are inoperable when the reactor coolant system (RCS) average temperature is less than 350°F. The basis of this TS limitation is to assure that the cold overpressure mitigation (COM) system can adequately protect against violation of the Appendix G pressure/temperature (P/T) limits during a postulated mass addition transient when the plant is operated under low temperature conditions. The current TS 3.4.9.3 requires the COM system be available to protect Appendix G P/T limits considering all safety injection (SI) pumps are inoperable during low temperature operations which is consistent with TS 3.5.3.2.

By letters dated December 14, 1990, April 24, 1991, June 14, 1991, and July 15, 1991, the licensee made application for changes of TS 3.5.3.2 and TS 3.4.9.3 to allow one operable safety injection pump during Mode 5 and Mode 6 with the reactor vessel head on and the RCS depressurized with a vent area equal to or greater than 18 square inches. This request for changes of TS addresses the recommendations of NRC Generic Letter 88-17 regarding the RCS makeup capability during a reduced RCS inventory condition.

2.0 EVALUATION

In Section 2.6.1 of Enclosure 1 to NRC Generic Letter 88-17, the staff recommends that operating PWRs provide at least two available or operable means of adding inventory to the RCS that are in addition to pumps that are a part of the normal decay heat removal systems. These should include at least one high pressure safety injection pump. The water addition rate capable of being provided by each of the means should be at least sufficient to keep the core covered. The proposed changes of TS will permit one operable safety injection pump during Mode 5 and Mode 6 with the reactor vessel head on when the RCS is depressurized with a vent area equal to or greater than 18 square inches.

The licensee has performed an engineering evaluation which supports the conclusion that an 18 square inch vent area is a sufficient RCS pressure relief path to limit RCS pressure within an acceptable range during Modes 5 and 6 operations. The licensee's engineering evaluation addressed a number of safety concerns which are discussed below.

Appendix G P/T Limits

The current COM system design basis events are either: (1) operation of a single centrifugal charging pump (CCP) or a single safety injection (SI) pump without letdown (limiting mass addition transient), or (2) inadvertent start of the reactor coolant pump with a 50°F temperature differential between the RCS and steam generator secondary temperatures (limiting heat addition transient). A single pressurizer power operated relief valve (PORV) with an equivalent vent area of 1.58 square inch is sufficient to protect Appendix G P/T limits against the above stated design basis events. The implementation of the proposed TS change would allow one operable SI pump in Modes 5 and 6. As a result, a mass addition transient more limiting than the current COM system design basis mass addition transient becomes possible. This new limiting transient is characterized by mass addition from the simultaneous operation of both a CCP and a SI pump without letdown. The results of the licensee's study indicate that a vent area of 2.92 square inch is required to protect Appendix G P/T limits against this new limiting mass transient. The proposed 18 square inch vent path is more than sufficient to prevent violation of the Appendix G P/T limits during such an event.

Steam Generator Nozzle Dam Integrity

The results of the licensee's evaluation indicate that the 18 square inch vent area specified in its proposed TS is sufficient to limit the pressure differential across the steam generator nozzle dams during the new limiting mass addition transient to 33 psi, which is less than the 56.8 psi design pressure differential of the nozzle dams which may be used at Seabrook. Also, in the event of a loss of residual heat removal (RHR) cooling during mid-loop operation, the 18 square inch vent area provides adequate relief capacity to assure steam generator nozzle dam integrity.

Gravity Feed to RCS

In addition to the SI pump and the CCP, gravity feed from the refueling water storage tank (RWST) to the RCS is available at Seabrook. The 18 square inch vent path is sufficient to pass the steaming rates associated with decay heat removal while maintaining RCS hot leg pressure: (1) less than 45 psig, for shutdown times in excess of 7 days, and (2) less than 32 psig, for shutdown time in excess of 15 days. With a full RWST, gravity feed is achievable up to a RCS pressure of 45 psig. With a RWST level of 25%, gravity feed is possible with RCS pressure up to 32 psig. Therefore, gravity feed from the RWST is likely to be available in the unlikely event that both the CCP and SI pumps are unavailable after a complete loss of RHR cooling.

The licensee stated that the anticipated method of providing the 18 square inch vent path is removal of a pressurizer safety valve from its flange or optionally, opening a pressurizer manway. Seabrook Station procedures will include administrative controls to ensure that a vent path of at least 18 square inches is established prior to making the SI pump available for use in a reduced inventory condition per the requirements of TS 3.5.3.2 and TS 3.4.9.3.

Temporary Thimble Tube Seals

Regarding potential failure of temporary thimble tube seals caused by pressurization of the RCS while a safety injection pump was operable in Mode 5 or 6, the licensee in its letters dated June 14, and July 15, 1991 stated that the Seabrook Major Plant Evaluation Procedure OS1000.09 "Refueling Operations" will specify that (1) the reactor vessel head must be detensioned before the RCS boundary is broken at the seal table and the installation of the temporary seal begins, and (2) the temporary seals must be removed and the permanent RCS pressure boundary reestablished at the seal table prior to beginning the tensioning of the reactor vessel head. The plant procedures IS1690.816 "Incore Instrumentation Thimble Installation" and IS1690.815 "Incore Instrumentation Thimble Withdrawal" will specify the same sequencing for the installation and removal of the temporary seals to assure that the temporary thimble seals will exist only while the plant is in Mode 6 with the reactor vessel head detensioned. During the preoperational testing period of Seabrook Station, the reactor vessel head was lifted from the reactor vessel with approximately 1 to 1½ inch gap by the internal spring forces. From the above experience, the licensee considers that a substantial vent area in the RCS will be available after the reactor vessel head is detensioned and a failure of temporary thimble tube seals caused by pressurization of the RCS will be prevented. The temporary thimble tube seals are designed to withstand the static head of approximately 10 psig. However, one of the temporary seals, of the same design that will be utilized during the refueling outage, has been informally bench tested to approximately 60 psig without catastrophic failure. Additionally, the temporary seals will be installed with a metal backing device so that the expected failure mechanism will be seal leakage and not a catastrophic failure of the temporary seal. Since the seal table and the location of the temporary thimble tube seals is 1½ inches below the elevation of the reactor vessel flange, the worst case of a postulated temporary thimble tube seal leakage may reduce the reactor vessel level to the reactor vessel flange which is well above the top of the core. With the plant design and operating procedures available at Seabrook plant it is unlikely that a failure of temporary thimble tube seals could occur due to a pressurization of the RCS while a safety injection pump was operable.

The staff has evaluated the licensee's engineering evaluation and agrees with its conclusion that the 18 square inch vent path during Modes 5 and 6 operation would provide sufficient relief capability to protect Appendix G P/T limits and steam generator nozzle dam integrity, and to assure the capability of gravity feed to the RCS from the RWST. Also, the integrity of the temporary thimble tube seals will be protected by the design of the seal, by the vent from the gap under the reactor vessel head when the vessel head is detensioned, and by plant operating procedures.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Hampshire State official was notified of the proposed issuance of the amendment. The State official 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. 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 (56 FR 24217). 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

Based on the staff evaluation in Section 2.0 above, the staff concludes that the licensee's proposed TS 3.5.3.2 and TS 3.4.9.3 are acceptable.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 REFERENCES

1. Letter from T. C. Feigenbaum, New Hampshire Yankee, to USNRC, "Request for License Amendment: Safety Injection Pump Operability in a Reduced Inventory Condition," December 14, 1990.

2. Letter from T. C. Feigenbaum, New Hampshire Yankee, to USNRC, "Request for License Amendment: Safety Injection Pump Operability in Modes 5 and 6," April 24, 1991.

3. Letter from T. C. Feigenbaum, New Hampshire Yankee, to USNRC, "Request for Additional Information Regarding Safety Injection Pump Operability in Modes 5 and 6," June 14, 1991.

4. Letter from T. C. Feigenbaum, New Hampshire Yankee, to USNRC, "Request for Additional Information Regarding Safety Injection Pump Operability in Modes 5 and 6," July 15, 1991.

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Date: August 13, 1991

AMENDMENT NO. 5 TO NPF-86 SEABROOK STATION DATED August 13, 1991

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