North Atlantic

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

The Northeast Utilities System

June 20, 2000

Docket No. 50-443

NYN-00058

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Seabrook Station
License Amendment Request 00-01, Revision 1,
"Enhancements To Technical Specifications Addressing Reduced Inventory Conditions"

North Atlantic Energy Service Corporation (North Atlantic) has enclosed herein License Amendment Request (LAR) 00-01, Revision 1. LAR 00-01, Revision 1, supercedes the original LAR 00-01submittal, dated February 18, 2000. LAR 00-01, Revision 1 is submitted pursuant to the requirements of 10 CFR 50.90 and 10 CFR 50.4.

LAR 00-01, Revision 1, proposes changes to the Seabrook Station Technical Specifications (TS) 3/4.5.3.2, "ECCS Subsystems – T_{avg} Equal To or Less Than 200°F;" 3/4.4.9.3, "Overpressure Protection Systems;" 3.1.2.4, "Boration Systems – Charging Pumps Operating;" Surveillance Requirement (SR) 4.5.2d.1), "ECCS Subsystems - T_{avg} Greater Than or Equal To 200°F;" SR 4.5.3.1.2, "ECCS Subsystems – T_{avg} Less Than 350°F;" and 4.1.2.3.2, "Boration Systems - Charging Pump Shutdown." The associated TS Bases are revised accordingly.

The proposed changes are enhancements to the Seabrook Station Technical Specifications to provide North Atlantic operational flexibility, particularly during the shutdown modes of operation. These enhancements include: 1) the ability to have a standby Safety Injection (SI) pump available during Reactor Coolant System (RCS) reduced inventory conditions with the RCS pressure boundary intact, 2) realigning a footnote to clarify the allowance of an inoperable SI pump to be energized for testing or filling accumulators, 3) allowance for an additional charging pump to be made capable of injection during pump-swap operations, 4) recognition that a substantial vent area exists for cold overpressure protection when the reactor vessel head is on and the studs are fully detensioned, 5) limit maneuvering the plant beyond Hot Shutdown when one charging pump is operable, 6) establishes a new value for the open permissive interlock associated with the Residual Heat Removal System suction isolation valves, and 7) the Bases notes the ability to respond with additional makeup sources when necessary in the unlikely event of a loss of decay heat removal capability or unexpected reduction in RCS inventory.

The Station Operation Review Committee and the Nuclear Safety Audit Review Committee have reviewed LAR 00-01, Revision 1.

A001

NRR-057

As discussed in the enclosed LAR Section IV, the proposed changes do not involve a significant hazard consideration pursuant to 10 CFR 50.92. A copy of this letter with the enclosed LAR has been forwarded to the New Hampshire State Liaison Officer pursuant to 10 CFR 50.91(b). North Atlantic requests NRC review of LAR 00-01, Revision 1, and issuance of a license amendment by September 30, 2000 (see Section V enclosed).

North Atlantic has determined that LAR 00-01, Revision 1, meets the criteria of 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement (see Section VI enclosed).

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Manager - Regulatory Programs, at (603) 773-7194.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.

Ted C. Feigenbaum
Executive Vice President
and Chief Nuclear Officer

Enclosure

cc: H. J. Miller, NRC Regional Administrator
R.M. Pulsifer, NRC Project Manager, Project Directorate 1-2
R. K. Lorson, NRC Senior Resident Inspector

Mr. Woodbury P. Fogg, P.E., Director
New Hampshire Office of Emergency Management
State Office Park South
107 Pleasant Street
Concord, NH 03301

North Atlantic

SEABROOK STATION UNIT 1

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

License Amendment Request 00-01, Revision 1,
"Enhancements To Technical Specifications Addressing Reduced Inventory Conditions"

North Atlantic Energy Service Corporation pursuant to 10CFR50.90 submits this License Amendment Request. The following information is enclosed in support of this License Amendment Request:

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

I, Ted C. Feigenbaum, Executive Vice President and Chief Nuclear Officer of North Atlantic Energy Service Corporation hereby affirm that the information and statements contained within this License Amendment Request are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

Sworn and Subscribed
before me this
20 day of June, 2000

Marilyn R. Sullivan
Notary Public

Ted C. Feigenbaum
Ted C. Feigenbaum
Executive Vice President and
Chief Nuclear Officer

Section I

Introduction and Safety Assessment for the Proposed Changes

I. INTRODUCTION AND SAFETY ASSESSMENT OF PROPOSED CHANGES

A. Introduction

License Amendment Request (LAR) 00-01, Revision 1, proposes changes to the Seabrook Station Technical Specifications (TS) 3/4.5.3.2, "ECCS Subsystems – T_{avg} Equal To or Less Than 200°F;" 3/4.4.9.3, "Overpressure Protection Systems;" 3.1.2.4, "Boration Systems – Charging Pumps Operating;" Surveillance Requirement (SR) 4.5.2d.1), "ECCS Subsystems - T_{avg} Greater Than or Equal To 200°F;" SR 4.5.3.1.2, "ECCS Subsystems – T_{avg} Less Than 350°F;" and 4.1.2.3.2, "Boration Systems - Charging Pump Shutdown." The associated TS Bases are revised accordingly.

The proposed changes are enhancements to the Seabrook Station Technical Specifications to provide North Atlantic operational flexibility, particularly during the shutdown modes of operation. These enhancements include: 1) the ability to have a standby Safety Injection (SI) pump available during Reactor Coolant System (RCS) reduced inventory conditions with the RCS pressure boundary intact, 2) realigning a footnote to clarify the allowance of an inoperable SI pump to be energized for testing or filling accumulators, 3) allowance for an additional charging pump to be made capable of injection during pump-swap operations, 4) recognition that a substantial vent area exists for cold overpressure protection when the reactor vessel head is on and the studs are fully detensioned, 5) limit maneuvering the plant beyond Hot Shutdown when one charging pump is operable, 6) establishes a new value for the open permissive interlock associated with the Residual Heat Removal System suction isolation valves, and 7) the Bases notes the ability to respond with additional makeup sources when necessary in the unlikely event of a loss of decay heat removal capability or unexpected reduction in RCS inventory.

B. Safety Assessment of Proposed Changes

The Seabrook Station Technical Specifications establish requirements for ensuring that the integrity of the reactor coolant pressure boundary (RCPB) and other systems, e.g., RHR, will not be compromised by violating the pressure and temperature (P/T) limits established in 10 CFR Part 50, the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, and/or other specific system and component design criteria.

The reactor vessel is the limiting RCPB component within the RCS. The reactor vessel material is less tough at low temperatures than at normal operating temperature. As the vessel neutron exposure accumulates, the material toughness decreases and becomes less resistant to pressure stress at low temperatures. RCS pressure, therefore, is maintained low at low temperatures and is increased only as temperature is increased.

The potential for vessel overpressurization is most acute when the RCS is water solid, occurring only when shutdown, since a pressure fluctuation can occur more quickly than an operator can react to relieve the condition. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. Thus, of particular concern, is minimizing the potential for overpressure transients occurring when the plant is operating at low temperature / low pressure conditions; experienced during the Shutdown Modes, i.e., 4, 5, and 6 with the reactor vessel head on.

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients, examples of which follow:

Mass Input Type Transients

- Inadvertent safety injection: or
- Charging/letdown flow mismatch.

Heat Input Type Transients

- Inadvertent actuation of pressurizer heaters;
- Loss of RHR cooling; or
- Reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The Cold Overpressure Mitigation System (COMS) is designed to ensure that postulated mass and heat input transients occurring during shutdown do not exceed the limits of Appendix G to 10 CFR Part 50 when the RCS is operating under low temperature conditions. The COMS 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 RCP 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.

To ensure the COMS adequately performs its designed safety function, the Seabrook Station Technical Specifications (TS) specify minimum pressure relief capacity, limits coolant input capability, and places restrictions on starting of an idle RCP. The specific TS requirements are:

- Requiring Operability of two Power Operated Relief Valves (PORVs), or two RHR suction relief valves, or a combination of a PORV and RHR suction relief valve, or an RCS vent opening of at least 1.58 square inches (equivalent vent area of a single PORV);
- All RCS Accumulator discharge valves closed with power removed from each valve operator;
- Lockout of both Safety Injection pumps (except as noted below) and all but one centrifugal charging pump; and
- Disallowing start of an idle RCP if the secondary coolant temperature of each steam generator is more than 50°F above the reactor coolant temperature of the RCS cold legs.

The TSs specify certain RCS temperatures (e.g., 375°F, 350°F, 329°F, 325°F and 200°F) and provide a time allowance when the above requirements must be met. In addition, other TSs and administrative controls govern operational restrictions for RCS pressure and temperature limits.

When operating below 200°F in Mode 5 or 6 with the reactor vessel head on, TS 3.5.3.2 and 3.4.9.3 permit one Safety Injection pump to be operable whenever the RCS has a vent area equal to or greater than 18 square inches. The 18 square inch 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 P/T limits are not exceeded when a Safety Injection pump is operable in Mode 5 or 6. Evaluation of a mass addition transient resulting from the simultaneous operation of both a CCP and a SI pump without letdown indicates that a vent area of 2.92 square inch is required to ensure that Appendix G P/T limits are not violated.

The 18 square inch vent specified in Technical Specifications conservatively accommodates other factors influencing mid-loop operation. When operating at RCS partial drain conditions for maintenance, the larger vent area limits RCS pressure during overpressure transients to reduce the possibility of adversely affecting the steam generator nozzle dams. When the reactor has been shutdown 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 (RWST) in the unlikely event that the CCP and SI pumps were unavailable.

The current provisions of TS 3.5.3.2 and 3.4.9.3 address the recommendations of NRC Generic Letter 88-17, "Loss of Decay Heat Removal," regarding the RCS makeup capability during a loss of decay heat removal (DHR) event when the RCS is operating in a partial drain condition. The Safety Evaluation associated with License Amendment 5 to the Seabrook Station Operating License, dated August 13, 1991, addresses these current provisions. However, at the time it was not foreseen that it might be desirable to perform a vacuum assisted fill of the RCS following maintenance activities to remove air and other non-condensable gasses. Performance of a vacuum assisted fill of the RCS requires the RCS to be intact, i.e., no open vent, and in a partial drain condition before drawing a vacuum. Currently, performance of an RCS vacuum assisted fill is performed without the added safety benefit of a standby safety injection pump available as an additional makeup source of water in the unlikely event of a loss of DHR capability, since TS 3.5.3.2 and 3.4.9.3 require both SI pumps to be inoperable whenever the RCS vent area is less than 18 square inches.

North Atlantic proposes a change to TS 3.5.3.2 and 3.4.9.3 to include a new Limiting Condition for Operation (LCO) which would allow one SI pump to be operable whenever the RCS is intact and in a reduced inventory condition. The change would provide North Atlantic flexibility for SI pump availability during the period where vacuum assisted fill of the RCS is desirable. Vacuum assisted fill requires the RCS to be intact. Reduced inventory condition is defined as a reactor vessel (RV) water level lower than 36 inches below the RV flange. With RCS water level lower than 36 inches below the RV flange and the RV head on, in Modes 5 and 6, a mass addition transient involving simultaneous operation of a CCP and a SI pump without letdown will not result in a cold overpressurization condition because of the relatively large free volume in the RCS. This free volume consists of the upper plenum of the reactor vessel and the RV head, the pressurizer and steam generator tubes, as a minimum. Normally vacuum assisted fill of the RCS is initially conducted at mid-loop operations. The relatively large free volume affords ample time (50 minutes or more) for operator action, (e.g., diagnose the water level increase on main control board instrumentation and stopping the pumps) to mitigate a transient. In addition, TS 3.4.9.3, ACTION e) is revised accordingly to reflect the new LCO addressing reduced inventory conditions.

Revisions to the Mode 6 Applicability statement in TS 3.4.9.3 and TS 3.5.3.2 and the exception stated in SR 4.1.2.3.2 are proposed to credit the gap underneath the reactor vessel head as a condition for determining TS or SR Applicability. Presently the Applicability for Mode 6 is conditioned as being applicable whenever the reactor vessel head is on, or conversely, in the case for SR 4.1.2.3.2, when the reactor vessel head is removed. Calculation indicates with the reactor vessel head on and the vessel head closure bolts fully detensioned[1] a substantial gap area exists for venting purposes, both within the reactor vessel internal structure and by the gap underneath the reactor vessel head. When the reactor vessel head is detensioned the internal spring forces within the reactor vessel lift the reactor vessel head (approximately 0.3 inches when last measured) to create the head gap. North Atlantic determined that a reactor vessel head lift of 0.03 inches is sufficient to ensure a minimum vent area of 18 square inches. In addition, the evaluation also indicates that even if no head gap existed, an increase in pressure within the RCS of approximately 12.6 psig would result in the vessel head lifting and providing the necessary vent path. The gap created by the reactor vessel internal spring forces is of sufficient size to provide for cold overpressure protection, for gravity feed from the RWST, and ensuring nozzle dam integrity. Therefore,

[1] A fully detensioned reactor vessel head is when all the closure nuts have been removed from the studs.

cold overpressure protection when the reactor vessel head is on is not a concern when the reactor vessel head is fully detensioned, provided existence of the gap is verified. Administrative controls will verify existence of the gap prior to crediting the gap for cold overpressure protection. It should be noted that this subject concerning crediting reactor vessel head gap was briefly discussed in the NRC's Safety Evaluation associated with License Amendment 5 to the Seabrook Station Operating License, dated August 13, 1991.

As a result of including a new LCO addressing reduced inventory conditions, a new surveillance requirement, SR 4.4.9.3.4, is established to verify reactor vessel water level is less than 36 inches below the RV flange at least once every 12 hours, whenever this LCO is being used for overpressure protection. The 12 hour frequency is consistent with the requirements of SR 4.4.9.3.3 associated with the use of the vent(s) for overpressure protection.

An additional asterisk is added to SR 4.4.9.3.3 as a proposed editorial change, necessitated as the result of additional footnotes added to TS 3.4.9.3.

A proposed editorial change to TS 3.5.3.2 moves the single footnote asterisk from 3.5.3.2a. to 3.5.3.2. The footnote allows an inoperable pump to be energized for testing or filling the accumulators. With the asterisk as presently placed literal compliance means the footnote only applies to condition a. whenever two SI pumps are inoperable. Placing the asterisk in the main sentence after the word "inoperable" would provide North Atlantic flexibility to energize the inoperable SI pump for testing or filling the accumulators even if an SI pump is inservice for other purposes, e.g., maintaining RCS inventory. Overpressure protection would still be assured since the discharge of the pump is required to be isolated prior to energizing the inoperable pump. In addition, placing the asterisk after the word "inoperable" is apropos to the footnote and would make it consistent with SRs 4.5.3.1.2 and 4.1.2.3.2.

Additional changes are proposed to TS 3.5.3.2, 3.4.9.3, 4.5.3.1.2 and 4.1.2.3.2 to enhance operator response time and ability to mitigate transients associated with loss of DHR capability or unexpected loss of RCS inventory during the Shutdown Modes of operation. These changes will allow use of an alternate method to render the charging pump and SI pumps inoperable as required by TS.

Presently, the aforementioned TSs require demonstration of pump inoperability by verifying that the associated motor circuit breakers are secured in the open position at least once per 31 days. Rendering a charging pump or SI pump inoperable to prevent cold overpressurization may be performed by employing an alternate method. The proposed alternate method uses at least two independent means to prevent cold overpressurization such that a single action will not result in an inadvertent injection into the RCS. This is accomplished through the pump control switch being placed in the Pull-to-Lock position and at least one valve in the discharge flow path closed. In addition, an additional administrative control measure is incorporated to increase the surveillance frequency for verifying inoperability to at least once every 12 hours instead of at least once per 31 days. This is a prudent measure since the alternate method relies on control switches and closed valves, instead of circuit breakers alone to render equipment inoperable. The increase in surveillance frequency will minimize the possibility of initiating an inadvertent injection into the RCS due to a mispositioned control switch. The alternate method provides the ability to respond to abnormal situations, expeditiously, from the main control room. Improved Standard Technical Specifications for Westinghouse Plants, NUREG-1431, LTOP System Bases 3.4.12, Surveillance Requirements (SR) 3.4.12.1, 3.4.2.1 and 3.4.12.3, recognizes that the alternate method is an acceptable method for cold overpressurization control.

The allowed outage time for TS 3.5.3.2 ACTION is changed from 4 hours to immediately to be consistent with the immediate requirement specified in the ACTION for TS 3.4.9.3 ACTION e). The situation depicted in TS 3.4.9.3 ACTION e) is similar to the situation depicted in the ACTION for TS 3.5.3.2 for the specific condition stated in LCO 3.5.3.2a.

Another proposed change to TS 4.5.3.1.2 and 4.1.2.3.2 is to provide an allowance for an inoperable charging pump to be made capable of injection under administrative control for up to 1 hour to support pump swap operation. The proposed change would provide North Atlantic the flexibility to perform pump swap maneuvers without the need to shutdown the operating charging pump and/or perform a complex line-up to comply with current TS limits. During the shutdown modes of operation the operable charging pump provides several functions such as: meeting the ECCS operability requirements (Mode 4); charging and letdown to maintain RCS inventory and chemistry control; seal injection to the Reactor Coolant Pumps (RCPs) when necessary; and is part of the boration flow path (Modes 5 and 6). Further, securing charging for the purposes of not having more than the allowable pumps operable would also put thermal fatigue cycles on the piping and impact seal injection to the RCPs which has seal degradation potential. For these reasons, it is desirable to have a provision to safely and deliberately swap pumps. One hour provides sufficient time to safely complete the actual transfer and to complete the administrative controls and surveillance requirements associated with the swap. Also, one hour is reasonable considering the small likelihood of a cold overpressurization event occurring during this brief period and the other administrative controls available, e.g., operator action to stop any pump that inadvertently starts. The intent is to minimize the actual time that more than one charging pump is physically capable of injection into the RCS. The allowance is conditioned to prohibit having more than one charging pump energized simultaneously when the RCS is in a water-solid condition. The prohibition recognizes that pressurization occurs rapidly when the RCS is in a water-solid condition, particularly if two charging pumps are capable of injecting into the RCS. Mass addition transients during solid water operations have a higher probability of exceeding Appendix G P/T limits. Rapid pressurization of the RCS when intact at partial drain conditions tends to be delayed and restricted due to the cushioning effect of air/gas compression. This delay permits time for operator action to mitigate the transient. Administrative controls would ensure that a cold overpressurization event does not occur as a result of an uncontrolled mass addition transient during pump swap operation. Note that such a provision is included in the improved Standard Technical Specifications for Westinghouse Plants, NUREG-1431, Draft Rev. 2 (supported by NRC-approved TSTF 285, Rev. 1), LCO 3.4.12, "LTOP System," Note: "Two charging pumps may be made capable of injecting for ≤ 1 hour for pump swap operations."

A proposed change to TS 3.1.2.4 revises the ACTION statement to limit maneuvering the plant beyond Hot Shutdown when one charging pump is operable. Presently, the ACTION requires the plant to be maneuvered to Cold Shutdown if two charging pumps are not restored to OPERABLE status within the other specified limits of the ACTION statement. Maneuvering the plant beyond Hot Shutdown (Mode 4) is unnecessary and is more restrictive than the charging pump operability requirements specified in TS 3.1.2.3 during the Shutdown Modes of operation. TS 3.1.2.3 requires one charging pump to be OPERABLE during Modes 4, 5 and 6. The associated ACTION for TS 3.1.2.3 does not require maneuvering the plant to Cold Shutdown should both charging pumps be inoperable in any of the Shutdown Modes. Thus, the ACTION statement of TS 3.1.2.4 is more restrictive than the specified limiting condition addressed in TS 3.1.2.3. Therefore, the appropriate action to be taken when the other specified actions of TS 3.1.2.4 cannot be met is to maneuver the plant to a condition whereby another LCO becomes effective. That LCO is TS 3.1.2.3 for Modes 4, 5 and 6 operation. The revised time limit to be in Hot Shutdown within the next 6 hours is consistent with other TSs when maneuvering the plant from Hot Standby condition. The proposed change would apply consistent requirements for maneuvering the plant when an operable charging pump is inoperable.

A proposed change to TS 4.5.2d.1) establishes 440 psig as the value for verifying that the automatic interlock action prevents the RHR suction isolation valves from being opened. Currently, TS 4.5.2d.1) requires verification that the interlocks prevent the valves from being opened whenever RCS pressure exceeds 365 psig.

The RHR suction isolation valves provide isolation of the RHR system during normal plant operation. The valves are normally closed, with power removed from their motor operators to preclude spurious or inadvertent operation with the RCS at normal operating pressure, which would result in RHR system overpressurization and possible intersystem LOCA. The valves are only opened for decay heat removal when the RCS temperature and pressure is reduced to approximately 350°F and 365 psig. The interlocks are designed such that the permissive to allow opening the valves from the main control room actuates at 365 psig decreasing and resets at 395 psig (nominally) increasing. With the interlocks set at 365 psig decreasing, a situation could occur where the valves could be opened above the interlock setpoint, but below the reset value of 395 psig, if the interlocks were actuated on RCS decreasing pressure and RCS pressure was subsequently raised.

The new interlock value accounts for RHR suction relief valve settings and allowable tolerance, bistable deadband, total instrument channel uncertainty associated with the interlock, and available operating margin (differential pressure operating limit) for reactor coolant pump operation to ensure shutdown cooling can be transitioned to RHR.

The Bases for TS 3.4.9.3 notes that the charging and/or safety injection pumps, normally rendered inoperable for cold overpressure protection may be operated as required under administrative controls during abnormal situations involving a loss of decay heat removal capability or an unexpected reduction in RCS inventory. Maintaining adequate core cooling and RCS inventory during these abnormal situations is essential for public health and safety. Administrative controls would ensure that a cold overpressurization condition would not occur as a result of an uncontrolled mass addition transient. The statement is in keeping with meeting the requirements of Generic Letter 88-17 regarding providing equipment to respond to either a loss of DHR or loss of RCS inventory during shutdown.

Other Bases associated with the aforementioned TSs are revised accordingly to reflect the proposed TS changes.

Based upon the proceeding safety analysis, the proposed Technical Specification changes described herein are considered safe and do not constitute a significant hazard.

Section II

Markup of Proposed Changes

The attached markups reflect the currently issued revision of the Technical Specifications listed below. Pending Technical Specifications or Technical Specification changes issued subsequent to this submittal are not reflected in the enclosed markup.

The following Technical Specifications are included in the attached markup:

Technical Specification	Title	Page(s)
3/4.1.3	Index	x
4.1.2.3.2	Reactivity Control Systems - Boration Systems Charging Pump - Shutdown	3/4 1-9
3.1.2.4	Reactivity Control Systems - Boration Systems Charging Pump - Operating	3/4 1-10
3.4.9.3	Reactor Coolant System – Pressure/Temperature Limits Overpressure Protection Systems	3/4 4-34 & 3/4 4-34a
4.4.9.3.3	Reactor Coolant System – Pressure/Temperature Limits Overpressure Protection Systems	3/4 4-35
4.5.2d.1)	Emergency Core Cooling Systems - ECCS Subsystems – T_{avg} Greater Than Or Equal To 350°F	3/4 5-6
4.5.3.1.2	Emergency Core Cooling Systems - ECCS Subsystems – T_{avg} Less Than 350°F	3/4 5-9
3.5.3.2 & 4.5.3.2	Emergency Core Cooling Systems - ECCS Subsystems – T_{avg} Equal To Or Less Than 200°F	3/4 5-10
B 3/4.1.2	Boration Systems Bases	B 3/4 1-3
B 3/4.4.9	Cold Overpressure Protection Bases	B 3/4 4-15 & B 3/4 4-16
B 3/4.5.2 and B 3/4.5.3	ECCS Subsystems Bases	B 3/4 5-1, B 3/4 5-2 & B 3/4 5-3

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 One charging pump in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 4, 5, and 6.

ACTION:

With no charging pump OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump shall be demonstrated OPERABLE by verifying, on recirculation flow, that a differential pressure across the pump of greater than or equal to 2480 psid is developed when tested pursuant to Specification 4.0.5.

4.1.2.3.2 All charging pumps, excluding the above required OPERABLE pump, 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, except when the reactor vessel head is removed.

CLOSURE BOLTS ARE FULLY DETENSIONED OR THE VESSEL HEAD

INSERT (A)

*An inoperable pump may be energized for testing provided the discharge of 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.

** INSERT (B)

REACTIVITY CONTROL SYSTEMS

BORATION SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.*

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least the limit specified in the CORE OPERATING LIMITS REPORT (COLR) for the above MODES at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.
HOT 6

SURVEILLANCE REQUIREMENTS

4.1.2.4 At least two charging pumps shall be demonstrated OPERABLE by verifying, on recirculation flow, that a differential pressure across each pump of greater than or equal to 2480 psid is developed when tested pursuant to Specification 4.0.5.

*The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 3 for the centrifugal charging pump declared inoperable pursuant to Specification 4.1.2.3.2 provided that the centrifugal charging pump is restored to OPERABLE status within 4 hours or prior to the temperature of one or more of the RCS cold legs exceeding 375°F, whichever comes first.

REACTOR COOLANT SYSTEM

PRESSURE/TEMPERATURE LIMITS

OVERPRESSURE PROTECTION SYSTEMS

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 at least one of the following groups of two overpressure protection devices shall be OPERABLE when the RCS is not depressurized with an RCS vent area of greater than or equal to 1.58 square inches:

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) One RHR suction relief valve and one PORV with setpoints as required above.

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, OR

2) THE RCS IN A REDUCED INVENTORY CONDITION*.

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 AND THE VESSEL HEAD CLOSURE BOLTS NOT FULLY DETENSIONED.

ACTION:

a) In MODE 4 with all Safety Injection pumps inoperable and with one of the two required overpressure protection devices inoperable, either restore two overpressure protection devices to OPERABLE status within 7 days or within the next 8 hours

(a) depressurize the RCS and

(b) vent the RCS through at least a 1.58-square-inch vent.

b) In MODE 5 and MODE 6 with all Safety Injection pumps inoperable and with one of the two required overpressure protection devices inoperable, restore two overpressure protection devices to OPERABLE status within 24 hours or within the next 8 hours

(a) depressurize the RCS and

(b) vent the RCS through at least a 1.58-square-inch vent.

FOOTNOTE INSERT (C) → *

LIMITING CONDITION FOR OPERATION

3.4.9.3

ACTION: (Continued)

c) In MODE 4, MODE 5 and MODE 6 with all Safety Injection pumps inoperable and with both of the two required overpressure protection devices inoperable, within the next 8 hours

(a) depressurize the RCS and

(b) vent the RCS through at least a 1.58-square-inch vent.

d) 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.

e) In MODE 5 and MODE 6 with all Safety Injection pumps except one inoperable and with the RCS vent area less than 18 square inches, immediately restore all Safety Injection pumps to inoperable status.

OR RCS WATER LEVEL NOT IN A REDUCED INVENTORY CONDITION

OVERPRESSURE PROTECTION SYSTEMS

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE when the PORV(s) are being used for overpressure protection by:

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

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.

4.4.9.3.2 Each RHR suction relief valve shall be demonstrated OPERABLE when the RHR suction relief valve(s) are being used for 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.

4.4.9.3.4 THE REACTOR VESSEL WATER LEVEL SHALL BE VERIFIED TO BE LOWER THAN 36 INCHES BELOW THE REACTOR VESSEL FLANGE AT LEAST ONCE PER 12 HOURS WHEN THE REDUCED INVENTORY CONDITION 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.

SURVEILLANCE REQUIREMENTS

4.5.2 (Continued)

d. At least once per 18 months by:

1) Verifying automatic interlock action of the RHR system from the Reactor Coolant System to ensure that with a simulated or actual Reactor Coolant System pressure signal greater than or equal to ~~365~~ 440 psig, the interlocks prevent the valves from being opened.

2) A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per 18 months, during shutdown, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on (Safety Injection actuation and Automatic Switchover to Containment Sump) test signals, and

2) Verifying that each of the following pumps start automatically upon receipt of a Safety Injection actuation test signal:

a) Centrifugal charging pump,

b) Safety Injection pump, and

c) RHR pump.

f. By verifying that each of the following pumps develops the indicated differential pressure on recirculation flow when tested pursuant to Specification 4.0.5:

1) Centrifugal charging pump, ≥ 2480 psid;

2) Safety Injection pump, ≥ 1445 psid; and

3) RHR pump, ≥ 171 psid.

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.

INSERT (A)

*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.

INSERT (D) **

SAE 91

AMENDMENT NO. 259

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., OR

c. ONE WHEN THE RCS IS IN A REDUCED INVENTORY CONDITION.**

APPLICABILITY: MODE 5 and MODE 6 with the reactor vessel head on, AND THE VESSEL HEAD CLOSURE BOLTS NOT FULLY DETENSIONED.

ACTION:

With fewer than the required number of Safety Injection pumps inoperable, IMMEDIATELY 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.

** INSERT (C)

*** INSERT (D)

INSERT
(A)

An additional pump may be made capable of injecting under administrative control for up to 1 hour during pump-swap operation, except during RCS water-solid conditions. Additionally,

INSERT
(B)

An alternate method to assure pump inoperability may be used by placing the control room pump-control switch in the Pull-to-Lock position and isolating the discharge flow path of the pump from the RCS by at least one closed isolation valve. Use of the alternate method requires inoperability verification at least once every 12 hours.

INSERT
(C)

A reduced inventory condition exists whenever reactor vessel (RV) water level is lower than 36 inches below the RV flange.

INSERT
(D)

An alternate method to assure pump inoperability may be used by placing the control room pump-control switch(s) in the Pull-to-Lock position and isolating the discharge flow path of the pump(s) from the RCS by at least one closed isolation valve. Use of the alternate method requires inoperability verification at least once every 12 hours.

MARK UP

3/4.1.2 BORATION SYSTEMS (Continued)

boron capability requirement occurs at EOL from full power equilibrium xenon conditions and requires 22,000 gallons of 7000 ppm borated water from the boric acid storage tanks or a minimum contained volume of 477,000 gallons of 2700 - 2900 ppm borated water from the refueling water storage tank (RWST).

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps except the required OPERABLE pump to be inoperable in MODES 4, 5, and 6 **except when the reactor vessel head closure bolts are fully detensioned or the vessel head is removed,** provides assurance that a mass addition pressure transient can be relieved by operation of a single PORV or an RHR suction relief valve.

Insert

As a result of this, only one boron injection system is available. This is acceptable on the basis of the stable reactivity condition of the reactor, the emergency power supply requirement for the OPERABLE charging pump and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single injection system becomes inoperable.

The boron capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN as specified in the CORE OPERATING LIMITS REPORT after xenon decay and cooldown from 200° F to 140° F. This condition requires a minimum contained volume of 6500 gallons of 7000 ppm borated water from the boric acid storage tanks or a minimum contained volume of 24,500 gallons of 2700 ppm borated water from the RWST.

The contained water volume limits include allowance for water not available because of discharge line location and 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.

The OPERABILITY of one Boron Injection System during REFUELING ensures that this system is available for reactivity control while in MODE 6.

The limitations on OPERABILITY of isolation provisions for the Boron Thermal Regeneration System and the Reactor Water Makeup System in Modes 4, 5, and 6 ensure that the boron dilution flow rates cannot exceed the value assumed in the transient analysis.

→ Move 3/4.1.3 Movable Control Assemblies To Next Page

MARK UP

NO CHANGES MADE TO WORDING THIS PARAGRAPH PUSHED OVER TO THIS PAGE

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that: (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. Verification that the Digital Rod Position Indicator agrees with the demanded position within ± 12 steps at 24, 48, 120, and 228 steps withdrawn for the Control Banks and 18, 210, and 228 steps withdrawn for the Shutdown Banks provides assurances that the Digital Rod Position Indicator is operating correctly over the full range of indication. Since the Digital Rod Position Indication System does not indicate the actual shutdown rod position between 18 steps and 210 steps, only points in the indicated ranges are picked for verification of agreement with demanded position.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Misalignment of a rod requires measurement of peaking factors and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the safety analyses. Measurement with rods at their individual mechanical fully withdrawn position, T_{avg} greater than or equal to 551°F and all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a Reactor trip at operating conditions.

The fully withdrawn position of shutdown and control banks can be varied between 225 and the mechanical fully withdrawn position (up to 232 steps), inclusive. An engineering evaluation was performed to allow operation to the 232 step maximum. The 225 to 232 step interval allows axial repositioning to minimize RCCA wear.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCOs are satisfied.

For Specification 3.1.3.1 ACTIONS b. and c., it is incumbent upon the plant to verify the trippability of the inoperable control rod(s). Trippability is defined in Attachment C to a letter dated December 21, 1984, from E. P. Rahe (Westinghouse) to C. 0. Thomas (NRC). This may be by verification of a control system failure, usually electrical in nature, or that the failure is associated with the control rod stepping mechanism. In the event the plant is unable to verify the rod(s) trippability, it must be assumed to be untrippable and thus falls under the requirements of ACTION a. Assuming a controlled shutdown from 100% RATED THERMAL POWER, this allows approximately 4 hours for this verification.

PUT REV BAR HERE TO SHOW SOMETHING HAPPENED ON THIS PAGE

MARK-UP

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

The OPERABILITY of two PORVs, or two RHR suction relief valves, or a combination of a PORV and RHR suction relief valve, 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 **to be made inoperable** while in MODES 4, 5, and 6 with the reactor vessel head installed **and not fully detensioned,** 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.

INSERT

Operation above 350°F but less than 375°F with only **one** 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.

INSERT

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

MARKUP

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

INSERT

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 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 **with the reactor vessel head on and the vessel head closure bolts not fully detensioned,** 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 **or whenever the RCS is in a reduced inventory condition, i.e., whenever reactor vessel water level is lower than 36 inches below the reactor vessel flange.** Cold overpressure protection ~~in this configuration is~~ provided by **the venting method utilizes an** 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 **with the reactor vessel head on and the vessel head closure bolts not fully detensioned.** 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. Additionally, ~~when operating in a reduced inventory condition,~~ **when steam generator nozzle dams are installed for maintenance purposes and the reactor vessel water level is not 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.

INSERT

INSERT

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

When the reactor vessel head is on and the vessel head closure bolts are fully detensioned, i.e., when the closure nuts have been removed from the studs, a substantial vent area exists by the gap underneath the reactor vessel head, created by the internal spring forces. A measured gap of greater than or equal to 0.03 inches is of sufficient size to provide for cold overpressure protection, for gravity feed from the RWST, and ensuring nozzle dam integrity. Verification of sufficient gap will be performed prior to crediting the gap as a means for cold overpressure protection.

Cold overpressure protection can also be provided when operating at a reduced inventory condition, i.e., whenever reactor vessel water level is lower than 36 inches below the reactor vessel flange. With RCS water level lower than 36 inches below the RV flange in Mode 5 or Mode 6 with the RV head on and the closure bolts not fully detensioned, a mass addition transient involving simultaneous operation of a CCP and a SI pump without letdown will not result in a cold overpressurization condition because of the relatively large void volume in the RCS. This void volume consists of the upper plenum of the reactor vessel and the RV head, the pressurizer and steam generator tubes, as a minimum. The relatively large void volume affords ample time for operator action, (e.g., diagnose the water level increase on main control board instrumentation and stopping the pumps) to mitigate the transient. A minimum time of 50 minutes has been determined based on one charging pump operating at 120 gpm without letdown and a Safety Injection pump injecting into the RCS.

The charging pumps and Safety Injection pumps are rendered incapable of injecting into the RCS through removing the power from the pumps by racking the motor circuit breakers out under administrative control. An alternate method of preventing cold overpressurization may be employed. The alternate method uses at least two independent means to prevent cold overpressurization such that a single action will not result in an inadvertent injection into the RCS. This may be accomplished through the pump control switch being placed in Pull-to-Lock position and at least one valve in the discharge flow path closed. The alternate method provides the ability to respond to abnormal situations, expeditiously, from the main control room.

During charging pump swap operation two charging pumps may be made capable of injecting into the RCS for up to 1 hour. This provision prevents securing charging for the purpose of not having more than the allowable pumps operable in order to limit thermal fatigue cycles on piping and impact seal injection to the Reactor Coolant Pumps (RCP) which has seal degradation potential. Given the short time duration of the evolution and the evolution controlled under administrative controls, e.g., prohibiting pump swap operation during RCS water-solid conditions, a cold overpressurization condition occurring as a result of an uncontrolled mass addition transient is unlikely.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

new insert

Charging and/or Safety Injection pumps, normally rendered inoperable for cold overpressure protection may be operated as required under administrative controls during abnormal situations involving a loss of decay heat removal capability or an unexpected reduction in RCS inventory. Maintaining adequate core cooling and RCS inventory during these abnormal situations is essential for public health and safety. Administrative controls ensure that a cold overpressurization condition will not occur as a result of an uncontrolled mass addition transient.

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.

3/4.5.1 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 **and the vessel head closure bolts not fully detensioned** provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV or RHR suction relief valve.

INSERT INSERT

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, **or the RCS is in a reduced inventory condition, i.e., whenever reactor vessel water level is lower than 36 inches below the reactor vessel flange,** one Safety Injection pump may be made OPERABLE when in MODE 5 or MODE 6 ~~(below 200°F)~~ **with the reactor vessel head on and the vessel head closure bolts not fully detensioned.** When operating in this configuration, cold overpressure protection is provided by **either** the mechanical vent opening **in the RCS boundary**, equal to or greater than 18 square inches, **or the additional void volume existing when operating in a reduced inventory condition. Either configuration** ~~that~~ is required to be present ~~in the RCS boundary~~ prior to making the SI pump OPERABLE. This required RCS vent area **or reduced inventory condition** and the **cold overpressure protection** surveillance requirements to verify the presence of the RCS vent area **or verify that the reactor vessel water level is lower than 36 inches below the reactor vessel flange** provides assurance that a mass addition transient can be ~~relieved~~ **mitigated** 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. With the exception of the operating centrifugal charging pump, the ECCS pumps are normally in a standby, non-operating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the piping from the refueling water storage tank (RWST) to the RCS full of water (by verifying at the accessible ECCS piping high points and pump casings, excluding the operating centrifugal charging pump) ensures that the system will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent water hammer, pump cavitation, and pumping of non-condensable gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following a safety injection (SI) signal or during shutdown cooling. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation. 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.

Verifying that the RHR system suction valve interlock is OPERABLE ensures that the RCS will not pressurize the RHR system beyond its design pressure. The value specified in the surveillance requirement ensures that the valves cannot be opened unless the RCS pressure is less than 440 psig. Due to bistable reset design, and the instrument uncertainty, the valves could be open above the interlock setpoint, but below the reset pressure. To ensure that the RHR system design pressure will not be exceeded, the actual interlock

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

setpoint takes into consideration RHR suction relief valve settings and allowable tolerance, bistable deadband, total instrument channel uncertainty associated with the interlock, and available operating margin (differential pressure operating limit) for reactor coolant pump operation to ensure shutdown cooling can be transitioned to RHR. This results in the actual setpoint and reset values being below the value specified in the surveillance requirement. The actual interlock setpoint and reset values, in addition to separate administrative controls, will ensure that the RHR suction isolation valves cannot be opened from the main control room when the RCS pressure could cause the RHR system design pressure to be exceeded.

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.

SECTION III

Retype of Proposed Changes

The attached retype reflects the currently issued version of the Technical Specifications. Pending Technical Specification changes or Technical Specification changes issued subsequent to this submittal are not reflected in the enclosed retype. The enclosed retype should be checked for continuity with Technical Specifications prior to issuance.

Please note that retype page B 3/4 1-4, Bases B 3/4.1.3, Movable Control Assemblies, Amendment 8, contains overflow information from the previous page, B 3/4 1-3, due to changes in font size and type. The information associated with Bases B 3/4.1.3 has not changed since issuance of Amendment 8.

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.3 One charging pump in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 4, 5, and 6.

ACTION:

With no charging pump OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

4.1.2.3.1 The above required charging pump shall be demonstrated OPERABLE by verifying, on recirculation flow, that a differential pressure across the pump of greater than or equal to 2480 psid is developed when tested pursuant to Specification 4.0.5.

4.1.2.3.2 All charging pumps, excluding the above required OPERABLE pump, 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, except when the reactor vessel head closure bolts are fully detensioned or the vessel head is removed.

*An additional pump may be made capable of injecting under administrative control for up to 1 hour during pump-swap operation, except during RCS water-solid conditions. Additionally, an inoperable pump may be energized for testing provided the discharge of 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.

**An alternate method to assure pump inoperability may be used by placing the control room pump-control switch in the Pull-to-Lock position and isolating the discharge flow path of the pump from the RCS by at least one closed isolation valve. Use of the alternate method requires inoperability verification at least once every 12 hours.

REACTIVITY CONTROL SYSTEMS

BORATION SYSTEMS

CHARGING PUMPS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.4 At least two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.*

ACTION:

With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least the limit specified in the CORE OPERATING LIMITS REPORT (COLR) for the above MODES at 200°F within the next 6 hours; restore at least two charging pumps to OPERABLE status within the next 7 days or be in HOT SHUTDOWN within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.4 At least two charging pumps shall be demonstrated OPERABLE by verifying, on recirculation flow, that a differential pressure across each pump of greater than or equal to 2480 psig is developed when tested pursuant to Specification 4.0.5.

*The provisions of Specifications 3.0.4 and 4.0.4 are not applicable for entry into MODE 3 for the centrifugal charging pump declared inoperable pursuant to Specification 4.1.2.3.2 provided that the centrifugal charging pump is restored to OPERABLE status within 4 hours or prior to the temperature of one or more of the RCS cold legs exceeding 375°F, whichever comes first.

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 at least one of the following groups of two overpressure protection devices shall be OPERABLE when the RCS is not depressurized with an RCS vent area of greater than or equal to 1.58 square inches:

   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) One RHR suction relief valve and one PORV with setpoints as required above.

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, or

   2) The RCS in a reduced inventory condition*.

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 and the vessel head closure bolts not fully detensioned.

ACTION:

a) In MODE 4 with all Safety Injection pumps inoperable and with one of the two required overpressure protection devices inoperable, either restore two overpressure protection devices to OPERABLE status within 7 days or within the next 8 hours

   (a) depressurize the RCS and

   (b) vent the RCS through at least a 1.58-square-inch vent.

*A reduced inventory condition exists whenever reactor vessel (RV) water level is lower than 36 inches below the RV flange.

3.4.9.3

ACTION: (Continued)

b) In MODE 5 and MODE 6 with all Safety Injection pumps inoperable and with one of the two required overpressure protection devices inoperable, restore two overpressure protection devices to OPERABLE status within 24 hours or within the next 8 hours

(a) depressurize the RCS and

(b) vent the RCS through at least a 1.58-square-inch vent.

c) In MODE 4, MODE 5 and MODE 6 with all Safety Injection pumps inoperable and with both of the two required overpressure protection devices inoperable, within the next 8 hours

(a) depressurize the RCS and

(b) vent the RCS through at least a 1.58-square-inch vent.

d) 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.

e) In MODE 5 and MODE 6 with all Safety Injection pumps except one inoperable and with the RCS vent area less than 18 square inches or RCS water level not in a reduced inventory condition, immediately restore all Safety Injection pumps to inoperable status.

OVERPRESSURE PROTECTION SYSTEMS

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE when the PORV(s) are being used for overpressure protection by:

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

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.

4.4.9.3.2 Each RHR suction relief valve shall be demonstrated OPERABLE when the RHR suction relief valve(s) are being used for 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.

4.4.9.3.4 The reactor vessel water level shall be verified to be lower than 36 inches below the reactor vessel flange at least once per 12 hours when the reduced inventory condition is being used for overpressure protection.

**Except when the vent pathway is provided with a valve(s) or device(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.

SURVEILLANCE REQUIREMENTS

4.5.2 (Continued)

d. At least once per 18 months by:

1) Verifying automatic interlock action of the RHR system from the Reactor Coolant System to ensure that with a simulated or actual Reactor Coolant System pressure signal greater than or equal to 440 psig, the interlocks prevent the valves from being opened.

2) A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per 18 months, during shutdown, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on (Safety Injection actuation and Automatic Switchover to Containment Sump) test signals, and

2) Verifying that each of the following pumps start automatically upon receipt of a Safety Injection actuation test signal:

a) Centrifugal charging pump,

b) Safety Injection pump, and

c) RHR pump.

f. By verifying that each of the following pumps develops the indicated differential pressure on recirculation flow when tested pursuant to Specification 4.0.5:

1) Centrifugal charging pump, ≥ 2480 psid;

2) Safety Injection pump, ≥ 1445 psid; and

3) RHR pump, ≥ 171 psid.

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 additional charging pump may be made capable of injecting under administrative control for up to 1 hour during pump-swap operation, except during RCS water-solid conditions. Additionally, 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.

**An alternate method to assure pump inoperability may be used by placing the control room pump-control switch(s) in the Pull-to-Lock position and isolating the discharge flow path of the pump(s) from the RCS by at least one closed isolation valve. Use of the alternate method requires inoperability verification at least once every 12 hours.

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, or

c. One when the RCS is in a reduced inventory condition**.

APPLICABILITY: MODE 5 and MODE 6 with the reactor vessel head on and the vessel head closure bolts not fully detensioned.

ACTION:

With fewer than the required number of Safety Injection pumps inoperable, immediately restore all pumps required to inoperable status.

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.

**A reduced inventory condition exists whenever reactor vessel (RV) water level is lower than 36 inches below the RV flange.

***An alternate method to assure pump inoperability may be used by placing the control room pump-control switch(s) in the Pull-to-Lock position and isolating the discharge flow path of the pump(s) from the RCS by at least one closed isolation valve. Use of the alternate method requires inoperability verification at least once every 12 hours.

3/4.1.2 BORATION SYSTEMS (Continued)

boron capability requirement occurs at EOL from full power equilibrium xenon conditions and requires 22,000 gallons of 7000 ppm borated water from the boric acid storage tanks or a minimum contained volume of 477,000 gallons of 2700 - 2900 ppm borated water from the refueling water storage tank (RWST).

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps except the required OPERABLE pump to be inoperable in MODES 4, 5, and 6 except when the reactor vessel head closure bolts are fully detensioned or the vessel head is removed, provides assurance that a mass addition pressure transient can be relieved by operation of a single PORV or an RHR suction relief valve.

As a result of this, only one boron injection system is available. This is acceptable on the basis of the stable reactivity condition of the reactor, the emergency power supply requirement for the OPERABLE charging pump and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single injection system becomes inoperable.

The boron capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN as specified in the CORE OPERATING LIMITS REPORT after xenon decay and cooldown from 200° F to 140° F. This condition requires a minimum contained volume of 6500 gallons of 7000 ppm borated water from the boric acid storage tanks or a minimum contained volume of 24,500 gallons of 2700 ppm borated water from the RWST.

The contained water volume limits include allowance for water not available because of discharge line location and 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.

The OPERABILITY of one Boron Injection System during REFUELING ensures that this system is available for reactivity control while in MODE 6.

The limitations on OPERABILITY of isolation provisions for the Boron Thermal Regeneration System and the Reactor Water Makeup System in Modes 4, 5, and 6 ensure that the boron dilution flow rates cannot exceed the value assumed in the transient analysis.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that: (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. Verification that the Digital Rod Position Indicator agrees with the demanded position within ± 12 steps at 24, 48, 120, and 228 steps withdrawn for the Control Banks and 18, 210, and 228 steps withdrawn for the Shutdown Banks provides assurances that the Digital Rod Position Indicator is operating correctly over the full range of indication. Since the Digital Rod Position Indication System does not indicate the actual shutdown rod position between 18 steps and 210 steps, only points in the indicated ranges are picked for verification of agreement with demanded position.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Misalignment of a rod requires measurement of peaking factors and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the safety analyses. Measurement with rods at their individual mechanical fully withdrawn position, T_{avg} greater than or equal to 551°F and all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a Reactor trip at operating conditions.

The fully withdrawn position of shutdown and control banks can be varied between 225 and the mechanical fully withdrawn position (up to 232 steps), inclusive. An engineering evaluation was performed to allow operation to the 232 step maximum. The 225 to 232 step interval allows axial repositioning to minimize RCCA wear.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCOs are satisfied.

For Specification 3.1.3.1 ACTIONS b. and c., it is incumbent upon the plant to verify the trippability of the inoperable control rod(s). Trippability is defined in Attachment C to a letter dated December 21, 1984, from E. P. Rahe (Westinghouse) to C. 0. Thomas (NRC). This may be by verification of a control system failure, usually electrical in nature, or that the failure is associated with the control rod stepping mechanism. In the event the plant is unable to verify the rod(s) trippability, it must be assumed to be untrippable and thus falls under the requirements of ACTION a. Assuming a controlled shutdown from 100% RATED THERMAL POWER, this allows approximately 4 hours for this verification.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

The OPERABILITY of two PORVs, or two RHR suction relief valves, or a combination of a PORV and RHR suction relief valve, 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 Appendix 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 both Safety Injection pumps and all but one centrifugal charging pump to be made inoperable while in MODES 4, 5, and 6 with the reactor vessel head installed and not fully detensioned, 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 one 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

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

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 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 with the reactor vessel head on and the vessel head closure bolts not fully detensioned, 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 or whenever the RCS is in a reduced inventory condition, i.e., whenever reactor vessel water level is lower than 36 inches below the reactor vessel flange. Cold overpressure protection provided by the venting method utilizes an 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 with the reactor vessel head on and the vessel head closure bolts not fully detensioned. 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. Additionally, when steam generator nozzle dams are installed for maintenance purposes and the reactor vessel water level is not 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.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

When the reactor vessel head is on and the vessel head closure bolts are fully detensioned, i.e., when the closure nuts have been removed from the studs, a substantial vent area exists by the gap underneath the reactor vessel head, created by the internal spring forces. A measured gap of greater than or equal to 0.03 inches is of sufficient size to provide for cold overpressure protection, for gravity feed from the RWST, and ensuring nozzle dam integrity. Verification of sufficient gap will be performed prior to crediting the gap as a means for cold overpressure protection.

Cold overpressure protection can also be provided when operating at a reduced inventory condition, i.e., whenever reactor vessel water level is lower than 36 inches below the reactor vessel flange. With RCS water level lower than 36 inches below the RV flange in Mode 5 or Mode 6 with the RV head on and the closure bolts not fully detensioned, a mass addition transient involving simultaneous operation of a CCP and a SI pump without letdown will not result in a cold overpressurization condition because of the relatively large void volume in the RCS. This void volume consists of the upper plenum of the reactor vessel and the RV head, the pressurizer and steam generator tubes, as a minimum. The relatively large void volume affords ample time for operator action, (e.g., diagnose the water level increase on main control board instrumentation and stopping the pumps) to mitigate the transient. A minimum time of 50 minutes has been determined based on one charging pump operating at 120 gpm without letdown and a Safety Injection pump injecting into the RCS.

The charging pumps and Safety Injection pumps are rendered incapable of injecting into the RCS through removing the power from the pumps by racking the motor circuit breakers out under administrative control. An alternate method of preventing cold overpressurization may be employed. The alternate method uses at least two independent means to prevent cold overpressurization such that a single action will not result in an inadvertent injection into the RCS. This may be accomplished through the pump control switch being placed in Pull-to-Lock position and at least one valve in the discharge flow path closed. The alternate method provides the ability to respond to abnormal situations, expeditiously, from the main control room.

During charging pump swap operation two charging pumps may be made capable of injecting into the RCS for up to 1 hour. This provision prevents securing charging for the purpose of not having more than the allowable pumps operable in order to limit thermal fatigue cycles on piping and impact seal injection to the Reactor Coolant Pumps (RCP) which has seal degradation potential. Given the short time duration of the evolution and the evolution controlled under administrative controls, e.g., prohibiting pump swap operation during RCS water-solid conditions, a cold overpressurization condition occurring as a result of an uncontrolled mass addition transient is unlikely.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS (Continued)

COLD OVERPRESSURE PROTECTION (Continued)

Charging and/or Safety Injection pumps, normally rendered inoperable for cold overpressure protection may be operated as required under administrative controls during abnormal situations involving a loss of decay heat removal capability or an unexpected reduction in RCS inventory. Maintaining adequate core cooling and RCS inventory during these abnormal situations is essential for public health and safety. Administrative controls ensure that a cold overpressurization condition will not occur as a result of an uncontrolled mass addition transient.

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.

3/4.5.1 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 and the vessel head closure bolts not fully detensioned 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, or the RCS is in a reduced inventory condition, i.e., whenever reactor vessel water level is lower than 36 inches below the reactor vessel flange, one Safety Injection pump may be made OPERABLE when in MODE 5 or MODE 6 with the reactor vessel head on and the vessel head closure bolts not fully detensioned. When operating in this configuration, cold overpressure protection is provided by either the mechanical vent opening in the RCS boundary, equal to or greater than 18 square inches, or the additional void volume existing when operating in a reduced inventory condition. Either configuration is required to be present prior to making the SI pump OPERABLE. This required RCS vent area or reduced inventory condition and the cold overpressure protection surveillance requirements to verify the presence of the RCS vent area or verify that the reactor vessel water level is lower than 36 inches below the reactor vessel flange provides assurance that a mass addition transient can be mitigated 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. With the exception of the operating centrifugal charging pump, the ECCS pumps are normally in a standby, non-operating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the piping from the refueling water storage tank (RWST) to the RCS full of water (by verifying at the accessible ECCS piping high points and pump casings, excluding the operating centrifugal charging pump) ensures that the system will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent water hammer, pump cavitation, and pumping of non-condensable gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following a safety injection (SI) signal or during shutdown cooling. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation. 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.

Verifying that the RHR system suction valve interlock is OPERABLE ensures that the RCS will not pressurize the RHR system beyond its design pressure. The value specified in the surveillance requirement ensures that the valves cannot be opened unless the RCS pressure is less than 440 psig. Due to bistable reset design, and the instrument uncertainty, the valves could be open above the interlock setpoint, but below the reset

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

pressure. To ensure that the RHR system design pressure will not be exceeded, the actual interlock setpoint takes into consideration RHR suction relief valve settings and allowable tolerance, bistable deadband, total instrument channel uncertainty associated with the interlock, and available operating margin (differential pressure operating limit) for reactor coolant pump operation to ensure shutdown cooling can be transitioned to RHR. This results in the actual setpoint and reset values being below the value specified in the surveillance requirement. The actual interlock setpoint and reset values, in addition to separate administrative controls, will ensure that the RHR suction isolation valves cannot be opened from the main control room when the RCS pressure could cause the RHR system design pressure to be exceeded.

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.

Section IV

Determination of Significant Hazards for Proposed Changes

IV. DETERMINATION OF SIGNIFICANT HAZARDS FOR PROPOSED CHANGES

License Amendment Request (LAR) 00-01, Revision 1, proposes changes to the Seabrook Station Technical Specifications (TS) 3/4.5.3.2, "ECCS Subsystems – T_{avg} Equal To or Less Than 200°F;" 3/4.4.9.3, "Overpressure Protection Systems;" 3.1.2.4, "Boration Systems – Charging Pumps Operating;" Surveillance Requirement (SR) 4.5.2d.1), "ECCS Subsystems - T_{avg} Greater Than or Equal To 200°F;" SR 4.5.3.1.2, "ECCS Subsystems – T_{avg} Less Than 350°F;" and 4.1.2.3.2, "Boration Systems - Charging Pump Shutdown." The associated TS Bases are revised accordingly.

The proposed changes are enhancements to the Seabrook Station Technical Specifications to provide North Atlantic operational flexibility, particularly during the shutdown modes of operation. These enhancements include: 1) the ability to have a standby Safety Injection (SI) pump available during Reactor Coolant System (RCS) reduced inventory conditions with the RCS pressure boundary intact, 2) realigning a footnote to clarify the allowance of an inoperable SI pump to be energized for testing or filling accumulators, 3) allowance for an additional charging pump to be made capable of injecting during pump-swap operations, 4) recognition that a substantial vent area exists for cold overpressure protection when the reactor vessel head is on and the studs are fully detensioned, 5) limit maneuvering the plant beyond Hot Shutdown when one charging pump is operable, 6) establishes a new value for the open permissive interlock associated with the Residual Heat Removal System suction isolation valves, and 7) the Bases notes the ability to respond with additional makeup sources when necessary in the unlikely event of a loss of decay heat removal capability or unexpected reduction in RCS inventory.

In accordance with 10 CFR 50.92, North Atlantic has reviewed the attached proposed changes and has concluded that they do not involve a significant hazards consideration (SHC). The basis for the conclusion that the proposed changes do not involve a SHC is as follows:

1. **The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.**

   1) the ability to have a standby Safety Injection (SI) pump available during Reactor Coolant System (RCS) reduced inventory conditions with the RCS pressure boundary intact:

   By allowing one SI pump to be operable whenever the RCS is intact and in a reduced inventory condition. Reduced inventory condition is defined as a reactor vessel (RV) water level lower than 36 inches below the RV flange. With RCS water level lower than 36 inches below the RV flange and the RV head on, in Modes 5 and 6, a mass addition transient involving simultaneous operation of a CCP and a SI pump without letdown will not result in a cold overpressurization condition because of the relatively large free volume in the RCS. This free volume consists of the upper plenum of the reactor vessel and the RV head, the pressurizer and steam generator tubes, as a minimum. The relatively large free volume affords ample time for operator action, (e.g., stopping the pumps) to mitigate a transient prior to the RCS attaining a water-solid condition. In addition, should a mass input transient occur, resulting from the operable centrifugal charging pump (CCP) and one SI pump inadvertently flowing to the RCS while letdown flow is isolated, the combination of one RHRS suction relief valve having a capacity of 900 gpm at a set pressure of 450 psig and the amount of air within the free volume to compress would delay and restrict rapid pressurization of the RCS. Reliance on the relatively large free volume (affording ample time for operator action, 50 minutes or more) provides an acceptable alternative compensatory measure to mitigate a transient prior to the RCS attaining a water-solid condition. Therefore, since it is expected that the proposed change will continue to provide a comparable level of control to avert an inadvertent mass addition transient, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2) Presently, TSs require demonstration of pump inoperability by verifying that the associated motor circuit breakers are secured in the open position at least once per 31 days. Rendering a charging pump or SI pump inoperable to prevent cold overpressurization may be performed by employing an alternate method. The proposed alternate method uses at least two independent means to prevent a pump start such that a single action will not result in an inadvertent injection into the RCS. This is accomplished through the pump control switch being placed in the Pull-to-Lock position and at least one valve in the discharge flow path closed. In addition, an additional administrative control measure is incorporated to increase the surveillance frequency for verifying inoperability to at least once every 12 hours instead of at least once per 31 days. This is a prudent measure since the alternate method relies on control switches instead of circuit breakers, or valves secured in position, to render equipment inoperable. The increase in surveillance frequency will minimize the possibility of initiating an inadvertent injection into the RCS due to a mispositioned control switch. The alternate method provides the ability to respond to abnormal situations, expeditiously, from the main control room. The alternate method is an acceptable method for cold overpressurization control. Therefore, since it is expected that the proposed change will continue to provide a comparable level of control to avert an inadvertent mass addition transient, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

3) realigning a footnote to clarify the allowance of an inoperable SI pump to be energized for testing or filling accumulators:

Placing the asterisk in the main sentence after the word "inoperable" in LCO 3.5.3.2 would provide flexibility to energize the inoperable SI pump for testing or filling the accumulators even if an SI pump is inservice for other purposes, e.g., maintaining RCS inventory. Overpressure protection would still be assured since the discharge of the pump is required to be isolated prior to energizing the inoperable pump. Therefore, since the proposed change provides the same level of preventative measures to avert an inadvertent mass addition transient, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

4) allowance for an additional charging pump to be made capable of injecting during pump-swap operations:

The proposed change would provide flexibility to perform pump swap maneuvers without the need to shutdown the operating charging pump and/or perform a complex line-up to comply with current TS limits. The allowance is conditioned to prohibit having more than one charging pump energized simultaneously when the RCS is in a water-solid condition. The prohibition recognizes that pressurization occurs rapidly when the RCS is in a water-solid condition, particularly if two charging pumps are capable of injecting into the RCS.

Mass addition transients during solid water operations have a higher probability of exceeding Appendix G P/T limits. Rapid pressurization of the RCS when intact at partial drain conditions tends to be delayed and restricted due to the cushioning effect of air/gas compression. This delay permits time for operator action to mitigate the transient. Administrative controls would ensure that a cold overpressurization event does not occur as a result of an uncontrolled mass addition transient during pump swap operation. Use of administrative controls to prohibit pump swap operation while the RCS is in a water-solid condition is an acceptable compensatory measure to prevent inadvertent RCS overpressurization. Therefore, since it is expected that the proposed change will continue to provide a comparable level of control to avert an inadvertent mass addition transient, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

5) recognition that a substantial vent area exists for cold overpressure protection when the reactor vessel head is on and the studs are fully detensioned:

Revisions to the Mode 6 Applicability statement in TS 3.4.9.3 and TS 3.5.3.2 and the exception stated in SR 4.1.2.3.2 are proposed to credit the gap underneath the reactor vessel head as a condition for determining TS or SR Applicability. Presently the Applicability for Mode 6 is conditioned as being applicable whenever the reactor vessel head is on, or conversely, in the case for SR 4.1.2.3.2, when the reactor vessel head is removed. Evaluation indicates with the reactor vessel head on and the vessel head closure bolts fully detensioned a substantial gap area exists for venting purposes, both within the reactor vessel internal structure and by the gap underneath the reactor vessel head. When the reactor vessel head is detensioned the internal spring forces within the reactor vessel lift the reactor vessel head (approximately 0.3 inches when last measured) to create the head gap. North Atlantic determined that a reactor vessel head lift of 0.03 inches is sufficient to ensure a minimum vent area of 18 square inches. In addition, the evaluation also indicates that even if no head gap existed, an increase in pressure within the RCS of approximately 12.6 psig would result in the vessel head lifting and providing the necessary vent path. The gap created by the reactor vessel internal spring forces is of sufficient size to provide for cold overpressure protection, for gravity feed from the RWST, and ensuring nozzle dam integrity. Therefore, cold overpressure protection when the reactor vessel head is on is not a concern when the reactor vessel head is fully detensioned. Administrative controls will verify existence of the gap prior to crediting the gap for cold overpressure protection. Therefore, since it is expected that the proposed change will continue to provide a comparable level of control to avert an inadvertent mass addition transient, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

6) limit maneuvering the plant beyond Hot Shutdown when one charging pump is operable:

A proposed change to TS 3.1.2.4 revises the ACTION statement to limit maneuvering the plant beyond Hot Shutdown when one charging pump is operable. Presently, the ACTION requires the plant to be maneuvered to Cold Shutdown if two charging pumps are not restored to OPERABLE status within the other specified limits of the ACTION statement. Maneuvering the plant beyond Hot Shutdown (Mode 4) is unnecessary and is more restrictive than the charging pump operability requirements specified in TS 3.1.2.3 during the Shutdown Modes of operation. TS 3.1.2.3 requires one charging pump to be OPERABLE during Modes 4, 5 and 6. The associated ACTION for TS 3.1.2.3 does not require maneuvering the plant to Cold Shutdown should both charging pumps be inoperable in any of the Shutdown Modes. Thus, the ACTION statement of TS 3.1.2.4 is more restrictive than the specified limiting condition addressed in TS 3.1.2.3. Therefore, the appropriate action to be taken when the other specified actions of TS 3.1.2.4 cannot be met is to maneuver the plant to a condition whereby another LCO becomes effective. That LCO is TS 3.1.2.3 for Modes 4, 5 and 6 operation. The revised time limit to be in Hot Shutdown within the next 6 hours is consistent with other TSs when maneuvering the plant from Hot Standby condition. The proposed change would apply consistent requirements for maneuvering the plant when an operable charging pump is inoperable. Applying consistent requirements for maneuvering the plant does not involve a significant increase in the probability or consequences of an accident previously evaluated.

7) establishing a new value for the open permissive interlock associated with the Residual Heat Removal System (RHR) suction isolation valves.

The proposed change is to ensure that the RHR suction isolation valves can only be opened when the RCS pressure is below that which would result in the RHR system design pressure being exceeded. The proposed change ensures that the bistables reset on increasing RCS pressure prior to reaching 440 psig, the design limit. This ensures that the suction isolation valves will not be opened at or above the RHR suction relief valve setpoint. The original TS value of 365 psig did not address the instrument loop uncertainty, the design of the bistable, and other factors. The actual interlock setpoint will be lower. Therefore, the change will ensure that the bistable reset and instrument channel uncertainties, as well as other factors are taken into account, and includes instrument uncertainty and adequate margin from the 440 psig design limit.

The value of 440 psig is below the allowed setpoint tolerance on the RHR suction side relief valve; therefore, the probability that the RHR suction relief valves will be challenged is not increased. The design remains consistent with Branch Technical Position RSB 5-1. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

In addition, the allowed outage time for TS 3.5.3.2 ACTION is changed from 4 hours to immediately to be consistent with the immediate requirement specified in the ACTION for TS 3.4.9.3 ACTION e). The situation depicted in TS 3.4.9.3 ACTION e) is similar to the situation depicted in the ACTION for TS 3.5.3.2 for the specific condition stated in LCO 3.5.3.2a. Applying consistent requirements for allowed outage times with respect to SI pump inoperability does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The above aforementioned proposed TS changes do not affect plant systems such that their function in the control of radiological consequences is adversely affected. The proposed changes do not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or manner in which structures, systems and components (SSCs) perform their intended safety function to mitigate the consequences of an initiating event within the acceptance limits assumed in the Updated Final Safety Analysis Report (UFSAR). The proposed changes do not affect the source term, containment isolation or radiological release assumptions used in evaluating the radiological consequences of an accident previously evaluated in the UFSAR. Providing provisions under administrative control to enhance operator response time and ability to mitigate transients associated with loss of DHR capability or unexpected loss of RCS inventory during the Shutdown modes of operation are not expected to challenge RCS integrity. The provisions provide an overall safety benefit by increasing the availability of equipment at the operator's disposal to mitigate the event, and when combined with the alternate method, potentially increases operator response time to expeditiously terminate and/or mitigate a loss of DHR capability or unexpected reduction in RCS inventory event. The proposed changes will not affect the mitigation of the radiological consequences of any accident described in the UFSAR. Therefore, radiological consequences of accidents previously evaluated in the UFSAR will not be increased.

Since there are no changes to previous accident analyses, the radiological consequences associated with these analyses remain unchanged. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **The proposed changes do not create the possibility of a new or different kind of accident from any previously analyzed.**

The possibility of a new or different kind of accident from any already evaluated in the UFSAR will not be created. The proposed changes do not result in a change to the design basis of any plant structure, system, or component. All equipment important to safety will operate as designed. The proposed TS changes in conjunction with administrative controls will provide adequate control measures to ensure component integrity is not challenged, particularly the RCS. The proposed changes do not cause the initiation of any accident nor create any new failure mechanisms. The changes do not result in any event previously deemed incredible being made credible. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously analyzed.

3. **The proposed changes do not involve a significant reduction in a margin of safety.**

The proposed changes do not adversely affect equipment design or operation and there are no changes being made to the Technical Specification required safety limits or safety system settings that would adversely affect plant safety. The proposed TS changes in conjunction with administrative controls will provide adequate control measures to ensure component integrity is not challenged, particularly the RCS. Providing provisions under administrative control to enhance operator response time and ability to mitigate transients associated with loss of DHR capability or unexpected loss of RCS inventory during the Shutdown modes of operation provide an overall safety benefit by increasing the availability of equipment at the operator's disposal to mitigate the event, and when combined with the alternate method, potentially increases operator response time to expeditiously terminate and/or mitigate a loss of DHR capability or unexpected reduction in RCS inventory event.

The increase in the TS limit for the interlock, from 365 to 440 psig remains consistent with ensuring that the RHR suction isolation valves remain closed until the RCS is depressurized to the point where the RHR suction relief valve set pressure is sufficient to protect the RHR system piping. The value in the technical specifications reflects the design limit. The actual interlock setpoint will be lower, and includes instrument uncertainty and adequate margin from the 440 psig design limit. Therefore, the proposed change ensures adequate margin is maintained to prevent the RHR system piping from overpressurization and not challenge lifting of the RHR suction relief valves.

The changes associated with aligning Actions in TS 3.5.3.2 and TS 3.1.2.4 with similar Actions of other TSs are made for consistency purposes. These changes ensure that ACTIONS of multiple TS, addressing similar limiting conditions, do not conflict. These changes do not significantly decrease the level of effectiveness of the ACTION to prescribe the required actions to be taken under designated conditions.

Therefore, the proposed changes described herein do not involve a significant reduction in any margin of safety.

Based on the above evaluation, North Atlantic concludes that the proposed changes do not constitute a significant hazard.

Sections V & VI

Proposed Schedule for License Amendment Issuance and Effectiveness
and
Environmental Impact Assessment

V. PROPOSED SCHEDULE FOR LICENSE AMENDMENT ISSUANCE AND EFFECTIVENESS

North Atlantic requests NRC review of License Amendment Request 00-01, Revision 1, and issuance of a license amendment by September 30, 2000 having immediate effectiveness and implementation required within 60 days.

VI. ENVIRONMENTAL IMPACT ASSESSMENT

North Atlantic has reviewed the proposed license amendment against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor increase the types and amounts of effluent that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, North Atlantic concludes that the proposed change meets the criteria delineated in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.