PSNH PUBLIC SERVICE
Company of New Hampshire

SEABROOK STATION
Engineering Office:
1671 Worcester Road
Framingham, Massachusetts 01701
(617) - 872 - 8100

November 10, 1982

SBN-361
T.F. B7.1.2

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

Attention: Mr. George W. Knighton, Chief
Licensing Branch 3
Division of Licensing

References: (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444
(b) USNRC Letter, dated April 26, 1982, "Request for Additional Information - Seabrook Station, Units 1 and 2," F. J. Miraglia to W. C. Tallman
(c) USNRC Memorandum, dated October 14, 1982, "Notice of Meeting Regarding Open Items in the Safety Review," L. L. Wheeler to J. D. Kerrigan

Subject: Response to 440.115 and 440.116; (Reactor Systems Branch)

Dear Sir:

We have enclosed a response to the Reactor Systems Branch Request for Additional Information (RAI) 440.115 which was forwarded in Reference (b).

We have also enclosed a response to RAI 440.116. Note that Reference (b) indicated that RAI 440.116 was deleted; however, in the referenced meeting [Reference (c)], Reactor Systems Branch representatives indicated that this item should be addressed.

Responses or revised responses to the 440 Series RAIs will be included in OL Application Amendment 48.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

J. DeVincentis
Project Manager

B001

ALL/fsf

RAI 440.115

Your response to Q440.36 indicates a portion of piping, which may require thermal relief protection. Address this issue.

RESPONSE

In both line 13-1-2501-12" (P&ID 9763-F-805003) and line 58-1-2501-12" (P&ID 9763-F-805005), 3/4"xl" relief valves have been installed to provide thermal relief protection for water trapped between RCV-22 and RCV-23 and between RCV-87 and 88. These lines and valving will relieve excessive pressure to the pressurizer relief tank.

440.116 Expand your response to 440.40 to include consideration of the possibility that the ECC accumulator isolation valves may be closed with power removed and certain charging and/or SI pumps may have their circuit breakers open for low temperature overpressure considerations.

RESPONSE: To minimize the possibility of low temperature overpressure transients during startup and cooldown, low pressurizer pressure and low steam line pressure safety injection actuation logic is manually blocked below 1900 psi. Below 1000 psi, the accumulator isolation valves are closed and power is removed from the motor operators. Below 1000 psi, power to the non-operating charging pump is also locked out. Prior to decreasing RCS temperature below 305°F, power is removed from the safety injection pumps. It should be noted that the high containment pressure safety injection actuation logic cannot be blocked. It should also be noted that power can be rapidly restored to the accumulator isolation valves, safety injection pumps and the non-operating charging pumps at the main control board.

If a steam line rupture occurs while both of these SI actuation signals are blocked, steam line isolation will occur on high negative steam pressure rate. An alarm for steam line isolation will alert the operator of the accident. The nuclear power and core flux increase is terminated at an RCS pressure that approximates the beginning of accumulator discharge. This transient, however, is terminated by the boron resulting from BIT injection so no adverse impact would be expected to result from accumulator isolation.

For large LOCA's, sufficient mass and energy would be released to the containment to automatically actuate SI when the containment high pressure setpoint is reached. At this time, the operator would be alerted to the occurrence of a LOCA by the following safety-related indications:

1. Loss of pressurizer level,

2. Rapid decrease of RCS pressure, and

3. Increase in containment pressure.

In addition to the above, the following indications are normally available to the opertor at the control board:

1. Radiation alarms inside containment,

2. Increase in sump water level,

3. Decrease off scale of accumulator water levels and decrease in pressure,

4. ECCS valve and pump position and status light in ECCS energized indication, and annunciators light as safeguards equipment becomes energized, and

5. [illegible] from ECCS pumps.

LOCA's during heatup and cooldown have been evaluated to determine the effects of the unavailability of the accumulators. The limiting case is cooldown, due to the presence of decay heat. Although the safety injection pumps would not be available during the event, it has been demonstrated that with only one charging pump, two RHR pumps and no accumulator discharge, peak clad temperature would only reach about 1100°F. Additionally, it has been demonstrated that with only one charging pump, one RHR pump and no accumulator discharge, the peak clad temperature would only reach about 1700°F. This is significantly below the Appendix K requirement and is bounded by the ECCS analysis presented in Chapter 15.

For very small LOCA's (approximately less than 2-inch diameter) in which the containment high pressure setpoint may not be reached, the operator would observe the safety-related indications plus the first two normally available indications.

In addition, a charging flow/letdown mismatch would provide the operator with another indication of leakage from the RCS. Since the operator would observe the pressurizer level and receive additional indications that a LOCA occurred, a manual SI would be initiated immediately. As presented in WCAP-8356, the time to uncover the core following a small break is relatively long (e.g., greater than 10 minutes for a 2-inch break). The operator would, therefore, have sufficient time to manually initiate SI.