PSNH PUBLIC SERVICE
Company of New Hampshire

SEABROOK STATION
Engineering Office:
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October 7, 1982

SBN- 341
T.F. B 7.1.2

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

Attention: Ms. Janis Kerrigan, Acting 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 August 13, 1982, "Draft Safety Evaluation Report (SER) for Seabrook Station", T. M. Novack to W. C. Tallman

Subject: Draft SER Section 6.1.1

Dear Ms. Kerrigan:

The following comment appears in the Draft SER Section 6.1.1, which was forwarded in Reference (b):

"The applicant has taken exception to the SRP recommendations to provide an inert cover gas on the sodium hydroxide storage tank to prevent deterioration of the chemicals. However, the applicant has not provided the information necessary to complete our review. We will report the resolution of this item after we receive the necessary information."

In response to the above comment, we will revise FSAR Section 6.2.2 as indicated on the attached FSAR pages 6.2-42 and 6.2-43 to provide justification for not including an inert cover gas on the sodium hydroxide storage tank. This information will be included in Amendment 48 to the OL Application.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

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J. DeVincentis
Project Manager

ALL/dd

Attachment

temperature of 86°F, and provides cooling for a minimum of 21.9 minutes after an accident, based upon maximum pumps in operation at maximum flow rates. Upon a low level signal from the RWST (approximately 350,000 gallons removed), the suctions of the residual heat removal (RHR) and CBS pumps automatically re-align to take suction from the containment recirculation sumps. The operator then manually re-aligns the centrifugal charging pumps to take suction from RHR pump P-8A discharge and the safety injection pumps to take suction from RHR pump P-8B discharge. All pumps continue to operate in the recirculation mode until no longer required.

b. Component Description

The following are descriptions of the components in the CBS system. RHR pumps and heat exchangers are described in Sections 5.4.7 and 6.3; ECCS component descriptions are found in Section 6.3.

1. Containment Spray Pumps

The CBS pumps are horizontal centrifugal pumps selected to supply the design spray flow rate at containment design pressure. The pumps are designed to take suction from the containment sump at the most limiting NPSH condition (atmospheric pressure and a temperature of 212°F) and pump it back into the containment through the spray nozzles. Design pump discharge pressure takes into account containment pressure, elevation head to the highest nozzles, and piping frictional losses.

Each CBS pump is designed to deliver 3010 gpm from the lowest level in the RHR equipment vault to the highest point in the containment building. Conservative assumptions have been made concerning piping and fitting frictional losses to assure adequate flow under actual conditions.

2. Spray Additive Tank

The spray additive tank (SAT) is mounted adjacent to the RWST, and drains by gravity into the RWST mixing chamber. External heaters are provided to prevent freezing or chemical precipitation during cold weather. The ratio of the spray additive tank area to the RWST area is such that the initial spray pH is maintained at approximately 9.5. The tank is sized to provide the correct amount of sodium hydroxide solution to insure that the final containment recirculation pump pH after injection will be between 8.5 and ~~11.0~~ for the various reactor coolant conditions. No provision is made in the design of the SAT to prevent the reaction of NaOH with

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atmospheric carbon dioxide during long-term storage. ~~It has been calculated that less than 0.0156% of the NaOH will react with CO_2 and become unavailable over the plant design life of forty years~~.

3. Containment Spray Heat Exchangers

The containment spray heat exchangers are shell and tube type heat exchangers with spray flow in the tube side and primary component cooling water (PCCW) on the shell side. They are sized such that one containment spray heat exchanger and one residual heat removal heat exchanger provide 100% of design heat removal capacity.

Heat exchanger parameters, including flow rates, were selected such that one RHR heat exchanger and one CBS heat exchanger satisfy containment cooling requirements. Table 6.2-76 contains the heat exchanger performance data used for the accident analyses.

4. Spray Headers and Nozzles

The spray headers are positioned in the containment dome to maximize coverage of the containment volume. Four separate headers are utilized to obtain the distribution of the flow, two for each 3010 gpm train. Each train contains 198 nozzles with each nozzle providing a flow of 15.2 gpm (see Figures 6.2-79 and 6.2-80).

5. Refueling Water Storage Tank

The refueling water storage tank (RWST) is designed to store 475,000 gallons of borated water. This tank is designed to supply water both for refueling operations and to the containment spray system and the emergency core cooling system during accident operations. The RWST capacity is based on accident requirements and will supply the safety injection, the charging, residual heat removal and containment spray pumps for at least 21.9 minutes during the injection phase of a design base accident.

Margin is provided to allow time for transfer of the systems to the recirculation mode and to account for instrument errors. Analysis is based on a minimum of 350,000 gallons of water being injected. An external steam heating supply system is provided to protect against freezing. Tank temperature is indicated locally and alarmed in the main control room.

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Using extremely conservative assumptions, it has been calculated that a very small fraction (0.0133) of the NaOH would react with the CO_2 during the life of the plant. The calculation assumes one complete volume change of air per day (in a stagnant tank) with complete reaction of all CO_2. The minimum total volume of NaOH (1260 ft^3) was assumed to be present in the tank, thus maximizing the available air space (291 ft^3).

The above calculated loss of N_aOH through reaction with atmospheric CO_2 would result in a reduction of NaOH concentration from 20% to 19.7% (by weight) over a forty year period. This is well within the range of concentrations allowed by the plant technical specifications. This will be verified periodically by chemical analysis.