PSNH

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March 10, 1983

SBN-489
T.F. B7.1.2

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

Attention: Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

References: (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444

Subject: Open Item Response: (SRP 7.4.2.1, RAI 420.48; Instrumentation and Control Systems Branch)

Dear Sir:

We have enclosed a response to the subject Request for Additional Information and open item regarding a postulated failure of the non-seismic portion of the Service Water System.

The enclosed response which revises previously submitted meeting notes will be incorporated in OL Application Amendment 49.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

J. DeVincentis
Project Manager

ALL/fsf

cc: Atomic Safety and Licensing Board Service List

B001

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420.48 p1

RESPONSE: 3/23 — Handout given to NRC. Staff questioned if MOV's and controls mentioned are safety grade. Items are safety grade. If problem exists during review, it will be covered under overall discussion of shutdown. "Adequate time" mentioned in response is minimum of four hours.

STATUS: 9/14 — This issue was discussed at the June 23 and 24, 1982, meeting, and is closed.

HANDOUT: 3/23 — Boration of the primary coolant will require an alignment of the suction of charging pumps from the refueling water storage tank (RWST) to the boric acid storage tank (BAST). This will be required once the plant starts its cooldown. The gravity feed from the BAST to the suction of the charging pumps contains manual isolation valves located in the primary auxiliary building. The RWST suction valves contain motor-operated valves (MOV) that can be controlled from the motor control center in the Switchgear Rooms. If need be, the MOV's can be operated locally. There is adequate time for an operator to follow the procedure since the plant is in a safe hot shutdown condition.

420.47 (7.4) — Using detailed drawings (schematics, P&IDs'), describe the automatic and manual operation and control of the atmospheric relief valves. Describe how the design complies with the requirements of IEEE-279 (i.e., testability, single failure, redundancy, indication of operability, direct valve position, indication in control room, etc.).

RESPONSE: 3/23 — Operation of these valves from a remote location is not considered a safety-related function; therefore, they are not designed to meet IEEE-279. Overview of operation given at meeting. Item still under review by staff and considered open.

REVISED RESPONSE: 9/14 1/83 — The operators for the atmospheric dump valves are being changed to safety grade operators that will comply with the requirements of IEEE 323-1974 and 344-1975. Safety grade manual control will be provided and will override the non-1E automatic controls. The preliminary design was discussed (i.e., applicable portions of IEEE 279-1971).

STATUS: 9/14 — Confirmatory pending review of formal documentation.

420.48 (7.4.2) (7.3) — Using detailed electrical schematics and piping diagrams, please discuss the automatic and manual operation and control of the station service water system and the component cooling water system. Be sure to discuss interlocks, automatic switchover, testability, single failure, channel independence, indication of operability, isolation functions, etc.

RESPONSE: 3/23 — Reviewed system design and operation from drawings and schematics. Staff will review isolation of non-seismic portion of service water system during earthquake without another accident.

ADDITIONAL RESPONSE: 5/12

Low service water pump discharge pressure (could be the result of tunnel blockage due to an earthquake) will result in tower actuation (TA). The TA signal will isolate the non-seismic portion of the SW system.

ADDITIONAL RESPONSE: 9/14

An analysis was performed that shows that a complete failure of the non-seismic SW piping will reduce SW pump discharge pressure below the tower actuation setpoint. The non-seismic SW piping is isolated on tower actuation, safety injection and loss of off-site power (see revised 9.2.5.5 in response to 420.44).

STATUS: 9/14

Open pending ICSB review with ASB.

ADDITIONAL RESPONSE: 11/82 2/83

As was discussed in the 9/14 meeting, we have performed an analysis that shows that a complete failure of the non-safety service water piping will result in a tower actuation (TA) that will isolate the non-safety piping and restore flow to the safety users. 2/83
Subsequent analyses have determined that any failure greater than an 8-inch nominal opening will result in a TA. It was also pointed out that the non-safety piping is isolated by a safety injection signal or a loss of off-site power. Since the isolation is performed automatically for large breaks and for the critical condition II, III and IV events, the remaining concern relates to the effect of reduced flow to the safety users for failures of the non-safety piping that do not cause a TA. 2/83 2/83

We have analyzed the effect of the largest non-safety piping failure (8-inch) that does not result in a TA under the worst case conditions of maximum sea water temperature (65°F), lowest tide and normal power operation heat loads with one diesel generator under full load test. This will result in a reduced service water flow to the CC heat exchanger of 5150 gpm (8,000 gpm normal) and 1500 gpm to the diesel (1800 gpm normal). The effects of the reduced flow are discussed below.

Component Cooling 2/83

Reduced service water flow to the CC heat exchanger will result in an increase in the CC outlet temperature from the normal 85°F to a steady-state value of about 95°F. This is lower than the 120°F design requirement of the safety-related equipment or the 130°F 4-hour limit for the reactor coolant pumps.

The containment temperature will increase slightly. It was determined that the maximum containment temperature after 10 minutes without any cooling is 128°F. Safety-related equipment inside the containment will not be affected as all such equipment is qualified for high energy line break environments.

The above analysis was performed for a 20" break in the non-safety piping; therefore, there is a larger change in flow than is indicated for the diesel generator with an 8-inch break.

Diesel Generator

The normal flow requirement for the diesel generator is based on an inlet temperature of 90°F. The reduced flow of 1500 gpm at 65°F meets the cooling requirements without affecting the operation of the diesel generator.

2/83

From the above discussion it can be seen that failure of the non-seismic piping does not affect safety-related equipment and is automatically isolated for critical condition II, III, and IV events.

Low service water pressure and high component cooling water temperature alarms alert the operator to abnormalities that would result from failure of the non-safety service water piping. The non-safety piping would be isolated manually to stop flooding of the non-safety turbine building.

420.49
(7.5)

The information supplied in FSAR Section 7.5 concentrates on the post accident monitoring instrumentation and does not provide sufficient information to describe safety related display instrumentation needed for all operating conditions. Therefore, please expand the FSAR to provide as a minimum additional information on the following:

1. ESF Systems Monitoring
2. ESF Support Systems Monitoring
3. Reactor Protective System Monitoring
4. Rod Position Indication System
5. Plant Process Display Instrumentation
6. Control Boards and Annunciators
7. Bypass and Inoperable Status Indication
8. Control Room Habitability Instrumentation
9. Residual Heat Removal Instrumentation

Please use drawings as necessary during your discussion.

RESPONSE: 3/23

All except Item 6 will be covered in response to Regulatory Guide 1.97. Summary of VAS and annunciator system will be provided.