PSNH

Public Service of New Hampshire

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SBN-477
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
(b) PSNH Letter, dated April 8, 1982, "Response to 460 Series RAIs; (Effluent Treatment Systems Branch)," J. DeVincentis to F. J. Miraglia
(c) PSNH Letter, dated November 5, 1982, "Revised Response to RAI 460.35(f); (Effluent Treatment Systems Branch)," J. DeVincentis to G. W. Knighton

Subject: Open Item Response: (SRP 11.5; Effluent Treatment Systems Branch)

Dear Sir:

In response to the open item regarding the need for a gross radioactivity monitor in the Service Water System, we have enclosed a technical justification, based on preliminary calculations, for not installing the above radioactivity monitor.

The enclosed response supplements the responses submitted in References (b) and (c).

Please note that FSAR Page 9.2-4 incorrectly states that the Service Water System is "continuously monitored by a dedicated process radiation monitoring system." The enclosed revised version of FSAR Page 9.2-4 will be incorporated in OL Application Amendment 49.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

David A. Maidrand

J. DeVincentis for
Project Manager

ALL/fsf

cc: Atomic Safety and Licensing Board Service List

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We have performed calculations to evaluate the need for a monitor on the Service Water System (SWS). Since the Station does not discharge effluents from the Radioactive Liquid Waste System into the the SWS, and the SWS does not provide direct cooling to any systems that are normally radioactive, we do not believe there is a need for a SWS monitor.

For the purpose of the calculation, a one gallon per minute (gpm) leak was assumed to exist from the Reactor Coolant System into the Primary Component Cooling Water System (PCCW). The same one gpm leak was then assumed to exist between the PCCW and SWS. With equal leak rates, no change in level would be seen in the surge (head) tank. Furthermore, only the iodines were considered ($1.0 \mu Ci/cm^3$ in reactor coolant).

The calculation shows that the PCCW monitor responds almost immediately (less than one minute) by an increase of over two orders of magnitude over the minimum detectable reading.

In six hours, the SWS activity concentration is at, or slightly above, the MPCs for the iodines. However, the dilution effect of the Circulating Water System is such that resulting concentrations in the discharge tunnel are 10^{-12} x MPC, even after 36 hours of leakage.

We believe that equal leakage from the Primary System to the PCCW System and PCCW to SWS, although extremely unlikely, constitutes the most limiting condition because PCCW head tank level would not change.

The operators would determine that because radiation levels in the PCCW System were increasing (indicating in-leakage) and head tank level was not changing, that there must be leakage out of the PCCW System. For any other combination of leaks, the PCCW head tank level would either increase or decrease and be detected by the operators. This combination of changing head tank level and increasing radiation levels in the PCCW System would quickly alert the operators to the problem. For either condition, the operator response would be to request sampling of the SWS. Even if SW monitors were provided, sampling and analysis would still be necessary to allow for full documentation of the radionuclides being released.

For the above reasons, we do not feel the addition of SW radiation monitors are required. We will provide the final leakage activity calculations and PCCW head tank level response to leaks in the near future. Furthermore, we will submit a Technical Specification requirements for the PCCW alarm set point and sampling frequency of the SWS when activity is found in the PCCW.

Each set of two service water pumps supplying each flow train has a dual electrical power supply (offsite or diesel) and is separated from the other train's power supply. A loss of power to the service water pumps supplying one flow train would affect only that flow train. Electrically-operated valves are powered by the same power supply train as their associated pumps.

A complete and independent service water system is provided for each unit. The capability of the service water system to perform its safety functions is not influenced by any conditions which may exist in the other unit. ~~The service water system is also continuously monitored by a dedicated process radiation monitoring system. The process radiation monitoring system is discussed in Section 11.5.~~

The service water pumps and motors are designed to comply with seismic Category I criteria and are housed in a Category I service water pump house. Sections 3.8.4 and 9.2.5 should be consulted for further details on the service water pump house. All Safety Class 3 service water system piping and valves are designed in accordance with Section III, Class 3, of the ASME Boiler and Pressure Vessel Code, and comply with seismic Category I requirements.

Cement-lined carbon steel pipe is used throughout most of the service water system to prevent long term corrosion. Portions of lines located immediately downstream of throttled valves may be subjected to excessive fluid velocities impinging on fittings e.g., elbows and tees. In these cases suitable pipe materials (polyurethane linings or copper nickel) are used for erosion protection. An epoxy-phenolic (Plasite #7122) coating is used in the cooling tower pipe. Service water pipe which is buried below grade is coated with coal-tar enamel and wrapped with asbestos-felt material. Underground service water piping is cathodically protected. Since service water piping is either buried or housed in buildings, essential service water supply is protected against freezing, icing and other adverse environmental conditions. Protection of the cooling tower and its associated equipment against these conditions is discussed in Section 9.2.5.

The service water pump motors are located above flood levels inside a reinforced concrete (seismic Category I) building which provides adequate protection against flooding. All service water piping is either buried or housed in concrete structures (seismic Category I), or otherwise protected, to preclude damage from tornado-driven missiles.

9.2.1.4 Tests and Inspections

Prior to plant startup, the service water system will be hydrostatically tested in accordance with ASME Boiler and Pressure Vessel Code Section III, Class 3, except where installation does not permit pressurization. A description of system preoperational testing is contained in Chapter 14.

During plant operation, inservice inspection of the Class 3 portion of the service water system will be performed in accordance with ASME Code, Section XI.