PSNH PUBLIC SERVICE
Company of New Hampshire

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TF B7.1.2

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

Attention: Mr. Frank J. Miraglia, Chief
Licensing Branch No. 3
Division of Licensing

References: (a) Construction Permit CPPR-135 and CPPR-136, Docket Numbers 50-443 and 50-444
(b) PSNH Letter dated July 2, 1982, "FSAR Section 8, Open Item List - Power Systems Branch (Electrical)" J. DeVincentis to F. Miraglia

Subject: FSAR Section 8, Open Item List - Power System Branch (Electrical)

Dear Sir:

As promised in our July 2, 1982 letter (Reference b), we are providing written responses to resolve the remaining concerns of Open Item 33 "Compliance with Regulatory Guide 1.63".

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

David A Macdonald for

J. Devincentis
Project Manager

GTS/kac

Attachment

B001

OPEN ITEM 33

Compliance with Regulatory Guide 1.63

RESPONSE

This item was discussed during a telephone conversation on June 2, 1982, and again during the June 18, 1982 meeting.

DISPOSITION

The majority of the concerns were resolved during these discussions. Written responses are provided herewith for the following remaining concerns:

1. Equipment inside containment that is infrequently used (cranes, refueling machines, etc.) and does not have redundant penetration protection will have to be under Technical Specification limitations if credit is to be given in having the feeder breaker locked open. If not, then redundant protection will have to be provided.

2. Further details on low-energy circuits inside containment not provided with redundant protection.

3. Details of physical and electrical separation between the primary and back-up protective devices.

The attached revised FSAR pages and RAI 430.54 provide information which addresses the above concerns. For information only, we are also providing sample pages of the Technical Specifications indicating how we are proposing to address the concern on infrequently used equipment inside containment.

7. Special 480 Volt Circuits

(a) Protection of Containment Electrical Penetrations

The Class 1E and non-Class 1E 480 volt unit substations, 460 volt motor control centers and the distribution panels which feed loads inside the containment are all qualified to meet Class 1E requirements and are located in Seismic Category I structures. 460 volt loads inside the containment are fed from distribution equipment with special provisions to satisfy the requirements of Regulatory Guide 1.63 for containment electrical penetration protection. These provisions are outlined below.

460 volt loads inside containment which are fed from motor control centers or distribution panels are provided with one of the following special arrangements to insure that the penetration integrity is maintained.

(1) Circuits of motors 5 hp and less are provided with two identical combination starters. Both units are located in the same compartment of the MCC. See Figure 8.3-49 for typical coordination curves.

(2) Circuits of motors greater than 5 hp are provided with a thermal magnetic breaker in series with a combination starter. Both the breaker and the combination starter are located in the same compartment of the MCC. See Figure 8.3-48 for typical coordination curves.

(3) Feeder circuits, including the pressurizer heater circuits, are provided with two identical thermal magnetic breakers. Both breakers are located in the same compartment of the MCC or panel.

The motor control centers containing these special protective devices are located in the Control Building switchgear area, with the one exception, the panels for the pressurizer heater circuits are located in the electrical penetration area outside the containment. Both the primary and the backup protective devices are qualified 1E devices.

There are no high or moderate energy lines in the above areas, therefore, only faults within the electrical devices could conceivably damage these protective devices. If a protective device fails catastrophically while clearing a short circuit, the second protective device may possibly be affected because of its proximity. However, in this instance, no penetration damage can occur because all short circuit current flow will be diverted to the new fault located at the protective device. Therefore, there is no conceivable electrical failure that could prevent both the protective devices from operating and at the same time allow the fault current to flow through the penetration.

460 volt loads inside the containment, which are fed directly from the 480 volt unit substations, satisfy the requirements of Regulatory Guide 1.63 by utilizing the load breaker as primary protection and the unit substation incoming feeder breaker as backup protection. See Figure 8.3-48 for an example.

460 volt loads inside the containment which are normally used only during shutdown (e.g., cranes, refueling machines, welding receptacles, etc.) are not provided with redundant protection because their circuits are de-energized and padlocked at the unit substation or motor control center during normal plant operation. Verification of the circuits being de-energized is part of the Technical Specifications. Though some of these circuits may be required for brief durations during plant operation such as prior to or after refueling outages, lack of redundant protection is justified because of the very limited usage in this mode and the fact that such usage will be under Technical Specification requirements.

Control circuits powered from 120 V ac or 125 V dc distribution panels have dual protective devices (circuit breakers and/or fuses) to provide penetration protection in accordance with Regulatory Guide 1.63.

Control circuits powered from limited capacity power sources such as control power transformers (maximum capacity 150 VA) and instrumentation circuits do not require dual protection because the short circuit versus time capacity of their power sources is within the penetration capabilities.

430.54 Section 8.3.1.2.b.4 of the FSAR indicates that instrumentation and low energy circuits are not provided with redundant overload protection devices. Define low energy circuits and justify non-compliance with the guidelines of Regulatory Guide 1.63.

RESPONSE: Low energy circuits are those energized by devices that are inherently energy self-limiting (e.g., control transformers or instrumentation current/voltage loop power supplies, etc.) Regulatory Guide 1.63 is satisfied because a short circuit would result in an energy level which is sufficiently low as to preclude damage to the electrical penetration seal.

For more information on low energy circuits, refer to Section 8.3.1.1c (7) of the FSAR.