PSNH

SEABROOK STATION
Engineering Office

Public Service of New Hampshire

New Hampshire Yankee Division

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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, SBN-703, dated August 9, 1984, "Alternate Pipe Break Design Criteria", J. DeVincentis to G. W. Knighton
(c) PSNH Letter, SBN-705, dated August 21, 1984, "Safety Evaluation Report (SER) Outstanding Issue No. 5, 'Load Combinations, Design Transients, and Stress Limits'", J. DeVincentis to G. W. Knighton
(d) USNRC Letter, dated February 1, 1984, "Safety Evaluation of Westinghouse Topical Reports Dealing with Elimination of Postulated Pipe Breaks in PWR Primary Main Loops (Generic Letter 84-04)", from D. G. Eisenhut
(e) PSNH Letter, SBN-756, dated January 31, 1985, "Reactor Coolant Loop Pipe Break Elimination Benefits Summary", J. DeVincentis to G. W. Knighton
(f) NUREG-1061, Volume 3, "Report of the US Nuclear Regulatory Commission Piping Review Committee", published November 1984

Subject: Request for Meeting; Safety Evaluation Report Issue No. 5, "Load Combinations, Design Transients, and Stress Limits"

Dear Sir:

BACKGROUND:

Outstanding Issue No. 5 in the Seabrook Safety Evaluation Report (NUREG-0896; Section 1.7 and Section 3.9.3.1) indicates that the "applicant has not yet addressed its methodology for ensuring functional capability in ASME Class 1 piping". The NRC Standard Review Plan (NUREG-0800;

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Section 3.9.3, Appendix A) defines "Component and Support Functional Capability" as follows:

> "Ability of a component, including its supports, to deliver rated flow and retain dimensional stability when the design and service loads, and their resulting stresses and strains are at prescribed levels."

Functional capability is, therefore, very different from structural integrity which is addressed via the prescription of quantitative Service Limits in the ASME Code (effective with the 1977 edition). The Standard Review Plan (NUREG-0800; Section 3.9.3, Appendix A) subscribes to the ASME Code Service Limits for structural integrity. Neither the ASME Code, nor the Standard Review Plan prescribe quantitative limits for the assurance of functional capability. The Standard Review Plan (NUREG-0800; Section 3.9.3, Appendix A) addresses functional capability as follows:

> "The design of Classes 1, 2, and 3 piping components shall include a functional capability assurance program. This program shall demonstrate that the piping components, as supported, can retain sufficient dimensional stability at service conditions so as not to impair the systems' functional capability. The program may be based on tests, analysis, or a combination of tests or analysis."

Neither Public Service Company of New Hampshire, nor, to the best of our knowledge, any other individual electric utility has initiated a test program or rigorous analysis to establish functional capability limits. Others (not electric utilities) have performed analysis and/or testing to establish proposed functional capability limits. In light of the inherent conservatism in piping analysis, we do not feel that functional capability represents a genuine generic safety concern, but nonetheless an issue to be dealt with such as we have [Reference (c)]. An example of the conservatism inherent in piping analysis is the inclusion of the dynamic loads imposed by LOCA in the load combination.

As discussed above, the NRC Standard Review Plan does not prescribe quantitative limits for the assurance of functional capability. The NRC, however, did prescribe quantitative limits (Service Limit C from ASME III, Subsection NB-3600, 1980 Edition up to and including Winter 1981 Addenda) in a Request for Additional Information on the Seabrook Docket (Attachment to RAI210.84).

In Reference (c), we provided the results of our analysis which demonstrates that functional capability is maintained. The analysis results we provided in Reference (c) assume the elimination of the dynamic loading caused by the guillotine rupture of the largest diameter pipe in the Reactor Coolant System (LOCA) as required by General Design Criteria 4 of 10CFR50, Appendix A. The assumption that the guillotine rupture and concommitant dynamic loading need not be postulated is founded on the fracture mechanics analysis performed by Westinghouse and evaluated by the NRC for Westinghouse

Owners Group plants which were required to address Unresolved Safety Issue A-2 ("Assymetric Blowdown Loads on PWR Primary Systems"). The NRC's review of the Westinghouse Topical Report dealing with the elimination of postulated pipe breaks in PWR primary loop is included with Generic Letter 84-04 [Reference (d)]. Generic Letter 84-04 also contains the following provision:

> "Other PWR licensees or applicants may also request exemptions on the same basis from the requirements of GDC-4 with respect to asymmetric blowdown loads resulting from discrete breaks in the primary main coolant loop, if they can demonstrate the applicability of the modeling and conclusions contained in the referenced reports to their plants or can provide an equivalent fracture mechanics based demonstration of the integrity of the primary main coolant loop in their facilities."

Our technical justification for the elimination of postulated pipe break in the primary loop and a request for exemption from GDC 4 was submitted in Reference (b). Therefore, our treatment of the functional capability issue is contingent on your acceptance of our request for partial exemption from GDC 4, which as of this writing has not transpired.

REQUEST FOR MEETING:

We are seeking a meeting on the functional capability issue because we have been informed by the Mechanical Engineering Branch (12/28/84 telephone discussion) that in spite of their technical acceptance of our treatment of the issue, the legal evaluation of the GDC 4 exemption requests has thus far resulted only in approval as it relates to the elimination of jet impingement shields for the Reactor Coolant System (primary loop). This approval was granted to TUGCO for Comanche Peak 1.

NRC Generic Letter 84-04 does not limit the application of the GDC 4 exemption requests to particular mitigating devices (e.g., jet impingement shields or pipe whip restraints). We cannot comprehend why the GDC 4 exemption should not apply equally to any device or structure intended to mitigate the dynamic effect of a LOCA (e.g., missiles, pipe whipping, fluid jets). Limiting the applicability of the GDC 4 exemption requests would also be inconsistent with the following conclusion, which the NRC Pipe Break Task Group reported in NUREG-1061, Volume 3 [Reference (f)]:

> "The elimination of the DEGB at terminal ends of large primary pipes in pressurized water reactors (PWRs), and the control of maximum flaw length in piping in general should permit an elimination of existing restraints or removal of restraints as a design requirement. Consequently, asymmetric reactor pressure vessel (RPV) loads, jet impingement loads, and reactor cavity over-pressurization that results from a postulated DEGB need not be considered." (p. ES-2)

We feel that further NRC legal evaluation of the GDC 4 exemption requests will result in approval of the elimination of the massive Reactor Coolant System (primary loop) pipe whip restraints, which, as a result of inadvertent excessive thermal expansion of the loop and/or improper shimming, can introduce additional undesirable stresses. We appreciate your position that the GDC 4 exemption at this time should not be applicable to the design of the Emergency Core Cooling System, Containment or Equipment Qualification environmental parameters; however, further limiting of its application seems arbitrary and technically inconsistent.

We notified the NRC as early as November 1983, that we intended to apply the GDC 4 exemption to the functional capability issue, and until now, we have received no adverse reaction to our proposed treatment. Also, other construction and engineering decisions have been dictated by the expected approval by you of our GDC 4 exemption request. Examples of these are:

- Cancellation of hot shimming of Unit 1 primary loop whip restraints
- Non-installation of primary loop whip restraints on Unit 2
- Cancellation of engineering and fabrication work on energy absorbing crush pads for the reactor cavity neutron shields
- Cancellation of engineering and fabrication work on jet impingement shields

The benefits associated with application of the GDC 4 exemption requests to the above items have been quantified in Reference (e).

You indicated in Generic Letter 84-04 [Reference (d)], that the "staff intends to proceed with rulemaking changes to GDC 4 to permit the use of fracture mechanics to justify not postulating pipe ruptures". We would certainly hope the rulemaking would not specify applications to which the elimination of postulated pipe ruptures would apply because an arbitrary approach may overlook other beneficial applications; however, if applications are specified, we know of no sound technical reason why the above items (including the LOCA load elimination to demonstrate functional capability) should not be included in the rule.

It is also our position that the issue of functional capability be removed from the listing of Outstanding Issues in the Seabrook Safety Evaluation Report. This new issue for which no formal guidance exists, is generic in nature and should not be resolved in an individual plant licensing. We believe this position to be consistent with your recent "Interim Procedures for NRC Management of Plant Specific Backfitting" (Generic Letter 84-08).

We hope to meet with you on this issue as soon as possible. Please discuss arrangements with our licensing representative.

Very truly yours,

John DeVincentis, Director
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