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WCAP-12842
WCAP-12841 Prop

SUBJECT: Forwards nonproprietary WCAP-12842 & proprietary WCAP-12841, "Structural Evaluation of Kewaunee Pressurizer Surge LIne, Considering Effects of Thermal Stratification." Rept withheld (ref 10CFR2.790).

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November 14, 1991

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Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Response to NRC Bulletin No. 88-11

References:

1) Letter from D. C. Hintz (WPSC) to US NRC Document Control Desk dated March 6, 1989

2) Letter from C. R. Steinhardt (WPSC) to US NRC Document Control Desk dated March 14, 1991

3) Letter from C. R. Steinhardt (WPSC) to US NRC Document Control Desk dated August 2, 1991

4) US NRC Bulletin 88-11, "Pressurizer Surge Line Stratification," dated December 20, 1988 (received on January 3, 1989)

5) Letter from A. G. Hansen (US NRC) to K. H. Evers (WPSC) dated October 10, 1991 (received October 17, 1991)

In references 1, 2, and 3 the Nuclear Regulatory Commission (NRC) was notified that Wisconsin Public Service Corporation (WPSC) conducted a visual examination (ASME, Section XI, VT-3) of the pressurizer surge line; obtained plant specific data on thermal stratification and line deflection by monitoring; and updated the stress and fatigue analysis to account for thermal

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stratification and thermal striping. The stress and fatigue analysis demonstrates that the pressurizer surge line meets ASME allowable limits for the design life of the plant contingent upon making modifications to the whip restraint gaps (i.e., increasing the distance between the pressurizer surge line and whip restraints) during the 1992 outage. These analyses along with modification of the whip restraint gaps to be completed in the 1992 refueling outage constitute full compliance with NRC Bulletin 88-11 (reference 4).

To demonstrate the acceptability of the modified whip restraint gaps, a detailed leak-before-break (LBB) and fatigue crack growth analysis of the Kewaunee pressurizer surge line was performed. The results of these analyses are in compliance with revised General Design Criteria 4 (Appendix A to 10 CFR 50) for application of leak-before-break to the Kewaunee surge line. WPSC submitted the leak-before-break results for NRC review on August 2, 1991 (reference 3).

This letter provides additional information which was requested by the NRC in a letter from A. G. Hansen (US NRC) to K. H. Evers (WPSC) dated October 10, 1991 (reference 5). Specifically, two questions were asked regarding thermal load modeling and WPSC's plans for satisfying Bulletin 88-11. The following are the NRC's questions and our response to each.

(1) Thermal Load Modeling

NRC Request

How was the thermal stratification load (for instance, ST 455/250 associated with Case F on page 4-7 of WCAP-12875) modeled in the analysis of the PSL? Please provide details on axial and sectional views of the input temperature profile and illustrate its relationship with time.

WPSC Response

Please find attached WCAP-12841, "Structural Evaluation of the Kewaunee Pressurizer Surge Line, Considering the Effects of Thermal Stratification" (Proprietary) and WCAP-12842, "Structural Evaluation of the Kewaunee Pressurizer Surge Line, Considering the Effects of Thermal Stratification" (Non Proprietary). These reports provide a detailed description of how thermal stratification loading is modeled into the analysis of the pressurizer surge line.

Also attached are a Westinghouse Electric Corporation authorization letter, CAW-91-227, accompanying affidavit, Proprietary Information Notice, and Copyright Notice.

As WCAP-12841 contains information proprietary to Westinghouse Electric Corporation, it is supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.790 of the Commission's regulations.

Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.790 of the Commissions's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse affidavit should reference CAW-91-227 and should be addressed to R. P. DiPiazza, Manager of Operating Plant Licensing Support, Westinghouse Electric Corporation, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

(2) Plan to Satisfy Bulletin 88-11

NRC Request

It is the staff's position to review submittals regarding application of leak-before-break only after the plant has satisfied the requirements of Bulletin 88-11. To accommodate Kewaunee's special situation, please submit a plan detailing the measures which WPSC is committed to take to meet Bulletin 88-11 during the 1992 outage.

WPSC Response

These actions, as explained in the introduction, along with modification of the whip restraint gaps to be completed in 1992, constitute full compliance to the requirements of Bulletin 88-11. Specifically, the following plan outlines the measures and sequence of events that will be implemented to meet Bulletin 88-11 during the 1992 outage, and subsequently utilize leak-before-break analysis to demonstrate acceptability of the modified surge line whip restraint configuration:

- Attain cold shutdown or refueling shutdown with the primary system depressurized. Note: Under these conditions the whip restraints are not needed since the reactor coolant system is depressurized.

- Modify whip restraints such that the gaps are greater than the maximum displacements found in the analysis of the pressurizer surge line performed in

response to Bulletin 88-11 and documented in WCAP-12841. Note: Upon completion of this item, all requirements of Bulletin 88-11 are satisfied.

- Utilize leak-before-break and fatigue crack growth analysis of the pressurizer surge line (documented in WCAP-12875 and currently under NRC review), in accordance with revised General Design Criteria 4 (Appendix A 10 CFR 50), to demonstrate acceptability of the post modification whip restraint configuration. Note: NRC approval of the leak-before-break analysis is requested prior to plant startup.

In order to allow the necessary time to plan and schedule the required activities, WPSC requests that the NRC staff complete their review and provide approval to the WPSC approach and LBB prior to February 1, 1992.

WPSC greatly appreciates the NRC staff's willingness to complete their review of our submittal. We trust that the information included herein adequately addresses your concerns. Should you need additional information please feel free to contact a member of my staff.

Sincerely,

C. R. Steinhardt
Senior Vice President-Nuclear Power

CAT/jms

Attach.

cc - US NRC - Region III (w/o WCAP 12841 & 12842)
Mr. Patrick Castleman, US NRC (w/o WCAP 12841 & 12842)

Subscribed and Sworn to
Before Me This 14th Day
of November 1991

Notary Public, State of Wisconsin

My Commission Expires:
June 18, 1995

LIC\NRC\N524