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SUBJECT: Updated interim Part 21 rept re svc support structure for
 control rod drive mechanisms. Seismic loading concern
 resolved for all plants & stresses resulting from LOCA loads
 for Davis Besse & ANO-1 within allowable limits.

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B&W NUCLEAR TECHNOLOGIES

JHT/93-216
September 3, 1993

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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Michael McBrearty

Subject: Update to Interim Report on Evaluation of Potential
Safety Concern Pursuant to 10CFR21

- References:
1. Letter to U.S. NRC from J. H. Taylor (BWNT), dated July 2, 1993; Subject: Interim Report Pursuant to 10CFR21.
 2. B&W Topical Report, BAW-1538, Rev. 1, "Assumptions, Methodology, and Acceptance Criteria Report for Asymmetric LOCA Loads Evaluation - Phase 2", B&W 177-FA Owners Group, April 1979.
 3. B&W Topical Report, BAW-1621, "Effects of Asymmetric LOCA Loadings - Phase II Analysis", B&W 177-FA Owners Group, July 1980.

Gentlemen:

This letter provides an update to the Interim Report submitted previously on the evaluation of a potential safety concern involving the Service Support Structure (SSS) for the Control Rod Drive Mechanisms at the B&W-designed operating plants (Reference 1). The concern was that a local bending moment was not accounted for in the original stress calculations for the SSS, and that revised calculations show that stresses in the support skirt and bolts of the SSS exceed allowables. The Interim Report stated that an analysis program was in progress which was expected to show that, based on updated design conditions and analysis techniques, the stresses are in fact within allowables and that no safety concern exists.

Results of Finite Element Analysis

The initial phase of the analysis program consisted of a finite element analysis of the affected regions of the SSS. That phase of the analysis program has been completed, with the following results:

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1. The seismic loading concern is resolved for all the plants.
2. The stresses resulting from the LOCA loads for Davis-Besse and Arkansas Nuclear One Unit 1 are within allowables.
3. The flange stresses and support skirt cylinder stresses due to LOCA loads are within allowable limits for all plants.
4. For Oconee Units 1, 2 and 3; TMI-1; and Crystal River, the bolts connecting the SSS skirt to the reactor vessel head are indicated as overstressed due to LOCA loads, ranging from 1.15 to 1.3 times allowable. Bolt stresses due to LOCA loads are within allowables for the other plants.

LOCA Analysis

The following is provided in response to your request for information on the load combination used in the LOCA load cases of the present finite element analysis work. The original stress analysis performed in the late 1960's combined Seismic (Maximum Hypothetical Earthquake) with LOCA. The current finite element analysis of LOCA loads also includes consideration of Seismic (Safe Shutdown Earthquake) loads, but in a more realistic manner. The current analysis is a Faulted Condition analysis based on the previous work performed for the Asymmetric Cavity Pressure (ACP) LOCA loading Syndrome. The ACP work received NRC review and concurrence of the analytical assumptions, methodology and acceptance criteria for the B&W plants (References 2 and 3).

Remaining Work for Closure of Concern

The work remaining to bring this concern to closure will address the overstressed bolt issue, as discussed in Item 4 above. Since the overstress condition has been shown in the recent analysis to be considerably less than originally believed when the concern was initially raised, it is no longer considered necessary to perform additional analyses of the types discussed in the Interim Report. We are, therefore, considering more simplified analytical approaches. We expect to select the approach to be used within the next few weeks.

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In conclusion, we continue to be confident that our analysis program will show that no safety concern exists for any of the B&W plants. If you have any questions concerning this matter, please contact the undersigned at 804/385-2817, or Mr. David Mars at 804/385-2852.

Very truly yours,



J. H. Taylor, Manager
Licensing Services

JHT/bcc

cc: E. C. Caba, Toledo Edison
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