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October 14, 1986

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Mr. J. F. Stolz, Director
PWR Project Directorate No. 6
Division of PWR Licensing - B
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Supplemental Information in
Support of Technical Specification
Amendment for Sleeving OTSG Tubes

Dear Mr. Stolz:

In telephone conversations with the ANO-1 Project Manager and other members of your staff, AP&L was requested to submit additional information in support of the 40% plugging criteria for the OTSG sleeved tubes and to verify adequate detectability of the parent tube below the sleeve . To address the first request attached is a copy of Babcock & Wilcox report 32-1147602-02 entitled "177 OTSG Tube/Sleeve Loads." This report was the basis for the conclusions found in Section 3.5.2 of BAW-1823P "Once-Through Steam Generator Mechanical Sleeve Qualification" and supports the same 40% through wall plugging limit for sleeves as is currently required for tubes. The report was supplemented to specifically address the expanded region of the sleeve, which was of particular interest to your staff due to the change in section modulus. As is shown in the later half of the report, the reduced section modulus of the expanded region has only a minor impact (increasing the minimum wall thickness requirement from 15% for the unexpanded sleeve to 18% for the roller expanded portion of the sleeve for the accident loads associated with a Main Feedwater Line Break plus Safe Shutdown Earthquake). The analysis shows the minimum wall thicknesses necessary to resist collapse under the external pressure resulting from a LOCA (limiting event) are 0.0141 for the unexpanded portion of the sleeve and 0.0129 for the roller expanded portion of the sleeve. Both of these values correspond to a 70% through-wall defect. This compares to a 69% defect limit for the OTSG tubes.

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As indicated in our original submittal, the capability currently exists to detect ASME size flaws in the transition and expansion regions of the sleeve and parent tube of 20% through-wall or greater. Current inspection techniques do not, however, allow sizing of these flaws. Since these flaws can not be accurately sized, any defect indications will be assumed to be in excess of the Technical Specification 40% plugging limit. Those sleeved tubes with these type defects in their pressure boundary will be removed from service. We believe the wording of the proposed Technical Specification requires this conservative approach.

It is reiterated that the actual mechanical limit (plugging limit based on structural integrity) for a sleeved tube corresponds to a 40% through-wall defect in the sleeve. As inspection techniques evolve, we anticipate being able to quantify the percent through-wall degradation in the transition and expansion areas of the tube and sleeve. When this capability exists we will utilize actual through-wall indications for the plugging criteria.

With respect to detectability of the parent tube below the sleeve, B&W has performed tests which demonstrate the smaller diameter probes necessary for the sleeve will still provide the minimum sensitivity required by Technical Specifications for the tube.

The attached report is considered to contain proprietary information by Babcock & Wilcox as defined by 10CFR2.790. In order to expedite our response, the attached copy is being provided without a supporting affidavit or non-proprietary version. We request you withhold this copy from public disclosure pending receipt of the affidavit and additional copies which we intend to submit about November 1, 1986.

Very truly yours,

J. Ted Enos

J. Ted Enos, Manager
Nuclear Engineering and Licensing

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Attachment - Proprietary