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SUBJECT: Requests authorization, per 10CFR50.55a(a)(3), to use proposed alternative to develop weld procedure specs for potential repairs to matl fabrication flaws identified in steam generator girth welds.

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G. E. VAUGHN
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Nuclear Services Department

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
REQUEST TO USE AN ALTERNATIVE TO 10CFR50.55a REQUIREMENTS

Gentlemen:

The purpose of this letter is to request authorization, pursuant to 10CFR50.55a(a)(3), to use a proposed alternative to the requirements of 10CFR50.55a to develop weld procedure specifications for potential repairs to material fabrication flaws which have been identified in steam generator girth welds at H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2). A discussion of the flaw indications has been provided by Carolina Power & Light Company's (CP&L) submittals dated January 8, 1991 and May 7, 1991.

Specifically, CP&L requests authorization to use subsections IWA-4500 and IWA-4510 in the 1990 Addenda to the ASME Code, Section XI; 10CFR50.55a(b)(2) currently approves the use through the 1986 Edition (no Addenda) for ASME Code, Section XI. CP&L believes the proposed alternative, using temperbead welding techniques rather than post-weld heat treatment, would provide an acceptable level of quality and safety. The enclosure to this letter provides background and justification for this request, which has been previously discussed with the NRC staff.

Your prompt attention to this matter will be greatly appreciated to allow maximum flexibility in the event weld repairs are required. Questions regarding this matter may be referred to Mr. R. W. Prunty at (919) 546-7318.

Yours very truly,

G. E. Vaughn

JSK/jbw (1378RNP)

Enclosure

cc: Mr. S. D. Ebnetter
Mr. L. Garner
Mr. R. Lo

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P PDR

Enclosure
Background and Justification for Proposed Alternative
to Requirements of 10CFR50.55a

CP&L requests authorization to use Subsections IWA-4500 and IWA-4510 in the 1990 Addenda to the ASME Code, Section XI for qualifying a temperbead welding procedure and for conducting any future limited weld repairs to the HBR2 steam generators (SGs) as explained in the following paragraphs. The temperbead welding procedure specifications (WPS) would be used only for limited weld repairs. Any extensive weld repairs would be made using a WPS requiring post-weld heat treatment (PWHT) in accordance with ASME Code, Section III.

During the HBR2 Refueling Outage 13 (RFO-13, fall 1990), ultrasonic examination (UT) of the SG girth welds, located between the dome and the lower shell transition cone, revealed weld metal indications requiring further evaluation. Although believed to be fabrication-type flaws (not service-related), some indications on SGs "A" and "C" exceeded the allowable flaw size of the ASME Code, Section XI (Subsection IWB-3500). Fracture mechanics (crack growth stress analyses) was used during RFO-13 to justify continued operation, and immediate weld repairs were not required. However, CP&L has committed to the NRC to reinspect these same weld joints during future outages, including a mid-cycle outage, if one of sufficient duration should occur.

Although these indications appear to be weld joint fabrication flaws, as discussed with the NRC by telephone and formal correspondence in early 1991, CP&L wishes to be prepared during future outages to make weld repairs to these weld joints if determined necessary. Possible scenarios which might necessitate such weld repairs include any growth of the weld flaws outside the limits considered acceptable by the ASME Code, Section XI stress analyses (IWB-3600) or steam generator minimum wall thickness encroachment during metallurgical sample extraction/analysis.

Currently, the only CP&L welding procedure specifications available for such repair work are those previously qualified and used for the HBR2 SG replacement activities in 1984. However, these WPSs require PWHT in accordance with the ASME Code, Section III. Due to the limited amount of remaining qualified PWHT time on the HBR2 SG base materials and the complexity of heat-treating these vessels, use of these PWHT WPSs for small localized weld repairs is not desirable. The ASME Code, Section XI allows the use of qualified temperbead/halfbead repair WPSs which do not require the ASME Code, Section III PWHT. CP&L wishes to qualify a temperbead WPS in accordance with Subsections IWA-4500 and IWA-4510 of the 1990 Addenda prior to Refueling Outage 14 (RFO-14, spring 1992) for use in making small localized weld repairs, if deemed necessary. If extensive weld repairs were necessitated, a WPS requiring PWHT would be utilized.

Enclosure (continued)
Background and Justification for Proposed Alternative
to Requirements of 10CFR50.55a

Subsections IWA-4500 and IWA-4510 of the 1990 Addenda to the ASME Code, Section XI offer advantages over previous edition requirements for conducting temperbead/halfbead weld repairs. Two examples follow:

- 1) The earlier Code editions required the temperbead/halfbead WPS qualification test assembly to consist of the same material specifications and grades as those to be repair welded. However, the 1990 Addenda allows the use of the same P-number and group-number, as required by the ASME Code, Section IX.
- 2) Earlier Code editions required the WPS qualification test assembly thickness to be the lesser of five times the thickness of the repair cavity or the same thickness as the base metal to be repaired. The 1990 Addenda places no such restrictions on the qualification test assembly, other than those required in the ASME Code, Section IX.

These two changes also facilitate the procurement of WPS qualification test assembly base materials.

The proposed alternative to 10CFR50.55a would only apply to the repair welding requirements covered in IWA-4500 and IWA-4510 of the 1990 Code Addenda. Remaining ASME Code, Section XI requirements would continue to be in accordance with the ASME Code edition to which HBR2 is committed (effective February 19, 1992, HBR2 will be committed to the 1986 Edition of the ASME Code, Section XI). This proposed alternative to 10CFR50.55a would not impact the level of quality and safety for the plant, since repair practices would still be conducted in accordance with ASME Boiler and Pressure Vessel Code requirements.