

August 7, 2006

Bill Eaton, BWRVIP Chairman
Entergy Operations, Inc.
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1340 Echelon Parkway
Jackson, MS 39213-8202

SUBJECT: SUPPLEMENTARY REQUEST FOR ADDITIONAL INFORMATION-REVIEW
OF BOILING WATER REACTOR VESSEL AND INTERNALS PROJECT
REPORT, "GUIDELINES FOR PERFORMING WELD REPAIRS TO
IRRADIATED BWR INTERNALS (BWRVIP-97)" (TAC NO. MB3948)

Dear Mr. Eaton,

By letter dated November 27, 2001, and supplemented by letter dated July 25, 2005, you submitted for Nuclear Regulatory Commission staff review, Electric Power Research Institute proprietary report, "Guidelines for Performing Weld Repairs to Irradiated BWR Internals (BWRVIP-97)." The BWRVIP-97 report provides a methodology to determine if weld repairs to irradiated components can be successfully performed and, if so, by which welding technique. Four major elements to the methodology are evaluated: (1) definition of weldability boundary, (2) methodology for helium determination, (3) survey of applicable welding techniques, and (4) welding guidelines.

The staff has determined that additional information is needed to complete the review. The supplemental request for additional information (RAI) regarding the BWRVIP-97 report is enclosed. Please note that these RAI questions were discussed with your staff on August 2, 2006. If you have any questions, please contact me at (301) 415-1467.

Sincerely,

/RA/

Matthew A. Mitchell, Chief
Vessels & Internals Integrity Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

Project No. 704

Enclosure:
Request for Additional Information

cc: BWRVIP Service List

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SUPPLEMENTAL REQUEST FOR ADDITIONAL INFORMATION REGARDING
THE "BWR VESSEL AND INTERNALS PROJECT, GUIDELINES FOR PERFORMING WELD
REPAIRS TO IRRADIATED BWR INTERNALS (BWRVIP-97)"

SUPPLEMENTAL RAI 97-1

By letter dated July 25, 2005, the Boiling Water Reactor Vessel and Internals Project (BWRVIP), in response to Supplementary RAI 5-1 (Nuclear Regulatory Commission letter dated October 7, 2004), stated that underwater welding will slightly affect the residual stresses. The BWRVIP also stated that outer diameter (OD) welding with a water-solid condition at the inner diameter (ID) has proven to be beneficial in producing improved ID and through-wall stresses. The staff does not accept this response because the OD welding with a water-solid condition at the ID is different than the underwater welding of the core spray piping where both the inside and outside piping surfaces are exposed to water. The staff agrees with the BWRVIP that residual stresses at the ID are likely to be beneficial (compressive), and, therefore, do not cause any intergranular stress corrosion cracking concerns. However, the presence of compressive stresses on the OD and ID surfaces imply a likely presence of tensile stresses at some point in the thickness. This location may become susceptible to helium embrittlement if exposed to high thermal neutron fluences. The staff requests the BWRVIP address this issue and include its discussion of this issue in the -A version of the BWRVIP-97 report.

SUPPLEMENTAL RAI 97-2

The staff requests that the BWRVIP evaluate any synergistic interactions between radiation embrittlement and thermal aging of the ferrite in the weld overlay material. The staff requests that the BWRVIP address this issue regarding the synergistic interactions and include its discussion of this issue in the -A version of the BWRVIP-97 report.

ENCLOSURE