

March 28, 2001

Mr. J. A. Scalice
Chief Nuclear Officer
and Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: BROWNS FERRY, UNIT 3 - REVIEW OF WELD GR-3-63 INSPECTION
RESULTS AND INDUCTION HEAT STRESS IMPROVEMENT
EFFECTIVENESS (TAC NO. MB0579)

Dear Mr. Scalice:

During the Browns Ferry Unit 3, Cycle 8 refueling outage in 1998, an intergranular stress corrosion cracking (IGSCC) indication was detected by ultrasonic testing (UT) at the heat-affected zone of weld GR-3-63. Weld GR-3-63 is a pipe to valve weld in the reactor water recirculation piping system. This weld was subjected to induction heat stress improvement (IHSI) process for IGSCC resistance in 1984. The IGSCC indication is 1.7 inches in length with a maximum depth of 0.2 inch and is located in the type 304 stainless steel pipe side of the weld. Previous UT inspection performed in 1992 on this weld did not report any cracking indication. In a letter dated October 9, 1998, the staff expressed concern regarding the effectiveness of the IHSI process that was performed on this weld since the flaw was found after the IHSI treatment. To address the concern, the staff requested TVA to (1) review the IHSI processing data pertaining to the weld GR-3-63 and (2) reinspect the weld during the next refueling outage using the same techniques, procedures and instruments that were used in the Cycle 8 refueling outage. By letter dated November 3, 2000, Mr. T. E. Abney provided the requested information which is summarized below.

1. TVA performed a review of the IHSI process control parameters and the actual IHSI data recorded for weld GR-3-63. The process parameters reviewed consisted of: (1) pipe outer surface temperature within the treatment zone, (2) minimum through wall temperature difference (ΔT) of 275° C, (3) minimum width of zone heated to (ΔT) minimum, (4) minimum distance from weld center to boundary of (ΔT) minimum, (5) minimum heating time to temperature, (6) maximum total time for outer surface above temperature 425° C, (7) the induction heating frequency of the IHSI process, (8) minimum induction coil length and (9) minimum water velocity. The licensee has determined that the process parameters reviewed met those specified in the IHSI process control specification (General Electric Procedure P50YP214, Revision 3, Table 1).
2. During the Browns Ferry Unit 3, Cycle 9 (spring 2000) refueling outage, UT inspection was performed on weld GR-3-63 using the same techniques, procedures, and instruments that were used during the Cycle 8 refueling outage. There was no change in the size of the flaw indication (1.2 inches in length and 0.2 inch in depth).

Mr. J. A. Scalice

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Based on the information in your November 3, 2000, letter, we have determined that the IHSI process applied to weld GR-3-63 is effective. This finding is based on the consideration that all the process parameters reviewed met the IHSI process control specifications and the results of UT inspection had shown that there was no crack growth after one cycle of operation. The staff agrees with your conclusion that the subject indication was not detected by the previous inspection in 1992, due to the limitations of the UT techniques employed by the industry at that time. Therefore, weld GR-3-63 can be inspected every other refueling cycle in accordance with the IGSCC Category E inspection schedule as delineated in Generic Letter 88-01.

This completes our efforts under TAC No. MB0579. If you have any questions regarding this issue, please contact me at 301-415-3026.

Sincerely,

/RA/

William O. Long, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-296

cc: See next page

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William O. Long, Senior Project Manager, Section 2
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Tennessee Valley Authority

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