

May 19, 1998

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - BROWNS FERRY NUCLEAR
PLANT, UNIT 3 REVISED RELIEF REQUEST 3-ISI-1 (TAC NO. MA1153)

Dear Mr. Zeringue:

By letter dated February 17, 1998, the Tennessee Valley Authority (TVA) submitted revised relief request 3-ISI-1 regarding the Browns Ferry Nuclear Plant, Unit 3 (BFN-3) reactor pressure vessel (RPV) shell weld inspections. TVA performed the BFN-3 augmented examination during the Fall 1993 extended outage; 15 indications exceeded the American Society of Mechanical Engineers (ASME) acceptance criteria. TVA analyzed the indications and determined that the BFN-3 RPV was acceptable for continued service.

TVA previously requested relief from the three successive examinations by letter dated January 22, 1997. This request was denied by the U.S. Nuclear Regulatory Commission (NRC) for a number of reasons, including the fact that TVA had not validated the fracture mechanics analysis by subsequent examinations to verify that the subject flaws were not growing beyond calculated projections.

The revised relief request seeks relief for one operating cycle from the requirements of the 1989 Edition (no addenda) of ASME Section XI, Subarticle paragraph IWB-2420(b). This paragraph states that "If flaw indications or relevant conditions are evaluated in accordance with IWB-3132.4 or IWB-3142.4, respectively, and the component qualifies as acceptable for continued service, the areas containing such flaw indications or relevant conditions shall be reexamined during the next three inspection periods listed in the schedule of the inspection programs of IWB-2410."

The staff has reviewed the revised relief request, and has developed additional questions. The information requested in the enclosure is needed to complete our review. Please provide your response by June 12, 1998.

Sincerely,

/s/

Albert W. De Agazio, Sr. Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-296
Serial No. BFN-98-012

Enclosure: As stated

cc: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in cursive script, reading "Albert W. De Agazio", is written over the typed name.

Albert W. De Agazio, Sr. Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-296
Serial No. BFN-98-012

Enclosure: As stated

cc: See next page

Mr. O. J. Zeringue
Tennessee Valley Authority

BROWNS FERRY NUCLEAR PLANT

cc:

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Limestone County Commission
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REQUEST FOR ADDITIONAL INFORMATION
BROWNS FERRY NUCLEAR PLANT, UNIT 3
THE TENNESSEE VALLEY AUTHORITY
DOCKET NO. 50-296

The staff requests additional information for the Tennessee Valley Authority (TVA) revised relief request 3-ISI-1 regarding the Browns Ferry Nuclear Plant, Unit 3 (BFN-3) reactor pressure vessel (RPV) shell weld inspections.

- 1) Provide justification that each of the 15 flaws found in the BFN-3 vessel during the Fall 1993 augmented examination are subsurface by considering the (1) uncertainties of the non-destructive examination (NDE) method, (2) size, and (3) location of each flaw.
- 2) Part of the basis for the requested relief is that the General Electric (GE) GERIS 2000 system that was used to perform the previous RPV examination is not available for the refueling outage scheduled to begin in October 1998. TVA asserts that a modified system similar to the previously utilized system would need to be constructed due to availability issues. GERIS 2000 is Performance-Demonstration-Initiative (PDI) qualified. PDI qualification of equipment, procedures, and personnel demonstrates that examination and evaluation techniques are repeatable.

Please provide information on alternate vendors that are PDI qualified and have equipment that are available for the upcoming cycle 8 outage.

- 3) It is stated on Page 3 of "General Electric Corporation Flaw Evaluation Extending Service Lifetime of Browns Ferry Unit 3 Reactor Pressure Vessel Flaws to Forty Years (Design Service Lifetime)" which is Attachment 3 to your February 17, 1998, letter:

"As operation continues past 12 EFPY, and vessel irradiation increases, the leak test temperature also increases as required to meet 10 CFR 50 Appendix G requirements for the vessel P-T curves. As a result, the $(T-RT_{NDT})$ temperature difference increases with time for non-beltline weld locations such as are evaluated here."

To substantiate this statement, please (a) provide the leak test temperature as a function of years of operation; (b) provide the fluence for Weld H23 to clearly rule out any meaningful embrittlement to Weld H23 due to fluence; and (c) confirm that the increase in T exceeds the increase in RT_{NDT} for Welds H34, H45, V4, and VFW during 40 years of operation.

- 4) On Page 11 of "Browns Ferry Unit III Flaw Evaluation Handbook" GENE-523-120-0992, (Reference 1 to Attachment 3 of your February 17, 1998, letter), Equation (2-5) is reported to be cited from the paper by Paris and Sih (Reference 11). Please verify its accuracy and provide the Equation No. from Paris' paper that you cited.