

August 13, 2004

10 CFR 50.55a(a)(3)(i)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of) Docket No. 50-259
Tennessee Valley Authority)

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - AMERICAN SOCIETY
OF MECHANICAL ENGINEERS (ASME) SECTION XI AND AUGMENTED
INSPECTIONS - RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION -
REQUEST FOR RELIEF, 1-ISI-19, REGARDING REACTOR PRESSURE
VESSEL (RPV) CIRCUMFERENTIAL SHELL WELDS**

In recent discussions with the NRC, the NRC Staff requested that TVA provide additional information to support its review of BFN Unit 1 Relief Request 1-ISI-19. BFN Unit 1 Relief Request 1-ISI-19 requests relief from the provisions of ASME Section XI, Table IWB-2500-1, Examination Category B-A, Item B1.11, requiring the examination of reactor vessel circumferential shell welds, and the (expedited) augmented examination requirements of 10 CFR 50.55a(g)(6)(ii)(A) for vessel circumferential welds. The additional information requested is provided in Enclosure 1 of this letter.

TVA submitted Relief Request 1-ISI-19 by letter dated May 12, 2004 (Reference 1). That request was based on the guidance contained in NRC Generic Letter (GL) 98-05, "Boiling Water Reactor Licensees Use of the BWRVIP-05 Report to Request Relief from Augmented Examination Requirements on Reactor Pressure Vessel Circumferential Shell Welds." Relief Request 1-ISI-19 was also consistent with TVA's corresponding request for BFN Unit 2, submitted by letter dated March 24, 2000 (Reference 2) and approved by the NRC by letter dated August 14, 2000 (Reference 3).

U.S. Nuclear Regulatory Commission
Page 2
August 13, 2004

However, based on their review, the NRC Staff indicated it needed additional information to complete its review of BFN Unit 1 Relief Request 1-ISI-19. The requested information is provided in the enclosure to this letter.

There are no new commitments contained in this letter. If you have any questions, please telephone me at (256) 729-2636.

Sincerely,

Original signed by:

T. E. Abney
Manager of Licensing
and Industry Affairs

References:

1. TVA letter, T. E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - Unit 1 - American Society Of Mechanical Engineers (ASME) Section XI And Augmented Inspections - Request For Relief, 1-ISI-19, Regarding Reactor Pressure Vessel (RPV) Circumferential Shell Welds," dated May 12, 2004.
2. TVA letter, T. E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - Unit 2 - American Society Of Mechanical Engineers (ASME) Section XI and Augmented Inspections - Request for Relief, 2-ISI-9, Regarding Reactor Pressure Vessel (RPV) Circumferential Shell Welds, (TAC No. MA8424)," dated March 24, 2000.
3. NRC letter, R. P. Correia to J. A. Scalice (TVA), "Browns Ferry Nuclear Plant Unit 2, Relief Request 2-ISI-9, Alternatives for Examination of Reactor Pressure Vessel Shell Welds (TAC No. MA8424)," dated August 14, 2000.

cc: See Page 3

U.S. Nuclear Regulatory Commission
Page 3
August 13, 2004

Enclosure

cc: (Enclosure):

(Via NRC Electronic Distribution)
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-3415

Mr. Stephen J. Cahill, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

NRC Senior Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, AL 35611-6970

Kahtan N. Jabbour, Senior Project Manager
U.S. Nuclear Regulatory Commission
(MS 08G9)
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852-2739

ENCLOSURE

**TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 1
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
SECTION XI, INSERVICE (ISI) AND AUGMENTED INSPECTION PROGRAM
(FIRST TEN YEAR INSPECTION INTERVAL)**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING
REQUEST FOR RELIEF 1-ISI-19**

The following provides TVA's responses to the NRC Staff questions concerning BFN Unit 1 Relief Request 1-ISI-19 submitted to the NRC by letter dated May 12, 2004 (Reference 1).

- (1) Did the licensee perform a volumetric examination during the first ten year inspection interval of all shell welds in accordance with the requirements of paragraph IWA-2500, of ASME Section XI, 1995 Edition, 1996 Addenda?

Response

No. The shell weld examinations performed to date were performed prior to the current BFN Unit 1 extended outage which began in 1985. These examinations were performed in accordance with the initial code of record, ASME Section XI, 1971 Edition, Summer 1971 Addenda and later updated for the second period to the ASME Section XI 1974 Edition with Addenda through Summer 1975, with no indications identified.

- (2) Augmented volumetric examination of RPV shell welds is required per 10 CFR 50.55a (g) (6) (ii) (A). The licensee should identify, if this examination has been performed or when this examination will be performed for all axial shell welds.

Response

The reactor vessel shell weld examinations required in accordance with 10 CFR 50.55a(g) (6) (ii) (A) will be performed for all axial shell welds prior to restart of BFN Unit 1 from its current outage.

- (3) Table 2 lists the 32 effective full power years fluence value for weld C-1-2. Also, the submittal stated that the fluence value was obtained using a methodology consistent with the guidance in RG 1.190. Please substantiate the proposed fluence value and the method used by providing a reference or statement

for the method used and the associated parameter values.

Response

General Electric Nuclear Energy (GENE) performed the fluence calculations for BFN Unit 1 using the 2-D discrete ordinates methodology described in NEDO-32983-A, "GE Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluations," Revision 0, December 2001. The NRC reviewed and approved that methodology, transmitting its safety evaluation by letter from S. A. Richards (NRC) to J. F. Klapproth (GE) by letter dated September 14, 2001. The NRC acknowledged that GE's method adheres to the guidance contained in NRC Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence."

Key inputs to the calculation and results were as follows:

KEY INPUTS	
Number of fuel assemblies in the core	764
Fuel assembly type	GE14
Assumed operation	32 EFPY
Vessel thickness	6.13 inches
KEY RESULTS	
RPV ID peak flux (>1.0MeV)	1.40 E ⁹ n/ cm ² -sec
RPV ID peak flux azimuth	27.25°
RPV ID peak flux location	100.9 inches above bottom of active fuel
Ratio peak/Girth Weld location	0.81
RPV ID peak surface fluence ¹	1.42 E ¹⁸ n/cm ²
RPV ID peak surface fluence at Girth Weld location	1.15 E ¹⁸ n/cm ²
Girth Weld peak fluence at 1/4T	.0799E ¹⁹ n/cm ²

Notes:

1. RPV ID peak surface fluence raised 1% (1.41E¹⁸ n/cm² to 1.42 E¹⁸ n/cm²) to account for MELLLA+ operation.

Reference:

1. TVA letter, T. E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - Unit 1 - American Society Of Mechanical Engineers (ASME) Section XI And Augmented Inspections - Request For Relief, 1- ISI-19, Regarding Reactor Pressure Vessel (RPV) Circumferential Shell Welds," dated May 12, 2004.