

February 22, 2006

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Washington, D.C. 20555-0001

Gentlemen:

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

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING SUPPLEMENTAL RESPONSE TO GENERIC LETTER 88-01, NRC POSITION ON INTERGRANULAR STRESS CORROSION CRACKING IN BWR AUSTENITIC STAINLESS STEEL PIPING (TAC NO. MC4891)

This letter provides TVA's responses to the NRC request for additional information (Reference 1) regarding TVA's supplemental responses to Generic Letter (GL) 88-01, NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping.

On July 21, 2004 (Reference 2), TVA provided a supplemental response to GL 88-01 regarding IGSCC for BFN Unit 1. As requested in the GL, this response included:

- (1) Plans regarding long-term mitigation of IGSCC,
- (2) A discussion of the inservice inspection program,
- (3) A verification of the adequacy of the BFN Technical Specifications,
- (4) Confirmation of leakage detection methods, and
- (5) Reporting requirements to NRC for flaws.

In addition, to assist NRC review, TVA provided a comparison between the welds and categorization proposed for Unit 1 and those approved by NRC for Units 2 and 3.

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On April 25, 2005, in response to an informal NRC request, TVA provided additional information regarding the use of weld overlays and an update to the weld list (Reference 3).

The enclosure to this letter provides TVA's responses to the NRC's February 3, 2006 request for additional information regarding hydrogen water chemistry, weld classification, and personnel qualifications.

If you have any questions about this submittal, please contact me at (256) 729-2636. I declare under penalty of perjury that the foregoing is true and correct. Executed on February 22, 2006.

Sincerely,

Original signed by:

William D. Crouch
Manager of Licensing
and Industry Affairs

References:

1. NRC letter to TVA, dated February 3, 2006, "Browns Ferry Nuclear Plant, Unit 1 - Request for Additional Information Regarding Supplemental Response to Generic Letter 88-01, NRC Position on Intergranular Stress Corrosion Cracking in BWR [Boiling Water Reactor] Austenitic Stainless Steel Piping (TAC No, MC4891)."
2. TVA letter to NRC, dated July 21, 2004, "Browns Ferry Nuclear Plant (BFN) Unit 1 - Supplemental Response to Generic Letter 88-01, NRC Position on Intergranular Stress Corrosion Cracking in BWR Austenitic Stainless Steel Piping."
3. TVA letter to NRC, dated April 25, 2005, "Browns Ferry Nuclear Plant (BFN) Unit 1 - Response to Request for Additional Information for Generic Letter 88-01, NRC Position on Intergranular Stress Corrosion Cracking in BWR Austenitic Stainless Steel Piping."

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Enclosure

cc (Enclosure):

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Enclosure

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**TENNESSEE VALLEY AUTHORITY (TVA)
BROWNS FERRY NUCLEAR PLANT UNIT 1
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING TVA'S SUPPLEMENTAL RESPONSE TO GENERIC LETTER 88-01,
NRC POSITION ON INTERGRANULAR STRESS CORROSION CRACKING IN BWR
AUSTENITIC STAINLESS STEEL PIPING**

BACKGROUND

On July 21, 2004 (Reference 1), TVA provided a supplemental response to Generic Letter (GL) 88-01, NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping regarding IGSCC for BFN Unit 1. As requested in the GL, this response included:

- (1) Plans regarding long-term mitigation of IGSCC,
- (2) A discussion of the inservice inspection program,
- (3) A verification of the adequacy of the BFN Technical Specifications,
- (4) Confirmation of leakage detection methods, and
- (5) Reporting requirements to NRC for flaws.

In addition, to assist NRC review, TVA provided a comparison between the welds and categorization proposed for Unit 1 and those approved by NRC for Units 2 and 3.

On April 25, 2005, in response to an informal NRC request, TVA provided additional information regarding the use of weld overlays and an update to the weld list (Reference 2).

On February 3, 2006, NRC issued a request for additional information (Reference 3) regarding TVA's supplemental responses to GL 88-01. Provided below is a response to each specific NRC request.

RESPONSES TO NRC REQUESTS

NRC Question:

1. Your July 21, 2004, submittal stated that hydrogen water chemistry (HWC) is being implemented in Unit 1 to reduce susceptibility to intergranular stress corrosion cracking (IGSCC). Please clarify that if credit for HWC is being taken in the inspection schedule, that adequate HWC is being maintained during operation as discussed in Boiling Water Reactor Vessel and Internals Project (BWRVIP)-75.

TVA Response:

The inspection schedule for IGSCC weldments follows BWRVIP-75 guidelines, including HWC effectiveness, where credit for HWC is taken.

NRC Question:

2. In Table 1, two Category D welds (DRHR-1-3 and DRHR-1-12) have limited accessibility for inspection. Please clarify or provide justification for the reason that they are in Category D and not in Category G.

TVA Response:

IGSCC Category D weldments are defined as those not made with resistant materials and have not been given a Stress Improvement (SI) treatment, but have been inspected by examiners and procedures in conformance with section 5.2.1 (NUREG-0313, Rev 2), and found to be free of cracks. IGSCC Category G weldments are those not made of resistant materials, have not been given an SI treatment and have not been inspected in accordance with Section 5.2.1 (NUREG-0313, Rev. 2). Stress improved welds that were not inspected after the SI treatment are considered to be Category G weldments until the post-SI inspection has been performed.

The two Category D welds, DRHR-1-3 and DRHR-1-12, are composed of nonresistant materials and have had no stress improvement. This categorization is consistent with Browns Ferry Units 2 and 3 for their corresponding weldments. These weldments were examined to the maximum extent practical utilizing qualified personnel and procedures in accordance with their classification as Category D.

NRC Question:

3. Please clarify that for Category G and D welds listed in Table 1 that are having Mechanical Stress Improvement Process (MSIP) performed, an inservice examination will be performed prior to performing MSIP (in addition to preservice examination) to ensure that no unacceptable flaws are present.

TVA Response:

Ultrasonic examinations that are capable of IGSCC detection are performed prior to application of MSIP to ensure a flaw does not exist which could be propagated in the weldment during the application of the stress improvement process. Existing weldments that were made prior to the current BFN Unit 1 recovery effort, which were categorized as Category G or D, were ultrasonically examined utilizing qualified personnel and procedures for IGSCC detection both prior to application of MSIP and following MSIP application. The weldments made in the process of BFN Unit 1 recovery, for all IGSCC categories, were ultrasonically examined on a sampling basis (13 welds examined) prior to MSIP application and ultrasonically examined on a 100 percent basis following MSIP application. There were no relevant indications detected in the post-MSIP IGSCC examinations.

NRC Question:

4. In Table 1, please clarify why a number of Category D welds are characterized as new welds as all new piping is made of IGSCC resistant materials.

TVA Response:

There were two cases where replacement materials were initially categorized as Category D weldments. In the first case, existing cast stainless valves were re-furbished and re-installed in the system in conjunction with the installation of IGSCC resistant piping. The subsequent weldments were conservatively listed as Category D. A subsequent review of the NRC safety evaluation of BWRVIP-75, dated September 15, 2000, indicated that these weldments may be upgraded to Category A. In the second case, the IGSCC resistant piping was connected to non-resistant piping at penetrations. In this case, the weldment remains Category D, until stress improvement is performed and then it is re-classified as Category C.

NRC Question:

5. The first bullet of Section 1.0 in the enclosure to your July 21, 2004, letter discusses nondestructive inspections. Please verify that the personnel qualification program for inspecting for IGSCC is in accordance with the Tri-Party Agreement (i.e., requalification every 3 years). This is discussed in a letter to Mr. K. P. Donovan (Boiling-Water Reactor Owners' Group) from Mr. William Russell, Nuclear Regulatory Commission, dated March 1, 1996.

TVA Response:

The personnel qualification program for IGSCC examinations is in accordance with the Tri-party agreement (re-qualification every 3 years).

REFERENCES

1. TVA letter to NRC, dated July 21, 2004, "Browns Ferry Nuclear Plant (BFN) Unit 1 - Supplemental Response to Generic Letter 88-01, NRC Position on Intergranular Stress Corrosion Cracking in BWR Austenitic Stainless Steel Piping."
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