

NRR-PMDAPEm Resource

From: Saba, Farideh
Sent: Monday, July 06, 2015 8:49 AM
To: Williams, Gordon Robert (grwilliams1@tva.gov)
Cc: Schrull, Edward Dustin (edschrull@tva.gov); Purtscher, Patrick
Subject: RAs for Browns Ferry Unit 3 P/T curves LAR
Attachments: MF5659 BFN3 RAsRev2 for P-T curves.docx

Importance: High

Gordon,

By letter dated January 27, 2015, Tennessee Valley Authority (TVA), the licensee for Browns Ferry Nuclear Plant, Unit 3 (BFN3), submitted a license amendment request (LAR) to modify TS 3.4.9, "Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits" (Agencywide Document Access and Management System (ADAMS) Accession Numbers ML15040A698). This proposed amendment would modify TS 3.4.9 from the current limits applicable to 20 Effective Full Power Years (EFPYs) and > 20 EFPY to ≤ 28 EFPY to the proposed limits that would be applicable to 38 EFPY and > 38 EFPY to ≤ 54 EFPY.

The Nuclear Regulatory Commission (NRC) staff has reviewed TVA's submitted LAR and determined that additional information is needed to complete its review. The NRC staff's request for additional information is attached. As we agreed, please response to these RAs by August 14, 2015.

Thanks,

Farideh
Farideh E. Saba, P.E.
Senior Project Manager
NRC/ADRO/NRR/DORL
301-415-1447
Mail Stop O-8G9A
Farideh.Saba@NRC.GOV

Tracking:

Recipient

Williams, Gordon Robert (grwilliams1@tva.gov)

Schrull, Edward Dustin (edschrull@tva.gov)

Purtscher, Patrick

Read

Read: 7/6/2015 9:18 AM

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Subject: RAls for Browns Ferry Unit 3 P/T curves LAR
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From: Saba, Farideh

Created By: Farideh.Saba@nrc.gov

Recipients:

"Schrull, Edward Dustin (edschrull@tva.gov)" <edschrull@tva.gov>

Tracking Status: None

"Purtscher, Patrick" <Patrick.Purtscher@nrc.gov>

Tracking Status:: Response: Read : 7/6/2015 9:18:00 AM

"Williams, Gordon Robert (grwilliams1@tva.gov)" <grwilliams1@tva.gov>

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Options

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Return Notification: No
Reply Requested: Yes
Sensitivity: Normal
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REQUEST FOR ADDITIONAL INFORMATION
BROWNS FERRY NUCLEAR PLANT, UNIT 3
REQUEST TO MODIFY TECHNICAL SPECIFICATION 3.4.9,
“RCS PRESSURE AND TEMPERATURE (P/T) LIMITS”
TENNESSEE VALLEY AUTHORITY
DOCKET NO. 50-296 TAC NO. MF5659

By letter dated January 27, 2015, Tennessee Valley Authority (TVA), the licensee for Browns Ferry Nuclear Plant, Unit 3 (BFN3), submitted a license amendment request to modify TS 3.4.9, “Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits” (Agencywide Document Access and Management System (ADAMS) Accession Numbers ML15040A698). This proposed amendment would modify TS 3.4.9 from the current limits applicable to 20 Effective Full Power Years (EFPYs) and > 20 EFPY to ≤ 28 EFPY to the proposed limits that would be applicable to 38 EFPY and > 38 EFPY to ≤ 54 EFPY.

Based on the review of the amendment request, the Reactor Systems Branch (SRXB) has determined that additional information is required regarding the neutron fluence calculations.

SRXB – RAI 1

BAW-1845, “Browns Ferry Core Region Materials Information (Units 1, 2, and 3),” dated August 1984, provides information on the materials and fabrication information for the Browns Ferry reactor vessel core region components. Figure 2-3, Browns Ferry 3 RV Fabrication Information Shell Course No.1 and Shell Course No. 2, describes axial welds locations and fabrication. There are 6 axial welds within the region of the fuel. The Pressure-Temperature Limits Report(PTLR) provides the Peak inner diameter (I.D.)and Peak 1/4 thickness(1/4T)neutron fluence values for the axial and circumferential welds. The NRC staff requests that the licensee provide the BWR neutron fluence map showing the location of the azimuthal and axial fluence variation with respect to all welds, axial welds and the circumferential weld.

SRXB – RAI 2

The Browns Ferry Nuclear Plant, Unit 1 (BFN1) P/T Limits submittal (ML13358A064), dated December 18, 2013, is referenced in Section 4.2, Precedent, of the licensee’s application. The NRC staff noted that the axial weld peak neutron fluence values at 38 EFPY for BFN1 when compared to the same axial welds for BFN3 at 54 EFPY peak neutron fluence values are similar. Additionally, the NRC staff approved a 5.00% power uprate for BFN3 in 1998. BFN1 returned to operating status with a 5.00% power uprate in 2007. The variance in periods of operation affects the EFPY calculated for Units 1 and 3. The NRC staff requests the following from the licensee:

- a) Provide clarification regarding the calculated neutron fluence values for BFN1 and BFN3, given the different operating history for each unit;
- b) Provide information for the neutron flux per fuel cycle for the peak axial weld fluence location at each unit along with the calendar dates for each unit through the period of applicability, 38 EFPY for Unit 1 and 54EFPY for Unit 3;
- c) Provide an explanation for the similarity between the 54 EFPY axial welds Peak neutron fluence values for BFN3 and the 38 EFPY axial welds Peak neutron fluence values for BFN1, including any neutron fluence calculation data to support the explanation.

SRXB – RAI 3

Regulatory Guide 1.190 (RG 1.190), "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," states under Section 1.2, Core Neutron Source, the following:

The peripheral assemblies, which contribute the most of the vessel fluence, have strong radial power gradients, and these gradients should not be neglected. In the case of PWRs, the fuel pins closest the core periphery tend to have reduced relative power while for BWRS the peripheral fuel pins may have increased relative power. The pin-wise source distribution should be used for best-estimate calculations and the peripheral-assembly pin-wise source data should be obtained from core depletion calculations. The pin-wise source distribution should represent the absolute source distribution in the assembly.

The NRC staff requests that the licensee provide an explanation for how the neutron fluence calculation was updated to reflect the ATRIUM-10 specific fuel bundles located on the periphery.