

From: Hon, Andrew
Sent: Tuesday, September 15, 2015 11:19 AM
To: Williams, Gordon Robert (grwilliams1@tva.gov)
Cc: Schrull, Edward Dustin (edschrull@tva.gov); Hardgrove, Matthew; Patel, Amrit; Saba, Farideh
Subject: RAI - Browns Ferry 3 TECHNICAL SPECIFICATION 3.4.9 LAR (TAC MF5659)
Attachments: RAIsRev3.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Gordon,

Based on the clarification calls on September 11, 2015, and today, we understand:

- The RAI as written is clear and not rewording to clarify is needed.
- It does not contain sensitive information that should be withheld from the public.
- TVA will respond by October 23, 2015

Andy

Andy Hon, PE

*Project Manager (Brunswick Nuclear Plant 1 & 2, Sequoyah Nuclear Plant 1 & 2, Acting for Browns Ferry)
Plant Licensing Branch II-2*

Division of Operating Reactor Licensing

Office of Nuclear Reactor Regulation

301-415-8480

OWFN O8H19

Mail Stop O8G-9a

andrew.hon@nrc.gov

From: Saba, Farideh
Sent: Thursday, September 03, 2015 4:19 PM
To: Williams, Gordon Robert (grwilliams1@tva.gov) <grwilliams1@tva.gov>
Cc: Schrull, Edward Dustin (edschrull@tva.gov) <edschrull@tva.gov>; Hon, Andrew <Andrew.Hon@nrc.gov>; Hardgrove, Matthew <Matthew.Hardgrove@nrc.gov>
Subject: RAIsRev3.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 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 Nuclear Regulatory Commission (NRC) staff has determined that additional information is required regarding the neutron fluence calculations.

Please let Andy and me know by COB tomorrow, if you request a clarification with the staff. Also, please confirm that the draft RAI does not contain any sensitive information. We would like to receive your response within 30 days from today (10/02/15). Please let us know if you cannot support this response date.

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

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 Nuclear Regulatory Commission (NRC) staff has determined that additional information is required regarding the neutron fluence calculations.

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The NRC staff reviewed the neutron fluence calculations and uncertainty analysis performed using GE Licensing Topical Report NEDO-32983P-A, Revision 2, "General Electric Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluations," dated January 2006, (ML072480121). It is not clear that when the neutron fluence method in NEDO-32983P-A, Revision 2, was approved, that it included detailed consideration of important phenomena associated with neutron fluence calculations outside the beltline region of the reactor pressure vessel. Recent NRC staff experience with license renewal applications has shown that the neutron fluence uncertainties for the upper regions of the reactor pressure vessel are highly sensitive to the assumed above core void fraction distribution and can lead to high uncertainties in these regions. Furthermore, it was seen that components located outside of the beltline and exceeding a neutron fluence of 1×10^{17} n/cm² could become limiting based on estimated uncertainties; refer to discussions in the documents at ADAMS Numbers ML15036A564 and ML1528A552 for additional background information.

Enclosure 3 of the application, NEDO-33857, "Pressure and Temperature Limits (PTLR) Up to 38 and 54 Effective Full Power Years", contains two tables for BFN3 Adjusted Reference Temperatures for 38 and 54 EFPY. Table B-4, BFNP Unit 3 Adjusted Reference Temperature for up to 38 EFPY, states that the nozzles forging $\frac{1}{4}$ T fluence is 3.19×10^{17} n/cm². Table B-5, BFNP Unit 3 Adjusted Reference Temperature for up to 54 EFPY, states that the nozzles forging $\frac{1}{4}$ T fluence is 4.67×10^{17} n/cm².

If comparisons to benchmark data (i.e., calculated-to-measured dosimetry activities) exists supporting the validation of neutron fluence calculations outside of the beltline and above the core, the NRC staff requests that these comparisons be provided.

Alternatively, the NRC staff requests that the licensee provide additional information on the plant-specific sensitivity analyses performed for BFN3. Specifically, show how the variability in above core water density is treated as part of the analytic uncertainty analysis used to estimate the potential variability in fluence calculations. Include the nominal above core water density assumed and its potential variation; also, provide the bases for these assumptions. If adjustments to calculated neutron fluence values are shown to be necessary, indicate whether the proposed *P/T* curves would be affected, and if so modify them accordingly.