



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 30, 2015

LICENSEE: Tennessee Valley Authority

FACILITY: Browns Ferry Nuclear Plant, Units 1, 2, and 3

SUBJECT: SUMMARY OF NOVEMBER 10, 2015, MEETING WITH TENNESSEE VALLEY AUTHORITY REGARDING THE PLANNED EXTENDED POWER UPRATE LICENSE AMENDMENT REQUEST FOR BROWNS FERRY NUCLEAR PLANT (CAC NOS. MF6741, MF6742, AND MF6743)

On November 10, 2015, a Category I public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Tennessee Valley Authority (TVA, the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the Browns Ferry Nuclear Plant Units 1, 2, and 3 (BFN) Extended Power Uprate (EPU) License Amendment Request (LAR) in terms of the amendment submittal, review schedule and logistics, the staffs acceptance review, future audits, supplemental documentation, and to provide an overview of TVA's portal and significant technical issues needing clarification and supplement information. The meeting notice and agenda, dated October 26, 2015, is available in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML15299A234. A list of attendees is enclosed.

The licensee presented informational slides at the meeting. The licensee's presentation document, which was provided prior to the meeting and attached to the meeting notice, is publicly available under ADAMS Accession No. ML15308A100. The licensee's presentation began with the planned review time line for the LAR and anticipated dates for implementation of the EPU. The licensee submitted the LAR in September of 2015. If the LAR is approved, the licensee plans to implement the EPU in the spring of 2018 for Unit 3, the fall of 2018 for Unit 1, and in the spring of 2019 for Unit 2.

The licensee then proceeded with details on the BFN EPU submittal format, content, and approach. The licensee indicated that the BFN EPU application followed the same process and format of approved Brunswick Steam Electric Plants Units 1 and 2 EPU, which also involved AREVA fuel. The BFN EPU incorporates format guidance from RS-001 "Review Standard for Extended Power Uprates," lessons learned from applicable NRC requests for additional information (RAI), operating experience from the Institute of Nuclear Power Operations, benchmarking results from recent Boiling Water Reactor (BWR) EPU LARs, lessons learned from BWR owners groups, document quality improvements from enhanced verification and validation processes, and expanded information in technical areas of interest such as steam dryer replacements and containment accident pressure issues.

Next the licensee detailed the results of seven pre-application meetings where the licensee gathered feedback from the NRC and provided associated resolution and disposition within the LAR application. These meetings touched on technical areas including fuel, startup test plans, steam dryer replacement, containment accident pressure credit elimination, probabilistic risk assessment, and flow induced vibration monitoring.

The meeting then proceeded with an overview of the licensee's electronic reading room, which allows read-only access to NRC staff to review drawings, calculations, and other documents. The reading room is only for staff review of documents and does not replace the formal NRC RAI process. Documents that are relied upon by the staff to make their technical determination or referenced in the safety evaluation will be requested on the docket via the RAI process.

The licensee next presented proposed dates for a series of three audits to facilitate the staff's review of the EPU LAR occurring in February and March 2016, with each audit to be located in the local Rockville, Maryland area to facilitate NRC staff's participation.

At two segments of the public meeting the staff and the licensee discussed technical areas that were of particular interest to the staff or were identified as areas where clarification and supplemental information was needed. These areas include the BFN steam dryer replacements, containment accident pressure credit elimination, spent fuel pool (SFP) criticality analysis, and the analysis of the "MICROBURN-B2" code. For the steam dryer replacements, attention is placed on safety impacts and failures on main steam system piping and safety relief valve flow induced vibrations and acoustic resonances. For the containment accident pressure credit elimination, the residual heat removal heat exchanger's fouling factor is the review focus. The meeting gravitated more significantly on the latter two topics. For the SFP criticality analysis, the review will focus on higher decay heat from the EPU that could potentially raise the spent fuel pool temperature and prevention of fuel criticality during fuel movement. In terms of "MICROBURN-B2," said code is a software program used to set initial conditions of plant operation. It was identified that low core flow causes nonconvergence of hydraulic solutions and therefore incorrect set condition solutions.

The following action items were developed during the meeting:

Electronic Reading Room

- NRC will provide names and email addresses of its staff and contractor reviewers of the EPU LAR for TVA to grant user access to the electronic reading room.

Spent Fuel Pool Criticality Analysis

- TVA will submit in its mid-December 2015 supplement, either the BFN SFP Criticality Safety Analysis (CSA) of record, or a summary of the SFP CSA of record, including a discussion of the methodology used,
- TVA will address in its mid-December 2015 supplement, a confirmation that, with respect to sensitivity studies for the parameters of the SFP CSA potentially affected by EPU (specifically, control history sensitivity), uncontrolled history produces the limiting result for the case of a leaking fuel assembly being discovered at startup and then suppressed for the full length of the 24 month cycle.

- TVA will address in its mid-December 2015 supplement whether or not an aging management program for the Boral neutron absorbers is used in the SFP racks and credited in the Browns Ferry SFP CSA.

MICROBURN-B2 Issues

- TVA submitted an interim report addressing MICROBURN-B2 impacts on the EPU LAR on November 13, 2015 (ADAMS Accession No. ML15317A361). In addition, TVA will submit revisions to the Fuel Uprate Safety Analysis Report and Representative Reload Report reflecting resolution of MICROBURN-B2 issues in its mid-December 2015 supplement.
- TVA will provide, in its mid-December 2015 supplement, more detailed information to facilitate staff understanding of how, during unit startup and a low flow condition, the MICROBURN-B2 code convergence issue does not impact "POWERPLEX" core monitoring results.
- TVA will address, in its mid-December 2015 supplement, any EPU impacts to AREVA analysis code "STAIF."
- TVA will address, in its mid-December 2015 supplement, how MICROBURN-B2 is being used and why the current version and its use is consistent with the safety evaluation report for the associated NRC-approved topical report.
- AREVA will plan followup proprietary discussions with NRC regarding the MICROBURN-B2 issues.

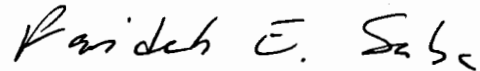
Electrical

- TVA will include,¹ in a mid-January 2016 supplement, a final interconnect system impact study and final updates to the "GDC [General Design Criterion]-17" study (i.e., the transmission stability study) reflecting modifications resulting from the interconnect system impact study.

Overall, the licensee reassured full and prompt cooperation with quality submissions on the staff's requests. The staff countered with a commitment for a thorough and open review. Both parties were confident that such cooperation would better ensure a streamlined and efficient review.

¹ As the result of followup discussions between the NRC staff and the licensee, this action item was revised from providing draft studies in December 2015 to submitting the final ones in January 2016.

There were no members of the public that were in attendance at the meeting or by telephone. Public Meeting Feedback forms were not received. Please direct any inquiries to me at 301-415-1447 or Farideh.Saba@nrc.gov.



Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, 50-296

Enclosure:
List of Attendees

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LIST OF ATTENDEES

NOVEMBER 10, 2015, PUBLIC MEETING WITH TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

LICENSE AMENDMENT REQUEST REGARDING EXTENDED POWER UPRATE

Name	Organization
Ben Beasley	Nuclear Regulatory Commission (NRC)
Farideh Saba	NRC
Briana Grange	NRC
Mark Blumberg	NRC
Russ Haskell	NRC
Amrit Patel	NRC
Muhammad Razzaque	NRC
George Thomas	NRC
Ahsan Sallman	NRC
Dan Warner	NRC
Kent Wood	NRC
Chakrapani Basavaraju	NRC
Chris Jackson	NRC
Jeremy Dean	NRC
Emmanuel Sayoc	NRC
Michael Breach	NRC
Victoria Huckabay	NRC
Aloysius Obodoako*	NRC
Todd Hilsmeier*	NRC
Dave Dumbacher*	NRC
Eric Stamm*	NRC
Joe A. March-Leuba (contactor)*	NRC Contractor
Gerard Doyle	Tennessee Valley Authority (TVA)
Pete Donahue	TVA
Jeff Kimberlin	TVA
Greg Storey	TVA
Dan Green	TVA
Ed Schrull	TVA
Joseph Bashore*	TVA
David Melear*	TVA
David Cook*	TVA
Clayton Haney*	TVA
Anthony Bechem*	TVA
Eric Frevold*	TVA
Ron King*	TVA
Michael Dick*	TVA

Enclosure

Gary Chung*	TVA
Dan Kearnaghan*	TVA
Dan Pappone*	General Electric Hitachi (GEH)
Tao Wu*	GEH
Brian Volls*	Sargent & Lundy
David McBurney*	AREVA
Ralph Grummer*	AREVA
Alan Meginnis*	AREVA
Dan Tinkler*	AREVA

*Participated by phone

There were no members of the public that were in attendance at the meeting or by telephone. Public Meeting Feedback forms were not received. Please direct any inquiries to me at 301-415-1447 or Farideh.Saba@nrc.gov.

/RA/

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
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NRC-001

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NAME	ESayoc	FSaba	BClayton	BBeasley	FSaba
DATE	11/24/15	11/24/15	11/24/15	11/25/15	11/30/15

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