



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

June 9, 2015

LICENSEE: Tennessee Valley Authority

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

SUBJECT: SUMMARY OF MAY 12, 2015, MEETING WITH TENNESSEE VALLEY AUTHORITY REGARDING PRE-SUBMITTAL OF EXTENDED POWER UPRATE LICENSE AMENDMENT REQUEST - CONTAINMENT ACCIDENT PRESSURE CREDIT ELIMINATION AND EMERGENCY CORE COOLING SYSTEM PUMP NET POSTIVE SUCTION HEAD ANALYSIS FOR BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 (TAC NOS. MF4851, MF4852, AND MF4853)

On May 12, 2015, a Category 1 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 for TVA to discuss with NRC staff containment accident pressure (CAP) credit elimination and an emergency core cooling system (ECCS) pump net positive suction head (NPSH) analysis as it relates to a forthcoming extended power uprate (EPU) license amendment request (LAR) for Browns Ferry Nuclear Plant, Units 1, 2, and 3 (BFN). The meeting notice and agenda dated April 23, 2015, is available in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML15126A409. The licensee provided presentation slides prior to the meeting that are available in ADAMS at Accession No. ML15126A406. A list of attendees is enclosed.

TVA presented an overview of the slides and its purpose for the meeting, reiterating that a new consolidated EPU LAR would supersede previous submittals (ADAMS Accession Nos. ML042800186 and ML041840301) which TVA withdrew on September 18, 2014 (ADAMS Accession No. ML14265A487). TVA stated that it would employ knowledge gained through the previous EPU LARs submission process (including content generated through NRC staff requests for additional information and lessons learned from the industry). TVA noted that the forthcoming EPU LAR submittal will conform to NRC Review Standard-001, Revision 0, "Review Standard for Extended Power Uprates" (ADAMS Accession No. ML033640024) and that an improved submittal verification process internal to TVA will be executed to ensure completeness and accuracy. TVA provided an overview of its proposed submittal schedule indicating an October 2015 and October 2017 target date for LAR submittal and NRC issuance of the amendments, respectively. The EPU implementation target is 2018 to 2019.

TVA then focused discussion to ECCS pump NPSH analyses and CAP credit elimination to mitigate potential future questions related to the technical presentation of these topics in the forthcoming BFN EPU LAR. TVA described that unlike its previous EPU submittal, the forthcoming EPU LAR will not credit CAP, and that the LAR will follow the guidance in SECY-11-0014, "The Use of Containment Accident Pressure in Reactor Safety Analysis" (ADAMS Accession No. ML102110167). TVA presented background on the history (2004 – present) of

their interactions with the NRC regarding CAP in the context of EPU at BFN and additional regulatory alignment guidance currently used. TVA discussed the General Electric Nuclear Energy Licensing Topical Report, NEDC-33004P, "Constant Pressure Power Uprate," and documents demonstrating historical precedent of a 21-percent uncertainty margin for EPU in lieu of a plant-specific uncertainty margin analysis.

TVA also presented their methodology for calculating available and required NPSH, as well as a summary of credited pumps for each event scenario analyzed (per SECY-11-0014, Enclosure 1): 1) short-term (0 - 10 minutes) design-basis accident (DBA) loss-of-coolant accident (LOCA); 2) long-term (greater than 10 minutes) DBA LOCA; 3) station blackout (SBO); anticipated transient without scram; and 4) a fire event. Key changes/modifications and assumptions for each event scenario were provided. During discussion of key inputs and assumptions, the NRC staff referred to a past EPU pre-submittal meeting in which the sensitivity of initial wetwell relative humidity on suppression pool temperature response was presented for Appendix R, "Fire Analysis." The NRC staff suggested TVA may use realistic inputs for special events, as discussed in SECY-11-0014, Enclosure 1.

TVA discussed the effect of fouling resistance on residual heat removal (RHR) heat exchangers heat transfer coefficient (or K-factor) for design and EPU conditions. TVA reported a lower value for fouling resistance at EPU conditions, prompting NRC staff questions regarding the origin of this decrease. TVA indicated that in recent performance testing of two heat exchanges, it was found that the worst fouling resistance was less than the value that has been used in design. The lower fouling factor supported CAP elimination. A summary table of preliminary results was provided with values for RHR heat exchangers K-factor, peak suppression pool temperature, available and required NPSH, and margin. In response to NRC questioning, TVA indicated margin results are dependent on flow rates and that these flow rates will be included in the forthcoming EPU LAR submittal to enable interpretation.

During a concluding question and answer session, NRC staff noted that the CAP elimination under EPU conditions is linked to a current National Fire Protection Association 805 LAR (Attachment X). NRC staff also advised that the licensee closely follow the ongoing Mitigation of Beyond Design-Basis Events rulemaking (www.regulations.gov Docket No. NRC-2014-0240), as it may impact their submittal. It was suggested that the forthcoming EPU LAR submittal clearly indicate page number references when referring to sections of the updated final safety analysis report pages as well as include designations for references to equivalent General Design Criteria when applicable.

Members of the public participated by phone. One member of the public commented on historical lessons learned from the "Lewis contention," a 1979 contention regarding Three Mile Island Nuclear Station, Unit 1. Public Meeting Feedback forms were not received.

Please direct any inquiries to Ms. Candace Pfefferkorn at 301-415-8395 or Candace.pfefferkorn@nrc.gov, or to me at 301-415-1447 or farideh.saba@nrc.gov.

A handwritten signature in black ink that reads "Farideh E Saba". The signature is written in a cursive style with a large initial 'F' and 'S'.

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, and 50-296

Enclosure:
List of Attendees

cc w/enclosure: Distribution via Listserv

LIST OF ATTENDEES

MAY 12, 2015, MEETING WITH TENNESSEE VALLEY AUTHORITY

REGARDING PRE-SUBMITTAL EXTENDED POWER UPRATE LICENSE AMENDMENT

REQUEST - CONTAINMENT ACCIDENT PRESSURE CREDIT ELIMINATION AND

EMERGENCY CORE COOLING SYSTEM PUMP NET POSITIVE SUCTION HEAD ANALYSIS

<p><u>U.S. NUCLEAR REGULATORY COMMISSION STAFF AND CONTRACTORS</u> Jerome Bettle Perry Buckberg Russell Haskell Shana Helton Eliza Mitchell Candace Pfefferkorn April Pulvirenti Farideh Saba Ahsan Sallman Diana Woodyatt</p>	<p><u>TENNESSEE VALLEY AUTHORITY STAFF AND CONTRACTORS</u> Peter Donahue Gerard Doyle Dan Green Jeffery Kimberlin Ed Schrull</p> <p><u>OTHER</u> John Elam* - Duke Energy-Progress William Freebairn* – Platts Nucleonics Week Marvin Lewis* – Public</p>
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* By phone

Enclosure

Please direct any inquiries to Ms. Candace Pfefferkorn at 301-415-8395 or candace.pfefferkorn@nrc.gov, or to me at 301-415-1447 or farideh.saba@nrc.gov.

/RA/

Farideh E. Saba, Senior Project Manager
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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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ADAMS Accession No.: ML15154B483 Meeting Notice ML15126A409 Handout ML15126A406

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NAME	CPfefferkorn (FSaba for)	FSaba	LRonewicz	BClayton
DATE	6/9/15	6/6/15	6/4/15	6/4/15
OFFICE	NRR/DSS/SCVB/BC	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM	
NAME	RDennig	SHelton	FSaba	
DATE	6/4/15	6/7/15	6/9/15	

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