July 05, 2007

Mr. William R. Campbell
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3 - REQUEST FOR ADDITIONAL INFORMATION FOR EXTENDED POWER UPRATE - ROUND 13 (TS-431-S AND TS-418) (TAC NOS. MD5262, MD5263, AND MD5264)

Dear Mr. Campbell:

By letters dated June 28 and 25, 2004, the Tennessee Valley Authority (TVA, the licensee) submitted amendment requests for Browns Ferry Nuclear Plant (BFN), Units 1, 2 and 3, as supplemented by letters dated August 23, 2004, February 23, April 25, June 6, and December 19, 2005, February 1 and 28, March 7, 9, 23 and 31, April 13, May 5 and 11, June 12, 15, 23 and 27, July 6, 21, 24, 26, and 31, December 1, 5, 11 and 21, 2006, January 31, February 16, and 26, and April 6, 18 and 24, 2007.

The proposed amendments would change the BFN operating licenses for Units 1, 2 and 3 to increase the maximum authorized power level by approximately 15 percent. In a letter dated November 7, 2006, TVA reported changes in the modeling used to determine compliance with emergency core cooling system requirements. The enclosed Request for Additional Information is related to this submittal.

A response to the enclosed Request for Additional Information is needed before the Nuclear Regulatory Commission staff can complete the review. This request was discussed with Mr. David Langley of your staff on June 4, 2007, and it was agreed that TVA would respond within 30 days of issuance of this letter.

If you have any questions, please contact me at (301) 415-2315.

Sincerely,

/RA/

Eva A. Brown, 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: Request for Additional Information

cc w/enclosure: See next page

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ADAMS Accession No. ML071780190 NRR-088

OFFICE	LPL2-2/PM	LPL2-2/LA	DSS/SBWB/BC	DRA/APLA/BC	LPL2-2/BC
NAME	EBrown	BClayton	GCranston	MRubin	TBoyce
DATE	07 / 05 /07	07 / 02 /07	07 / 05 /07	06 / 29 /07	07/ 05 /07

OFFICIAL RECORD COPY

Letter to William R. Campbell, Jr. from Eva A. Brown dated July 5, 2007

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 - REQUEST FOR ADDITIONAL INFORMATION FOR EXTENDED POWER UPRATE - ROUND 13 (TS-431-S AND TS-418) (TAC NOS. MD5262, MD5263 AND MD5264)

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REQUEST FOR ADDITIONAL INFORMATION

EXTENDED POWER UPRATE

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3

DOCKET NOS. 50-259 , 50-260 AND 50-296

APLA

28./30. Confirm that the following success criteria were used to estimate the risk related to the containment overpressure (COP) credit:

Initiator	Injection	NPSH
Large Break Loss of coolant Accident (LLOCA)	1 core spray (CS) pump or 1 Low Pressure Core Injection (LPCI) pump	3 or 4 residual heat removal (RHR) pumps/heat exchanges (H/Xs) aligned to spent fuel pool cooling (SPC) or 2 RHR pumps/HXs aligned to SPC and favorable plant conditions (initial SP volume at 123,500 ft^3, river water temperature at 85 degrees F, torus water temperature less than or equal to 86 degrees F) or 2 pumps/HXs aligned to SPC and containment integrity (COP credit) Note: 1 pump/HX aligned to SPC and containment integrity (COP credit) will not provide adequate NPSH to the low pressure emergency core cooling system (ECCS) pumps during LLOCAs
Anticipated Transient Without Scram (ATWS) or Station Blackout (SBO) (upon AC power recovery after 4 hours)	1 CS pump or 1 LPCI pump	containment integrity (COP credit) Note: Does not depend on the number of RHR pumps/HXs aligned to SPC

Enclosure

Other transients	1 CS pump or 1 LPCI pump	2 or more RHR pumps/HXs aligned to SPC or 1 pump/HX aligned to SPC and containment integrity (COP credit)

29./31. Describe any interlocks or procedural prohibitions that preclude the simultaneous opening of the LPCI valves, SPC valves, and/or drywell spray valves in the same RHR subsystem.

30./32. The licensee has made a commitment to terminate drywell cooling within two of entry into the Appendix R fire safe shutdown operating procedures. Address how this commitment was considered during development of the probabilistic risk assessment (PRA) success criteria.

31./33. The SPC mode is manually aligned by the operator. Describe how the operator decides the number of RHR pumps/HXs to align to SPC. Address whether it is credible (e.g., within procedural guidance) that the operator would actually align three or four RHR pumps/HXs to SPC.

32./34. Determine if there is a significant statistical correlation between the suppression pool water level, river water temperature, and/or torus water temperature.

33./35. Discuss whether it is possible to eliminate or substantially reduce the need for the COP credit by maximizing the suppression pool water level, minimizing the initial torus water temperature and/or reducing the amount of power uprate.

34./36. Provide the approximate high confidence of low probability of failure (HCLPF) of the Browns Ferry containment structure (including considerations of personnel access or equipment hatches, penetrations, etc.).

35./37. Discuss whether the fire risk evaluation contained in the IPEEE addresses spurious actuations (hot shorts) of the containment isolation valves or the need for the COP credit. If not, address the change in risk considering COP and submit a summary of the updated results.

36./37. Discuss when and how the peer review for the Unit 1 PRA was conducted (identify the participants, describe what methods were used, etc.), and submit the peer review report. Indicate which comments may significantly affect the PRA results, insights, and conclusions concerning the proposed EPU. Also, discuss the plans and timetable to resolve comments and revise the PRA model.

37./38. Explain how COP credit maintains the defense-in-depth concept provided Section 2.2.1.1 of Regulatory guide 1.174. Specifically address each of the seven bulleted items with particular emphasis on the fifth item (independence of barriers is not degraded).

SBWB

(Unit 1 Only)

67. Discuss whether the 3-D MONICORE core monitoring system is based on TGBLA06/PANAC11 methods.

68. The 50 megawatt thermal/million pounds mass/hour (MWt/Mlbm/hr) limit establishes the generic envelope for General Electric neutronic methods nodal, bundle and axial power distribution uncertainties. Discuss whether the core thermal power to core flow ratio for the Unit 1 extended power uprate will remain below 50 MWt/Mlbm/hr at any statepoint in the allowed operating domain limit.

69. Discuss whether the plant specific R-factor calculation at a bundle level was performed consistent with lattice axial void conditions expected for the hot channel operating state.

70. The presence of bypass voiding at the low-flow conditions where instabilities are likely can result in calibration errors. Discuss whether these calibration errors were accounted for when determining the setpoints for the detect and suppress long term methodology.

(Units 2 and 3 Only)

82. Provide the reference and/or description of the models governing counter-current flow (CCFL) at the exit to the hot bundle/core. Also identify the reference that describes the validation (separate effects and integral test data comparisons) of the CCFL limit model governing top down cooling in rod bundles.

83. Provide the vapor and liquid hot bundle exit velocities versus time for the 0.05 ft^2 breaks presented in the April 18, 2007, SBWB-64 Supplement response.

84. Provide the axial power shapes used in the calculations provided in the April 18, 2007, request for additional information response.

William R. Campbell, Jr.
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