



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

December 26, 2019

Mr. James Barstow
Vice President, Nuclear Regulatory
Affairs and Support Services
Tennessee Valley Authority
1101 Market Street, LP 4A-C
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNIT 2 – REVIEW OF EXTENDED
POWER UPRATE IMPLEMENTATION POWER ASCENSION RESULTS AND
REPORTS REGARDING REPLACEMENT STEAM DRYERS
(EPID L-2019-LRO-0053)

Dear Mr. Barstow:

By Letter dated August 14, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17032A120), to Tennessee Valley Authority (the licensee, TVA), the Nuclear Regulatory Commission (NRC) issued Amendment Nos. 299, 323, and 283 to Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68 for Browns Ferry Nuclear Plant (Browns Ferry), Units 1, 2, and 3, respectively. These amendments authorized an increase in the maximum licensed thermal power level for Browns Ferry units, from 3458 megawatts thermal (MWt) to 3952 MWt, which is an increase of approximately 20-percent above the original licensed thermal power level of 3293 MWt. This change in power level is considered an extended power uprate (EPU).

The NRC staff approval of the EPU was based, in part, on the capability for the licensee to monitor, evaluate, and take prompt action in response to potential adverse flow effects as a result of EPU operation on plant structures, systems, and components (including verifying the continued structural integrity of the replacement steam dryer (RSD)), and meeting certain license conditions.

In accordance with license conditions 2.C(18)(e), by letter dated September 19, 2019 (ADAMS Accession No. ML19262G978), TVA submitted the results of the Browns Ferry Unit 2 RSD EPU power ascension testing (90-Day EPU Reports) to the NRC. The specific results are contained in the enclosure in the TVA's letter GEH document NEDC-33909P, "Browns Ferry Nuclear Plant Unit 2 Replacement Steam Dryer EPU Full Re-analysis Report (PBLE02) (proprietary)." TVA, in its letter dated December 12, 2019 (ADAMS Accession No. ML19347B133), provided supplemental information that is contained in GEH document 005N5578, Revision 0, "Browns Ferry Nuclear Plant Units 1 and 2, Replacement Steam Dryer EPU Full Re-Analysis Reports (NEDC-33908P [1] and NEDC-33909P [2]) – NRC Questions & Responses."

The NRC staff completed its review of the Browns Ferry Unit 2 RSD power ascension testing results, final load definition as well as the results of a complete structural re-analysis Browns Ferry Unit 3 RSD verifying its structural integrity using the end-to-end biases/uncertainties at Browns Ferry EPU conditions. Based on the review of these reports, the licensee adequately demonstrated that the stresses in the replacement steam dryer are below the appropriate

American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code Section III 1989 Edition acceptance limits, thus maintaining structural integrity at the EPU conditions. Therefore, the NRC staff determined that the 90-day EPU reports for Browns Ferry Unit 2 are acceptable and meet the requirements of License Condition 2.C(18)(e).

Browns Ferry Unit 2 License Condition 2.C(18)(f) requires the licensee to provide within 90 days following completion of EPU power ascension testing, a flow induced vibration (FIV) summary report for certain specified Browns Ferry Unit 3 piping and valve locations, including the vibration data and evaluation of the measured data compared to acceptance limits. In accordance with License Condition 2.C(18)(f), by letter dated September 4, 2019 (ADAMS Accession No. ML19247C982), TVA submitted "Browns Ferry Nuclear Plant Unit 2 Flow Induced Vibration Summary Report" that provided an evaluation of FIV data obtained at approximately 3630 MWt, 3803 MWt, and 3952 MWt for Browns Ferry Unit 2. The licensee presented the vibration measurement results along with Level-2 and Level-1 allowable limits. Based on review of the FIV results, and licensee's evaluations, all the monitored locations meet the Level-1 and Level-2 allowable limits. Therefore, the staff concluded that the licensee meets the requirements of License Condition 2C(18)(f).

Based on the above reviews, the NRC staff determined the licensee's submitted reports for Browns Ferry Unit 2 EPU power ascension are acceptable and meet the associated license conditions.

If you have any questions, please contact me at 301-415-1447 or Farideh.Saba@nrc.gov.

Sincerely,

/RA/

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-260

cc: Listserv

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