



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

May 24, 2012

10 CFR 50.4  
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ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2  
Facility Operating License Nos. DPR-77 and DPR-79  
NRC Docket Nos. 50-327 and 50-328

Subject: **Response to NRC Fifth Request for Additional Information  
Regarding Application to Modify Technical Specifications for Use  
of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07) (TAC Nos.  
ME6538 and ME6539)**

- References:
1. Letter from TVA to NRC, "Application to Modify Technical Specifications for Use of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07)," dated June 17, 2011
  2. Letter from TVA to NRC, "Response to NRC Request for Supplemental Information Regarding Application to Modify Technical Specifications for Use of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07)," dated July 27, 2011
  3. Letter from NRC to TVA, "Sequoyah Nuclear Plant, Units 1 and 2 - Request for Additional Information Regarding the Propopsed [sic] Technical Specification Changes to Allow Use of AREVA Advanced W17 High Thermal Performance Fuel (TAC Nos. ME6538 and ME6539)," dated October 14, 2011
  4. Letter from TVA to NRC, "Response to NRC Request for Additional Information Regarding Application to Modify Technical Specifications for Use of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07)," dated November 14, 2011

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5. Letter from NRC to TVA, "Sequoyah Nuclear Plant, Units 1 and 2 - Request for Additional Information Regarding the Propopsed [sic] Technical Specification Changes to Allow Use of AREVA Advanced W17 High Thermal Performance Fuel (TAC Nos. ME6538 and ME6539), dated February 8, 2012
6. Letter from TVA to NRC, "Response to NRC Second Request for Additional Information Regarding Application to Modify Technical Specifications for Use of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07)," dated March 23, 2012
7. Electronic Mail from NRC to TVA, "LAR for TAC ME6538/6539 (Sequoyah 1 & 2 - Use of AREVA Advanced W17 HTP Fuel)," dated April 4, 2012
8. Letter from TVA to NRC, "Response to NRC Third Request for Additional Information Regarding Application to Modify Technical Specifications for Use of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07) (TAC Nos. ME6538 and ME6539)," dated April 26, 2012
9. Electronic Mail from NRC to TVA, "Sequoyah, Units 1 & 2 - AREVA W17 HTP Fuel Transition (TAC Nos. ME6538 and ME6539)," dated May 2, 2012
10. Letter from TVA to NRC, "Response to NRC Fourth Request for Additional Information Regarding Application to Modify Technical Specifications for Use of AREVA Advanced W17 HTP Fuel (TS-SQN-2011-07) (TAC Nos. ME6538 and ME6539)," dated May 15, 2012
11. Electronic Mail from NRC to TVA, "TCD Issue," dated May 15, 2012

The purpose of this letter is to provide a response to the Nuclear Regulatory Commission (NRC) request for additional information (RAI) transmitted to the Tennessee Valley Authority (TVA) by electronic mail (email) on May 15, 2012 (Reference 11) regarding thermal conductivity degradation (TCD) as it relates to the proposed Technical Specification (TS) changes for Sequoyah Nuclear Plant (SQN), Units 1 and 2, allowing use of AREVA Advanced W17 High Thermal Performance (HTP) fuel.

By letter dated June 17, 2011 (Reference 1), TVA submitted a request for amendment to the TSs for SQN, Units 1 and 2. The amendment request proposed to allow use of AREVA Advanced W17 High Thermal Performance (HTP) fuel at SQN. In a letter dated July 27, 2011 (Reference 2), TVA provided supplemental information requested by the Nuclear Regulatory Commission (NRC) on July 21, 2011, in a telephone call

between TVA and NRC representatives. By letter dated October 14, 2011 (Reference 3), the NRC forwarded the first RAI regarding the proposed changes to the TSs. TVA provided the response to this first RAI in a letter dated November 14, 2011 (Reference 4). A second RAI regarding the proposed TS changes was forwarded to TVA in a letter dated February 8, 2012 (Reference 5). TVA provided the response to the second RAI in a letter dated March 23, 2012 (Reference 6).

On April 4, 2012, the NRC transmitted a third RAI by email (Reference 7) involving the Loss of Coolant Accident (LOCA) analyses supporting the proposed use of AREVA Advanced W17 HTP fuel at SQN. Following a telephone conference call between TVA and NRC representatives held on April 9, 2012, TVA agreed to provide an analysis of the effects of fuel clad swelling, rupture, and relocation, and also to provide a discussion of the cause of the apparent negative trend of the post-LOCA reactor vessel downcomer liquid level transient, with confirmation that this trend does not continue. TVA provided the requested analysis and confirmation in a letter dated April 26, 2012 (Reference 8).

By email dated May 2, 2012 (Reference 9), the NRC transmitted a fourth RAI regarding the proposed use of AREVA Advanced W17 HTP fuel at SQN. TVA provided the response to this fourth RAI in a letter dated May 15, 2012 (Reference 10). Also on May 15, 2012, the NRC transmitted a fifth RAI by email (Reference 11) regarding the TCD issue and its effect on HTP fuel performance. A telephone conference call was held with the NRC reviewers on May 16, 2012, to discuss the TCD issue and the response to a previous RAI question. Upon conclusion of the conference call, it was TVA's understanding that the discussions during the conference call adequately addressed the NRC reviewers' questions regarding the previous RAI response such that only the questions pertaining to the TCD issue as documented in the fifth NRC RAI (Reference 11) require docketed responses.

Enclosure 1 to this letter contains TVA's responses to the Reference 11 RAI describing the treatment of the TCD affects using AREVA's NRC-approved fuel performance analytical code. Enclosure 1 also includes the responses to the first and second NRC RAIs (References 4 and 6). These RAI responses include information provided by AREVA NP Inc. (AREVA NP) which they consider to be proprietary in nature, pursuant to 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," paragraph (a)(4). It is requested that this information be withheld from public disclosure. Enclosure 2 provides a redacted version of Enclosure 1 that is suitable for public disclosure.

Enclosure 3 to this letter contains the affidavit supporting the request for withholding the information from public disclosure. No other changes have been made to the previous submittals regarding the proposed TS amendment to allow use of AREVA Advanced W17 HTP fuel at SQN.

Note that Sections 3 and 4 of Enclosures 1 and 2 include the previously submitted responses to the NRC's first and second RAIs (References 4 and 6), respectively, regarding the proposed use of AREVA Advanced W17 HTP fuel. Section 5 of Enclosures 1 and 2 provides the responses to this fifth NRC RAI (Reference 11).

May 24, 2012

There are no regulatory commitments associated with this submittal. Please address any questions regarding this request to Clyde Mackaman at 423-751-2834.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 24<sup>th</sup> day of May, 2012.

Respectfully,



J. W. Shea

Manager, Corporate Nuclear Licensing

Enclosures:

1. ANP-3053(P), Revision 3, Sequoyah HTP Fuel Transition – NRC RAIs and Responses, May 2012 (Proprietary Version)
2. ANP-3053(NP), Revision 3, Sequoyah HTP Fuel Transition – NRC RAIs and Responses, May 2012 (Non-Proprietary Version)
3. AREVA NP Affidavit

cc (Enclosures):

NRC Regional Administrator - Region II  
NRC Senior Resident Inspector - Sequoyah Nuclear Plant  
Director, Division of Radiological Health - Tennessee State Department of  
Environment and Conservation