



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

August 30, 2012

10 CFR 50.4(b)(6)  
10 CFR 50.34(b)

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

Watts Bar Nuclear Plant, Unit 2  
NRC Docket No. 50-391

**Subject: Watts Bar Nuclear Plant (WBN) Unit 2 – Instrumentation and Controls Staff Request for Additional Information (RAI) Related to Supplemental Safety Evaluation Report (SSER) Open Item 80**

- References:
1. TVA to NRC letter dated April 23, 2012, "Watts Bar Nuclear Plant (WBN) Unit 2 - Instrumentation and Controls Staff Information Requests"
  2. TVA to NRC letter dated December 22, 2011, "Watts Bar Nuclear Plant (WBN) Unit 2 - Instrumentation and Controls Staff Information Requests"
  3. TVA to NRC letter April 15, 2011, "Watts Bar Nuclear Plant (WBN) Unit 2 - Instrumentation and Controls Staff Information Requests"
  4. NRC to TVA letter dated November 18, 2011, "Watts Bar Nuclear Plant, Unit 2 - Request for Additional Information Regarding Supplemental Safety Evaluation Report Open Items 80, 81, 94, 105, and 108 (TAC NO. ME0853)" (ML113130218)

The purpose of this letter is to respond to a commitment made in Reference 1 to perform current to frequency (I/F) testing of an I/F converter in a radiation monitoring device supplied by General Atomics Electronics Systems Inc. (GA-ESI). Enclosure 1 provides additional information to the NRC follow-up question, which was the source for this commitment. Enclosure 2 provides the new regulatory commitment.

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If you have any questions, please contact Gordon Arent at (423) 365-2004.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 30<sup>th</sup> day of August, 2012.

Respectfully,



Raymond A. Hruby, Jr.  
General Manager, Technical Services  
Watts Bar Unit 2

Enclosures:

1. RAI Response
2. New Regulatory Commitment

cc (Enclosures):

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**Enclosure 1**  
**TVA Letter Dated August 30, 2012**  
**TVA Responses to Instrumentation and Controls Staff Information Requests**

**NRC Follow-up Request (SSER 23 Appendix HH Item Number 80)**  
**(NRC to TVA via e-mail dated March 20, 2012)**

*NRC Staff has reviewed this GA-ESI document 04038800-1SP and 04508905-2SP (referenced in 04038800-1SP and submitted via ML110620236) documents. These documents explain the similarities and differences in the old I/F converter and the new I/F converter model (GA-ESI P/N 04501351-003). It also explains some of the improvements related to shielding for better EMC protection. However, there is no test data or analysis provided to support the missing frequency range (i.e. 50 kHz to 150 kHz). In the NRC letter to TVA dated September 21, 2011 (ML112590046) NRC staff explained that both the Regulatory Guide 1.180, Rev. 1 and MIL Std 461-E require the test range from 30 Hz to 150 kHz for low frequency susceptibility test. Therefore, TVA is requested to provide test data for closing this item. If majority of the components have already been tested under some other similar tests for the required frequency range, then an analysis with justification for the differences may be provided as an alternate.*

**TVA Response to NRC Follow-up Request**

The previous response to this item in the April 23, 2012, TVA letter was based on an incorrect understanding of the requirements of Regulatory Guide 1.180, Rev. 1, and the question being asked. The following is the revised response to this question.

Regulatory Guide 1.180, Revision 1, requires EMC low frequency conducted susceptibility testing be performed in accordance with MIL-STD-461E which requires testing from 30 Hz to 150 kHz for DC supplied equipment and from the second harmonic 120 Hz (for 60 Hz equipment) to 150 kHz for AC supplied equipment. The GA-ESI RM-1000 monitors used in WBN Unit 2 (with I/F converters) are AC supplied; therefore, the conducted susceptibility testing lower limit is 120 Hz.

GA-ESI performed low frequency conducted susceptibility testing for the I/F converter as part of RM-1000 testing performed in 1999. The documented test range is 100 Hz to 150 kHz. The GA-ESI proprietary test report, 04038800, dated November 11, 1999, "RM-1000 EMC Test Report, TVA," containing this information was provided as part of Attachment 1, "Browns Ferry High Range Radiation Monitor," of TVA to NRC letter dated April 15, 2011. The specific location of the test data is, Appendix B, TÜV Test Report 58569-02, dated December 11, 1998, "RM-1000 Radiation Monitor Two Channel," page TD8 of TD34 or page 273 of the overall attachment.

The testing was performed in accordance with MIL-STD-461D while Regulatory Guide 1.180 Revision 1 requires testing to Revision E. TVA has reviewed the data against the requirements of MIL-STD-461E and confirms that the test meets the current requirements. The applicability of this testing to the current I/F converter is documented in 04038800-1SP, "RM-1000 EMC Test Report Supplement 1," Revision A, submitted as Attachment 25 on TVA to NRC letter dated November 30, 2011.

**Enclosure 1**  
**TVA Letter Dated August 30, 2012**  
**TVA Responses to Instrumentation and Controls Staff Information Requests**

The confusion over this issue stems from incorrect information contained in 04038800-1SP on page 29. The Conducted Susceptibility table entry states:

**Low Frequencies (Power Conductors Only)**

- Frequency: 30 Hz to 50 kHz
- Amplitude: 6.3 volts rms average
- Alternate procedures MIL-STD-461C (CS-01, CS-02, and RS-02 Part II Class A3) or MILSTD-461D (CS-101)

However, TÜV Test Report 58569-02 shows that the low frequency conducted susceptibility testing was actually performed from 100 Hz to 150 kHz which envelopes the MIL-STD-461E required test range of 120 Hz to 150 kHz.

A review of the April 15, 2011 letter found that it stated proprietary and non-proprietary versions of 04038800 along with an affidavit for withholding would be provided. However, this information was not included in the letter commitments and these documents were not submitted. A new commitment to submit these documents is included in this letter.

This completes the response to this request.

**Enclosure 2**  
**New Regulatory Commitment**

Proprietary and non-proprietary versions of GA-ESI document GA-ESI test report, 04038800, dated November 11, 1999, "RM-1000 EMC Test Report, TVA," along with an affidavit for withholding will be provided within three weeks of receipt from GA-ESI.