



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
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July 6, 2012

Mr. Joseph W. Shea  
Manager, Corp. Nuclear Licensing Programs  
Tennessee Valley Authority  
1101 Market Street, LP 4B-C  
Chattanooga, TN 37402-2801

SUBJECT: ERRATA WATTS BAR NUCLEAR PLANT- NRC INTEGRATED INSPECTION  
REPORT 05000390/2010005 (ML 110280456)

Dear Mr. Shea:

The purpose of this errata is to correct references to the tracking number associated with the closure of Unresolved Item (URI) 05000390/2010006-02, "Worst Case 6900 VAC Bus Voltage in Design Calculations" contained in the Watts Bar 2010 4<sup>th</sup> quarter integrated inspection report 05000390/2010005 (ML 110280456).

Section 4OA5.3 (report pages 21 and 22) and the "List of Items Opened, Closed and Discussed" (supplemental page 2) of the above inspection report incorrectly identify that URI tracking number 05000390/2010008-02 is being closed by the inspection report. The correct URI tracking number is 05000390/2010006-02. Replace Section 4OA5.3 (page numbers 21 and 22) and Supplemental Information (page number 2) of ML 110280456 with the pages enclosed to correct the URI tracking number reference error.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm.adams.html> (the Public Electronic Reading Room).

I apologize for any inconvenience this error may have caused. If you have any questions, please contact me at (404) 997- 4530.

Sincerely,

***/RA: Jason Eargle for/***

Rebecca L. Nease, Chief  
Engineering Branch 1  
Division of Reactor Safety

Docket No.: 50-390  
License No.: NPF-90

Enclosure: As stated  
w/ Attachment: Supplemental Information

cc w/encl: (See page 3)

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Enclosure

Letter to Joseph W. Shea from Rebecca L. Nease dated July 6, 2012.

SUBJECT: ERRATA WATTS BAR- 2010 4<sup>th</sup> QUARTER INTEGRATED INSPECTION  
REPORT (ML 110280456)

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RIDSNNRRDIRS

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RidsNrrPMWattsBar1 Resource

RidsNrrPMWattsBar2 Resource

.3 (Closed) URI 05000390/2010006-02, "Worst Case 6900 VAC Bus Voltage in Design Calculations"

Introduction: The NRC identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, for the failure to correctly translate the 6900 VAC emergency bus undervoltage trip value specified in Technical Specifications (TS) into design calculations for motor starting and loading. The values used by the licensee in the design calculations were non-conservative with respect to the specified TS values. This issue was initially discussed as URI 05000390/2010006-02: "Worst Case 6900 VAC Bus Voltage in Design Calculations."

Description: Offsite power at Watts Bar is normally provided to the Class 1E 6900 VAC buses from the 161 kV offsite power system through the Common Station Service Transformers (CSSTs). Watts Bar TS Section 3.3.5-1, item 2, "Loss of Power Diesel Generator Start Instrumentation," requires and specifies the undervoltage and degraded voltage relay trip setpoints, including allowable values and time delays associated with the safety-related 6900 VAC buses. These degraded voltage setpoints provide the bases for the minimum voltage available to all safety-related equipment such as motors, contactors, and solenoid valves during a postulated degraded voltage scenario.

At Watts Bar, the degraded voltage relays initiate the nominal 10 second time delay at the TS specified relay voltage setting. When the 10 second time delay has elapsed, the plant loads are removed from the offsite power supply and transferred to the onsite emergency diesel generators. The degraded voltage relays drop-out (de-energize) when sufficient voltage is not available and normally pick-up (energize) if voltage is recovered within the 10 second delay on the 6900 VAC bus. The degraded voltage relay settings at Watts Bar are in accordance with TS Table 3.3.5-1 which states the values to be as follows: Allowable Value  $\geq 6570$  VAC, Trip Setpoint between  $\leq 6606$  VAC and  $\geq 6593$  VAC.

The inspector reviewed licensee calculation of record WBN-EEB-MS-TI-06-0029, "Degraded Voltage Analysis," Rev. 31, which evaluated motor starting voltages at the beginning of a design basis loss of coolant accident (LOCA) concurrent with a degraded grid condition. This calculation used the degraded voltage setpoint of 6672 V to analyze post LOCA load motor starting. This voltage of 6672 VAC used in the calculation was non-conservative with respect to the voltage specified in TS which specified a maximum value of 6606 VAC.

Analysis: The failure to use the degraded voltage relay setpoint values as specified in TS and installed in the plant for the 6900 VAC bus electrical design calculation was a performance deficiency. This finding is more than minor because it affects the Design Control attribute of the Mitigating Systems Cornerstone. It impacts the cornerstone objective of ensuring the availability, reliability, and operability of the 6900 VAC safety buses to perform the intended safety function during a design basis event. The potential availability, reliability, and operability of the 6900 VAC safety buses during a potential degraded voltage condition was impacted as the licensee calculation used a non-conservative degraded voltage input, with respect to the values specified in TS, into their safety-related motor starting and running calculations. The inspectors assessed the

finding using the SDP and determined that the finding was of very low safety significance (Green) because the finding represented a design deficiency confirmed not to result in the loss of functionality of safety-related loads due to the availability of load tap changers (LTCs) that are installed to improve a degraded voltage condition.

The inspectors reviewed the performance deficiency for cross-cutting aspects and determined that none were applicable since this performance deficiency was not indicative of current licensee performance as the design calculation discussed above was not recently performed.

Enforcement: 10 CFR 50, Appendix B, Criterion III, Design Control, states, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. This appendix also states in part that measures shall be established for the selection and review for suitability of application of processes that are essential to the safety-related functions of the structures, systems, and components. Watts Bar TS Section 3.3.5-1, "Loss of Power Diesel Generator Start instrumentation," table 3.3.5-1, item 2 specifies the 6900 VC emergency bus undervoltage (degraded) relay trip setpoints to be as follows: "Allowable Value,  $\geq 6570$  VAC, Trip Setpoint,  $\leq 6606$  VAC and  $\geq 6593$  VAC."

Contrary to the above, since at least December 2001, the licensee failed to assure that applicable regulatory requirements for undervoltage (degraded) voltage protection, including those prescribed in TS 3.3.5-1, item 2, were correctly translated into design calculation, WBN-EEB-MS-TI-06-0029, "Degraded Voltage Analysis," Revision 31, which evaluated motor starting voltages at the beginning of a design basis loss of coolant accident (LOCA) concurrent with a degraded grid condition. Further, the process used by the licensee for the selection of input voltage value in the design calculation was non-conservative with respect to the TS. Specifically, the licensee used the input value of 6672 VAC which was higher than the maximum value of 6606 VAC specified in TS. This did not result in a loss of function of safety-related loads.

Because this finding is of very low safety significance and was entered into the licensee's corrective action program as PER 296306 this violation is being treated as a NCV, consistent with the NRC Enforcement Policy. This finding is identified as NCV 05000390, 2010005-03: "Failure to Use Worst Case 6900 VAC Bus Voltage in Design Calculations." URI 05000390/2010006-02, "Worst Case 6900 VAC Bus Voltage in Design Calculations" is closed.

05000390/2010005-03	NCV	Failure to Use Worst Case 6900 VAC Bus Voltage in Design Calculations. (Section 4OA5.3)
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Closed

05000390/2515/172	TI	Reactor Coolant System Dissimilar Metal Butt Welds (Section 4OA5.1)
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05000390/2009002-03	URI	Acceptability of Seismic Qualification of 120VAC Vital Instrumentation Board Circuit Breakers
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05000390/2010006-02	URI	Worst Case 6900 VAC Bus Voltage in Design Calculations
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Discussed

None