UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

August 19, 2019

EA-19-042

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

SUBJECT: WATTS BAR NUCLEAR PLANT – NRC INSPECTION REPORT 05000390/2019013 and 05000391/2019013 AND APPARENT VIOLATION

Dear Mr. Shea:

This letter refers to an in-office inspection conducted by the U.S. Nuclear Regulatory Commission (NRC), which was completed on August 1, 2019. The purpose of the inspection was to follow up on Unresolved Item (URI) 05000390, 391/2016011-05 "Common Service Station Transformers A and B General Design Criteria 17 Analyses," which was identified during a prior NRC inspection of August 2016 (NRC Inspection Report 05000390, 391/2016011, ADAMS ML16285A217). The enclosed report presents the results of these inspections. A final exit briefing was conducted (telephonically) with you on August 1, 2019.

Based on the results of these inspections, one apparent violation (AV) was identified, and is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html.

The AV involves the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.9(a), which requires, in part, that "Information provided to the Commission by an applicant for a license or by a licensee . . . shall be complete and accurate in all material respects." The NRC inspection identified that TVA, on multiple occasions as part of the licensing of Watts Bar (WBN) Unit 2 from 2010 through 2013, and subsequently as part of a license amendment for WBN Unit 1 in 2015, submitted inaccurate information regarding the adequacy of the offsite electric power system, and that information was material for an NRC licensing decision. Additional details of this AV are further discussed in the Inspection Results Section of the enclosed inspection report.

Before the NRC makes its enforcement decision, we are providing you an opportunity to (1) respond to the apparent violation(s) addressed in this inspection report within 30 days of the

date of this letter, (2) request a Pre-decisional Enforcement Conference (PEC), or (3) request Alternative Dispute Resolution (ADR). If a PEC is held, it will be open for public observation and the NRC will issue a press release to announce the time and date of the conference. If you decide to participate in a PEC or pursue ADR, please contact James Baptist at (404) 997-4506 within 10 days of the date of this letter. A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

If you choose to provide a written response, it should be clearly marked as a "Response to Apparent Violation in NRC Inspection Report 05000390/2019013 and 05000391/2019013, EA-19-042" and should include for the AV: (1) the reason for the apparent violation or, if contested, the basis for disputing the apparent violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. Additionally, your response should be sent to the NRC's Document Control Center, with a copy mailed to Mark Franke, U.S. Nuclear Regulatory Commission Region II- Marquis One Tower, 245 Peachtree Center Avenue North East, Suite 1200, Atlanta, GA 30303-1257, within 30 days of the date of this letter. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a PEC.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC has determined that a violation has occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision. The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned.

In lieu of a PEC, you may also request ADR with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a third party neutral. The technique that the NRC has decided to employ is mediation. Mediation is a voluntary, informal process in which a trained neutral (the "mediator") works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues. Additional information concerning the NRC's program can be obtained at http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html. The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact ICR at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR.

Because the NRC has not made a final determination in this matter, no Notice of Violation is being issued for this inspection finding at this time. In addition, please be advised that the number and characterization of the AV described in this letter and the enclosure may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

Additionally, one finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

If you have any questions concerning this matter, please contact James Baptist of my staff at (404) 997-4506.

Sincerely,

/RA/

Mark Franke, Director
Division of Reactor Safety

Docket Nos.: 05000390 and 05000391
License Nos.: NPF-90 and NPF-96

Enclosure:
Inspection Report 05000390/2019013
and 05000391/2019013

cc w/ encl: Distribution via ListServ

SUBJECT: WATTS BAR NUCLEAR PLANT – NRC INSPECTION REPORT 05000390/201913 and 05000391/2019013 AND APPARENT VIOLATION dated August 19, 2019

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ADAMS: ☒ Yes ACCESSION NUMBER **ML 19231A179** ☒ SUNSI REVIEW COMPLETE ☐ FORM 665 ATTACHED

OFFICE	RII/ORA	RII/ORA/EICS	RII/DRS/EB1	RII/DRS/EB1	RII/ DRS	
NAME	S. Price	M. Kowal	M. Greenleaf	J. Baptist	M. Franke	
DATE	8/14 / 2019	8/13 / 2019	8/14 / 2019	8/13 / 2019	8/ 19 /2019	
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	

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U.S. NUCLEAR REGULATORY COMMISSION

Inspection Report

Docket Number(s):	05000390 and 05000391
License Number(s):	NPF-90 and NPF-96
Report Number(s):	05000390/2019013 and 05000391/2019013
Enterprise Identifier:	I-2019-013-0012
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Watts Bar, Units 1 and 2
Location:	Chattanooga, TN 37402
Inspection Dates:	April 01, 2019 to June 30, 2019
Inspectors:	M. Greenleaf, Reactor Inspector
Approved By:	James Baptist, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an in-office inspection of Watts Bar Units 1 and 2 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Failure to Adequately Analyze Common Station Service Transformers A and B to Design Bases Requirements			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000390, 05000391/2019013-01 Open/Closed	None (NPP)	71111.21M
The inspectors identified a Green finding and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III when the licensee failed to adequately analyze common station service transformer's (CSST) A and B capability as qualified offsite circuits during licensing actions for Watts Bar (WBN) Units 1 and 2.			

Incomplete and Inaccurate Information for Unit 1 License Amendment 103 and Unit 2 Initial Operating License			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Not Applicable	NOV 05000390, 05000391/2019013-02 Open EA-19-042	Not Applicable	71111.21M
The inspectors identified an apparent violation (AV) of 10 CFR 50.9, and an associated reactor oversight process finding (NCV 05000390,391/2019013-01, "Failure to Adequately Analyze Common Station Service Transformers A and B to Design Bases Requirements") for the licensee's failure to provide complete and accurate information pertaining to the CSST A and B capability during licensing actions for WBN Units 1 and 2.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000391,05000390/2016011-05	Common Service Station Transformers A and B General Design Criteria 17 Analyses	71111.21M	Closed

INSPECTION SCOPE

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.21M - Design Bases Assurance Inspection (Teams)

The inspectors evaluated the following components and listed applicable attributes, permanent modifications, and operating experience:

Design Review - Risk-Significant/Low Design Margin Components (IP Section 02.02) (2 Partials)

(1) (Partial)
Common Station Service Transformer A
- GDC 17 design criteria

(2) (Partial)
Common Station Service Transformer B
- GDC 17 design criteria

INSPECTION RESULTS

Failure to Adequately Analyze Common Station Service Transformers A and B to Design Bases Requirements			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000390, 05000391/2019013-01 Open/Closed	None (NPP)	71111.21M
The inspectors identified a Green finding and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III when the licensee failed to adequately analyze common station service transformer's (CSST) A and B capability as qualified offsite circuits during licensing actions for Watts Bar (WBN) Units 1 and 2.			
Description: On August 26, 2016 a team inspection from NRC Region II documented an Unresolved Item (URI) related to the capability of the CSSTs A and B to meet the requirements of 10 CFR Part 50, Appendix A, General Design Criteria 17 (GDC 17). Specifically, inspectors had requested the analysis used in licensing actions for WBN Units 1 and 2 that demonstrated that the station's CSSTs were capable of providing offsite power in accordance with the station's design and licensing basis. GDC 17 requires, in part, that the licensee provide onsite and offsite electric power systems capable of providing the necessary power to operate equipment important to safety necessary to maintain the fuel and reactor vessel pressure within their design limits, maintain reactor core cooling, containment			

integrity, and other vital functions. GDC 17 also requires that the offsite power system shall be supplied by two independent and fully capable circuits and that at least one of those circuits shall be available within a few seconds following a loss-of-coolant accident (LOCA). The original operating licensing bases of WBN Unit 1 - as well as Unit 2 in its construction phase - credited CSSTs C and D as offsite power sources required by GDC 17.

During the 2010 construction licensing phase of Unit 2 and in a license amendment request (LAR) for Unit 1, the licensee credited an analysis (EDQ00099920070002) that had been performed to support the use of CSST A or B as a credited offsite power source. The licensee stated that this analysis demonstrated that when CSST A or B was electrically aligned (or capable of being aligned via a bus transfer), the CSST (A or B) also satisfied the GDC 17 required design and licensing bases for offsite power for Units 1 and 2, with CSSTs C and D remaining the preferred offsite power sources.

The inspectors reviewed the design of the plant and electrical bus alignments and loads that would be powered from GDC 17 related offsite power sources. The inspectors noted that in some configurations one of the station's 6.9 kV safety-related shutdown boards could be aligned to a unit station service transformer (USST). If a trip of the main turbine were to occur in this alignment, the station's electrical power system would result in an automatic "fast bus transfer" whereby the USST's safety related loads would transfer after a fixed time delay to either CSST A or B. The CSST (A or B) would be the source of electrical power during transient and steady-state conditions following the transfer and should have the capacity and capability to mitigate the consequences of postulated events as delineated in design and licensing basis of the station for dual unit operation.

The inspectors requested the analysis (EDQ00099920070002) that demonstrated adequacy of plant design to withstand the voltage transients that would occur following a bus transfer and actuation of accident loads. Specifically, the inspectors were interested in the magnitude of voltage transients that would depress the bus voltages and actuate the station's degraded voltage relays (DVRs). DVR actuation indicates that the offsite power source cannot support plant shutdown, separates the station's Class 1E 6.9 kV shutdown boards from the CSSTs, and transfers the loads onto the station's emergency diesel generators. In response to the inspectors' request, the station staff discovered that the "fast bus transfer" design feature was not accurately included in their analysis (as described to the NRC in licensing actions). Based on this finding, the licensee performed an apparent cause evaluation (ACE) documented in condition report (CR) 1244348. The ACE and subsequent reanalysis detailed that the transfer of the loads onto the CSST (A or B) would depress the bus voltage for a sufficient duration such that the station's degraded voltage relays would actuate, separate the CSST loads from the offsite power source, and initiate an emergency diesel generator start to support safe shutdown loads. The reanalysis concluded that the specific configuration using CSST A or B coupled with the plant configuration following a bus transfer was not qualified to support safe shutdown using the offsite power source - contrary to the design and licensing basis of WBN Units 1 and 2.

Corrective Actions: In response, the licensee performed an ACE, regulatory analysis, and confirmed that they had not previously entered the unqualified electrical alignment using CSST A or B. The licensee also took compensatory actions to hang caution tags in the control room to prevent the station's operators from entering this unqualified electrical alignment. The station has also planned the editing of drawings and procedures to remove the capability of entering this electrical alignment. The licensee is in the process of determining additional long-term corrective actions to correct this condition.

Corrective Action References: CR 1244348, CR 1244275, CR 124506

Performance Assessment:

Performance Deficiency: The failure to effectively implement design control measures for calculation EDQ00099920070002 as required by 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was determined to be a performance deficiency. Specifically, the failure to consider the effect of the fast bus transfer on CSST capability and bus voltage allowed for the licensee to erroneously conclude that CSST A or B can perform their design bases function in accordance with GDC 17.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone. Specifically, an evaluation was improperly omitted from calculation EDQ00099920070002 which resulted in an inadequate determination of the voltage response during the transfer from a USST to CSST A or B.

Significance: The inspectors assessed the significance of the finding using Appendix A, "Significance Determination of Reactor Inspection Findings for At - Power Situations." The inspectors determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design of a mitigating SSC that maintained its operability.

Cross-Cutting Aspect: Not Present Performance. No cross cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 of CFR Part 50, Appendix B, Criterion III, "Design Control," required, in part, that "design control measures shall provide for verifying or checking the adequacy of design." Contrary to the above, since July 2011, the licensee did not implement design control measures to verify or check the adequacy of the design. Specifically, an evaluation was improperly omitted from calculation EDQ00099920070002 which resulted in an inadequate determination of the voltage response during the transfer from a USST to CSST A or B.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

The disposition of this finding and associated violation closes URI: 05000391,05000390/2016011-05.

Incomplete and Inaccurate Information for Unit 1 License Amendment 103 and Unit 2 Initial Operating License

Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Apparent Violation AV 05000390, 05000391/2019013-02 Open EA-19-042	Not Applicable	71111.21M

The inspectors identified an apparent violation (AV) of 10 CFR 50.9, and an associated reactor oversight process finding (NCV 05000390,391/2019013-01, "Failure to Adequately Analyze Common Station Service Transformers A and B to Design Bases Requirements") for the licensee's failure to provide complete and accurate information pertaining to the CSST A and B capability during licensing actions for WBN Units 1 and 2.

Description:

By letters dated November 24, 2009, and January 11, 2010 (ADAMS Accession Nos. ML093370340 and ML100200452), TVA submitted FSAR Amendment Nos. 95 and 97, for Section 8.0 "Electric Power" for WBN Unit 2. This submittal was a part of the initial operating licensing of WBN Unit 2. By letter dated July 12, 2010 (ADAMS Accession No. ML101530354), the NRC staff submitted a request for additional information (RAI) to complete the NRC staff review. In the RAI, the NRC requested, in part:

"Since NRC staff has not previously reviewed the capability of the preferred and emergency electric power systems for dual-unit operation, provide an executive summary of the analysis to support the following design requirements.

a. A dual-unit trip as a result of abnormal operational occurrence
b. Accident in one unit and concurrent shutdown of the second unit (with and without offsite power)

c. Accident in one unit and spurious Engineered Safety Features (ESF) actuation in the other unit"

The inspectors reviewed the licensee's docketed correspondence with the NRC staff during the licensing of WBN Unit 2, dated July 31, 2010, December 6, 2010, and April 6, 2011(ADAMS Accession Nos. ML102290258, ML103420569, and ML110980637, respectively) and discovered numerous docketed statements in response to the NRC staff's RAI where the station had relied upon an incomplete analysis to demonstrate the acceptability of CSSTs A and B to be qualified offsite sources per GDC 17.

Based upon the statements in the licensee's docketed correspondence in 2010 and 2011, the NRC staff found CSST A and B acceptable as offsite power sources for WBN Unit 2, as documented in Supplements 22 and 24 of NUREG-0847 (ADAMS Accession Nos. ML110390197 and ML11277A148), "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant Unit 2" (February and September of 2011).

Additionally, by letter dated August 1, 2013 (ADAMS Accession No. ML13220A103), TVA submitted a license amendment request (LAR) to the WBN Unit 1 Technical Specifications (TS). The purpose of this submittal was:

- to modify the Limiting Condition for Operation (LCO) 3.8.1 to provide additional time to restore an inoperable offsite circuit;
- to modify the associated Surveillance Requirement (SR) 3.8.1.8; and
- to modify the current licensing basis for the available maintenance feeder for CSSTs A and B.

The LAR indicated that the TS change was needed to support dual unit operations without requiring a dual unit shutdown during maintenance on either preferred power CSST C or D. The inspectors reviewed the LAR and the licensee's docketed correspondence with the NRC staff during the LAR approval of WBN Unit 1, dated January 29, 2015 (ADAMS Accession No. ML15030A466), and discovered statements in the LAR where the station had relied upon the incomplete analysis to demonstrate the acceptability of CSSTs A and B to be qualified offsite sources per GDC 17.

Based upon the statements in the licensee's LAR and docketed correspondence dated January 29, 2015, the NRC staff found CSST A and B acceptable as offsite power sources for WBN Unit 1, as documented in the safety evaluation report to Amendment 103 of the operating license (ADAMS Accession No. ML15225A094) for Watts Bar Unit 1 (September 29, 2015).

The TVA letters mentioned above were incomplete and inaccurate because they each stated that appropriate analysis had been performed and demonstrated that the station's electric power system was fully capable of meeting its design and licensing bases. The fast bus transfer—an original design feature of both units (as described in NCV 05000390, 391/2019013-01)—had not been modeled in the analysis. Had this transfer been modeled in the analysis, the licensee would have recognized that the CSSTs A and B could not be used as qualified sources of offsite power when the station configuration aligned Class 1E shut down boards to the USST via the station's unit boards. This failure to develop a model reflective of the station's specific configuration led the licensee to provide incomplete and inaccurate information to the NRC that was material to the licensing actions for Units 1 and 2 described above.

Corrective Actions: As a result, the licensee performed a regulatory analysis as described in CR 1244275 and determined that the licensee was required to notify the Commission of information identified as incomplete and inaccurate in accordance with 10 CFR 50.9(b). The licensee performed the necessary reporting to the Regional Administrator of Region II stating that they had unknowingly provided incomplete and inaccurate information and that they had never relied on CSSTs A and B as the qualified sources of offsite power. The licensee took compensatory actions to restrict the station's operations from entering this unique alignment and generated CRs to begin the process of restoring regulatory compliance.

Corrective Action References: CR 1244275, CR 1244348, CR 1245056

Performance Assessment: This violation was associated with a significance determination process finding which was documented in this report as NCV 05000390/391-2019013-01.

Enforcement: As discussed in Section 2.2.4 of the NRC Enforcement Policy, the NRC uses traditional enforcement to disposition certain types of violations identified at power reactors, including those that may impact the ability of the NRC to perform its regulatory oversight function.

Severity: This issue is being treated as an AV pending a final enforcement determination.

Apparent Violation: Title 10 CFR 50.9(a), requires, in part, that "Information provided to the Commission by an applicant for a license or by a licensee...shall be complete and accurate in all material respects."

By letter dated July 31, 2010, TVA responded to an NRC request for additional information (RAI), dated July 12, 2010, regarding an analysis of a dual unit trip as a result of abnormal operational occurrence. TVA's response stated, in part, that "This analysis is enveloped by the analysis performed while postulating an accident in one unit and concurrent orderly shutdown of the second unit."

By letter dated July 31, 2010, TVA responded to an NRC RAI, dated July 12, 2010, regarding an analysis of an accident in one unit and concurrent shutdown of the second unit (with and without offsite power). TVA's response stated, in part, "The auxiliary power system was determined to be adequate to support the above scenarios for two unit operation. The voltage recovery times were within the time limits so that 6.9kV shutdown board degraded voltage relays reset and do not separate 6.9kV shutdown board from the offsite power source."

By letter dated December 6, 2010, TVA responded to an NRC RAI dated July 12, 2010. The letter from TVA stated, in part, "The loading for a dual unit trip is slightly less than the loading with one unit in accident and a spurious accident signal in the other unit. Therefore, a separate load flow was not performed." By letter dated April 6, 2011, TVA stated that they had subsequently performed a separate load flow analysis and, in part, that "A separate load flow was performed for a dual unit shutdown resulting from an abnormal operational occurrence with and without offsite power…This additional analysis will be included in the next revision of AC Auxiliary Power System Analysis Calculation EDQ00099920070002."

By letter dated December 6, 2010, TVA responded to an NRC RAI, dated July 12, 2010, regarding an analysis of an accident in one unit and spurious Engineered Safety Features (ESF) actuation in the other unit. TVA's response stated, in part, "Analysis with one unit in accident and the spurious ESF actuation in the other unit with offsite power has been performed. TVA reviewed the results for the following two bounding configurations: (1) . . . and (2) two shutdown boards on either the A or B CSSTs. This review determined that the CSSTs have adequate capacity to support all ESF loads for one unit in accident and spurious ESF actuation in the other unit."

By letter dated April 6, 2011, TVA responded to an NRC action item in Appendix HH of NUREG-0847, Supplement 22, dated February 2011, stating, in part, "a separate load flow was performed for a dual unit shutdown resulting from an abnormal operational occurrence with and without offsite power."

By letter dated August 1, 2013, TVA submitted a LAR to the WBN, Unit 1 TS bases for section 3.8.1, AC Sources – Operating, LCO. The LAR stated, in part, "A second note has been added to allow common station service transformer (CSST) A or B to be used to meet one of the two qualified offsite circuit requirements of LCO 3.8.1.a. CSSTs A and B directly power the unit boards, and through feeder breakers between the unit board and the shutdown boards, can provide power to the shutdown boards required by LCO 3.8.9, 'AC Distribution.' The note allows one of the two CSSTs (A or B) to replace the normal qualified offsite circuit supply (CSST C or D), provided the CSST is only providing power to its normal unit and reactor coolant pump (RCP) boards, and either a) CSST A or B (as applicable) is providing power to the associated shutdown board; or b) the associated shutdown board is being

powered by the unit station transformer (USST) and automatic transfer capability from the USST to CSST A or B (as applicable) is OPERABLE. This allowance is acceptable since CSST A and B are capable of providing the proper voltage and frequency to the class 1E shutdown boards."

By letter dated January 29, 2015, TVA responded to NRC RAIs dated February 26, 2014 and June 2, 2014. The letter stated, in part, "TVA has concluded that based on the upgrades to CSSTs A and B and the supporting electrical studies and engineering calculations, as discussed above and in the references, the requirements of GDC 17 are satisfied and that CSST A or B may be used as proposed in the LAR."

Contrary to the above, on multiple occasions, from July 31, 2010, until January 29, 2015, the licensee failed to provide information that was complete and accurate in all material aspects. Part of the initial licensing of WBN Unit 2 and subsequently as part of a license amendment for WBN Unit 1, TVA submitted inaccurate information regarding the adequacy of the offsite electric power system. Specifically,

- TVA's analysis of a dual unit trip did not envelop a postulated accident in one unit and concurrent orderly shutdown of the second unit, as was stated in its letter dated July 31, 2010;
- TVA's auxiliary power system was, in fact, not determined to be adequate to support scenarios for two unit operation, as was stated in TVA's letter dated July 31, 2010;
- A separate load flow was not performed for a dual unit shutdown resulting from an abnormal operational occurrence with and without offsite power, as was stated in TVA's letter dated April 6, 2011;
- The CSSTs, in fact, do not have adequate capacity to support all ESF loads for one unit in accident and spurious ESF actuation in the other unit, as was stated in TVA's letter dated December 6, 2010;
- CSSTs A and B are, in fact, not capable of providing the proper voltage and frequency to the class 1E shutdown boards, as was stated in TVA's letter dated August 1, 2013;
- The requirements of GDC 17 are, in fact, not satisfied, as was stated in TVA's letter dated January 29, 2015.

This information was material to the NRC because it is subject to and was used during an NRC inspection issued on October 6, 2016 (IR 05000390/2016011, 05000391/2016011), and was used as part of the basis to approve WBN Unit 1 License Amendment No. 103, dated September 29, 2015. Additionally, the information was used as part of the basis to grant an operating license to WBN Unit 2, as documented in "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2" (NUREG-0847) Supplement 22, dated February 2011, and in the closure of Open Item 27 in NUREG-0847 Supplement 24, dated September 2011.

Unresolved Item (Closed)	Common Service Station Transformers A and B General Design Criteria 17 Analyses 05000391,05000390/2016011-05	71111.21M

Description: On August 26, 2016 a team inspection from NRC Region II documented an Unresolved Item (URI) related to the capability of the CSSTs A and B to meet the requirements of GDC 17. Specifically, inspectors had requested the analysis used in licensing actions for Watts Bar Units 1 and 2 that demonstrated that the station's common station service transformers (CSSTs) were capable of providing offsite power in accordance with the station's design and licensing basis.

In response to the inspectors' questions during the 2016 Component Design Bases Inspection (CDBI) in which the URI had been opened, the station discovered that the "fast bus transfer" design feature (an automatic transfer of electrical loads from the station's unit station service transformer to its common station service transformer A or B) was not included in their analysis (as described to the NRC in licensing actions). Based on this, the licensee performed an apparent cause evaluation (ACE) as documented in condition report (CR) 1244348. The ACE and subsequent reanalysis detailed that the transfer of the loads onto the CSST (A or B) would depress the bus voltage for a sufficient duration of time such that the station's degraded voltage relays would divorce the CSST loads from offsite power and demand a start and load on an emergency diesel generator.

The results of this reanalysis demonstrated that the station's original analysis was invalid in that CSSTs A or B could not be credited as offsite power sources in accordance with the station's license and design bases. The result of this will be documented as a violation of 10 CFR Part 50 Appendix B, Criterion III.

Corrective Action Reference(s): CR 1244275, CR 1244348, CR 1245056

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report

- On August 1, 2019 the inspectors presented the in-office inspection results to Site Vice President Anthony Williams and other members of the licensee staff.