

NRR-DMPSPeM Resource

From: Saba, Farideh
Sent: Wednesday, December 26, 2018 4:40 PM
To: Ruben Crosslin
Cc: Schaaf, Robert; Shoop, Undine; Clayton, Beverly; Betts, Ikeda; Hon, Andrew; Ronewicz, Lynn
Subject: Update: State Consultation: Request for Comments on Amendment to Watts Bar Unit 2 Facility Operating License to Revise a License Condition Regarding Actions to Resolve Issues Identified in NRC Bulletin 2012-01
Attachments: ML18334A333%2Epdf.pdf
Importance: High

Dear Mr. Crosslin,

I am providing you with an update to the email I sent you on December 10, 2018. Specifically, my previous email stated that "The amendment was noticed in the Federal Register on December 14, 2018 (83 FR 56876). Please see the attachment to this email. Up to this date, no public comments were received." Subsequently, the NRC received a comment from a member of public on December 14, 2018.

Please see Section 6 of the SE in the attached document for the public comment and the NRC staff response.

Regards,

Farideh
Farideh E. Saba, P.E.
Senior Project Manager
NRC/ADRO/NRR/DORL
301-415-1447
Mail Stop O-8B01A
Farideh.Saba@NRC.GOV

From: Ruben Crosslin [<mailto:Ruben.Crosslin@tn.gov>]
Sent: Monday, December 17, 2018 1:41 PM
To: Saba, Farideh
Cc: Schaaf, Robert ; Shoop, Undine ; Clayton, Beverly ; Betts, Ikeda
Subject: [External_Sender] RE: State Consultation: Request for Comments on Amendment to Watts Bar Unit 2 Facility Operating License to Revise a License Condition Regarding Actions to Resolve Issues Identified in NRC Bulletin 2012-01

[Thank you for the opportunity to review and comment regarding the amendment request. We do not have any comments to submit.](#)

From: Saba, Farideh [<mailto:Farideh.Saba@nrc.gov>]
Sent: Monday, December 10, 2018 11:04 AM
To: Ruben Crosslin
Cc: Schaaf, Robert; Shoop, Undine; Clayton, Beverly; Betts, Ikeda
Subject: State Consultation: Request for Comments on Amendment to Watts Bar Unit 2 Facility Operating License to Revise a License Condition Regarding Actions to Resolve Issues Identified in NRC Bulletin 2012-01
Importance: High

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Dear Mr. Crosslin,

This email is to inform you that the NRC is finalizing a license amendment for Watts Bar Nuclear Plant, Unit 2. We are notifying you of the proposed issuance in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.91(b), 10 CFR 50.91(b)(3) and (b)(4). The amendment revises the Watts Bar, Unit 2 Operating License Condition 2.C.(5) to revise the completion date for reporting of actions taken to resolve issues identified in Nuclear Regulatory Commission Bulletin 2012-01, "Design Vulnerability in Electrical Power System." The licensee's application, dated October 31, 2018, is available in the Agencywide Documents Access and Management System under Accession No. ML18305A365.

The amendment was noticed in the *Federal Register* on December 14, 2018 (83 FR 56876). Please see the attachment to this email. Up to this date, no public comments were received.

Please let us know if you have any comments on behalf of the State of Tennessee in regards to this license amendment. Please contact me by e mail or at 301-415-1447 if you have any questions or comments.

Regards,

Farideh
Farideh E. Saba, P.E.
Senior Project Manager
NRC/ADRO/NRR/DORL
301-415-1447
Mail Stop O-8B01A
Farideh.Saba@NRC.GOV

Hearing Identifier: NRR_DMPS
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Subject: Update: State Consultation: Request for Comments on Amendment to Watts Bar Unit 2 Facility Operating License to Revise a License Condition Regarding Actions to Resolve Issues Identified in NRC Bulletin 2012-01

Sent Date: 12/26/2018 4:40:17 PM

Received Date: 12/26/2018 4:40:17 PM

From: Saba, Farideh

Created By: Farideh.Saba@nrc.gov

Recipients:

"Schaaf, Robert" <Robert.Schaaf@nrc.gov>

Tracking Status: None

"Shoop, Undine" <Undine.Shoop@nrc.gov>

Tracking Status: None

"Clayton, Beverly" <Beverly.Clayton@nrc.gov>

Tracking Status: None

"Betts, Ikeda" <Ikeda.Betts@nrc.gov>

Tracking Status: None

"Hon, Andrew" <Andrew.Hon@nrc.gov>

Tracking Status: None

"Ronewicz, Lynn" <Lynn.Ronewicz@nrc.gov>

Tracking Status: None

"Ruben Crosslin" <Ruben.Crosslin@tn.gov>

Tracking Status: None

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Options

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Reply Requested: No

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

December 21, 2018

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, UNIT 2 – ISSUANCE OF AMENDMENT
NO. 23 REGARDING THE ACTIONS TO RESOLVE ISSUES IDENTIFIED IN
NRC BULLETIN 2012-01, "DESIGN VULNERABILITY IN ELECTRIC POWER
SYSTEM" (EPID L-2018-LLA-0239)

Dear Mr. Shea:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 23 to Facility Operating License No. NPF-96 for the Watts Bar Nuclear Plant (Watts Bar), Unit 2. This amendment consists of changes to the Watts Bar, Unit 2, Facility Operating License in response to your letter dated October 31, 2018.

The amendment extends the completion date for Watts Bar, Unit 2, License Condition 2.C.(5) regarding completion of the actions to resolve the issues identified in NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System," from December 31, 2018, to December 31, 2019, to align with the remainder of the Tennessee Valley Authority fleet and with the nuclear industry.

A copy of the related Safety Evaluation is also enclosed. Notice of issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert G. Schaaf", is written over a horizontal line.

Robert G. Schaaf, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosures:

1. Amendment No. 23 to NPF-96
2. Safety Evaluation

cc: Listserv



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-391

WATTS BAR NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 23
License No. NPF-96

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Tennessee Valley Authority (the licensee) dated October 31, 2018, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, Facility Operating License No. NPF-96 is amended as indicated in the attachment to this license amendment, and paragraphs 2.C.(2) and 2.C.(5) are hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 23 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

- (5) By December 31, 2019, the licensee shall report to the NRC that the actions to resolve the issues identified in Bulletin 2012-01, "Design Vulnerability in Electrical Power System," have been implemented.

3. This license amendment is effective as of the date of its issuance and shall be implemented immediately.

FOR THE NUCLEAR REGULATORY COMMISSION



Undine Shoop, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License

Date of Issuance: December 21, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 23

WATTS BAR NUCLEAR PLANT, UNIT 2

FACILITY OPERATING LICENSE NO. NPF-96

DOCKET NO. 50-391

Replace page 3 of the Facility Operating License with the attached revised page 3. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Pages

- 3 -

Insert Pages

- 3 -

- C. The license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.

(1) Maximum Power Level

TVA is authorized to operate the facility at reactor core power levels not in excess of 3411 megawatts thermal.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 23 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

- (3) TVA shall implement permanent modifications to prevent overtopping of the embankments of the Fort Loudon Dam due to the Probable Maximum Flood by June 30, 2018.

- (4) PAD4TCD may be used to establish core operating limits for Cycles 1 and 2 only. PAD4TCD may not be used to establish core operating limits for subsequent reload cycles.

- (5) By December 31, 2019, the licensee shall report to the NRC that the actions to resolve the issues identified in Bulletin 2012-01, "Design Vulnerability in Electrical Power System," have been implemented.

- (6) The licensee shall maintain in effect the provisions of the physical security plan, security personnel training and qualification plan, and safeguards contingency plan, and all amendments made pursuant to the authority of 10 CFR 50.90 and 50.54(p).

- (7) TVA shall fully implement and maintain in effect all provisions of the Commission approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The TVA approved CSP was discussed in NUREG-0847, Supplement 28.

- (8) TVA shall implement and maintain in effect all provisions of the approved fire protection program as described in the Fire Protection Report for the facility, as described in NUREG-0847, Supplement 29, subject to the following provision:



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 23 TO FACILITY OPERATING LICENSE NO. NPF-96

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-391

1.0 INTRODUCTION

By application dated October 31, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18305A365), Tennessee Valley Authority (TVA, the licensee) submitted a license amendment request (LAR) to modify the operating license condition for Watts Bar Nuclear Plant (Watts Bar), Unit 2, regarding the actions to resolve issues identified in U.S. Nuclear Regulatory Commission (NRC or the Commission) Bulletin 2012-01, "Design Vulnerability in Electrical Power System" (ADAMS Accession No. ML12074A115). The licensee, in its LAR, proposed to extend the completion date for the Watts Bar, Unit 2, Facility Operating License (FOL), License Condition 2.C.(5), from December 31, 2018, to December 31, 2019, to align with the completion date for the TVA fleet and nuclear industry.

2.0 REGULATORY EVALUATION

2.1 System Description

The preferred offsite power for Watts Bar, Units 1 and 2, is supplied from TVA's 161 kilovolt-(kV) transmission grid at the Watts Bar Hydro Plant switchyard over two separate transmission lines, each connecting to two 161/6.9-kV common station service transformers (CSSTs) C and D. CSST C provides offsite power from the secondary 'Y' winding to 6.9-kV Shutdown Board 1A-A, and from the secondary 'X' winding to 6.9-kV Shutdown Board 2A-A. In addition, this transformer provides alternate (offsite) power from the secondary 'X' winding to 6.9-kV Shutdown Board 1B-B, and from the secondary 'Y' winding to 6.9-kV Shutdown Board 2B-B. CSST C is normally aligned to power 6.9-kV Shutdown Boards 1A-A (Unit 1) and 2A-A (Unit 2). CSST D provides offsite power from the secondary 'X' winding to 6.9-kV Shutdown Board 1B-B, and from the secondary 'Y' winding to 6.9-kV Shutdown Board 2B-B. In addition, this transformer provides alternate (offsite) power from the secondary 'Y' winding to 6.9-kV Shutdown Board 1A-A from the secondary 'X' winding to 6.9-kV Shutdown Board 2A-A. CSST D is normally aligned to power 6.9-kV Shutdown Boards 1B-B (Unit 1) and 2B-B (Unit 2). The four 6.9-kV shutdown boards are arranged electrically into four power trains (two per unit) with two boards associated with each load group in each unit. The balance of Class 1E auxiliary power system is normally aligned to the respective 6.9-kV shutdown bus load group.

During normal plant operation, the engineered safety feature buses are powered from the CSSTs.

2.2 Background Information

On January 30, 2012, an operating event at Byron Station, Unit No. 2, revealed a significant design vulnerability when an open phase condition (OPC) in the plant's offsite power supply resulted in unbalanced voltage conditions on the electrical buses and tripped operating equipment. NRC Bulletin 2012-01 provides an overview of the consequences of a failure of a single electrical conductor on overhead three phase power circuits associated with nuclear power plant offsite power supplies. The failures resulted in high impedance faults that were not detected by existing protective relaying and caused voltage unbalances in the downstream power system, resulting in equipment failures. The bulletin required licensees to comprehensively evaluate conformance of their plant design with the regulatory requirements related to onsite and offsite power systems.

During the licensing phase of Watts Bar, Unit 2, by letter dated September 3, 2014 (ADAMS Accession No. ML14247A231), TVA proposed a license condition for Watts Bar, Unit 2, associated with actions for resolving vulnerabilities in NRC Bulletin 2012-01, with a completion date of December 31, 2017. By letter dated October 22, 2015 (ADAMS Accession No. ML15251A587), the NRC issued the FOL for Watts Bar, Unit 2, with FOL Condition 2.C.(5) accepting the completion date of December 31, 2017. Subsequently, by letter dated March 28, 2017 (ADAMS Accession No. ML17093A608), TVA requested an extension to the completion date for Watts Bar, Unit 2, FOL Condition 2.C.(5), from December 31, 2017, to December 31, 2018. This extension was approved by the NRC by letter dated November 6, 2017 (ADAMS Accession No. ML17258A328).

2.3 Reason for Proposed Change

By letter dated September 20, 2018 (ADAMS Accession No. ML18268A114), Nuclear Energy Institute (NEI) informed the NRC that many plants had completed installation of modifications related to vulnerabilities identified in NRC Bulletin 2012-01. However, monitoring data had indicated that installed systems may experience spurious actuations resulting in plant trips. NEI indicated some spurious actuation causes were unknown, and resolutions are still being pursued. Additionally, there was some uncertainty that all existing and potentially new plant/grid configurations had not been adequately considered. As a result, the industry needed an extended monitoring period and requested an extension to the implementation schedule. The industry requested a revised implementation date of December 31, 2019. In alignment with the industry initiative, TVA, in its LAR dated October 31, 2018, proposed to revise the completion date for Watts Bar, Unit 2, FOL Condition 2.C.(5), from December 31, 2018, to December 31, 2019.

2.4 Description of Proposed Changes

Watts Bar, Unit 2, FOL Condition 2.C.(5), currently states:

By December 31, 2018, the licensee shall report to the NRC that the actions to resolve the issues identified in Bulletin 2012-01, "Design Vulnerability in Electrical Power System," have been implemented.

The proposed change revises Watts Bar, Unit 2, FOL Condition 2.C.(5), as follows:

By December 31, 2019, the licensee shall report to the NRC that the actions to resolve the issues identified in Bulletin 2012-01, "Design Vulnerability in Electrical Power System," have been implemented.

2.5 Applicable Regulatory Requirements

The NRC staff applied the following regulations to evaluate the LAR for Watts Bar, Unit 2:

General Design Criterion (GDC) 17, "Electric power systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, requires, in part, that an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components (SSCs) important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences, and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure. The offsite power system is required to be supplied by two physically independent circuits that are designed and located to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions.

GDC 17 ensures that the electric power system provides: (1) capacity and capability to permit functioning of SSCs important to safety; (2) independence, redundancy, and availability; and (3) provisions to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

3.0 TECHNICAL EVALUATION

3.1 NRC Staff's Evaluation of Proposed Changes

The licensee, in its LAR, proposed a new completion date for upgrading the protective features required to address all the vulnerabilities in onsite and offsite power systems discussed in NRC Bulletin 2012-01 and corresponding technical specification requirements for operability of the power systems when they are degraded as a consequence of an OPC.

As discussed above, NRC Bulletin 2012-01 identified weaknesses in plant designs to accurately detect an OPC in the offsite power source(s) that rendered the source inoperable and also resulted in unbalanced voltage conditions in the plant distribution system. The operating plants implemented interim corrective actions to manually identify potential problems in the offsite power system conductors and trained operators to recognize and take corrective actions if an OPC occurs in the plant electrical system. By letter dated February 3, 2014 (ADAMS Accession No. ML14038A075), in response to NRC requests for additional information, TVA provided an overview of actions taken at TVA plants to manually detect an OPC while a final solution to automatically detect and mitigate the consequences of an OPC was being developed. The TVA

LAR dated October 31, 2018, states that TVA will continue to implement the interim compensatory measures during the requested extension period for License Condition 2.C.(5).

By application dated November 17, 2017, TVA submitted a LAR for the TVA plants to incorporate addition of a new level of protection, "Unbalanced Voltage," to the technical specifications for the loss of power instrumentation. The LAR identified plant modifications installed at the TVA fleet to protect against the consequences of an OPC. In Section 3.6 of Enclosure 1 of the LAR, the licensee stated:

The hardware modifications have already been installed on 12 of the 16 shutdown boards in the TVA fleet and the rest are currently scheduled to be completed by Spring 2018.

The currently installed hardware is performing a monitoring function with significantly lower setpoints. The trip function and MCR [main control room] annunciation portion has been disabled and is a blind installation to operators. Upon NRC approval of this LAR, final setpoints will be entered into the 60Q relays and the trip/alarm function will be enabled.

The hardware installed at Watts Bar, Unit 2, though still in monitoring mode, will enhance the capability of plant operators to detect voltage issues at the plant buses. Based on the continued implementation of interim actions and enhanced capability to detect unbalanced voltage actions, the NRC staff concludes that an OPC-related degradation in GDC 17-required offsite power source for Watts Bar, Unit 2, will be detected in a reasonable time for plant operators to take corrective actions. The implementation of automatic trip functions of the undervoltage relays will ensure that degraded power source(s) are isolated in a timely manner to protect Class 1E equipment and actuate safety-related systems commensurate with assumptions in accident analyses.

The NRC staff has conducted preliminary inspections at four operating plants to assess the adequacy of modifications implemented to detect OPCs in the offsite power systems. Based on observations of the preliminary inspections and the feedback from the operating plants, the staff agrees with TVA's request for an additional monitoring period required to further evaluate the adequacy of trip setpoints for the installed hardware. The NRC staff concludes that the completion date of December 31, 2019, for TVA to implement the actions to resolve the issues identified in NRC Bulletin 2012-01 is acceptable.

3.2 NRC Staff's Technical Conclusion

The licensee is implementing modifications to detect unbalanced voltage conditions on plant buses to provide reasonable assurance that GDC 17-required onsite electric power system will be available to permit functioning of SSCs important to safety in the event of degradation in offsite power source. The LAR requests additional time for monitoring the adequacy of selected trip setpoints for the protective relays. TVA has implemented interim actions such as manual actions to identify broken conductors in the offsite power system(s), additional operator training and installed unbalanced voltage relays that are in alarm mode. These actions enhance the operator's ability to detect and respond to a degraded power source while the final resolution of issues identified in NRC Bulletin 2012-01 is implemented. The NRC staff considers these compensatory actions as temporary measures to provide reasonable assurance that conformance to the intent of GDC 17-required power sources will be available for safe shutdown of Watts Bar, Unit 2. The implementation of automatic trip functions of the undervoltage relays

will ensure that degraded power source(s) are isolated in a timely manner to protect Class 1E equipment and actuate safety-related systems, commensurate with assumptions in accident analyses. The NRC staff concludes that the proposed completion date of December 31, 2019, for TVA to close the issues identified in NRC Bulletin 2012-01, is acceptable.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The NRC's regulation in 10 CFR 50.92(c) states that the NRC may make a final determination, under the procedures in 10 CFR 50.91, that a license amendment involves no significant hazards consideration (NSHC) if operation of the facility, in accordance with the amendment, would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, or (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety.

In its letter dated October 31, 2018, the licensee provided its analysis of the issue of NSHC. The licensee's analysis is as follows:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes to revise the completion date for OL [Operating License] Condition 2.C.(5) for WBN Unit 2 regarding the reporting of actions taken to resolve issues identified in NRC Bulletin 2012-01 from December 31, 2018, to December 31, 2019, do not affect the structures, systems, or components (SSCs) of the plant, affect plant operations, or any design function or any analysis that verifies the capability of an SSC to perform a design function. No change is being made to any of the previously evaluated accidents in the WBN dual-unit Updated Final Safety Analysis Report (UFSAR).

The proposed changes do not 1) require physical changes to plant SSCs; 2) prevent the safety function of any safety-related system, structure, or component during a design basis event; 3) alter, degrade, or prevent action described or assumed in any accident described in the WBN UFSAR from being performed because the safety-related SSCs are not modified; 4) alter any assumptions previously made in evaluating radiological consequences; or 5) affect the integrity of any fission product barrier.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes do not introduce any new accident causal mechanisms, because no physical changes are being made to the plant, nor do they affect any plant systems that are potential accident initiators.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The margin of safety associated with the acceptance criteria of any accident is unchanged. The proposed changes will have no effect on the availability, operability, or performance of safety-related systems and components. The proposed change will not adversely affect the operation of plant equipment or the function of equipment assumed in the accident analysis.

The proposed amendment does not involve changes to any safety analyses assumptions, safety limits, or limiting safety system settings. The changes do not adversely affect plant-operating margins or the reliability of equipment credited in the safety analyses.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

The NRC staff reviewed the licensee's analysis and concludes that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff has made a final determination that no significant hazards consideration is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified on December 10, 2018, of the proposed issuance of the amendment. The State official had no comments.

6.0 PUBLIC COMMENTS

On November 14, 2018, the NRC staff published a "Notice of Consideration of Issuance of Amendments to Facility Operating Licenses, Proposed No Significant Hazards Consideration Determination, and Opportunity for a Hearing," in the *Federal Register* associated with the proposed amendment request (83 FR 56876). In accordance with the requirements in 10 CFR 50.91, the notice provided a 30-day period for public comment on the proposed NSHC determination. One public comment was received on December 14, 2018 (ADAMS Accession No. ML18352A693), regarding the proposed amendment, and it was within the scope of the proposed NSHC, which was included in the November 14, 2018, notice. The public comment and the NRC staff's response are provided below.

6.1 Member of Public Comment

I object to this extension. This simply increases risk for a longer period and in a time when a large earthquake may hit. Watts Bar was just hit by a 4.4 M quake. The next one could be worse. Impacts of a nuclear accident would be devastating for most of the country. Watts Bar is own by the US government and should be held to higher standards, not weaker ones. Instead, TVA appears plagued by corruption. Shame, shame on you.

6.2 NRC Staff's Response

As presented in Section 3.0 of the safety evaluation, in alignment with the industry initiative, TVA, in its LAR dated October 31, 2018, proposed to revise the completion date for Watts Bar, Unit 2, FOL Condition 2.C.(5), from December 31, 2018, to December 31, 2019. Based on the NRC staff's review of the LAR, responses to NRC Bulletin 2012-01, and to the licensee's response to the NRC's requests for additional information, dated February 3, 2014, the NRC staff has determined that the corrective actions and compensatory measures implemented by the licensees have sufficiently reduced the risk associated with an offsite power OPC and provide reasonable assurance of adequate protection of public health and safety until the final corrective actions are completed. The interim compensatory measures include, but are not limited to, operator awareness and procedure modifications. Watts Bar NRC Integrated Inspection Reports 05000390/2017001, 05000391/2017001, dated May 12, 2017 (ADAMS Accession No. ML17132A004), documented the NRC's verification of the licensee's implementation of corrective actions and compensatory measures in accordance with Temporary Instruction 2515/192, "Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems," dated November 9, 2016 (ADAMS Accession No. ML16181A170). No findings were identified during these inspections.

The hardware modifications have already been installed on 12 of the 16 shutdown boards in the TVA fleet, and the rest are currently scheduled to be completed this year (2018). The currently installed hardware is performing a monitoring function. The hardware installed at Watts Bar, Unit 2, though still in the monitoring mode, will enhance the capability of plant operators to detect voltage issues at the plant buses until TVA's LAR dated November 17, 2017, is approved, and the licensee completes the automatic protective function. Based on the continued implementation of interim actions and enhanced capability to detect unbalanced voltage actions, the NRC staff concludes that an OPC-related degradation due to natural phenomena, such as an earthquake, would be detected in a reasonable time for plant operators to take corrective actions until all the actions in NRC Bulletin 2012-01 are completed by December 31, 2019.

Also, as a measure of defense-in-depth, NRC Order EA-12-049, dated March 12, 2012 (ADAMS Accession No. ML12054A735), which was issued in response to the Fukushima Dai-ichi accident, requires U.S. nuclear power plants to implement strategies to maintain key safety functions of core cooling, containment, and spent fuel pool cooling capabilities, following an extreme external event that causes an extended loss of all alternating current power and loss of ultimate heat sink. Order EA-12-049's three phase approach to mitigating beyond-design-basis external events, such as an earthquake, included an initial phase where installed equipment and resources are used to restore and maintain the key safety functions described above, a transition phase where the licensee uses portable onsite equipment and consumables to maintain or restore the key functions until they can be performed with offsite resources, and a

final phase where sufficient offsite resources are brought to bear to sustain key functions indefinitely. All U.S. nuclear power plants have established compliance with Order EA-12-049, and the NRC is in the process of codifying the requirements of the order into the *Code of Federal Regulations*.

Based on the review of the licensee's LAR dated October 31, 2018, the NRC staff has concluded that the risk is acceptable, and there is reasonable assurance that the health and safety of the public will not be endangered.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration (83 FR 56876; November 14, 2018). One public comment was received and is addressed above. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: G. Matharu

Date: December 21, 2018

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 – ISSUANCE OF AMENDMENT
NO. 23 REGARDING THE ACTIONS TO RESOLVE ISSUES IDENTIFIED IN
NRC BULLETIN 2012-01, "DESIGN VULNERABILITY IN ELECTRIC POWER
SYSTEM" (EPID L-2018-LLA-0239) DATED DECEMBER 21, 2018

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OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NRR/DE/EEOB/BC(A)*
NAME	FSaba	IBetts/LRonewicz	EMiller
DATE	12/10/2018	12/18/2018	12/18/2018
OFFICE	OGC – NLO* with comments	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM
NAME	AGhosh	UShoop	RSchaaf (AHon for)
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