



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

March 30, 2020

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

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENT NOS. 133 AND 37 REGARDING CHANGES TO TECHNICAL  
SPECIFICATIONS PERTAINING TO DIESEL GENERATOR START  
INSTRUMENTATION (EPID L-2020-LLA-0003)

Dear Mr. Barstow:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 133 to Facility Operating License No. NPF-90 and Amendment No. 37 to Facility Operating License No. NPF-96 for the Watts Bar Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated January 17, 2020.

The amendments revise the Watts Bar Nuclear Plant, Units 1 and 2, Technical Specification 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation," Condition C to require, with one or more channels per bus inoperable, restoring the channels to operable status within one hour.

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,

/RA/

Michael J. Wentzel, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-390 and 50-391

Enclosures:

1. Amendment No. 133 to NPF-90
2. Amendment No. 37 to NPF-96
3. Safety Evaluation

cc: Listserv



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-390

WATTS BAR NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 133  
License No. NPF-90

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (TVA, the licensee) dated January 17, 2020, 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, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-90 is 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. 133 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. This license amendment is effective as of the date of its issuance and shall be implemented by April 23, 2020.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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  
and Technical Specifications

Date of Issuance: March 30, 2020

ATTACHMENT TO AMENDMENT NO. 133

WATTS BAR NUCLEAR PLANT, UNIT 1

FACILITY OPERATING LICENSE NO. NPF-90

DOCKET NO. 50-390

Replace page 3 of Facility Operating License No. NPF-90 with the attached revised page 3. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

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3.3-50

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- (4) TVA, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis, instrument calibration, or other activity associated with radioactive apparatus or components; and
  - (5) TVA, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This 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 3459 megawatts thermal.
  - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 133 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) Safety Parameter Display System (SPDS) (Section 18.2 of SER Supplements 5 and 15)

Prior to startup following the first refueling outage, TVA shall accomplish the necessary activities, provide acceptable responses, and implement all proposed corrective actions related to having the Watts Bar Unit 1 SPDS operational.
  - (4) Vehicle Bomb Control Program (Section 13.6.9 of SSER 20)

During the period of the exemption granted in paragraph 2.D.(3) of this license, in implementing the power ascension phase of the approved initial test program, TVA shall not exceed 50% power until the requirements of 10 CFR 73.55(c)(7) and (8) are fully implemented. TVA shall submit a letter under oath or affirmation when the requirements of 73.55(c)(7) and (8) have been fully implemented.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Only applicable to Function 5 -----</p> <p>C. One or more channels per bus inoperable.</p>	C.1 Restore channel(s) to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----  
Refer to Table 3.3.5-1 to determine which SRs apply for each LOP Function.  
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SURVEILLANCE	FREQUENCY
<p>SR 3.3.5.1 -----NOTE----- Verification of relay setpoints not required. ----- Perform TADOT.</p>	92 days
SR 3.3.5.2 Perform CHANNEL CALIBRATION.	6 months
SR 3.3.5.3 Perform CHANNEL CALIBRATION.	18 months



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. 37  
License No. NPF-96

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (TVA, the licensee) dated January 17, 2020, 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, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-96 is 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. 37 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. This license amendment is effective as of the date of its issuance and shall be implemented by April 23, 2020.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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  
and Technical Specifications

Date of Issuance: March 30, 2020



ATTACHMENT TO AMENDMENT NO. 37

WATTS BAR NUCLEAR PLANT, UNIT 2

FACILITY OPERATING LICENSE NO. NPF-96

DOCKET NO. 50-391

Replace page 3 of Facility Operating License No. NPF-96 with the attached revised page 3. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

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- 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. 37 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 until the WBN Unit 2 steam generators are replaced with steam generators equivalent to the existing steam generators at WBN Unit 1.
- (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, as amended by changes approved in License Amendment No. 7.
- (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:

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Not applicable to Function 5 -----</p>		
B. One or more Functions with two or more channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour
<p>-----NOTE----- Only applicable to Function 5 -----</p>		
C. One or more channels per bus inoperable.	C.1 Restore channel(s) to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately



UNITED STATES  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 133 AND 37

TO FACILITY OPERATING LICENSE NOS. NPF-90 AND NPF-96

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-390 AND 50-391

1.0 INTRODUCTION

By letter dated November 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18324A609), Tennessee Valley Authority (TVA, the licensee) submitted an application to modify operating licenses for Browns Ferry Nuclear Plant, Units 1, 2, and 3; Sequoyah Nuclear Plant, Units 1 and 2; and Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2. The licensee had installed unbalanced voltage relays (UVRs) to compliment the loss of power (LOP) relays on the medium voltage Shutdown Boards (SDBD) at the above three sites. In the license amendment request (LAR), the licensee proposed new technical specification (TS) for the newly installed UVRs. For Watts Bar TSs, the licensee proposed to add new Function 5, "6.9 kV [kilo Volt] Emergency Bus Undervoltage (Unbalanced Voltage)," to TS Table 3.3.5-1 and corresponding ACTIONS in TS 3.3.5 "LOP DG [Diesel Generator] Start Instrumentation." By letter dated August 27, 2019 (ADAMS Accession No. ML18277A110), the U.S. Nuclear Regulatory Commission (NRC or the Commission) issued license amendments related to unbalanced voltage protection for TVA plants.

By letter dated December 10, 2019 (ADAMS Accession No. ML19336C519), the NRC issued amendment Nos. 131 and 34 for Watts Bar, Units 1 and 2, respectively. These amendments approved a correction to three instrument values in Watts Bar Units 1 and 2 TS Table 3.3.5-1, "LOP DG Start Instrumentation," Function 5. TS Table 3.3.5-1 requires three channels to be operable for Function 5.

By letter dated January 17, 2020 (ADAMS Accession No. ML20017A341), TVA submitted a request to revise the requirements in TS 3.3.5, Condition C related to one channel per bus being inoperable. In Condition C, the associated REQUIRED ACTION to restore the channel to OPERABLE status has to be completed within one hour. TS 3.3.5 does not have REQUIRED ACTIONS for condition(s) when more than one channel is inoperable. Limiting Condition for Operation (LCO) 3.0.3 requires a unit to be shut down when an LCO is not met and no associated REQUIRED ACTION is provided. Therefore, if more than one channel per bus in Function 5 is inoperable, TVA would be required to shutdown both units (Watts Bar, Units 1 and 2 share the onsite and offsite power systems). In the LAR, the licensee proposed to revise

Watts Bar, Units 1 and 2, TS 3.3.5, Condition C to require restoration of one or more inoperable channels per bus to OPERABLE status within 1 hour. TS 3.3.5, Condition C was part of the changes approved in the NRC letter dated August 27, 2019, related to Unbalanced Voltage Protection schemes installed at the TVA plants.

## 2.0 REGULATORY EVALUATION

### 2.1 System Description

The preferred offsite power source for Watts Bar, Units 1 and 2, as described in Updated Final Safety Analysis Report (UFSAR), Section 8.2, "Offsite (Preferred) Power System" (ADAMS Accession No. ML19336A068), is supplied from TVA's 161 kV transmission grid at Watts Bar Hydro Plant switchyard using two separate transmission lines, each connecting to 161/6.9 kV Common Station Service Transformers (CSSTs) A, B, C and D. The low voltage side of CSSTs A and B power 6.9 kV station service buses which include the 6.9 kV common, unit and Reactor Coolant Pump buses. The Class 1E power system is normally supplied from offsite power through CSSTs C and D to four power trains, shared between the two units. Each train has an independent Class 1E 6.9 kV shutdown board. 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 to 6.9 kV shutdown board 1B-B (Unit 1) and shutdown board 2B-B (Unit 2). Power trains 1A and 2A comprise load group A (i.e., a train from each unit), and power trains 1B and 2B comprise load Group B. The boards composing load group A are located in the Unit 1 area and those of load group B are located in the Unit 2 area. The standby onsite power at Watts Bar Units 1 and 2 is supplied by four DGs. Each DG is automatically connected to its associated shutdown board if the LOP relays detect degraded conditions in the preferred power source.

Each 6.9 kV shutdown board is equipped with LOP relays consisting of loss-of-voltage relays and degraded-voltage relays. In the event of loss of voltage or degraded voltage conditions on the shutdown boards, the LOP relays actuate to isolate the degraded power source and start the DGs and supply power to the safety-related loads.

In its letter dated November 19, 2018, the licensee described installation of new Class 1E UVRs on the medium voltage 6.9 kV shutdown boards at the Watts Bar units to protect the functionality of the Class 1E equipment from unbalanced voltages. The unbalanced voltage protective relay scheme monitors the Class 1E bus voltage on all three phases of the medium-voltage safety bus via the existing Class 1E bus potential transformers. In the event of an unbalanced voltage condition, the protective relay scheme actuates after a time delay to disconnect the preferred power supply. The licensee stated that the UVR logic scheme is set up in a permissive one-out-of-two logic to ensure reliability and security. A contact from the alarm relay forms the permissive function and actuation of one-out-of-two relays on the other phases of the bus completes the trip logic. This arrangement provides reliability to prevent nuisance tripping.

### 2.2 Description of Proposed Changes

The proposed LAR revises Watts Bar, Units 1 and 2, TS 3.3.5. This TS requires each Function in Table 3.3.5-1 to be OPERABLE when each Watts Bar unit is in MODES 1, 2, 3, and 4 and the associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources Shutdown." Specifically, the proposed change revises Condition C, Function 5 of TS 3.3.5, associated with one channel per bus inoperable and restoration of the inoperable channel to OPERABLE status within one hour.

The current Watts Bar, Units 1 and 2, TS 3.3.5, Conditions C and D state (Condition D is not being revised, but is shown here for the related ACTION):

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Only applicable to Function 5 -----</p> <p>C. One or more Functions with one channel per bus inoperable.</p>	C.1 Restore channel to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

The licensee proposes to revise Watts Bar, Units 1 and 2, TS 3.3.5, Condition C to state:

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Only applicable to Function 5 -----</p> <p>C. One or more channels per bus inoperable.</p>	C.1 Restore channel(s) to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

The licensee stated that the reason for requesting the amendment was, “an oversight on TVA’s part when developing the [Watts Bar] Units 1 and 2, TS 3.3.5, Condition C, and has been entered into the TVA corrective action program.” The licensee has further stated that the corresponding TS for the Browns Ferry Nuclear Plant, Units 1, 2, and 3, and Sequoyah Nuclear Plant, Units 1 and 2, as approved by the NRC in letter dated August 27, 2019, correctly provide actions related to conditions when one or more UVRs or channels are inoperable.

## 2.3 Applicable Regulatory Requirements and Guidance

Title 10 to the *Code of Federal Regulations* (10 CFR) 50.36, “Technical specifications,” establishes the regulatory requirements related to the content of TSs. Paragraph 50.36(a)(1) requires an application for an operating license to include proposed TSs. A summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the TSs.

Pursuant to 10 CFR 50.36, TSs for operating reactors are required, in part, to include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) LCOs; (3) Surveillance Requirements; (4) design features; and (5) administrative controls. In accordance with 10 CFR 50.36(c)(2)(i), LCOs are the lowest functional capability or performance level of equipment required for safe operation of the facility. When LCOs are not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs, until the LCO can be met.

Appendix A, "General Design Criteria [GDC] for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," GDC 13, "Instrumentation and control," states:

Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

GDC 17, "Electric power systems," states:

An onsite electrical power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system 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.

GDC 17 ensures that the electric power system provides: (1) capacity and capability to permit functioning of structures, systems, and components (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 LOP generated by the nuclear power unit, the LOP from the transmission network, or the LOP from the onsite electric power supplies.

### 3.0 TECHNICAL EVALUATION

The NRC staff used the information provided by the licensee in its letter dated January 17, 2020, to review the proposed amendment to TS Table 3.3.5, Condition C.

GDC 17 requires, in part, that the offsite and onsite power systems have adequate capacity and capability to permit functioning of SSCs important to safety. The LOP relays monitor the offsite power source and provide assurance that the power source is in conformance with GDC 17 requirements for capacity and capability. The LOP relays also satisfy the GDC 13 requirement in that they monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions, as appropriate, to ensure safe shutdown capability of the Watts Bar units is maintained. No changes have been made to the

instrumentation or controls for the protective functions and they continue to meet the monitoring and protective functions.

Section 3.0, "Technical Evaluation," of the LAR provides the purpose and functional requirements of the LOP relays used to monitor the OPERABILITY of offsite power system and associated signals required to automatically start the onsite power sources. The licensee stated:

[T]he DGs provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. An LOP start will be generated from the following conditions:

- Three loss of voltage relays are provided on each 6.9 kV SDBD for the purpose of detecting a loss of voltage condition. These relays are combined in a two-out-of-three logic to generate a supply breaker trip signal.
- Three degraded voltage relays are provided on each 6.9 kV SDBD for detecting a sustained undervoltage condition. The relays are combined in a two-out-of-three logic configuration to generate a supply breaker trip signal.
- Three UVRs are provided on each 6.9 kV SDBD for detecting an unbalanced voltage condition, which could signal an open phase condition is present. The relays are combined in a permissive one-out-of-two logic configuration to generate a supply breaker trip. A permissive one-out-of-two trip logic is defined as a trip of the "Alarm" relay and either the "High" or "Low" relay.

The LCO for LOP DG start instrumentation requires that three channels per bus of the loss of voltage, degraded voltage and unbalanced voltage Functions shall be OPERABLE in MODES 1, 2, 3, and 4 when the LOP DG start instrumentation supports safety systems associated with the emergency safety features. Currently, Watts Bar, Units 1 and 2, TS 3.3.5, Condition C states, "One or more Functions with one channel per bus inoperable." Section 7.1 of Chapter 7, "Instrumentation and Controls" (ADAMS Accession No. ML19176A142), of the Watts Bar, Units 1 and 2, UFSAR provides definition of channel as, "An arrangement of components and modules or software as required to generate a single protective action signal when required by a plant condition." In the context of the LOP relays, a channel constitutes all the elements starting from the voltage sensor(s) to the actuating contact performing the protective function through the trip logic. Each channel of the loss-of-voltage relays, degraded-voltage relays, and UVRs performs a specific function related to the type of degradation detected in the offsite power system. If a channel is inoperable, then the capability of that channel to detect the degradation in the offsite power systems and provide start signal to the DGs is not available. Hence the operability of offsite power source and DG is not assured. The REQUIRED ACTION to restore the channel to an OPERABLE status has to be completed within 1 hour. Typically, the REQUIRED ACTION is to place the channel into a trip mode such that the channel related protective action for the overall protective logic is partially satisfied. For the Watts Bar units, if the REQUIRED ACTION cannot be completed in 1 hour, then both units enter Condition D of TS 3.3.5 which requires immediate escalated actions.

The Watts Bar units do not have associated required actions for loss of multiple channels in TS 3.3.5, Condition C. The two units share the onsite and offsite power systems. In the event that more than one channel is declared inoperable, the lack of associated REQUIRED ACTION



requires both units to enter TS LCO 3.0.3, which has actions for power reduction and plant shutdown within a specified time.

The licensee is proposing to change TS 3.3.5, Condition C from “one channel inoperable” to “one or more channels inoperable” without changing the 1-hour completion time for REQUIRED ACTION. Section 3.1 of the LAR states:

The proposed change to [Watts Bar] Units 1 and 2, TS 3.3.5, Condition C “One or more channels per bus inoperable” will correct the oversight and provide clearer instruction of the loss in terms of channel (e.g., source to unbalanced voltage relay) rather than a combination of channel and function.

The consequences of multiple channels becoming inoperable depend on the failure modes of the elements in the UVR channels. The fail-safe design feature of the UVR relay scheme can result in isolating the offsite power source and starting the associated onsite DG power source, which can be used for safe shutdown of the unit, in accordance with the current licensing basis of the plant. Other failure modes may preclude the UVRs from detecting and actuating to perform the required protective actions. These failure modes are similar to the existing failure mode of loss of a single channel used for detection of unbalanced voltage conditions. The licensee is not proposing any changes to the REQUIRED ACTION completion time of 1 hour. Hence, the overall potential duration of degraded conditions and time for corrective actions is not changed. If the REQUIRED ACTION cannot be completed in 1 hour, then the current actions identified in Condition D of TS 3.3.5 remain applicable for immediate escalated actions. The proposed change will allow the licensee to continue to meet the requirements of 10 CFR 50.36 for conditions when LCOs are not met because the licensee will be required to shut down the reactor or follow any remedial action permitted by the TSs until the LCO can be met.

#### Technical Conclusion

The NRC staff concludes that the implementation of the proposed changes to the TS 3.3.5, Condition C provides reasonable assurance that the onsite electric power system required by GDC 17 will be available to permit functioning of safety systems and components important to safety following a loss of channel(s) required to detect unbalanced voltage conditions in the offsite power system. In addition, the GDC 13-required monitoring and controls continue to maintain variables and systems within the prescribed operating ranges of Function 5. The NRC staff finds that the impact of loss of multiple channels, required to protect safety-related equipment from the effects of unbalanced currents resulting from unbalanced voltage conditions, will be minimal, as the duration of time required to take corrective actions is not changed. Furthermore, the NRC staff concludes that the TS, as amended by the proposed change, will continue to meet the requirements of 10 CFR 50.36, because the TS LCO 3.3.5, Condition C and associated REQUIRED ACTION will include measures for loss of multiple channels. Based on the above evaluation, the NRC staff finds that the Watts Bar, Units 1 and 2, TSs, as amended by the proposed change, will continue to meet the requirements of GDC 13, GDC 17, and 10 CFR 50.36; and therefore, the proposed change to Watts Bar, Units 1 and 2, TS 3.3.5, Condition C is acceptable.

#### 4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The NRC made a proposed determination that the license amendment request involves no significant hazards consideration in the *Federal Register* on February 25, 2020 (85 FR 10734).

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 proposed license amendment involves no significant hazards consideration if operation of the facility, in accordance with the proposed 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.

An evaluation of the issue of no significant hazards consideration is presented below:

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

Response: No.

The proposed changes correct the Watts Bar, Units 1 and 2, TS 3.3.5, Condition C to address required actions when more than one channel per bus is inoperable. This change corrects an oversight in the initial development of Condition C and is consistent with similar requirements in Watts Bar, Units 1 and 2, TS 3.3.5, Condition B, and the Westinghouse Standard TS 3.3.5 A and B. Thus, this change makes no impact on the probability nor consequences of an accident.

Based on the above, it is concluded that the proposed changes do 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 correct the Watts Bar, Units 1 and 2, TS 3.3.5, Condition C to address required actions when more than one channel per bus is inoperable. The proposed changes are in conformance with the existing plant design and will operate as credited in existing accident analyses.

Based on the above, it is concluded that 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 proposed changes correct the Watts Bar, Units 1 and 2, TS 3.3.5, Condition C to address required actions when more than one channel per bus is inoperable. The safety analysis acceptance criteria are not affected by this

change. The proposed changes will not result in plant operation in a configuration outside or different from the existing design basis.

Based on the above, it is concluded that the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above evaluation, the NRC staff 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 amendments and that the amendments 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 of the proposed issuance of the amendments on February 26, 2020. The State official had no comments.

## 6.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on February 25, 2020 (85 FR 10734). The Commission has made a final determination that no significant hazards consideration is involved for the proposed amendments as discussed in Section 4.0 of this SE. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 7.0 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, NRR

Date: March 30, 2020

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENT NOS. 133 AND 37 REGARDING CHANGES TO TECHNICAL  
SPECIFICATIONS PERTAINING TO DIESEL GENERATOR START  
INSTRUMENTATION (EPID L-2020-LLA-0003) DATED MARCH 30, 2020

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