



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

June 12, 2015

Mr. Joseph W. Shea
Vice President, Nuclear Licensing
Tennessee Valley Authority
1101 Market Street, LP 3R-C
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 1 - ISSUANCE OF EXIGENT
AMENDMENT REGARDING APPLICATION TO ALLOW TEMPERATURE
INDICATION FOR REACTOR COOLANT SYSTEM LOOP 4 TO BE
INOPERABLE FOR THE REMAINDER OF OPERATING CYCLE 13
(TAC NO. MF6286)

Dear Mr. Shea:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 100 to Facility Operating License No. NPF-90 for the Watts Bar Nuclear Plant, Unit 1 (WBN-1). This amendment consists of a change to Technical Specification (TS) Table 3.3.4-1, "Remote Shutdown System Instrumentation and Controls," Note A, in response to your application dated May 29, 2015, as supplemented by letter dated June 5, 2015.

This amendment allows for a temperature indicator in the Auxiliary Control Room for reactor coolant system Loop 4 to remain inoperable for the remainder of Operating Cycle 13. This change would allow repair of the faulty indication in the next refueling outage. The next refueling outage for WBN-1, is scheduled for September 2015.

Tennessee Valley Authority (the licensee) requested this proposed TS change under exigent circumstances in accordance with Title 10 *Code of Federal Regulations* Section 50.91(a)(6). The finding of exigent circumstances and determination that the amendment involves no significant hazards considerations are addressed in Sections 4.0 and 5.0 of this Safety Evaluation.

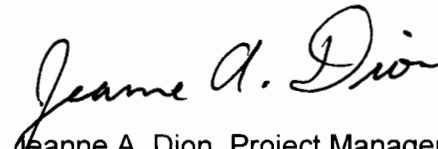
J. Shea

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The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

If you have any questions regarding this letter, please contact me at (301) 415-1349 or by e-mail at Jeanne.Dion@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Jeanne A. Dion". The signature is fluid and cursive, with the first name "Jeanne" being more prominent than the last name "Dion".

Jeanne A. Dion, Project Manager
Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosures:

1. Amendment No. 100 to NPF-90
2. Safety Evaluation

cc w/encls: Distribution via 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. 100
License No. NPF-90

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Tennessee Valley Authority (TVA or the licensee) dated May 29, 2015, as supplemented by letter dated June 5, 2015, 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 Title 10 of the *Code of Federal Regulations* (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.

Enclosure 1

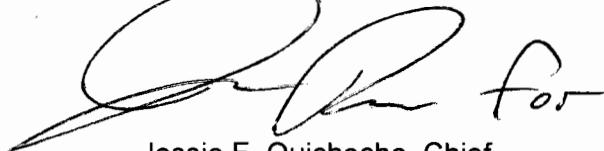
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-90 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 100 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 on June 12, 2015.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'JF Quichocho for', is written over the printed name.

Jessie F. Quichocho, Chief
Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and the Technical Specifications

Date of Issuance: June 12, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 100

FACILITY OPERATING LICENSE NO. NPF-90

DOCKET NO. 50-390

Replace the following page of Facility Operating License NPF-90 and the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contains a marginal line indicating the area of change.

Facility Operating License

REMOVE

3

INSERT

3

Technical Specifications

REMOVE

3.3-48

INSERT

3.3-48

- (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. 100 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.

Table 3.3.4-1 (page 1 of 1)
Remote Shutdown System Instrumentation and Controls

FUNCTION/INSTRUMENT OR CONTROL PARAMETER	REQUIRED NUMBER OF FUNCTIONS
1. Reactivity Control	
a. Source Range Neutron Flux	1
b. Reactor Trip Breaker Position Indication	1 per trip breaker
2. Reactor Coolant System (RCS) Pressure Control	
a. Pressurizer Pressure Indication or RCS Wide Range Pressure Indication	1
b. Pressurizer Power Operated Relief Valve (PORV) Control and Pressurizer Block Valve Control	1 each per relief path
c. Pressurizer Heater Control	1
3. RCS Inventory Control	
a. Pressurizer Level Indication	1
b. Charging and Letdown Flow Control and Indication	1
4. Decay Heat Removal via Steam Generators (SGs)	
a. RCS Hot Leg Temperature Indication	1 per loop (Refer to Note A below)
b. AFW Controls	1
c. SG Pressure Indication and Control	1 per SG
d. SG Level Indication and AFW Flow Indication	1 per SG
e. SG T _{sat} Indication	1 per SG
5. Decay Heat Removal via RHR System	
a. RHR Flow Control	1
b. RHR Temperature Indication	1

Notes:

- A. For Function 4a, the temperature indicator for RCS hot leg 4 is not required to be operable for the remainder of Cycle13.



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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. NPF-90
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 1
DOCKET NO. 50-390

1.0 INTRODUCTION

By letter dated May 29, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15149A511), as supplemented by letter dated June 5, 2015 (ADAMS Accession No. ML15156B466), Tennessee Valley Authority (TVA), the licensee, submitted an exigent license amendment request to revise the Watts Bar Nuclear Plant, Unit 1 (WBN-1) Technical Specification (TS) Table 3.3.4-1, "Remote Shutdown System Instrumentation and Controls," Function 4a, "RCS [Reactor Coolant System] Hot Leg Temperature Indication," to allow a one-time change for RCS Loop 4 to be inoperable for the remainder of WBN-1 Operating Cycle 13.

On May 16, 2015, TVA discovered that Temperature Indicator (TI), 1-TI-68-65C, was not operable. This TI provides indication in the Auxiliary Control Room (ACR) for the hot leg temperature of RCS Loop 4. While trouble shooting, the licensee determined that the problem is either with the modifier circuit or the thermocouple, both of which are located inside the Reactor Building Polar Crane Wall. TVA requested the proposed TS change to be approved by June 14, 2015, because the 30-day completion time for the Required Action of Condition A.1 of the current limiting condition of operation (LCO) of TS 3.3.4 expires on June 15, 2015. The Required Action A.1 for LCO 3.3.4 is the remedial action permitted by the TS to restore the required function to operable status within a completion time of 30 days. If this Required Action and Completion Time are not met, the TS requires placing the unit in mode 3, hot standby, within 6 hours, and in mode 4, hot shutdown, within 12 hours. Approval of this TS change will prevent an unwarranted plant transient that is caused by a shutdown, and allow for the repairs needed to restore instrument operability to be made during the next refueling outage in September 2015.

The supplemental letter dated June 5, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in *The Advocate & Democrat* and *The Herald-News* on June 7, and June 10, 2015, as well as *The Daily Post-Athenian*, on June 5, and June 8, 2015.

2.0 REGULATORY EVALUATION

2.1 System Description

The proposed TS change concerns indicators and parameters for the Remote Shutdown System Functions listed in Table 3.3.4-1 of the WBN-1 TSs. The Remote Shutdown System (also referred to as the Auxiliary Control System (ACS)) provides the control room operator with sufficient instrumentation and controls to place and maintain the unit in hot standby (mode 3) from a location other than the main control room (MCR). Hot standby is a stable plant condition, automatically reached following a plant shutdown. In the event that access to the MCR is restricted, the plant can be safely kept at hot standby with the use of the indicators and controls of the ACS available in the ACR.

The ACS is required in the event that the MCR must be evacuated due to some unspecified reason, as well as during a control building fire, which causes loss of safe shutdown control from the MCR. With the unit in hot standby (mode 3), the auxiliary feedwater (AFW) system and the steam generator (SG) safety valves or the SG atmospheric dump valves can be used to remove core decay heat to ensure that the plant remains in a safe condition in this mode. The RCS T(hot) indicators, as well as the other Remote Shutdown System indicators listed in TS Table 3.3.4-1 in the ACR, are used to ensure decay heat removal via the SGs and are used to set the reactor cooldown rate during safe shutdown.

2.2 Description of Proposed Change

LCO 3.3.4 specifies that "The Remote Shutdown System Functions in Table 3.3.4-1 shall be OPERABLE." Table 3.3.4-1 "Remote Shutdown System Instrumentation and Controls" lists the "Function/Instrument or Control Parameter" and the associated "Required Number of Functions." For "Decay Heat Removal via Steam Generators (SGs)," line 4.a of Table 3.3.4-1 requires, for "RCS Hot Leg Temperature Indication," "1 per loop (Refer to Note A below)." Note A of Table 3.3.4-1 currently states "For Function 4a, the temperature indicator for RCS hot leg 4 is not required to be operable for the remainder of Cycle 6." Under the proposed change, Note A would be modified by replacing "Cycle 6"¹ with "Cycle 13."

The proposed change would remove the RCS Loop 4 T(hot) indicator in the ACR from the set of instruments required to be operable for the remainder of the current operating cycle. Thus, rather than having to shut down the unit after exceeding the completion time of 30 days, the proposed change would allow continued operation for the remainder of the operating cycle, which ends September 2015. The licensee stated that operation for the remainder of the cycle without the RCS Loop 4 T(hot) indicator in the ACR is acceptable because the inoperable indicator has no effect on the safe operation and shutdown of the reactor.

¹ On November 19, 2004 (ML043140476), using exigent procedures, the Nuclear Regulatory Commission issued Amendment 53 to License NPF-90 to address the inoperable RCS temperature indicator for Cycle 6.

2.3 Applicable Regulatory Requirements

The Nuclear Regulatory Commission's (NRC's) requirements related to the content of the TSs are contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 36(c). The regulations at 10 CFR 50.36 require that the TSs include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) LCOs; (3) surveillance requirements; (4) design features; and (5) administrative controls. As specified in 10 CFR 50.36(c)(2)(i), LCOs are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

Watts Bar Updated Final Safety Analysis Report (UFSAR) Section 7.4, "Systems Required for Safe Shutdown," describes monitoring indicators and controls needed to achieve and maintain safe shutdown in the event an evacuation of the control room is required. Applicable General Design Criteria (GDC) are described in the WBN-1 UFSAR Section 3.1.2, WBN Conformance with GDC.

The regulation of 10 CFR Part 50, Appendix A, GDC 13, "Instrumentation and control," requires, in part, instrumentation be provided to monitor variables and systems, and controls be provided to maintain these variables and systems within prescribed operating ranges.

The regulation in 10 CFR Part 50 Appendix A, GDC 19, "Control room," requires, in part, that "a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident condition, including loss-of-coolant accidents.... Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor through the use of suitable procedures."

The regulation in 10 CFR Part 50, Appendix A, GDC 34, "Residual heat removal," requires, in part, a system be provided to remove residual heat and "to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded." Suitable redundant components shall be provided for accomplishing the safety functions in case of a single failure.

As required by 10 CFR 50.48, "Fire protection," each operating nuclear power plant must have a fire protection plan, which satisfies Criterion 3 of Appendix A to Part 50. The regulation in 10 CFR Part 50.48(b) requires, nuclear power plants licensed to operate prior to January 1, 1979 to implement Section III.G of 10 CFR Part 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979." For plants, including WBN-1, that were licensed after January 1, 1979, the applicable requirements were incorporated into the operating license for the facility. TVA committed to meeting Section III.G of 10 CFR Part 50, Appendix R requirements at the time of initial licensing, as documented in the Supplemental Safety Evaluation Report 18, "Safety Evaluation Report Related to the Operation of Watts Bar

Nuclear Plant, Units 1 and 2," NUREG-0847, Supplement No. 18, October 1995 (ADAMS Accession No. ML070530364).

3.0 TECHNICAL EVALUATION

The proposed TS change would allow operation without the use of the RCS Loop 4 T(hot) indicator in the ACR for the remainder of Operating Cycle 13. The NRC staff evaluated the proposed change against the regulatory criteria for systems required for safe shutdown and other supporting GDC to determine if safe shutdown can be achieved with the inoperable RCS Loop 4 T(hot) indicator in the ACR. In the event that it is necessary to evacuate the MCR due to a fire and operators must control safe shutdown from the ACR, the staff considered the Safety Evaluation of the WBN-1 fire protection program (Appendix FF, Section 3.4.3 of NUREG-0847, Supplement No.18) which assumes two SGs are available for cooldown from power operation to hot-standby conditions. WBN-1 has four SGs; thus, there is additional redundancy in the system to ensure safe shutdown. The NRC staff did not consider the dose justification in Section B, "Repair Considerations," or the discussion of the risk impact in Section C, "Risk Considerations," of the May 29, 2015, submittal. There was sufficient information available in the May 29, 2015, submittal and the June 5, 2015, supplement without these sections to fully evaluate the requested action.

3.1 10 CFR Part 50, Section 50.36(c)

The TS LCO 3.3.4 requires that the Remote Shutdown System Functions in Table 3.3.4-1, Remote Shutdown System Instrumentation and Controls, to be operable in modes 1 (power operation), 2 (startup) and 3 (hot standby). This is required so that the unit can be placed and maintained in mode 3 for an extended period of time from a location other than the control room. The licensee proposed to modify one function/instrument that is contained in Table 3.3.4-1. For RCS Hot Leg Temperature Indication, Table 3.3.4-1 requires one indication per loop. The proposed modification would allow the T(hot) indicator for RCS Loop 4 to be inoperable for the remainder of Operating Cycle 13.

The regulations at 10 CFR 50.36 define the broad categories of information that is contained in the TSs, but do not specify the content requirements for individual specifications. The proposed change modifies the number of instruments required to be operable to provide RCS hot leg temperature indication. The requirement to maintain the other three T(hot) indications and the remedial measures to be taken if one of these instruments becomes inoperable is maintained. As explained below, with the proposed change to TS 3.3.4 and the associated LCO, the LCO will continue to provide the lowest functional capability or performance levels of equipment required for safe operation of the facility, and remain in compliance with 10 CFR 50.36 requirements.

3.2 10 CFR Part 50, Appendix A, GDC 13

Adequate instrumentation indications and controls are provided in the ACR to orderly control the plant operation and cooldown, if needed. The RCS T(hot) indication is one of five parameters used in the ACR to ensure decay heat removal via the SGs per TS Table 3.3.4-1. The other indications include SG pressure, SG level, AFW flow, and SG saturation temperature (SG T(sat)). The ACR RCS T(hot) indicators are not safety-related equipment, they are not part

of the reactor protection system, and they do not provide input to any safety-related shutdown system. Provided that the parameters other than the RCS T(hot) indicators on the operable loops (Loops 1, 2, and 3) are comparable to the corresponding parameters on Loop 4, and the T(hot) indicators on the operable loops are consistent, it is reasonable to conclude that Loop 4 is adequately removing decay heat.

The WBN-1 safe shutdown logic diagram for an Appendix R fire identifies T(hot) indication as required for the safety function of SG level control in redundant shutdown logic paths. The T(hot) indications are used by the operators in the ACR to monitor cooldown rate and maintain appropriate SG level. If the T(hot) indication in the affected RCS loop (Loop 4) is not available, success for monitoring cooldown rate and maintaining SG level control can still be achieved via the remaining available T(hot) indicators in the other three loops.

Therefore, the NRC staff has determined that the requirements of 10 CFR Part 50, Appendix A, GDC 13 are generally met without the use of the RCS Loop 4 T(hot) indicator in the ACR since there is adequate instrumentation to monitor variables and systems to ensure adequate safety of the plant during scenarios where the MCR is evacuated.

3.3 10 CFR Part 50, Appendix A, GDC 19

Normal plant operations are carried out from the MCR and are not impacted by the inoperable RCS T(hot) indicator on Loop 4. However, there are certain scenarios where the MCR may need to be evacuated. These scenarios include fire and smoke in the control room, flooding in the control room, and some other non-fire-related, but unspecified reason. For such MCR evacuation, the plant operator is required to trip the reactor before abandoning the control room and the safe shutdown will continue to be controlled from the ACR. It is reasonable to conclude that the T(hot) indicator in Loop 4 would be comparable to the other loops with operating T(hot) indicators. Thus, the other operable loops' T(hot) indicators can be monitored to ensure safe shutdown. Additionally, adequate redundancy is provided by the operable parameters on Loop 4 (SG pressure, SG level, AFW flow, and SG T(sat) indications) that could be monitored to ensure decay heat removal in Loop 4. The controls and indications used in the ACR are not subject to control room fire and will remain functional in case of a control room fire.

The overall operating conditions can be monitored from the MCR without this inoperable RCS Loop 4 T(hot) indicator. In the event of an MCR evacuation (e.g., fire/smoke in the MCR), the plant conditions during a safe shutdown mode can be monitored from the ACR except for the unavailable T(hot) indication in RCS Loop 4. All other indications in the remaining three RCS loops (e.g., T(hot), auxiliary feedwater controls, SG pressure indication and control, SG level, and SG T(sat) indication) will be available. In addition, during a shutdown where the residual heat removal (RHR) system is activated to remove decay heat from the reactor, the plant operator can monitor the remaining three loops (Loops 1, 2, and 3) to achieve the intended purpose of monitoring decay heat removal and RCS temperature. If the operable three loops are consistent relative to T(hot) and the remaining parameters in all four loops are not contradictory, then it is reasonable to conclude that Loop 4 is performing its function to remove decay heat via the SG. Hence, the absence of RCS Loop 4 T(hot) indication in the ACR will not interfere with safe shutdown of the plant. Based on the above, the NRC staff finds that the MCR and the ACR continue to meet the requirements of GDC 19 if the RCS Loop 4 T(hot) indicator is inoperable.

3.4 10 CFR Part 50, Appendix A, GDC 34

The WBN-1 TS 3.3.4, "Remote Shutdown System," Action A requires the RCS hot leg temperature indication be restored in 30 days if one or more indications is found inoperable. Otherwise, the plant must be shut down in accordance with the timeframe prescribed in Required Action B.1 and B.2 for Condition B of the LCO for TS 3.3.4. The T(hot) temperature instruments on each of the four loops provide indication in the ACR. They are not part of the reactor protection system and do not provide any input to any safety-related shutdown system. The only component affected by the inoperable RCS Loop 4 T(hot) indicator is the corresponding hot leg temperature recorder as indicated in the licensee's application submittal dated May 29, 2015.

If the plant moves to a configuration where the RHR system is removing decay heat, the plant operator can monitor one of the operable T(hot) indications to ensure adequate decay heat removal, thus the inoperable RCS Loop 4 T(hot) indicator has no impact on the safe operation and shutdown of the plant in this configuration. Based on the above, the NRC staff has determined that the licensee continues to meet the requirements of 10 CFR Part 50, Appendix A, GDC 34.

3.5 10 CFR Part 50.48 and 10 CFR Part 50, Appendix R

WBN-1 was granted its operating license on February 7, 1996. Therefore, the need to meet 10 CFR Part 50, Appendix R requirements (e.g., Section III. G "Fire Protection of Safe Shutdown Capability") has been incorporated into the operating license. The inoperable T(hot) indicator has minimal impact on the ability of the licensee to safely shutdown the plant, if the other operable T(hot) indicators are available in the ACR.

To ensure operating personnel are fully cognizant of the out-of-service instrument, the licensee will implement the following compensatory measures during the time the subject instrument is out-of-service as stated, in part, in the license amendment request submittal dated May 29, 2015:

1. Operating procedures impacted by the inoperable instrument will be revised in accordance with established practice.
2. The inoperable instrument will be appropriately tagged.
3. The inoperable instrument will be incorporated into the re-qualification training and the required reading (i.e., Night Orders) for licensed operators.

In the supplement dated June 5, 2015, TVA stated that WBN-1 will impose additional fire protection compensatory actions for the duration of this revised TS. TVA stated that WBN staff will perform transient combustible walkdowns in the control building once per shift, rather than the normal weekly periodicity. In addition to the normal hot work permit system, a licensed operator will review all control building "hot work" permits and determine if the "hot work" is necessary to be performed while the revised TS is in place. TVA also stated that the power

supplies for the unaffected T(hot) indicators will be protected to provide additional assurance of the availability of those indicators.

The supplement dated June 5, 2015, describes that even a controlled complete shutdown to 0 percent power, mid-cycle, has the potential to challenge plant safety systems (such as the reactor protection system, AFW system, and the RHR system) or even cause an unexpected plant trip. The licensee has described that the capability of the remaining indicators is sufficient to provide for safe shutdown for the duration of the TS change. The licensee concluded that the loss of this single indicator has less of an impact on plant safety, than a controlled shutdown to 0 percent power to restore the indicator.

The NRC staff has reviewed the compensatory actions, and based on the limited impact of the loss of the RCS Loop 4 T(hot) indicator, the compensatory actions are reasonable. In addition, the impact to the plant of the inoperable RCS Loop 4 T(hot) indicator is small compared to the impact of performing an additional shutdown. Therefore, allowing WBN-1 to continue Operating Cycle 13 with the inoperable RCS Loop 4 T(hot) indicator is acceptable and all fire protection program requirements continue to be met.

4.0 EXIGENT CIRCUMSTANCES

Background

The NRC's regulations contain provisions for issuance of amendments when the usual 30-day public comment period cannot be met. These provisions are applicable under exigent circumstances. Consistent with the requirements in 10 CFR 50.91(a)(6), exigent circumstances exist when: (1) a licensee and the NRC must act quickly; (2) time does not permit the NRC to publish a *Federal Register* notice allowing 30 days for prior public comment; and (3) the NRC determines that the amendment involves no significant hazards considerations. As discussed in the licensee's application dated May 29, 2015, the licensee requested that the proposed amendment be processed by the NRC on an exigent basis.

On May 16, 2015, TVA discovered that Temperature Indicator (TI) 1-TI-68-65C was not operable. Upon the discovery of this condition, TVA entered TS 3.3.4, "Remote Shutdown System," Condition A. Condition A requires restoration of the TI within 30 days. TVA isolated the problem to components of the TI (modifier circuit or thermocouple) that are both located inside the Reactor Building Polar Crane Wall. The repair of the affected instrumentation precludes repair at power because the affected equipment is located inside the Reactor Building Polar Crane wall, which is a high dose area during power operations.

Although TVA had experienced a failure of the Loop 4 hot leg instrumentation in 2004, the issues associated with the current failure are different than the previous failure, therefore, TVA could not have anticipated the current failure. The exigent circumstance for the amendment request is due to the 30-day completion time for Condition A.1 of TS 3.3.4, which expires on June 15, 2015, at approximately 04:48 EDT, at which point a plant shutdown is required.

Summary

If the proposed amendment is not granted, TS 3.3.4 would require that the plant be shut down by June 15, 2015, as repairs to the RCS Loop 4 T(hot) indicator cannot be made while the unit is in operation.

Based on the above circumstances, the NRC staff finds that the licensee made a timely application for the proposed amendment following identification of the issue. In addition, the NRC staff finds that the licensee could not avoid the exigency because failure of the instrumentation could not be anticipated. Based on these findings, and the determination that the amendment involves no significant hazards consideration as discussed in Section 5.0 below, the NRC staff has determined that a valid need exists for issuance of the license amendment using the exigent provisions of 10 CFR 50.91(a)(6).

5.0 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Under the provisions in 10 CFR 50.91(a)(6), the NRC notifies the public in one of two ways: (1) by issuing a *Federal Register* notice providing notice of an opportunity for hearing and allowing at least 2 weeks from the date of the notice for prior public comment; or (2) by using local media to provide reasonable notice to the public in the area surrounding the licensee's facility. In this case, a notice was published on June 7 and June 10, 2015, in *The Advocate & Democrat* and *The Herald-News* as well as June 5 and June 8, 2015, in *The Daily Post-Athenian*, requesting comment by June 11, 2015.

As required by 10 CFR 50.91(a)(1), when a licensee requests an amendment, it must provide to the Commission its analysis about the issue of no significant hazards consideration using the standards in 10 CFR 50.92. Under 10 CFR 50.92(c), a proposed amendment to an operating license 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.

The licensee's determination of no significant hazards consideration is presented below:

The proposed change will revise the Remote Shutdown System Technical Specification Table 3.3.4-1, Function 4a, "RCS Hot Leg Temperature Indication," to allow operation with only three of four loop remote shutdown indications for Reactor Coolant System (RCS) hot leg temperature until the Cycle 13 refueling outage.

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

Response: No.

The proposed TS change to allow operation with only three of four loop remote shutdown indications for RCS hot leg temperature until the Cycle 13 refueling outage is only applicable to the following conditions:

- A. Fire or smoke in the Main Control Room (MCR).
- B. An evacuation of the MCR due to some other (non-fire) unspecified reason.
- C. The design basis flood.

The inoperability of the one T(hot) indicator does not change the probability of occurrence for these events because the indicator is not an accident initiator. The T(hot) indicators on the four loops are used for indication only and have no automatic control functions. During safe shutdown for an MCR evacuation event, design basis flood or fire related event, no fuel damage is postulated to occur, nor is the integrity of the reactor coolant pressure boundary or containment barriers postulated to be lost. Sufficient redundancy exists with the operational instrumentation to ensure that decay heat removal functions are not adversely affected by this change. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed TS change does not alter the function of the Remote Shutdown System which is to achieve and maintain safe reactor shutdown from outside the MCR. The TS instrumentation and controls required are such that sufficient capability is retained for decay heat removal via the Steam Generators (SGs) to provide the indication required for safe shutdown capabilities. The change will not result in the installation of any new equipment or system. The T(hot) instrument is used for indication only and has no automatic control functions. No new operations procedures will be created by this change. Appropriate operational procedures will be updated to clarify that the Loop 4 T(hot) indication in the Auxiliary Control Room (ACR) is not available during the remainder of Cycle 13. No new operating conditions or modes will be created by this proposed change. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No.

The radiological dose consequences are not affected, because this change is only applicable to the following conditions.

- A. Fire or smoke in the MCR.
- B. An evacuation of the MCR due to some other (non-fire) unspecified reason.
- C. The design basis flood.

During safe shutdown for an MCR evacuation event, design basis flood or fire related event, no fuel damage is postulated to occur, nor is the integrity of the reactor coolant pressure boundary or containment barriers postulated to be lost. Sufficient redundancy exists with the operational instrumentation to ensure that decay heat removal functions are not adversely affected by this change. Because the conduit, cables and equipment that provide T(hot) indication in the ACR are routed outside the Control Building, removal of the Loop 4 T(hot) indication is acceptable due to the redundant paths not being affected by the Control Building fire. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

The NRC Staff has reviewed the licensee's analysis. Based on its review, NRC staff determined that the amendment involves no significant hazards considerations.

6.0 STATE CONSULTATION

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

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 no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The amendment involves no significant hazards consideration. Accordingly, the amendment meets 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 amendment.

8.0 CONCLUSION

The NRC staff evaluated the licensee's proposed change to TS Table 3.3.4-1, Function 4a, "RCS Hot Leg Temperature Indication." Based on the considerations discussed in this document, the NRC staff concludes that the proposed changes to TS Table 3.3.4-1 are acceptable. The NRC staff finds that (1) there is a 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 the health and safety of the public.

Contributors: G. Singh
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Date: June 12, 2015

J. Shea

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The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

If you have any questions regarding this letter, please contact me at (301) 415-1349 or by e-mail at Jeanne.Dion@nrc.gov.

Sincerely,

/RA/

Jeanne A. Dion, Project Manager
Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosures:

1. Amendment No. 100 to NPF-90
2. Safety Evaluation

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