



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

---

CNL-18-092

August 1, 2018

10 CFR 50.90

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Units 1 and 2  
Facility Operating License Nos. NPF-90 and NPF-96  
NRC Docket Nos. 50-390 and 50-391

**SUBJECT: Application to Revise the Watts Bar Nuclear Plant Units 1 and 2 Technical Specifications to Adopt TSTF-266-A, Revision 3, "Eliminate the Remote Shutdown System Table of Instrumentation and Controls" (WBN-TS-18-02)**

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," Tennessee Valley Authority (TVA) is submitting a request for an amendment to Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN) Units 1 and 2, respectively, for Nuclear Regulatory Commission (NRC) approval. The proposed amendment revises WBN Units 1 and 2 Technical Specifications (TS) to adopt Technical Specification Task Force (TSTF) Traveler 266-A, Revision 3, "Eliminate the Remote Shutdown System Table of Instrumentation and Controls." TSTF-266-A relocates WBN Units 1 and 2 TS Table 3.3.4-1, "Remote Shutdown System Instrumentation and Controls," to the TS Bases, where changes can be administered under the provisions of TS 5.6, "TS Bases Control Program."

The Enclosure to this letter provides a description of the proposed changes, technical evaluation of the proposed changes, regulatory evaluation, and a discussion of environmental considerations. Attachments 1 and 2 to the Enclosure provide the existing WBN Units 1 and 2 TS and Bases pages marked-up to show the proposed changes. The proposed Bases changes are provided for information only. Attachment 3 to the Enclosure provides the existing WBN Unit 1 TS pages retyped to show the proposed changes.

U.S. Nuclear Regulatory Commission  
CNL-18-092  
Page 2  
August 1, 2018

TVA has determined that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and Enclosure to the Tennessee State Department of Environment and Conservation.

TVA requests approval of the proposed license amendment within one year of the date of this letter, with the amendment being implemented within 30 days of issuance of the amendment.

There are no new regulatory commitments in this submittal. Please address any questions regarding this request to Ed Schrull at 423-751-3850.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 1st day of August 2018.

Respectfully,



E. K. Henderson  
Director, Nuclear Regulatory Affairs

Enclosure: Evaluation of Proposed Change

cc (w/Enclosure):

U.S. Nuclear Regulatory Commission, Region II Administrator  
NRC Senior Resident Inspector, Watts Bar Nuclear Plant  
NRC Project Manager, Watts Bar Nuclear Plant  
Director, Division of Radiological Health – Tennessee State Department of  
Environment and Conservation

**Evaluation of the Proposed Change**

**Subject: Application to Revise the Watts Bar Nuclear Plant, Units 1 and 2 Technical Specifications to Adopt TSTF-266-A, Revision 3, “Eliminate the Remote Shutdown System Table of Instrumentation and Controls” (WBN-TS-18-02)**

**Contents**

1.0 SUMMARY DESCRIPTION..... 2

2.0 Detailed Description ..... 2

3.0 TECHNICAL EVALUATION..... 3

4.0 REGULATORY EVALUATION ..... 3

    4.1 Applicable Regulatory Requirements and Criteria ..... 3

        4.1.1 Regulations..... 3

        4.1.2 General Design Criteria ..... 4

    4.2 Precedent ..... 4

    4.3 Significant Hazards Consideration ..... 5

    4.4 Conclusions ..... 6

5.0 ENVIRONMENTAL CONSIDERATION ..... 6

6.0 REFERENCE ..... 6

**ATTACHMENTS**

- 1. Proposed TS Changes (Mark-Ups)
- 2. Proposed TS Changes (Final Typed)
- 3. Proposed TS Bases Page Changes (Mark-Ups)

## 1.0 SUMMARY DESCRIPTION

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," Tennessee Valley Authority (TVA) is requesting a license amendment to amend the Watts Bar Nuclear Plant (WBN) Units 1 and 2 Technical Specifications (TS) to adopt Technical Specification Task Force (TSTF) Traveler TSTF-266-A, Revision 3, "Eliminate the Remote Shutdown System Table of Instrumentation and Controls." TSTF-266-A relocates WBN Units 1 and 2 TS Table 3.3.4-1, "Remote Shutdown System Instrumentation and Controls," to the TS Bases, where changes can be administered under the provisions of TS 5.6, "Technical Specifications (TS) Bases Control Program."

## 2.0 DETAILED DESCRIPTION

### 2.1 Reason for the Proposed Change

TSTF-266-A relocates WBN Units 1 and 2 TS Table 3.3.4-1 to TS Bases B 3.3.4, which allows for future changes to be made under TS 5.6, "TS Bases Control Program." The Nuclear Regulatory Commission (NRC) documented their approval of TSTF-266-A, Revision 3, in the referenced letter.

### 2.2 Description of the Proposed Change

WBN Units 1 and 2 TS 3.3.4 details the instrumentation that supports Remote Shutdown System (RSS) operability. The specific Functions are listed on WBN Units 1 and 2 TS Table 3.3.4-1.

This change eliminates the table of instrumentation and controls referenced in WBN Units 1 and 2 TS 3.3.4 for the RSS and relocates this table to the TS Bases. As stated in TSTF-266-A:

"It is unnecessary to list the specific instruments and controls in the TS to provide adequate assurance that the functions can be performed. [General Design Criterion] GDC 19 requires that the remote shutdown capability be provided. The [Limiting Condition for Operation] LCO provides references to the Functions, which are described in the Bases. This is sufficient to ensure that the system will be operable. Listing the specific instrumentation and controls is unnecessary and may lead to needless expenditure of licensee and NRC resources processing license amendments to revise the table when the information can be adequately controlled by the licensee."

### 2.3 Variations from TSTF-266-A

The following administrative variation is taken:

- The information contained in WBN Units 1 and 2 TS Table 3.3.4-1 is different from the table included in TSTF-266-A in that the functions listed in Table 3.3.4-1 of TSTF-266-A are not identical to those listed in WBN Units 1 and 2 TS Table 3.3.4-1. However, TSTF-266-A states that the table is for illustration purposes only, and that it does not attempt to encompass every function used at every unit.

### **3.0 TECHNICAL EVALUATION**

The RSS provides the control room operator with sufficient instrumentation and controls to place and maintain the unit in a safe shutdown condition from a location other than the control room. This capability is necessary to protect against the possibility that the control room becomes inaccessible. A safe shutdown condition is defined as Mode 3. With the unit in Mode 3, the Auxiliary Feedwater (AFW) System and the steam generator (SG) safety valves or the SG atmospheric dump valves (ADVs) can be used to remove core decay heat and meet all safety requirements. The long term supply of water for the AFW System and the ability to borate the Reactor Coolant System (RCS) from outside the control room allows extended operation in Mode 3.

If the control room becomes inaccessible, the operators can establish control in the auxiliary control room, and place and maintain the unit in Mode 3. Not all controls and necessary transfer switches are located in the auxiliary control room. Some controls and transfer switches will have to be operated locally at the switchgear, motor control panels, or other local stations. Some instrumentation serves a dual purpose in providing information to the operator. This instrumentation includes the pressurizer pressure indicator, which can be used to indicate pressurizer pressure and RCS wide range pressure, and the SG pressure indicators, which can be used to indicate SG pressure and SG T<sub>sat</sub>. Additionally, controls for the RCS power operated relief valves can be used for both RCS pressure and inventory control. The unit automatically reaches Mode 3 following a unit shutdown and can be maintained safely in Mode 3 for an extended period of time.

The operability of the remote shutdown control and instrumentation functions ensures there is sufficient information available on selected unit parameters to place and maintain the unit in Mode 3 should the control room become inaccessible. Should it be necessary to go to Mode 4 or Mode 5, decay heat removal via the Residual Heat Removal System is available to support the transition.

As noted in TSTF-266-A, the revised LCO provides references to the RSS Functions that will be described in the TS Bases. This is sufficient to ensure that the RSS as described above will be Operable.

### **4.0 REGULATORY EVALUATION**

#### **4.1 APPLICABLE REGULATORY REQUIREMENTS AND CRITERIA**

##### **4.1.1 Regulations**

10 CFR 50.36 sets forth the regulatory requirements for the content of the TSs. This regulation requires, in part, that the TS contain LCOs. 10 CFR 50.36(c)(2)(ii), states that TS LCOs must be established for items meeting Criteria 1-4 of 10 CFR 50.36. As stated in the TS 3.3.4 Bases, the RSS is considered an important contributor to the reduction of unit risk to accidents, and as such it has been retained in the TS. However, RSS instrument table itself does not meet any of the criteria of 10 CFR 50.36(c)(ii) and so may be relocated from the TS to the TS Bases.

#### 4.1.2 General Design Criteria

As noted in the WBN dual-unit updated final safety analysis report (UFSAR) Section 3.1.1, WBN was designed to meet the intent of the "Proposed General Design Criteria for Nuclear Power Plant Construction Permits" published in July 1967. The WBN construction permit was issued in January 1973. The WBN Unit 1 UFSAR, however, addresses the General Design Criteria (GDC) published as Appendix A to 10 CFR 50 in July 1971, including Criterion 4 as amended October 27, 1987.

The WBN UFSAR contains the GDC followed by a discussion of the design features and procedures that meet the intent of the criteria. The relevant GDC with the discussion of the design features and procedures that meet the intent of the criteria are included below. Any exception to the 1971 GDC is identified in the discussion of the corresponding criterion.

##### Criterion 19, Control Room

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 conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. 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.

Compliance with GDC 19 is described in Section 3.1.2 of the WBN dual-unit UFSAR. This proposed change does not affect GDC 19 compliance.

#### 4.2 PRECEDENT

Most recently, the Vogtle Electric Generating Plant, Units 1 and 2, and Joseph M. Farley Nuclear Plant, Units 1 and 2, included TSTF-266 in License Amendment Requests that adopted a number of TSTF travelers. These applications were approved with the issuance of License Amendments 180/161 on June 9, 2016 (ML15132A569), and 203/188 on August 3, 2016 (ML15233A448), respectively. Additionally, the proposed change is consistent with the TVA Sequoyah Nuclear Plant (SQN) that incorporated TSTF-266 as part of their conversion to the Improved TS (ML15238B460, ML15236A351, ML15258A511, ML15254A509, and ML15258A516).

#### 4.3 SIGNIFICANT HAZARDS CONSIDERATION

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, Tennessee Valley Authority (TVA) is submitting a license amendment request to adopt Technical Specification Task Force (TSTF) Traveler TSTF-266-A, Revision 3, "Eliminate the Remote Shutdown System Table of Instrumentation and Controls" for the Watts Bar Nuclear Plant (WBN) Units 1 and 2 Technical Specifications (TS). TSTF-266 relocates TS Table 3.3.4-1, "Remote Shutdown System Instrumentation and Controls," to the TS Bases, where changes can be administered under the provisions of TS 5.6, "Technical Specifications (TS) Bases Control Program." TVA has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below.

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

**Response: No.**

The proposed change removes the list of Remote Shutdown System (RSS) instrumentation and controls from the TS and places them in the TS Bases. The TS continue to require that the instrumentation and controls be operable. The location of the list of Remote Shutdown System instrumentation and controls is not an initiator to any accident previously evaluated. The proposed change will have no effect on the mitigation of any accident previously evaluated because the instrumentation and controls continue to be required to be operable.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of any 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 change does not involve a physical alteration to the plant (i.e., no new or different type of equipment will be installed) or a change to the methods governing normal plant operation. The changes do not alter the assumptions made in the safety analysis.

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 proposed change removes the list of RSS instrumentation and controls from the TS and places it in the TS Bases. The review performed by the Nuclear Regulatory Commission when the list of RSS instrumentation and controls is revised will no longer be needed unless the criteria of 10 CFR 50.59 are not met such that prior Nuclear Regulatory Commission (NRC) review is required. The TS requirement that the RSS be operable, the definition of operability, the requirements

## Enclosure

of 10 CFR 50.59, and the TS Bases Control Program are sufficient to ensure that revision of the list without prior NRC review and approval does not introduce a significant safety risk.

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

Based on the above, TVA concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

### **4.4 CONCLUSIONS**

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) 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.

### **5.0 ENVIRONMENTAL CONSIDERATION**

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

### **6.0 REFERENCE**

NRC letter to the Nuclear Energy Institute, dated September 10, 1999 (Legacy Accession Number 9909160189)



Enclosure

**Attachment 1**

**Proposed Technical Specification Changes (Mark-Up)  
(5 pages)**

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions ~~in Table 3.3.4-1~~ shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each Function.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

Removed from TS and placed in Bases as Table B 3.3.4-1. Insert "Page Intentionally Left Blank"

**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 <sub>sat</sub> 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 Cycle 13.

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions ~~in Table 3.3.4.1~~ shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each Function.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

Removed from TS and placed in  
Bases as Table B 3.3.4-1. Insert  
"Page Intentionally Left Blank"

Remote Shutdown System  
3.3.4

Table 3.3.4-1 (page 1 of 2)  
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 on page 2 of 2)
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

Removed from TS and placed in Bases  
as Table B 3.3.4-1. Delete page.

Table 3.3.4-1 (page 2 of 2)  
Remote Shutdown System Instrumentation and Controls

Note A:

For Function 4a, the temperature indicator for RCS hot leg 3 is not required to be operable for the remainder of Cycle 2. If WBN Unit 2 enters Mode 3 or 4 prior to the Unit 2 Cycle 2 refueling outage, TVA will determine the cause of the inoperability of the temperature indicator for RCS hot leg 3 and the following actions will be taken:

1. If the problem is with the temperature modifier circuit, the temperature modifier circuit will be repaired or replaced, and the temperature indicator for RCS hot leg 3 will be restored to OPERABLE status prior to plant startup.
2. If the problem is with the thermocouple, the thermocouple will be repaired or replaced, if WBN Unit 2 enters Mode 5 prior to the Unit 2 Cycle 2 refueling outage, and the temperature indicator for RCS hot leg 3 will be restored to OPERABLE status prior to plant startup.

Regardless of the above actions, the temperature indicator for RCS hot leg 3 will be restored to OPERABLE status no later than the end of the Unit 2 Cycle 2 refueling outage.

Enclosure

**Attachment 2**

**Proposed TS Changes (Final Typed)  
(4 pages)**

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4                    The Remote Shutdown System Functions shall be OPERABLE. |

APPLICABILITY:            MODES 1, 2, and 3.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each Function.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A.    One or more required Functions inoperable.	A.1    Restore required Function to OPERABLE status.	30 days
B.    Required Action and associated Completion Time not met.	B.1    Be in MODE 3.	6 hours
	<u>AND</u> B.2    Be in MODE 4.	12 hours



Page Intentionally Left Blank

|

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4            The Remote Shutdown System Functions shall be OPERABLE. |

APPLICABILITY:    MODES 1, 2, and 3.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each Function.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1      Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1      Be in MODE 3.	6 hours
	<u>AND</u> B.2      Be in MODE 4.	12 hours

Page Intentionally Left Blank

|

Enclosure

**Attachment 3**

**Proposed Technical Specification Bases Changes (Mark-Ups) – For Information Only  
(8 pages)**

BASES (continued)

---

APPLICABLE  
SAFETY ANALYSES

The Remote Shutdown System is required to provide equipment at appropriate locations outside the control room with a capability to promptly shut down and maintain the unit in a safe condition in MODE 3.

The criteria governing the design and specific system requirements of the Remote Shutdown System are located in 10 CFR 50, Appendix A, GDC 19 (Ref. 1).

The Remote Shutdown System is considered an important contributor to the reduction of unit risk to accidents and as such it has been retained in the Technical Specifications as indicated in the NRC Policy Statement.

---

LCO

The Remote Shutdown System LCO provides the OPERABILITY requirements of the instrumentation and controls necessary to place and maintain the unit in MODE 3 from a location other than the control room. The instrumentation and controls typically required are listed in Table B 3.3.4-1 in the accompanying LCO.

The controls, instrumentation, and transfer switches are required for:

- Core reactivity control (initial and long term);
- RCS pressure control;
- Decay heat removal via the AFW System and the SG safety valves or SG ADVs;
- RCS inventory control via charging and letdown flow;
- Decay Heat Removal via RHR System;
- Safety support systems though not specifically listed in Table B 3.3.4-1, for the above Functions, including service water, component cooling water, reactor containment fan cooler units, auxiliary control air compressors, and onsite power, including the diesel generators are required as discussed in FSAR Section 7.4 (Reference 2).

---

(continued)

BASES

---

LCO  
(continued)

A Function of a Remote Shutdown System is OPERABLE if all instrument and control channels needed to support the Remote Shutdown System Function are OPERABLE. Reference 3 and 4 provides additional information on required equipment. In some cases, Table B 3.3.4-1 may indicate that the required information or control capability is available from several alternate sources. In these cases, the Function is OPERABLE as long as one channel of any of the alternate information or control sources is OPERABLE.

The remote shutdown instrument and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the instruments and control circuits will be OPERABLE if unit conditions require that the Remote Shutdown System be placed in operation.

---

APPLICABILITY

The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3. 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.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the facility is already subcritical and in a condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control functions if control room instruments or controls become unavailable.

---

ACTIONS

A Remote Shutdown System division is inoperable when each function is not accomplished by at least one designated Remote Shutdown System channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases.

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function ~~listed on Table 3.3.4-1.~~

The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

(continued)

BASES

---

ACTIONS  
(continued)

A.1

Condition A addresses the situation where one or more required Functions of the Remote Shutdown System are inoperable. This includes the control and transfer switches for any required Function, listed in Table 3.3.4-1, as well as the control and transfer switches.

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

---

SURVEILLANCE  
REQUIREMENTS

SR 3.3.4.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

(continued)

BASES

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

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

Notes:

- A. For Function 4a, the temperature indicator for RCS hot leg 4 is not required to be operable for the remainder of Cycle 13.



BASES (continued)

---

APPLICABLE  
SAFETY  
ANALYSES

The criteria governing the design and specific system requirements of the Remote Shutdown System are located in 10 CFR 50, Appendix A, GDC 19 (Ref. 1).

The Remote Shutdown System is considered an important contributor to the reduction of unit risk to accidents and as such it has been retained in the Technical Specifications as indicated in 10 CFR 50.36(c)(2)(ii).

---

LCO

The Remote Shutdown System LCO provides the OPERABILITY requirements of the instrumentation and controls necessary to place and maintain the unit in MODE 3 from a location other than the control room. The instrumentation and controls typically required are listed in Table [B 3.3.4-1](#) in the accompanying LCO.

The controls, instrumentation, and transfer switches are required for:

- Core reactivity control (initial and long term);
- RCS pressure control;
- Decay heat removal via the AFW System and the SG safety valves or SG ADVs;
- RCS inventory control via charging and letdown flow;
- Decay Heat Removal via RHR System;
- Safety support systems though not specifically listed in Table [B 3.3.4-1](#), for the above Functions, including service water, component cooling water, reactor containment fan cooler units, auxiliary control air compressors, and onsite power, including the diesel generators are required as discussed in FSAR Section 7.4 (Reference 2).

A Function of a Remote Shutdown System is OPERABLE if all instrument and control channels needed to support the Remote Shutdown System Function are OPERABLE. References 3 and 4 provide additional information on required equipment. In some cases, Table [B 3.3.4-1](#) may indicate that the required information or control capability is available from several alternate sources. In these cases, the Function is OPERABLE as long as one channel of any of the alternate information or control sources is OPERABLE.

(continued)

BASES

---

LCO  
(continued)                      The remote shutdown instrument and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the instruments and control circuits will be OPERABLE if unit conditions require that the Remote Shutdown System be placed in operation.

---

APPLICABILITY                      The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3. 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.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the facility is already subcritical and in a condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control functions if control room instruments or controls become unavailable.

---

ACTIONS                              [A Remote Shutdown System division is inoperable when each function is not accomplished by at least one designated Remote Shutdown System channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases.](#)

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function ~~listed on Table 3.3.4-1.~~

The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A addresses the situation where one or more required Functions of the Remote Shutdown System are inoperable. This includes [the control and transfer switches for any required Function, listed in Table 3.3.4-1, as well as the control and transfer switches.](#)

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

(continued)

BASES

Table B 3.3.4-1 (page 1 of 2)  
Remote Shutdown System Instrumentation and Controls

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

BASES (continued)

---

Table B 3.3.4-1 (page 2 of 2)  
Remote Shutdown System Instrumentation and Controls

---

Note A:

For Function 4a, the temperature indicator for RCS hot leg 3 is not required to be operable for the remainder of Cycle 2. If WBN Unit 2 enters Mode 3 or 4 prior to the Unit 2 Cycle 2 refueling outage, TVA will determine the cause of the inoperability of the temperature indicator for RCS hot leg 3 and the following actions will be taken:

1. If the problem is with the temperature modifier circuit, the temperature modifier circuit will be repaired or replaced, and the temperature indicator for RCS hot leg 3 will be restored to OPERABLE status prior to plant startup.
2. If the problem is with the thermocouple, the thermocouple will be repaired or replaced, if WBN Unit 2 enters Mode 5 prior to the Unit 2 Cycle 2 refueling outage, and the temperature indicator for RCS hot leg 3 will be restored to OPERABLE status prior to plant startup.

Regardless of the above actions, the temperature indicator for RCS hot leg 3 will be restored to OPERABLE status no later than the end of the Unit 2 Cycle 2 refueling outage.

---