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

May 2, 2023

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: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 - ISSUANCE OF AMENDMENT NOS. 328, 351, AND 311 REGARDING ADOPTION OF TSTF-505, REVISION 2, FOR RISK-INFORMED COMPLETION TIMES AND TSTF-439, REVISION 2, TO ELIMINATE SECOND COMPLETION TIMES (EPID L-2022-LLA-0049)

Dear Mr. Barstow:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment Nos. 328, 351, and 311 to Renewed Facility Operating Licenses Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2, and 3, respectively. These amendments are in response to your application dated March 31, 2022, as supplemented by letter dated December 1, 2022, and March 29, 2023.

The amendments revise the Browns Ferry technical specification requirements to permit the use of Risk-Informed Completion Times in accordance with Technical Specification Task Force (TSTF) Traveler TSTF-505-A, Revision 2, “Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b.” Additionally, the amendments revise the technical specifications to eliminate second completion times in accordance with Traveler TSTF-439-A, “Eliminate Second Completion Times Limiting Time From Discovery of Failure To Meet an LCO.”

A copy of the Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's monthly Federal Register notice.

Sincerely,

/RA/

Kimberly J. Green, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, and 50-296

Enclosures:
1. Amendment No. 328 to DPR-33
2. Amendment No. 351 to DPR-52
3. Amendment No. 311 to DPR-68
4. Safety Evaluation

cc: Listserv

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 328
Renewed License No. DPR-33

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Tennessee Valley Authority (the licensee) dated March 31, 2022, as supplemented by letters dated December 1, 2022, and March 29, 2023, 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.

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 Renewed Facility Operating License No. DPR-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 328, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

David J. Wrona

Digitally signed by David J. Wrona
Date: 2023.05.02 10:42:04 -04'00'

David J. Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications and Renewed Facility Operating License

Date of Issuance: May 2, 2023

ATTACHMENT TO LICENSE AMENDMENT NO. 328

RENEWED FACILITY OPERATING LICENSE NO. DPR-33

BROWNS FERRY NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-259

Replace the following pages of the Renewed Facility Operating License and Appendix A, Technical Specifications (TSs), with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
License DPR-33	License DPR-33
Page 3	Page 3

Remove	Insert	Remove	Insert
1.3-3	1.3-3	–	3.5-2a
1.3-6	1.3-6	3.5-12	3.5-12
1.3-8	1.3-8	3.6-6	3.6-6
1.3-15	1.3-15	3.6-10	3.6-10
–	1.3-15a	3.6-11	3.6-11
3.1-23	3.1-23	3.6-12	3.6-12
3.3-1	3.3-1	3.6-31	3.6-31
3.3-2	3.3-2	3.6-34	3.6-34
3.3-2a	3.3-2a	3.6-36	3.6-36
3.3-21	3.3-21	3.7-3	3.7-3
3.3-32	3.3-32	3.7-6	3.7-6
3.3-36	3.3-36	3.8-2	3.8-2
3.3-37	3.3-37	3.8-3a	3.8-3a
3.3-38	3.3-38	3.8-4	3.8-4
3.3-39	3.3-39	3.8-5	3.8-5
3.3-40	3.3-40	3.8-22	3.8-22
–	3.3-40a	3.8-34	3.8-34
3.3-48	3.3-48	3.8-35	3.8-35
3.3-53	3.3-53	3.8-36	3.8-36
3.3-70	3.3-70	3.8-37	3.8-37
3.5-1	3.5-1	5.0-21c	5.0-21c
3.5-1a	--	–	5.0-21d
3.5-2	3.5-2		

(3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) 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 or equipment and instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3952 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 328, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 234 to Facility Operating License DPR-33, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 234. For SRs that existed prior to Amendment 234, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 234.

1.3 Completion Times

DESCRIPTION (continued)

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery..."

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours

(continued)

EXAMPLES

EXAMPLE 1.3-3 (continued)

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

It is possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. However, doing so would be inconsistent with the basis of the Completion Times. Therefore, there shall be administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the Completion Times for those Conditions are not inappropriately extended.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One subsystem inoperable.	A.1	Restore subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

1.3 Completion Times (continued)

EXAMPLES

EXAMPLE 1.3-8 (continued)

When a subsystem is declared inoperable, Condition A is entered. The 7 day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition B must also be entered.

The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

If the 7 day Completion Time clock of Condition A has expired and subsequent changes in plant condition result in exiting the applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start.

If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B may be terminated.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SLC subsystem inoperable.	A.1 Restore SLC subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Two SLC subsystems inoperable.	B.1 Restore one SLC subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours OR In accordance with the Risk Informed Completion Time Program
	OR	
	A.2 ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- Place associated trip system in trip.	12 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- One or more Functions with one or more required channels inoperable in both trip systems.	B.1	Place channel in one trip system in trip.	6 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	B.2	Place one trip system in trip.	6 hours OR In accordance with the Risk Informed Completion Time Program
C. One or more Functions with RPS trip capability not maintained.	C.1	Restore RPS trip capability.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 26% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1	Initiate action to implement the Manual Backup Stability Protection (BSP) Regions defined in the COLR.	Immediately
	AND		
	I.2	Implement the Automated BSP Scram Region using the modified APRM Flow Biased Simulated Thermal Power-High scram setpoints defined in the COLR.	12 hours
	AND		
	I.3	Initiate action to submit an OPRM report in accordance with Specification 5.6.7.	Immediately

(continued)

3.3 INSTRUMENTATION

3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Two channels of feedwater and main turbine high water level trip instrumentation per trip system shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 23% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more feedwater and main turbine high water level trip channels inoperable, in one trip system.	A.1 Place channel(s) in trip.	7 days OR In accordance with the Risk Informed Completion Time Program
B. One or more feedwater and main turbine high water level trip channels inoperable in each trip system.	B.1 Restore feedwater and main turbine high water level trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

3.3 INSTRUMENTATION

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation

LCO 3.3.4.2 Two channels per trip system for each ATWS-RPT instrumentation Function listed below shall be OPERABLE:

a. Reactor Vessel Water Level - Low Low, Level 2; and

b. Reactor Steam Dome Pressure - High.

APPLICABILITY: MODE 1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Restore channel to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
	OR	
	A.2 ----------NOTE---------- Not applicable if inoperable channel is the result of an inoperable breaker. ---------- Place channel in trip.	14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1	----------NOTES---------- Only applicable for Functions 1.a, 1.b, 2.a, and 2.b. ----------	
		Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for features in both divisions
	AND		
	B.2	----------NOTE---------- Only applicable for Functions 3.a and 3.b. ----------	
		Declare High Pressure Coolant Injection (HPCI) System inoperable.	1 hour from discovery of loss of HPCI initiation capability
	AND		
	B.3	Place channel in trip.	24 hours OR ---------NOTE------ Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1 ----------NOTES---------- Only applicable for Functions 1.c, 1.e, 2.c, 2.d, and 2.f. ----------	
	Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for features in both divisions
	AND	
	C.2 Restore channel to OPERABLE status.	24 hours OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program
D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1 ----------NOTE---------- Only applicable if HPCI pump suction is not aligned to the suppression pool. ----------	
	Declare HPCI System inoperable.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	E.1	----------NOTES---------- Only applicable for Function 1.d. ----------	
		Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for subsystems in both divisions
	AND		
	E.2	Restore channel to OPERABLE status.	7 days OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	F.1 Declare Automatic Depressurization System (ADS) valves inoperable. AND	1 hour from discovery of loss of ADS initiation capability in both trip systems
	F.2 Place channel in trip.	96 hours from discovery of inoperable channel concurrent with HPCI or reactor core isolation cooling (RCIC) inoperable OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1 Declare ADS valves inoperable. AND G.2 Restore channel to OPERABLE status.	1 hour from discovery of loss of ADS initiation capability in both trip systems 96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.	H.1 Declare associated supported ECCS feature(s) inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.5.3 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.3 The RCIC System instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	B.1 Declare RCIC System inoperable. <u>AND</u> B.2 Place channel in trip.	1 hour from discovery of loss of RCIC initiation capability 24 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 ----------NOTE---------- Only applicable for Function 1.d if two or more channels are inoperable. ---------- Place channel in trip.	12 hours for Functions 2.a, 2.b, 5.h, 6.b, and 6.c OR In accordance with the Risk Informed Completion Time Program AND 24 hours for Functions other than Functions 2.a, 2.b, 5.h, 6.b, and 6.c OR In accordance with the Risk Informed Completion Time Program
	AND	
	A. 2 ----------NOTE---------- Only applicable for Function 1.d when 15 of 16 channels are OPERABLE. ---------- Place channel in trip.	30 days

(continued)

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Table 3.3.8.1-1 Function on 4 kV shutdown boards A, B, C, and D shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One degraded voltage relay channel inoperable on one or more shutdown board(s). AND The loss of voltage relay channels on the affected shutdown board(s) are OPERABLE.	A.1 Verify by administrative means that the other two degraded voltage relay channels and associated timers on the affected shutdown board(s) are OPERABLE. AND A.2 Place the degraded voltage relay channel in trip.	Immediately 15 days OR In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS - Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to HPCI.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable. OR One low pressure coolant injection (LPCI) pump in both LPCI subsystems inoperable.	A.1 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. HPCI System inoperable.	C.1	Verify by administrative means RCIC System is OPERABLE. AND	Immediately
	C.2	Restore HPCI System to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
D. HPCI System inoperable. AND Condition A entered.	D.1	Restore HPCI System to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	D.2	Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
F. One ADS valve inoperable. AND Condition A entered.	F.1 Restore ADS valve to OPERABLE status. OR	72 hours OR In accordance with the Risk Informed Completion Time Program
	F.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.3 RCIC System

LCO 3.5.3 The RCIC System shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to RCIC.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RCIC System inoperable.	A.1	Verify by administrative means High Pressure Coolant Injection System is OPERABLE.	Immediately
	AND		
	A.2	Restore RCIC System to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Reduce reactor steam dome pressure to ≤ 150 psig.	36 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Lock an OPERABLE door closed. AND	24 hours
	B.3	----------NOTE---------- Air lock doors in high radiation areas or areas with limited access due to inerting may be verified locked closed by administrative means. ---------- Verify an OPERABLE door is locked closed.	Once per 31 days
C. Primary containment air lock inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate primary containment overall leakage rate per LCO 3.6.1.1, using current air lock test results. AND	Immediately
	C.2	Verify a door is closed. AND	1 hour
	C.3	Restore air lock to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable except due to MSIV leakage not within limits.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line OR In accordance with the Risk Informed Completion Time Program AND 8 hours for main steam line OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days [following isolation] for isolation devices outside primary containment AND Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with two PCIVs inoperable except due to MSIV leakage not within limits.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ----------NOTE---------- Only applicable to penetration flow paths with only one PCIV. ---------- One or more penetration flow paths with one PCIV inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. <u>AND</u> C.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	4 hours except for excess flow check valves (EFCVs) <u>AND</u> 12 hours for EFCVs Once per 31 days [following isolation]

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Four RHR suppression pool cooling subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1 Restore the RHR suppression pool cooling subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool cooling subsystems inoperable.	B.1 Restore one RHR suppression pool cooling subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR suppression pool cooling subsystems inoperable.	C.1 Restore required RHR suppression pool cooling subsystems to OPERABLE status.	8 hours

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal (RHR) Suppression Pool Spray

LCO 3.6.2.4 Four RHR suppression pool spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR suppression pool spray subsystem inoperable.	A.1	Restore the RHR suppression pool spray subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool spray subsystems inoperable.	B.1	Restore one RHR suppression pool spray subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR suppression pool spray subsystems inoperable.	C.1	Restore required RHR suppression pool spray subsystems to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.5 Residual Heat Removal (RHR) Drywell Spray

LCO 3.6.2.5 Four RHR drywell spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR drywell spray subsystem inoperable.	A.1	Restore the RHR drywell spray subsystem to OPERABLE status.	30 days
B. Two RHR drywell spray subsystems inoperable.	B.1	Restore one RHR drywell spray subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR drywell spray subsystems inoperable.	C.1	Restore required RHR drywell spray subsystems to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One RHRSW subsystem inoperable.	B.1	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling - Hot Shutdown," for RHR shutdown cooling made inoperable by the RHRSW system. ----------	
		Restore RHRSW subsystem to OPERABLE status.	30 days
C. Two required RHRSW pumps inoperable.	C.1	Restore one inoperable RHRSW pump to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
D. Two RHRSW subsystems inoperable.	D.1	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, for RHR shutdown cooling made inoperable by the RHRSW System. ----------	
		Restore one RHRSW subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

3.7 PLANT SYSTEMS

3.7.2 Emergency Equipment Cooling Water (EECW) System and Ultimate Heat Sink (UHS)

LCO 3.7.2 The EECW System with three pumps and UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required EECW pump inoperable.	A.1 Restore the required EECW pump to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met. OR Two or more required EECW pumps inoperable. OR UHS inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one shutdown board concurrent with inoperability of redundant required feature(s)
	AND		
	A.3	Restore required offsite circuit to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. One required Unit 1 and 2 DG inoperable.	B.1	Verify power availability from the offsite transmission network.	1 hour AND Once per 8 hours thereafter
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore Unit 1 and 2 DG to OPERABLE status.	7 days from discovery of unavailability of TDG(s) AND 24 hours from discovery of Condition B entry ≥ 6 days concurrent with unavailability of TDG(s) AND 14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One division of 480 V load shed logic inoperable.	C.1 Restore required division of 480 V load shed logic to OPERABLE status.	7 days
D. One division of common accident signal logic inoperable.	D.1 Restore required division of common accident signal logic to OPERABLE status.	7 days
E. Two required offsite circuits inoperable.	E.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable. AND E.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s) 24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
----------NOTE---------- Only applicable when more than one 4.16 kV shutdown board is affected. ---------- F. One required offsite circuit inoperable. AND One Unit 1 and 2 DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems - Operating," when Condition F is entered with no AC power source to any 4.16 kV shutdown board. ---------- F.1 OR F.2	Restore required offsite circuit to OPERABLE status. Restore Unit 1 and 2 DG to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program 12 hours OR In accordance with the Risk Informed Completion Time Program
----------NOTE---------- Applicable when only one 4.16 kV shutdown board is affected. ---------- G. One required offsite circuit inoperable. AND One Unit 1 and 2 DG inoperable.	G.1	Declare the affected 4.16 kV shutdown board inoperable.	Immediately

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The following DC electrical power systems shall be OPERABLE:

a. Unit DC subsystems 1, 2, and 3;

b. Shutdown Board DC subsystems A, B, C, and D;

c. Unit 1 and 2 Diesel Generator (DG) DC subsystems;

d. Unit 3 DG DC subsystem(s) supporting DG(s) required to be OPERABLE by LCO 3.8.1, "AC Sources - Operating"; and

e. Unit 3 Shutdown Board DC subsystem 3EB needed to support equipment required to be OPERABLE by LCO 3.7.3, "Control Room Emergency Ventilation (CREV) System."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit DC electrical power subsystem inoperable. <u>OR</u> One Unit 1 and 2 Shutdown Board DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit 1 and 2 4.16 kV Shutdown Board inoperable, for reasons other than Condition I.	----------NOTE---------- Enter applicable Conditions and Required Actions of Condition B, C, and F when Condition A results in no power source to a required 480 volt board. ----------	
	A.1 Restore the Unit 1 and 2 4.16 kV Shutdown Board to OPERABLE status.	5 days OR In accordance with the Risk Informed Completion Time Program
	AND	
	A.2 Declare associated diesel generator inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One Unit 1 480 V Shutdown Board inoperable, for reasons other than Condition I. OR 480 V RMOV Board 1A inoperable, for reasons other than Condition I. OR 480 V RMOV Board 1B inoperable, for reasons other than Condition I.	B.1 Restore Board to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
C. One Unit 1 and 2 DG Auxiliary Board inoperable.	C.1 Restore Unit 1 and 2 DG Auxiliary Board to OPERABLE status.	5 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Unit DC Board inoperable, for reasons other than Condition I. OR One Unit 1 and 2 Shutdown Board DC Distribution Panel inoperable, for reasons other than Condition I. OR 250 V DC RMOV Board 1A inoperable, for reasons other than Condition I. OR 250 V DC RMOV Board 1B inoperable, for reasons other than Condition I. OR 250 V DC RMOV Board 1C inoperable, for reasons other than Condition I.	D.1 Restore required Board or Shutdown Board DC Distribution Panel to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Unit 1 and 2 4.16 kV Shutdown Board A and B inoperable, for reasons other than Condition I. OR Unit 1 and 2 4.16 kV Shutdown Board C and D inoperable, for reasons other than Condition I.	----------NOTE---------- Enter applicable conditions and required actions of Condition B, C, and F when Condition E results in no power source to a required 480 volt board. ---------- E.1 Restore one 4.16 kV Shutdown Board to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
F. One or more required Unit 2 or 3 AC or DC Boards inoperable, for reasons other than Condition I.	F.1 Declare the affected SGT or CREV subsystem inoperable.	Immediately
G. Required Action and associated Completion Time of Condition A, B, C, D, E, or I not met.	G.1 Be in MODE 3. AND G.2 Be in MODE 4.	12 hours 36 hours

(continued)

5.5 Programs and Manuals

5.5.15 Surveillance Frequency Control Program (continued)

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, “Risk-Informed Method for Control of Surveillance Frequencies,” Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

5.5.16 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09-A, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any change to the plant configuration, as defined in NEI-06-09-A, Appendix A, must be considered for the effect on the RICT.

1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

5.5 Programs and Manuals

5.5.16 Risk Informed Completion Time Program (continued)

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. For emergent conditions, if the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or

2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

e. The risk assessment approaches and methods shall be acceptable to the NRC. The plant PRA shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in Regulatory Guide 1.200, Revision 2. Methods to assess the risk from extending the Completion Times must be PRA methods approved for use with this program, or other methods approved by the NRC for generic use; and any change in the PRA methods to assess risk that are outside these approval boundaries require prior NRC approval.

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 351
Renewed License No. DPR-52

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated March 31, 2022, as supplemented by letters dated December 1, 2022, and March 29, 2023, 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.

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 Renewed Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 351, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

David J. Wrona

Digitally signed by David J. Wrona
Date: 2023.05.02 10:43:06 -04'00'

David J. Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications and Renewed Facility Operating License

Date of Issuance: May 2, 2023

ATTACHMENT TO LICENSE AMENDMENT NO. 351

RENEWED FACILITY OPERATING LICENSE NO. DPR-52

BROWNS FERRY NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-260

Replace the following pages of the Renewed Facility Operating License and Appendix A, Technical Specifications (TSs), with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
License DPR-52	License DPR-52
Page 3	Page 3

Remove	Insert	Remove	Insert
1.3-3	1.3-3	3.5-12	3.5-12
1.3-6	1.3-6	3.6-6	3.6-6
1.3-8	1.3-8	3.6-10	3.6-10
1.3-15	1.3-15	3.6-11	3.6-11
--	1.3-15a	3.6-12	3.6-12
3.1-23	3.1-23	3.6-31	3.6-31
3.3-1	3.3-1	3.6-34	3.6-34
3.3-2	3.3-2	3.6-36	3.6-36
3.3-22	3.3-22	3.7-3	3.7-3
3.3-33	3.3-33	3.7-7	3.7-7
3.3-37	3.3-37	3.8-2	3.8-2
3.3-38	3.3-38	3.8-3a	3.8-3a
3.3-39	3.3-39	3.8-4	3.8-4
3.3-40	3.3-40	3.8-5	3.8-5
3.3-41	3.3-41	3.8-22	3.8-22
--	3.3-41a	3.8-34	3.8-34
3.3-49	3.3-49	3.8-35	3.8-35
3.3-54	3.3-54	3.8-35a	3.8-35a
3.3-71	3.3-71	3.8-36	3.8-36
3.5-1	3.5-1	3.8-37	3.8-37
3.5-1a	--	5.0-21c	5.0-21c
3.5-2	3.5-2	--	5.0-21d
--	3.5-2a		

sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) 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 or equipment and instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3952 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 351, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 253 to Facility Operating License DPR-52, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 253. For SRs that existed prior to Amendment 253, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 253.

3) The licensee is authorized to relocate certain requirements included in Appendix A and the former Appendix B to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's

1.3 Completion Times

DESCRIPTION (continued)

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery..."

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours

(continued)

1.3 Completion Times

EXAMPLES EXAMPLE 1.3-3 (continued)

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

It is possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. However, doing so would be inconsistent with the basis of the Completion Times. Therefore, there shall be administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the Completion Times for those Conditions are not inappropriately extended.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One subsystem inoperable.	A.1	Restore subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-8 (continued)

When a subsystem is declared inoperable, Condition A is entered. The 7 day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition B must also be entered.

The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revise RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Times (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

If the 7 day Completion Time clock of Condition A has expired and subsequent changes in plant condition result in exiting the applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start.

If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B may be terminated.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SLC subsystem inoperable.	A.1 Restore SLC subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Two SLC subsystems inoperable.	B.1 Restore one SLC subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours OR In accordance with the Risk Informed Completion Time Program
	OR	
	A.2 ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- Place associated trip system in trip.	12 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- One or more Functions with one or more required channels inoperable in both trip systems.	B.1	Place channel in one trip system in trip.	6 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	B.2	Place one trip system in trip.	6 hours OR In accordance with the Risk Informed Completion Time Program
C. One or more Functions with RPS trip capability not maintained.	C.1	Restore RPS trip capability.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 26% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours

(continued)

3.3 INSTRUMENTATION

3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Two channels of feedwater and main turbine high water level trip instrumentation per trip system shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 23% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more feedwater and main turbine high water level trip channels inoperable, in one trip system.	A.1 Place channel(s) in trip.	7 days OR In accordance with the Risk Informed Completion Time Program
B. One or more feedwater and main turbine high water level trip channels inoperable in each trip system.	B.1 Restore feedwater and main turbine high water level trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

3.3 INSTRUMENTATION

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation

LCO 3.3.4.2 Two channels per trip system for each ATWS-RPT instrumentation Function listed below shall be OPERABLE:

a. Reactor Vessel Water Level - Low Low, Level 2; and

b. Reactor Steam Dome Pressure - High.

APPLICABILITY: MODE 1.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Restore channel to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
	OR		
	A.2	----------NOTE---------- Not applicable if inoperable channel is the result of an inoperable breaker. ---------- Place channel in trip.	14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1	----------NOTES---------- Only applicable for Functions 1.2, 1.b, 2.a, and 2.b. ----------	
		Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for features in both divisions
	AND		
	B.2	----------NOTE---------- Only applicable for Functions 3.a and 3.b. ----------	
		Declare High Pressure Coolant Injection (HPCI) System inoperable.	1 hour from discovery of loss of HPCI initiation capability
	AND		
	B.3	Place channel in trip.	24 hours OR ---------NOTE-------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1	----------NOTES---------- Only applicable for Functions 1.c, 1.e, 2.c, 2.d, and 2.f ---------- Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for features in both divisions
	AND		
	C.2	Restore channel to OPERABLE status.	24 hours OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program
D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1	----------NOTE---------- Only applicable if HPCI pump suction is not aligned to the suppression pool. ---------- Declare HPCI System inoperable.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	E.1 ----------NOTES---------- Only applicable for Function 1.d. ---------- Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for subsystems in both divisions
	AND	
	E.2 Restore channel to OPERABLE status.	7 days OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	F.1 Declare Automatic Depressurization System (ADS) valves inoperable. AND F.2 Place channel in trip.	1 hour from discovery of loss of ADS initiation capability in both trip systems 96 hours from discovery of inoperable channel concurrent with HPCI or reactor core isolation cooling (RCIC) inoperable OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1 Declare ADS valves inoperable. AND G.2 Restore channel to OPERABLE status.	1 hour from discovery of loss of ADS initiation capability in both trip systems 96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable OR ----------NOTE---------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ----------NOTE---------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.	H.1 Declare associated supported ECCS feature(s) inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.5.3 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.3 The RCIC System instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.5.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	B.1	Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	AND		
	B.2	Place channel in trip.	24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required channels inoperable.	A.1	----------NOTE---------- Only applicable for Function 1.d if two or more channels are inoperable. ----------	
		Place channel in trip.	12 hours for Functions 2.a, 2.b, 5.h, 6.b, and 6.c OR In accordance with the Risk Informed Completion Time Program AND 24 hours for Functions other than Functions 2.a, 2.b, 5.h, 6.b, and 6.c OR In accordance with the Risk Informed Completion Time Program
	AND		
	A.2	----------NOTE---------- Only applicable for Function 1.d when 15 of 16 channels are OPERABLE. ----------	
		Place channel in trip.	30 days

(continued)

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Table 3.3.8.1-1 Function on 4 kV shutdown boards A, B, C, and D shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One degraded voltage relay channel inoperable on one or more shutdown board(s). AND The loss of voltage relay channels on the affected shutdown board(s) are OPERABLE.	A.1 Verify by administrative means that the other two degraded voltage relay channels and associated timers on the affected shutdown board(s) are OPERABLE. AND A.2 Place the degraded voltage relay channel in trip.	Immediately 15 days OR In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS - Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to HPCI.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable. OR One low pressure coolant injection (LPCI) pump in both LPCI subsystems inoperable.	A.1 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. HPCI System inoperable.	C.1 Verify by administrative means RCIC System is OPERABLE. AND	Immediately
	C.2 Restore HPCI System to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
D. HPCI System inoperable. AND Condition A entered.	D.1 Restore HPCI System to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
	OR D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
F. One ADS valve inoperable. AND Condition A entered.	F.1 Restore ADS valve to OPERABLE status. OR F.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program 72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.3 RCIC System

LCO 3.5.3 The RCIC System shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to RCIC.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RCIC System inoperable.	A.1	Verify by administrative means High Pressure Coolant Injection System is OPERABLE.	Immediately
	AND		
	A.2	Restore RCIC System to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Reduce reactor steam dome pressure to ≤ 150 psig.	36 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Lock an OPERABLE door closed.	24 hours
	AND		
	B.3	----------NOTE---------- Air lock doors in high radiation areas or areas with limited access due to inerting may be verified locked closed by administrative means. ----------	
		Verify an OPERABLE door is locked closed.	Once per 31 days
C. Primary containment air lock inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate primary containment overall leakage rate per LCO 3.6.1.1, using current air lock test results.	Immediately
	AND		
	C.2	Verify a door is closed.	1 hour
	AND		
	C.3	Restore air lock to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable except due to MSIV leakage not within limits.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line OR In accordance with the Risk Informed Completion Time Program AND 8 hours for main steam line OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days [following isolation] for isolation devices outside primary containment AND Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with two PCIVs inoperable except due to MSIV leakage not within limits.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ----------NOTE---------- Only applicable to penetration flow paths with only one PCIV. ---------- One or more penetration flow paths with one PCIV inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	4 hours except for excess flow check valves (EFCVs) AND 12 hours for EFCVs Once per 31 days [following isolation]

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Four RHR suppression pool cooling subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1 Restore the RHR suppression pool cooling subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool cooling subsystems inoperable.	B.1 Restore one RHR suppression pool cooling subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR suppression pool cooling subsystems inoperable.	C.1 Restore required RHR suppression pool cooling subsystems to OPERABLE status.	8 hours

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal (RHR) Suppression Pool Spray

LCO 3.6.2.4 Four RHR suppression pool spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR suppression pool spray subsystem inoperable.	A.1	Restore the RHR suppression pool spray subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool spray subsystems inoperable.	B.1	Restore one RHR suppression pool spray subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR suppression pool spray subsystems inoperable.	C.1	Restore required RHR suppression pool spray subsystems to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.5 Residual Heat Removal (RHR) Drywell Spray

LCO 3.6.2.5 Four RHR drywell spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR drywell spray subsystem inoperable.	A.1	Restore the RHR drywell spray subsystem to OPERABLE status.	30 days
B. Two RHR drywell spray subsystems inoperable.	B.1	Restore one RHR drywell spray subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR drywell spray subsystems inoperable.	C.1	Restore required RHR drywell spray subsystems to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One RHRSW subsystem inoperable.	B.1	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling - Hot Shutdown," for RHR shutdown cooling made inoperable by the RHRSW system. ---------- Restore RHRSW subsystem to OPERABLE status.	30 days
C. Two required RHRSW pumps inoperable.	C.1	Restore one inoperable RHRSW pump to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
D. Two RHRSW subsystems inoperable..	D.1	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, for RHR shutdown cooling made inoperable by the RHRSW System. ---------- Restore one RHRSW subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

3.7 PLANT SYSTEMS

3.7.2 Emergency Equipment Cooling Water (EECW) System and Ultimate Heat Sink (UHS)

LCO 3.7.2 The EECW System with three pumps and UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required EECW pump inoperable.	A.1 Restore the required EECW pump to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met. OR Two or more required EECW pumps inoperable. OR UHS inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one shutdown board concurrent with inoperability of redundant required feature(s)
	AND		
	A.3	Restore required offsite circuit to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. One required Unit 1 and 2 DG inoperable.	B.1	Verify power availability from the offsite transmission network.	1 hour AND Once per 8 hours thereafter
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore Unit 1 and 2 DG to OPERABLE status.	7 days from discovery of unavailability of TDG(s) AND 24 hours from discovery of Condition B entry ≥ 6 days concurrent with unavailability of TDG(s) AND 14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One division of 480 V load shed logic inoperable.	C.1 Restore required division of 480 V load shed logic to OPERABLE status.	7 days
D. One division of common accident signal logic inoperable.	D.1 Restore required division of common accident signal logic to OPERABLE status.	7 days
E. Two required offsite circuits inoperable.	E.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable. AND E.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s) 24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE---------- Only applicable when more than one 4.16 kV shutdown board is affected. ---------- F. One required offsite circuit inoperable. <u>AND</u> One Unit 1 and 2 DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems - Operating," when Condition F is entered with no AC power source to any 4.16 kV shutdown board. ---------- F.1 Restore required offsite circuit to OPERABLE status. <u>OR</u> F.2 Restore Unit 1 and 2 DG to OPERABLE status.	12 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program 12 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
----------NOTE---------- Applicable when only one 4.16 kV shutdown board is affected. ---------- G. One required offsite circuit inoperable. <u>AND</u> One Unit 1 and 2 DG inoperable.	G.1 Declare the affected 4.16 kV shutdown board inoperable.	Immediately

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The following DC electrical power systems shall be OPERABLE:

a. Unit DC subsystems 1, 2, and 3;

b. Shutdown Board DC subsystems A, B, C, and D;

c. Unit 1 and 2 Diesel Generator (DG) DC subsystems;

d. Unit 3 DG DC subsystem(s) supporting DG(s) required to be OPERABLE by LCO 3.8.1, "AC Sources - Operating"; and

e. Unit 3 Shutdown Board DC subsystem 3EB needed to support equipment required to be OPERABLE by LCO 3.7.3, "Control Room Emergency Ventilation (CREV) System."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit DC electrical power subsystem inoperable. OR One Unit 1 and 2 Shutdown Board DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit 1 and 2 4.16 kV Shutdown Board inoperable, for reasons other than Condition J.	----------NOTE---------- Enter applicable Conditions and Required Actions of Condition B, C, D, and G when Condition A results in no power source to a required 480 volt board. ----------	
	A.1 Restore the Unit 1 and 2 4.16 kV Shutdown Board to OPERABLE status.	5 days OR In accordance with the Risk Informed Completion Time Program
	AND	
	A.2 Declare associated diesel generator inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One Unit 2 480 V Shutdown Board inoperable, for reasons other than Condition J. OR 480 V RMOV Board 2A inoperable, for reasons other than Condition J. OR 480 V RMOV Board 2B inoperable, for reasons other than Condition J.	----------NOTE---------- Enter Condition C when Condition B results in no power source to 480 volt RMOV board 2D or 2E. ---------- B.1 Restore Board to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Unit 2 480 V RMOV Board 2D inoperable, for reasons other than Condition J. OR Unit 2 480 V RMOV Board 2E inoperable, for reasons other than Condition J.	C.1 Declare the affected RHR subsystem inoperable.	Immediately
D. One Unit 1 and 2 DG Auxiliary Board inoperable.	D.1 Restore Unit 1 and 2 DG Auxiliary Board to OPERABLE status.	5 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Unit DC Board inoperable, for reasons other than Condition J. OR One Unit 1 and 2 Shutdown Board DC Distribution Panel inoperable, for reasons other than Condition J. OR 250 V DC RMOV Board 2A inoperable, for reasons other than Condition J. OR 250 V DC RMOV Board 2B inoperable, for reasons other than Condition J. OR 250 V DC RMOV Board 2C inoperable, for reasons other than Condition J.	E.1 Restore required Board or Shutdown Board DC Distribution Panel to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Unit 1 and 2 4.16 kV Shutdown Board A and B inoperable, for reasons other than Condition J. OR Unit 1 and 2 4.16 kV Shutdown Board C and D inoperable, for reasons other than Condition J.	----------NOTE---------- Enter applicable conditions and required actions of Condition B, C, D, and G when Condition F results in no power source to a required 480 volt board. ---------- F.1 Restore one 4.16 kV Shutdown Board to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
G. One or more required Unit 1 or 3 AC or DC Boards inoperable, for reasons other than Condition J.	G.1 Declare the affected SGT or CREV subsystem inoperable.	Immediately
H. Required Action and associated Completion Time of Condition A, B, D, E, F, or J not met.	H.1 Be in MODE 3. AND H.2 Be in MODE 4.	12 hours 36 hours
I. Two or more electrical power distribution subsystems inoperable that result in a loss of function, for reasons other than Condition J.	I.1 Enter LCO 3.0.3.	Immediately

5.5 Programs and Manuals

5.5.15 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk- Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

5.5.16 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09-A, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any change to the plant configuration, as defined in NEI 06-09-A, Appendix A, must be considered for the effect on the RICT.

   1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

(continued)

5.5 Programs and Manuals

5.5.16 Risk Informed Completion Time Program (continued)

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. For emergent conditions, if the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or

2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

e. The risk assessment approaches and methods shall be acceptable to the NRC. The plant PRA shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in Regulatory Guide 1.200, Revision 2. Methods to assess the risk from extending the Completion Times must be PRA methods approved for use with this program, or other methods approved by the NRC for generic use; and any change in the PRA methods to assess risk that are outside these approval boundaries require prior NRC approval.

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 311
Renewed License No. DPR-68

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated March 31, 2022, as supplemented by letters dated December 1, 2022, and March 29, 2023, 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.

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 Renewed Facility Operating License No. DPR-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 311, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

David J. Wrona

Digitally signed by David J. Wrona
Date: 2023.05.02 10:44:00 -04'00'

David J. Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications and Renewed Facility Operating License

Date of Issuance: May 2, 2023

ATTACHMENT TO LICENSE AMENDMENT NO. 311

RENEWED FACILITY OPERATING LICENSE NO. DPR-68

BROWNS FERRY NUCLEAR PLANT, UNIT 3

DOCKET NO. 50-296

Replace the following pages of the Renewed Facility Operating License and Appendix A, Technical Specifications (TSs), with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
License DPR-68	License DPR-68
Page 3	Page 3

Remove	Insert	Remove	Insert
1.3-3	1.3-3	--	3.5-2a
1.3-6	1.3-6	3.5-12	3.5-12
1.3-8	1.3-8	3.6-6	3.6-6
1.3-15	1.3-15	3.6-10	3.6-10
--	1.3-15a	3.6-11	3.6-11
3.1-23	3.1-23	3.6-12	3.6-12
3.3-1	3.3-1	3.6-31	3.6-31
3.3-2	3.3-2	3.6-34	3.6-34
3.3-22	3.3-22	3.6-36	3.6-36
3.3-33	3.3-33	3.7-3	3.7-3
3.3-37	3.3-37	3.7-7	3.7-7
3.3-38	3.3-38	3.8-2	3.8-2
3.3-39	3.3-39	3.8-3a	3.8-3a
3.3-40	3.3-40	3.8-4	3.8-4
3.3-41	3.3-41	3.8-5	3.8-5
--	3.3-41a	3.8-22	3.8-22
3.3-49	3.3-49	3.8-34	3.8-34
3.3-54	3.3-54	3.8-35	3.8-35
3.3-71	3.3-71	3.8-36	3.8-36
3.5-1	3.5-1	3.8-37	3.8-37
3.5-1a	--	5.0-21c	5.0-21c
3.5-2	3.5-2	--	5.0-21d

(3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) 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 or equipment and instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3952 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 311, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 212 to Facility Operating License DPR-68, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 212. For SRs that existed prior to Amendment 212, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 212.

1.3 Completion Times

DESCRIPTION (continued)

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery..."

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-3 (continued)

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

It is possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. However, doing so would be inconsistent with the basis of the Completion Times. Therefore, there shall be administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the Completion Times for those conditions are not inappropriately extended.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One subsystem inoperable.	A.1	Restore subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-8 (continued)

When a subsystem is declared inoperable, Condition A is entered. The 7 day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition B must also be entered.

The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

If the 7 day Completion Time clock of Condition A has expired and subsequent changes in plant condition result in exiting the applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start.

If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B may be terminated.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SLC subsystem inoperable.	A.1 Restore SLC subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Two SLC subsystems inoperable.	B.1 Restore one SLC subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours OR In accordance with the Risk Informed Completion Time Program
	OR	
	A.2 ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- Place associated trip system in trip.	12 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. ----------NOTE---------- Not applicable for Functions 2.a, 2.b, 2.c, 2.d, or 2.f. ---------- One or more Functions with one or more required channels inoperable in both trip systems.	B.1	Place channel in one trip system in trip.	6 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	B.2	Place one trip system in trip.	6 hours OR In accordance with the Risk Informed Completion Time Program
C. One or more Functions with RPS trip capability not maintained.	C.1	Restore RPS trip capability.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 26% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours

(continued)

3.3 INSTRUMENTATION

3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Two channels of feedwater and main turbine high water level trip instrumentation per trip system shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 23% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more feedwater and main turbine high water level trip channels inoperable, in one trip system.	A.1 Place channel(s) in trip.	7 days OR In accordance with the Risk Informed Completion Time Program
B. One or more feedwater and main turbine high water level trip channels inoperable in each trip system.	B.1 Restore feedwater and main turbine high water level trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to < 23% RTP.	4 hours

3.3 INSTRUMENTATION

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation

LCO 3.3.4.2 Two channels per trip system for each ATWS-RPT instrumentation Function listed below shall be OPERABLE:

a. Reactor Vessel Water Level - Low Low, Level 2; and

b. Reactor Steam Dome Pressure - High.

APPLICABILITY: MODE 1.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Restore channel to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
	OR		
	A.2	----------NOTE---------- Not applicable if inoperable channel is the result of an inoperable breaker. ---------- Place channel in trip.	14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1 ----------NOTE---------- Only applicable for Functions 1.a, 1.b, 2.a, and 2.b. ---------- Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for features in both divisions
	AND	
	B.2 ----------NOTE---------- Only applicable for Functions 3.a and 3.b. ---------- Declare High Pressure Coolant Injection (HPCI) System inoperable.	1 hour from discovery of loss of HPCI initiation capability
	AND	
	B.3 Place channel in trip.	24 hours OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1	----------NOTES---------- Only applicable for Functions 1.c, 1.e, 2.c, 2.d, and 2.f. ---------- Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for features in both divisions
	AND		
	C.2	Restore channel to OPERABLE status.	24 hours OR ---------NOTE------ Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program
D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1	----------NOTE---------- Only applicable if HPCI pump suction is not aligned to the suppression pool. ---------- Declare HPCI System inoperable.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	E.1	----------NOTES---------- Only applicable for Function 1.d. ----------	
		Declare supported ECCS feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for subsystems in both divisions
	AND		
	E.2	Restore channel to OPERABLE status.	7 days OR ---------NOTE------ Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	F.1 Declare Automatic Depressurization System (ADS) valves inoperable. AND F.2 Place channel in trip.	1 hour from discovery of loss of ADS initiation capability in both trip systems 96 hours from discovery of inoperable channel concurrent with HPCI or reactor core isolation cooling (RCIC) inoperable OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ----------NOTE--------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1 Declare ADS valves inoperable. AND G.2 Restore channel to OPERABLE status.	1 hour from discovery of loss of ADS initiation capability in both trip systems 96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR --------NOTE------- Not applicable when a loss of function occurs ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.	H.1 Declare associated supported ECCS feature(s) inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.5.3 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.3 The RCIC System instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.5.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	B.1	Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	AND		
	B.2	Place channel in trip.	24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 ----------NOTE---------- Only applicable for Function 1.d if two or more channels are inoperable. ---------- Place channel in trip.	12 hours for Functions 2.a, 2.b, 5.h, 6.b, and 6.c OR In accordance with the Risk Informed Completion Time Program AND 24 hours for Functions other than Functions 2.a, 2.b, 5.h, 6.b, and 6.c OR In accordance with the Risk Informed Completion Time Program
	AND	
	A.2 ----------NOTE---------- Only applicable for Function 1.d when 15 of 16 channels are OPERABLE. ---------- Place channel in trip.	30 days

(continued)

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Table 3.3.8.1-1 Function on 4 kV shutdown boards 3EA, 3EB, 3EC, and 3ED shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One degraded voltage relay channel inoperable on one or more shutdown board(s). AND The loss of voltage relay channels on the affected shutdown board(s) are OPERABLE.	A.1 Verify by administrative means that the other two degraded voltage relay channels and associated timers on the affected shutdown board(s) are OPERABLE. AND A.2 Place the degraded voltage relay channel in trip.	Immediately 15 days OR In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS - Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure $\leq$ 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to HPCI.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable. OR One low pressure coolant injection (LPCI) pump in both LPCI subsystems inoperable.	A.1 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. HPCI System inoperable.	C.1	Verify by administrative means RCIC System is OPERABLE. AND	Immediately
	C.2	Restore HPCI System to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
D. HPCI System inoperable. AND Condition A entered.	D.1	Restore HPCI System to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	D.2	Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
F. One ADS valve inoperable. AND Condition A entered.	F.1 Restore ADS valve to OPERABLE status. OR F.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program 72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.3 RCIC System

LCO 3.5.3 The RCIC System shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to RCIC.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RCIC System inoperable.	A.1	Verify by administrative means High Pressure Coolant Injection System is OPERABLE.	Immediately
	AND		
	A.2	Restore RCIC System to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Reduce reactor steam dome pressure to ≤ 150 psig.	36 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Lock an OPERABLE door closed.	24 hours
	AND		
	B.3	----------NOTE---------- Air lock doors in high radiation areas or areas with limited access due to inerting may be verified locked closed by administrative means. ----------	
		Verify an OPERABLE door is locked closed.	Once per 31 days
C. Primary containment air lock inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate primary containment overall leakage rate per LCO 3.6.1.1, using current air lock test results.	Immediately
	AND		
	C.2	Verify a door is closed.	1 hour
	AND		
	C.3	Restore air lock to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable except due to MSIV leakage not within limits.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line OR In accordance with the Risk Informed Completion Time Program AND 8 hours for main steam line OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	Once per 31 days [following isolation] for isolation devices outside primary containment AND Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ----------NOTE---------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with two PCIVs inoperable except due to MSIV leakage not within limits.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ----------NOTE---------- Only applicable to penetration flow paths with only one PCIV. ---------- One or more penetration flow paths with one PCIV inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. <u>AND</u> C.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated.	4 hours except for excess flow check valves (EFCVs) <u>AND</u> 12 hours for EFCVs Once per 31 days [following isolation]

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Four RHR suppression pool cooling subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1 Restore the RHR suppression pool cooling subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool cooling subsystems inoperable.	B.1 Restore one RHR suppression pool cooling subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR suppression pool cooling subsystems inoperable.	C.1 Restore required RHR suppression pool cooling subsystems to OPERABLE status.	8 hours

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal (RHR) Suppression Pool Spray

LCO 3.6.2.4 Four RHR suppression pool spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR suppression pool spray subsystem inoperable.	A.1	Restore the RHR suppression pool spray subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool spray subsystems inoperable.	B.1	Restore one RHR suppression pool spray subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR suppression pool spray subsystems inoperable.	C.1	Restore required RHR suppression pool spray subsystems to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.5 Residual Heat Removal (RHR) Drywell Spray

LCO 3.6.2.5 Four RHR drywell spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One RHR drywell spray subsystem inoperable.	A.1	Restore the RHR drywell spray subsystem to OPERABLE status.	30 days
B. Two RHR drywell spray subsystems inoperable.	B.1	Restore one RHR drywell spray subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
C. Three or more RHR drywell spray subsystems inoperable.	C.1	Restore required RHR drywell spray subsystems to OPERABLE status.	8 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 4.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One RHRSW subsystem inoperable.	B.1 ----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling - Hot Shutdown," for RHR shutdown cooling made inoperable by the RHRSW system. ---------- Restore RHRSW subsystem to OPERABLE status.	30 days
C. Two required RHRSW pumps inoperable.	C.1 Restore one inoperable RHRSW pump to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
D. Two RHRSW subsystems inoperable.	D.1 ----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, for RHR shutdown cooling made inoperable by the RHRSW System. ---------- Restore one RHRSW subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

3.7 PLANT SYSTEMS

3.7.2 Emergency Equipment Cooling Water (EECW) System and Ultimate Heat Sink (UHS)

LCO 3.7.2 The EECW System with three pumps and UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required EECW pump inoperable.	A.1 Restore the required EECW pump to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met. OR Two or more required EECW pumps inoperable. OR UHS inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one shutdown board concurrent with inoperability of redundant required feature(s)
	AND		
	A.3	Restore required offsite circuit to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. One required Unit 3 DG inoperable.	B.1	Verify power availability from the offsite transmission network.	1 hour AND Once per 8 hours thereafter
	AND		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore Unit 3 DG to OPERABLE status.	7 days from discovery of unavailability of TDG(s) AND 24 hours from discovery of Condition B entry ≥ 6 days concurrent with unavailability of TDG(s) AND 14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One division of 480 V load shed logic inoperable.	C.1 Restore required division of 480 V load shed logic to OPERABLE status.	7 days
D. One division of common accident signal logic inoperable.	D.1 Restore required division of common accident signal logic to OPERABLE status.	7 days
E. Two required offsite circuits inoperable.	E.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable. AND E.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s) 24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
----------NOTE---------- Only applicable when more than one 4.16 kV shutdown board is affected. ---------- F. One required offsite circuit inoperable. AND One Unit 3 DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems - Operating," when Condition F is entered with no AC power source to any 4.16 kV shutdown board. ---------- F.1 OR F.2	Restore required offsite circuit to OPERABLE status. Restore Unit 3 DG to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program 12 hours OR In accordance with the Risk Informed Completion Time Program
----------NOTE---------- Applicable when only one 4.16 kV shutdown board is affected. ---------- G. One required offsite circuit inoperable. AND One Unit 3 DG inoperable.	G.1	Declare the affected 4.16 kV shutdown board inoperable.	Immediately

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The following DC electrical power systems shall be OPERABLE:

a. Unit DC subsystems 1, 2, and 3;

b. Shutdown Board DC subsystems 3EB;

c. Unit 3 Diesel Generator (DG) DC subsystems;

d. Unit 1 and 2 DG DC subsystem(s) supporting DG(s) required to be OPERABLE by LCO 3.8.1, "AC Sources — Operating"; and

e. Unit 1 and 2 Shutdown Board DC subsystems needed to support equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," and LCO 3.7.3, "Control Room Emergency Ventilation (CREV) System."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit DC electrical power subsystem inoperable. OR 3EB Shutdown Board DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit 3 4.16 kV Shutdown Board inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of Condition B, C, D, and G when Condition A results in no power source to a required 480 volt board. ----------	
	A.1 Restore the Unit 3 4.16 kV Shutdown Board to OPERABLE status.	5 days OR In accordance with the Risk Informed Completion Time Program
	AND	
	A.2 Declare associated diesel generator inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One Unit 3 480 V Shutdown Board inoperable. OR 480 V RMOV Board 3A inoperable. OR 480 V RMOV Board 3B inoperable.	----------NOTE---------- Enter Condition C when Condition B results in no power source to 480 volt RMOV board 3D or 3E. ---------- B.1 Restore Board to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
C. Unit 3 480 V RMOV Board 3D inoperable. OR Unit 3 480 V RMOV Board 3E inoperable.	C.1 Declare the affected RHR subsystem inoperable.	Immediately
D. One Unit 3 DG Auxiliary Board inoperable.	D.1 Restore Unit 3 DG Auxiliary Board to OPERABLE status.	5 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Unit DC Board inoperable. OR Shutdown Board DC Distribution Panel 3EB inoperable. OR 250 V DC RMOV Board 3A inoperable. OR 250 V DC RMOV Board 3B inoperable. OR 250 V DC RMOV Board 3C inoperable.	E.1 Restore required Board or Shutdown Board DC Distribution Panel 3EB to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Unit 3 4.16 kV Shutdown Board 3EA and 3EB inoperable. OR Unit 3 4.16 kV Shutdown Board 3EC and 3ED inoperable.	----------NOTE---------- Enter applicable conditions and required actions of Condition B, C, D, and G when Condition F results in no power source to a required 480 volt board. ---------- F.1 Restore one 4.16 kV Shutdown Board to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
G. One or more required Unit 1 or 2 AC or DC Boards inoperable, for reasons other than Condition J.	G.1 Declare the affected SGT or CREV subsystem inoperable.	Immediately
H. Required Action and associated Completion Time of Condition A, B, D, E, F, or J not met.	H.1 Be in MODE 3. AND H.2 Be in MODE 4.	12 hours 36 hours
I. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	I.1 Enter LCO 3.0.3.	Immediately

(continued)

5.5 Programs and Manuals

5.5.15 Surveillance Frequency Control Program (continued)

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk- Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

5.5.16 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09-A, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODES 1 and 2;

c. When a RICT is being used, any change to the plant configuration, as defined in NEI 06-09-A, Appendix A, must be considered for the effect on the RICT.

1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

5.5 Programs and Manuals

5.5.16 Risk Informed Completion Time Program (continued)

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. For emergent conditions, if the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:

1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or

2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.

e. The risk assessment approaches and methods shall be acceptable to the NRC. The plant PRA shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in Regulatory Guide 1.200, Revision 2. Methods to assess the risk from extending the Completion Times must be PRA methods approved for use with this program, or other methods approved by the NRC for generic use; and any change in the PRA methods to assess risk that are outside these approval boundaries require prior NRC approval.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 328, 351, AND 311

TO RENEWED FACILITY OPERATING LICENSE NOS. DPR-33, DPR-52, AND DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 INTRODUCTION

By application dated March 31, 2022 [1], as supplemented by letters dated December 1, 2022 [2], and March 29, 2023 [3], Tennessee Valley Authority (the licensee) submitted a license amendment request (LAR) for Browns Ferry Nuclear Plant, Units 1, 2, and 3. The proposed amendments would revise technical specification (TS) requirements to permit the use of a risk-informed completion time (RICT) for actions to be taken when certain limiting conditions for operation (LCOs) are not met. The proposed changes are based on Technical Specifications Task Force (TSTF) Traveler TSTF-505, Revision 2, "Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b," dated July 2, 2018 [4] (TSTF-505 hereafter). The U.S. Nuclear Regulatory Commission issued a final model safety evaluation approving TSTF-505 on November 21, 2018 [5].

In addition, the licensee proposed to adopt Traveler TSTF-439, Revision 2, "Eliminate Second Completion Times Limiting Time from Discovery of Failure To Meet an LCO" [6] (TSTF-439 hereafter). The proposed amendments would allow the elimination of second completion times that limit the time from discovery of the failure to meet an LCO. The NRC authorized the use of TSTF-439 in a letter dated January 11, 2006 [7].

The licensee has proposed variations from the TS changes described in TSTF-505 [4], which are described in section 2.3 of the LAR [1] and evaluated in section 3.1.1 of this safety evaluation.

The NRC staff conducted a regulatory audit in September 2022, to confirm the information supplied in the application and to identify information that requires docketing to support the staff's basis for its regulatory decision. On January 11, 2023, the staff issued an audit summary [8].

By electronic mail dated October 19, 2022 [9], the NRC staff sent the licensee a summary of its needs for supplemental information and a request for additional information (RAI). By letter

dated December 1, 2022 [2], the licensee responded to the RAI and supplemented other information related to the LAR.

By letter dated and March 29, 2023 [3], the licensee submitted a second supplement to the LAR, in which it identified a minor error in Traveler TSTF-505. Specifically, the traveler establishes a new Example 1.3-8 for TS Section 1.3, "Completion Times." Example 1.3-8 specifies a Required Action B.1 "Be in MODE 3" with a Completion Time (CT) of "6 hours." The licensee noted that a 6-hour CT is inconsistent with all other "Be in MODE 3" Required Actions in NUREG-1433 and should be "12 hours." As a result, the licensee proposed an administrative variation to TSTF-505 to change the Example 1.3-8 Required Action B.1 Completion Time from 6 hours to 12 hours.

The supplemental letters dated December 1, 2022 [2], and March 29, 2023 [3], provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on June 14, 2022 (87 FR 36009).

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," sets forth the regulatory requirements that a licensee must meet for the submittal of a license application. The NRC staff has identified the following sections of Part 50 as relevant to the staff's review of an application to adopt TSTF-505 [4] and TSTF-439 [6].

- 10 CFR 50.36, "Technical specifications," particularly paragraphs (c)(2) and (c)(5)
- 10 CFR 50.55a, "Codes and standards," particularly paragraph (h)
- 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants" (the Maintenance Rule)

The NRC staff considered applicable regulatory guides. Each regulatory guide offers a way that is acceptable to the staff for ensuring that an aspect of the regulations will continue to be met:

- Regulatory Guide 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (RG 1.200, [10])
- Regulatory Guide 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (RG 1.174, [11])
- Regulatory Guide 1.174, Revision 3, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (RG 1.174, [12])
- Regulatory Guide 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decision-making: Technical Specifications" (RG 1.177 [13])

Other staff guidance was also considered in the review:

- NUREG-1855, Revision 1, "Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decisionmaking" [14]
- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 19, Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance" [15] and Section 16.1, "Risk-Informed Decision Making: Technical Specifications" [16]

The Nuclear Energy Institute (NEI) published NEI 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines" [17], which provides industry guidance for risk-informed TSs. The industry guidance cited RG 1.174, Revision 1 [18]; the initial version of RG 1.177 [19]; and RG 1.200, Revision 1 [20]. The NRC staff issued a final model safety evaluation and approved the use of NEI 06-09-A on May 17, 2007 [21].

The licensee's submittal states that the guidance of later versions of these regulatory guides will be used in the implementation of the configuration risk management program (CRMP): RG 1.174, Revision 3 [12]; RG 1.177, Revision 1 [13]; and RG 1.200, Revision 2 [10]. The program will use definitions taken from RG 1.200, Revision 3 [22]. The LAR states that its probabilistic risk assessment (PRA) and CRMP satisfy RG 1.174, Revision 3. The staff notes that these updated regulatory guides do not include any technical changes that impair consistency with NEI 06-09-A [17]. Therefore, the NRC staff finds they are also applicable for use in the licensee's adoption of TSTF-505 [4].

2.1 Description of Risk-Informed Completion Time Program

The TS LCOs are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO is not met, the licensee must shut down the reactor or follow any remedial or required action (e.g., testing, maintenance, or repair activity) that is permitted by the TSs until the condition can be met. The remedial actions (i.e., TS Required Actions) associated with an LCO contain Conditions that typically describe the ways in which the requirements of the LCO are to be met. Specified for each stated condition are Required Action(s) with an associated CT. The TS CTs are referred to as the "front stops" in the context of this safety evaluation. For certain Conditions, the TSs require exiting the mode of applicability of an LCO (e.g., shutting down the reactor).

The licensee's submittal requested approval to add a RICT program to the Administrative Controls section of the TSs, and to modify selected CTs to permit extending them, provided risk is assessed and managed as described in NEI 06-09-A.

The licensee is proposing no changes to the design of the plant or any operating parameter, and no changes to the design basis in the proposed changes to the TSs. The effect of the proposed changes to the TSs when implemented will allow CTs to vary, based on the risk significance of the given plant configuration (i.e., the equipment out of service at any given time), provided that the system(s) retain(s) the capability to perform the applicable safety function(s) without any further failures (e.g., one train of a two-train system is inoperable). These restrictions on inoperability of all required trains of a system ensure that consistency with the

defense-in-depth philosophy is maintained by following existing guidance when the capability to perform TS safety function(s) is lost.

The proposed RICT program uses plant-specific operating experience for component reliability and availability data. Thus, the allowances permitted by the RICT program are directly reflective of actual component performance in conjunction with component risk significance.

Example 1.3-8 will be added to TS 1.3, “Completion Times,” as discussed in TSTF-505. The example would read as follows:

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

When a subsystem is declared inoperable, Condition A is entered. The 7-day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition B must also be entered.

The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

If the 7 day Completion Time clock of Condition A has expired and subsequent changes in plant condition result in exiting the

applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition B is also entered, and the Completion Time clocks for Required Actions B.1 and B.2 start.

If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition B is also entered, and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B may be terminated.

2.2 Deletion of Second Completion Times

Consistent with TSTF-439, the licensee proposed to delete the second CTs from TSs. The TS Example 1.3-3 Actions table would be revised as follows:

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days AND ~~10 days from discovery of failure to meet the LCO~~
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 days AND ~~10 days from discovery of failure to meet the LCO~~

In the accompanying description to TS Example 1.3-3, the last paragraph, which explains the requirements for second completion times, would also be deleted. This paragraph would be replaced with the following:

> It is possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. However, doing so would be inconsistent with the basis of the Completion Times. Therefore, there shall be administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the Completion Times for those Conditions are not inappropriately extended.

In addition, a reference to TS Example 1.3-3 describing second CTs also will be deleted from the description section of TS 1.3. Similarly, the following Required Actions would have their second CTs deleted:

> for Unit 1: TS 3.8.1, "AC [alternating current] Sources – Operating," Required Actions A.3 and B.5, and TS 3.8.7, "Distribution Systems – Operating," Required Actions A.1, B.1, C.1, D.1, and E.1; and
>
> for Units 2 and 3: TS 3.8.1 Required Actions A.3 and B.5, and TS 3.8.7 Required Actions A.1, B.1, D.1, E.1, and F.1.

2.3 Other Technical Specification Changes

In LAR section 4.0, the licensee proposed several changes in addition to TSTF-439 and TSTF-505.

- For Unit 2, the licensee proposed to delete expired requirements in TS 3.5.1, "ECCS [emergency core cooling system] – Operating," added by License Amendment No. 294 [23]. The amendment added footnote (1) allowing a one-time extension of the CT for Required Action A.1 from 7 days to 14 days, which expired on June 1, 2005. Also to be deleted is an extraneous line above the footnote.
- The licensee proposed to delete extraneous pen-and-ink markings to the footer of TS page 3.3-1 for Unit 2 and Unit 3 regarding implementation. These markings show in the NRC record copy TSs for these units, but are not in the as-issued pages for Unit 2 License Amendment No. 258 dated March 11, 1999 [24] and Unit 3 License Amendment No. 221 dated September 27, 1999 [25].
- For Unit 1, the licensee proposed to add a continuation header for TS 5.5.15, "Surveillance Frequency Control Program," which has requirements that carry over onto TS page 5.0-21c from the preceding page.
- For Unit 2, the licensee proposed to add a double line that would indicate the end of TS section 5.5, after TS 5.5.15. With the current LAR, the lines would be after new TS 5.5.16, "Risk Informed Completion Time Program."

3.0 TECHNICAL EVALUATION

For TSTF-505, an acceptable approach for making risk-informed decisions about proposed TS changes, including both permanent and temporary changes, is to demonstrate that the proposed licensing basis changes meet the five key principles provided in section C of RG 1.174 [12] and the three-tiered approach outlined in section C of RG 1.177 [13]. The five key principles are:

Principle 1: The proposed licensing basis change meets the current regulations unless it is explicitly related to a requested exemption.

Principle 2: The proposed licensing basis change is consistent with the defense-in-depth philosophy.

Principle 3: The proposed licensing basis change maintains sufficient safety margins.

Principle 4: When the proposed licensing basis change results in an increase in risk, the increases should be small and consistent with the intent of the Commission's policy statement on safety goals for the operations of nuclear power plants.

Tier 1: PRA Capability and Insights

Tier 2: Avoidance of Risk-Significant Plant Configurations

Tier 3: Risk-Informed Configuration Risk Management

Principle 5: The impact of the proposed licensing basis change should be monitored by using performance measurement strategies.

For TSTF-439, an acceptable approach to demonstrate that the proposed licensing basis changes are satisfactory consist of demonstrating adherence to the 10 CFR 50.36(c)(2) and (c)(5), and are consistent with elements included in the Reactor Oversight Process (ROP).

3.1. Method of Staff Review

Each one of the key principles and tiers is addressed in NEI 06-09-A [17]. The industry guidance provides a methodology for extending existing CTs, thereby delaying the requirement to exit from the operational mode of applicability or to take required actions. This is allowed if risk is assessed and managed within the limits and programmatic requirements established by an approved RICT program. The NRC staff's evaluation of the licensee's proposed use of RICTs against the key safety principles of RG 1.177 [13] is discussed below.

For TSTF-439, the guidance in the traveler provides a method for removing the "second completion times" from the affected TS Required Actions. It highlights the controls of the Maintenance Rule, the ROP, and the new requirement in TS section 1.3. The application also included proposed changes to the TS bases. Bases are not part of the TSs, but the NRC staff confirmed that the licensee described the basis for each revised TS requirement accurately, as set forth in Chapter 16 of NUREG-0800. The staff's evaluation of the licensee's proposed removal of the second CTs is provided within Key Principle 1, section 3.1.1 of this safety evaluation.

3.1.1 Key Principle 1: Evaluation of Compliance with Current Regulations

Paragraph 50.36(c)(2) of 10 CFR states that 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.

The CTs in the current TSs were established using experiential data, risk insights, and engineering judgment. In the LAR [1], the licensee proposed to add a new program, "Risk Informed Completion Time Program," in TS section 5.0, "Administrative Controls." The proposed

program would require adherence to NEI 06-09-A [17]. The staff finds that reliance on the RICT program, following the criteria in NEI 06-09-A, provides reasonable assurance that the facility's LCOs will be met.

The RICT program (evaluated in section 3.1.5 of this safety evaluation) provides the necessary administrative controls to permit extension of CTs. This allows the licensee to delay reactor shutdown or completion of required actions if risk is assessed and managed appropriately. Limits are specified and programmatic requirements ensure that both safety margins and defense-in-depth remain sufficient. The option to determine the extended CT in accordance with the RICT program allows the licensee to perform an integrated evaluation in accordance with the methodology prescribed in NEI 06-09-A [17] and TS 5.5.16, "Risk Informed Completion Time Program." The RICT is limited to a maximum of 30 days (termed the "back stop").

The typical CT is modified by the application of the RICT program as shown in the following example. The changed portion is indicated in italics.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days *OR* *In accordance with the Risk Informed Completion Time Program*

As described in section 2.2 of this safety evaluation, Traveler TSTF-439 deletes the second CTs from the affected Required Actions, and revises Improved Standard Technical Specifications Example 1.3-3 to remove the second CTs and include in the discussion portion that alternating between Conditions in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO is inconsistent with the basis of the CTs and is inappropriate. Therefore, the licensee shall have administrative controls to limit the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO. These administrative controls shall ensure that the maximum time allowed for any combination of Conditions that result in a single contiguous occurrence of failing to meet the LCO is not inappropriately extended. The NRC staff reviewed the proposed changes to the TSs and determined that they meet the standards for TSs as delineated in 10 CFR 50.36. Additionally, the changes to the TSs were reviewed for technical clarity and consistency with customary terminology and format in accordance with Chapter 16 of the Standard Review Plan.

In Attachments 2.1, 2.2, and 2.3 and Enclosure 1 of the LAR, the licensee provided a list of the affected TSs, associated LCOs, and Required Actions for the CTs that included modifications and variations from the approved TSTF-505 [4]. The NRC staff reviewed the licensee's proposed changes to the TSs, associated LCOs, Required Actions and CTs for inclusion within the scope of the RICT program. The staff also reviewed the removal of second CTs for TSTF-439 [6] and evaluated the incorporation of the RICT program under existing regulations and processes, along with the licensee's administrative controls. The staff concluded that the required performance levels of equipment specified in LCOs are not changed. Only the required

CTs for the Required Actions are modified, such that 10 CFR 50.36(c)(2) will remain met. Based on the discussion provided above, the staff finds that the RICT program, LCOs, Required Actions, and CTs meet the first key principle of RG 1.174 [12] and RG 1.177 [13] and are, therefore, consistent with the requirements of 10 CFR 50.36.

As discussed in section 2.3 of this safety evaluation, the licensee proposed several editorial and administrative changes that are not included in TSTF-505 or TSTF-439. The NRC staff reviewed the proposed TS changes and found that they are non-technical and editorial in nature because they are expired requirements or formatting corrections. The changes will simplify the requirements and improve consistency within the TSs. Therefore, staff finds these changes acceptable.

3.1.2 Key Principle 2: Evaluation of Defense-in-Depth

In RG 1.174 [12] the NRC identified the following considerations used for evaluation of how the licensing basis change is maintained for the defense-in-depth philosophy:

- Preserve a reasonable balance among the layers of defense.
- Preserve adequate capability of design features without an overreliance on programmatic activities as compensatory measures.
- Preserve system redundancy, independence, and diversity commensurate with the expected frequency and consequences of challenges to the system, including consideration of uncertainty.
- Preserve adequate defense against potential common-cause failures (CCFs).
- Maintain multiple fission product barriers.
- Preserve sufficient defense against human errors.
- Continue to meet the intent of the plant's design criteria.

The licensee requested the use of a RICT program to extend the existing CTs for the respective TS LCOs prescribed in Attachments 2.1, 2.2, and 2.3 to the LAR [1], as supplemented [2], [3]. For the TS LCOs in Enclosure 1 of the LAR, the licensee provided a description and assessment of the redundancy and diversity relevant to the proposed changes.

The NRC staff confirmed that for the following TS LCOs, the criteria above were applicable except for the criteria for maintaining multiple fission product barriers. (The specific technical specifications at issue in the LAR do not address multiple fission product barriers.)

LCOs related to instrumentation and control (I&C)

- TS 3.3.1.1, "Reactor Protection System (RPS) Instrumentation"
- TS 3.3.2.2, "Feedwater and Main Turbine High Water Level Trip Instrumentation"
- TS 3.3.4.2, "Anticipated Transient Without Scram Recirculation Pump Trip (ATWS–RPT) Instrumentation"
- TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation"
- TS 3.3.5.3, "Reactor Core Isolation Cooling (RCIC) System Instrumentation"

- TS 3.3.6.1, “Primary Containment Isolation Instrumentation”
- TS 3.3.8.1, “Loss of Power (LOP) Instrumentation”

LCOs related to electrical systems

- TS 3.8.1, “AC Sources – Operating”
- TS 3.8.4, “DC Sources – Operating”
- TS 3.8.7, “Distribution Systems – Operating”

For the TS LCOs related to I&C, the NRC staff reviewed the specific trip logic arrangements, redundancy, backup systems, manual actions, and diverse trips specified for each of the protective safety functions and associated instrumentation as described in Chapter 7, “Control and Instrumentation” of the Browns Ferry Updated Final Safety Analysis Report (UFSAR) [27] and as reflected in Enclosure 1 of the LAR [1], as supplemented [2]. The staff also performed a confirmatory assessment for all affected functions. This included reviewing the number of operable channels under each RICT condition and identifying the number of channels required to actuate specific features to accomplish the relevant safety functions for every design-basis accident (DBA). The staff confirmed that the RICT program would not allow a loss-of-function condition for the DBAs evaluated in the Browns Ferry UFSAR.

Additionally, the NRC staff reviewed the Browns Ferry UFSAR [27] and the equipment and actions credited in Enclosure 1 of the LAR [1], as supplemented [2] in all applicable operating modes. The staff verified independently that either at least one redundant or at least one diverse means is available to accomplish the safety function in a RICT. Furthermore, the staff verified that each affected protective feature would perform its intended function by ensuring the ability to detect and mitigate the associated event or accident when the CT of a channel is extended. Therefore, the staff finds the I&C TS LCOs for TS 3.3.1.1, TS 3.3.2.2, TS 3.3.4.2, TS 3.3.5.1, TS 3.3.5.3, TS 3.3.6.1, and TS 3.3.8.1 to be consistent with TSTF-505 [4].

Based on the above, the NRC staff concludes that there is sufficient redundancy, diversity, and defense-in-depth to protect against CCFs and a potential single failure for the Browns Ferry I&C systems evaluated in Enclosure 1 of the LAR [1], as supplemented [2], during operations under a RICT. There is at least one diverse means specified by the licensee for initiating mitigating action for each accident event, thus providing defense-in-depth against a failure of instrumentation during the RICT for each TS LCO. The defense-in-depth specified by the licensee does not depend too much on manual actions as the diverse method of initiating mitigation. Further, the staff finds no overreliance on programmatic activities as compensatory measures. Therefore, the staff finds that the intent of the plant’s design criteria is maintained for the TS LCOs in the RICT program that are related to I&C.

Failures in electrical power distribution systems can simultaneously affect multiple safety functions; consequently, challenges to defense-in-depth from electrical system failures are potentially significant. For the TS LCOs specific to electrical and power systems, the Browns Ferry UFSAR [27] states that the plant is designed such that the safety functions are maintained assuming a single failure within the electrical power system. Single-failure requirements are typically suspended when a plant is in a TS Required Action statement.

The NRC staff reviewed the information the licensee provided in the LAR [1] and its supplemental letter [2] for the proposed TS LCOs and TS bases, as well as the UFSAR [27].

The staff verified that the capability of the affected electrical power systems to perform their safety functions is maintained (assuming no additional failures). The staff also verified that the design success criteria for the affected TS LCOs reflect the redundant or absolute minimum electrical power source/subsystem required to support the safety functions necessary to mitigate postulated DBAs, safely shutdown the reactor, and maintain the reactor in a safe shutdown condition.

In addition, the NRC staff reviewed examples of risk management action (RMA). The staff finds that these provide reasonable assurance that appropriate RMAs will be implemented to monitor and control risk. The staff finds that the intent of the plant's design criteria is maintained as it applies to the electrical and power-related TS LCOs. The staff finds that the proposed changes do not alter the ways in which the affected systems fail, and they do not introduce new CCF modes. System independence is maintained.

The NRC staff reviewed all TS LCOs proposed by the licensee in Attachments 2.1, 2.2, and 2.3 of the LAR [1], as supplemented [2], [3]. The staff's evaluation of the proposed changes for these LCOs assessed the plant's redundant or diverse means to mitigate accidents consistent with the plant licensing basis. The staff applied the guidance in RG 1.174 [12], RG 1.177 [26], and TSTF-505 [4] to ensure adequate defense-in-depth for each affected function.

While in a TS Required Action statement, the level of redundancy of the affected system is reduced, and this reduction may reduce the level of defense against some CCFs. However, such reductions in redundancy and defense against CCFs are acceptable since diverse means are available to maintain adequate defense-in-depth against a potential single failure during a RICT. The staff finds that extending the selected CTs with the RICT program following loss of redundancy is an acceptable reduction in defense-in-depth during the proposed RICT period so long as the capability of the system to perform its safety function is maintained. The RICT program ensures that the licensee identifies and implements appropriate compensatory measures during the extended CT.

Based on these findings, the NRC staff finds that the licensee's proposed changes are consistent with the NRC-endorsed guidance prescribed in the NEI 06-09-A [17] along with TSTF-439 [6]. Further, the staff finds that the licensee satisfied the second key principle in RG 1.174 [12] and RG 1.177 [26]. Finally, the staff finds that the changes are consistent with the defense-in-depth philosophy described in RG 1.174.

3.1.3 Key Principle 3: Evaluation of Safety Margins

Section 2.2.2 of RG 1.177 [26] states, in part, that sufficient safety margins are maintained when these conditions are satisfied:

- Codes and standards...or alternatives approved for use by the NRC are met.
- Safety analysis acceptance criteria in the final safety analysis report are met or proposed revisions provide sufficient margin to account for analysis and data uncertainties.

The licensee is not proposing in this application to change any quality standard, material, or operating specification. In the LAR [1], the licensee proposed to add a new program, "Risk Informed Completion Time Program," in TS section 5.0, "Administrative Controls." The proposed program would require adherence to NEI 06-09-A [17].

The NRC staff evaluated the effect on safety margins when the RICT is applied to extend the CT up to a backstop of 30 days in a TS condition with a sufficient number of trains remaining operable to fulfill the TS safety function. Although the licensee will be able to have design-basis equipment out of service longer than the current TSs allow, any increase in unavailability is expected to be insignificant and is addressed by consideration of the single-failure criterion in the design-basis analyses. Acceptance criteria for the operability of equipment are not changed and ensure that enough trains remain operable to fulfill the TS safety function. In other words, the operability of the remaining train(s) will ensure that the current safety margins are maintained during the extended CT of the RICT program.

Safety margins are also maintained if PRA functionality is determined for the inoperable train, which would result in an increased CT. Credit for PRA functionality, as described in NEI 06-09-0-A [17], is limited to the inoperable train, loop, or component.

Based on the above, the NRC staff finds that the design-basis analyses for Browns Ferry remain applicable and unchanged, that sufficient safety margins would be maintained during the extended CT, and that the proposed changes to the TSs do not include any change in the standards applied or the safety analysis acceptance criteria. The staff finds that the proposed changes meet the third key principle of RG 1.177 [26] and are acceptable.

3.1.4 Key Principle 4: Change in Risk Consistent with the Safety Goal Policy Statement

In TS 5.5.16, “Risk Informed Completion Time Program,” the TSs state that the RICT “must be implemented in accordance with NEI 06-09-A” [17]. This industry guidance provides a methodology for a licensee to evaluate and manage the risk impact of extensions to TS CTs. Permanent changes to the fixed TS CTs are typically evaluated by using the three-tiered approach described in Chapter 16.1 of the SRP [16], RG 1.177 [26], and RG 1.174 [12]. This approach addresses the calculated change in risk as measured by the change in core damage frequency (CDF) and large early release frequency (LERF). It also addresses the incremental conditional core damage probability and incremental conditional large early release probability; the use of compensatory measures to reduce risk; and the implementation of a CRMP to identify risk-significant plant configurations.

The NRC staff evaluated the licensee’s processes and methodologies for determining that the change in risk from implementation of RICTs will be small and consistent with the intent of the Commission’s Safety Goal Policy Statement. In addition, the staff evaluated the licensee’s proposed changes against the three-tiered approach in RG 1.177 [26] for the licensee’s evaluation of the risk associated with a proposed TS CT change. The results of the staff’s review are discussed below.

3.1.4.1 Tier 1: PRA Capability and Insights

The first tier evaluates the impact of the proposed changes on plant operational risk. The Tier 1 review involves two aspects: (1) scope and acceptability of the PRA models and their application to the proposed changes, and (2) a review of the PRA results and insights described in the licensee’s application.

Enclosures 2 and 4 of the LAR identified models the licensee will use to assess the risk contribution for extending the CT of a TS LCO:

- internal events PRA model (which includes internal floods)
- internal fire PRA model
- seismic PRA model

Other external hazards are screened from inclusion in the RICT program based on Appendix 6-A of ASME/ANS RA-Sa–2009, "Addenda to ASME/ANS RA-S–2008, Standard for Level 1 / Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications" (the PRA Standard) [28].

3.1.4.1.1 PRA Scope

RG 1.174 [11] states that the scope, level of detail, and technical adequacy of the PRA are to be commensurate with the application for which it is intended and the role the PRA results play in the integrated decision process. The NRC's safety evaluation for NEI 06-09 0-A [17] states that the PRA models should conform to the guidance in RG 1.200 [10]. The current version is RG 1.200, Revision 3 [22], which identifies the current PRA Standard [28]. This is a recent update that does not include any technical challenges that would impact the plants' consistency with NEI 06-09-A, therefore, RG 1.200, Revision 2 [10] is also acceptable for the implementation of the RICT program. For external hazards for which a PRA is not available, the guidance in NEI 06-09-A allows for the use of a bounding analysis of the risk contribution of the hazard in the RICT calculation or justification for why the hazard is not significant to the RICT calculation.

The NRC staff evaluated the PRA acceptability information provided by the licensee in Enclosure 2 of the LAR [1] and in response to the RAI [2] , including the results of industry peer review and the licensee's self-assessment of the PRA models for internal events, fire, and seismic hazards against the guidance in RG 1.200 [10]. The licensee screened out all external hazard events, except for seismic, as insignificant contributors to RICT calculations. The Browns Ferry PRA model of record with modifications is used as the basis for the CRMP model.

The NRC staff finds the scope of PRA hazards modeled for Browns Ferry and the treatment of hazards for which no PRA model is available to be commensurate with its use in the integrated decisionmaking process for the RICT application. This is consistent with RG 1.174 [11].

3.1.4.1.2 Evaluation of PRA Acceptability

Internal Events PRA (includes internal flooding)

In Enclosure 2, section 3 of the LAR [1], the licensee confirmed that its internal events PRA model received a full-scope peer review in August 2009 and the internal flooding model was peer reviewed in October 2009. Both reviews were in accordance with the PRA Standard [28] and RG 1.200 [10]. Subsequent to the peer review, the findings and observations (F&Os) from the peer review were addressed in revisions to the internal events PRA in accordance with a proceduralized PRA maintenance and update process. A focused-scope peer review of the internal events and internal floods PRA model was conducted in September 2018, which resulted in several F&Os. A subsequent independent assessment for closure of F&Os using Appendix X to NEI 05-04, 07-12, and 12-13 (Appendix X) [29] was performed in December

2020, which resulted in closure of all finding-level F&Os. Consequently, the LAR does not identify any open finding-level F&Os for the internal events PRA models.

The NRC staff finds that the internal events PRA was appropriately peer reviewed consistent with RG 1.200 [10] and that all finding-level F&Os have been closed consistent with Appendix X [29]. Therefore, the staff concludes that the internal events PRA is acceptable for use in the RICT program.

Internal Fire PRA

In Enclosure 2, section 4 of the LAR [1], the licensee confirmed that its internal fire events PRA model received a full-scope peer review in May 2012 using the PRA Standard [28] and RG 1.200 [10]. A focused-scope peer review was conducted in June 2015. An independent assessment for closure of F&Os was performed in December 2020 using Appendix X [29]. This resulted in closure of all finding-level F&Os, so the LAR does not identify any open finding-level F&Os.

The full-scope peer review of the fire PRA was performed in May 2012, which was before the final internal events PRA F&O closure review in December 2020. The internal events PRA provides the modeling foundation for the fire PRA. In response to RAI 3 [9], the licensee explained in the LAR supplement [2] that the updates to the internal events PRA to close F&Os were incorporated into the fire PRA model used for the RICT program. Since changes resulting from closure of F&Os were incorporated into the RICT program model, the staff find that this issue was appropriately addressed for implementation of the RICT program.

Based on its review and the above conclusions, the NRC staff finds that the Browns Ferry fire PRA was appropriately peer reviewed, consistent with RG 1.200 [10], fire methodologies were appropriately considered and implemented, and all finding-level F&Os were closed consistent with Appendix X [29]. Therefore, the licensee's fire PRA is acceptable for use in the RICT program.

Seismic PRA

In Enclosure 2, section 5 of the LAR [1],the licensee confirmed that the seismic events PRA model received a full-scope peer review in May 2019 using the ASME/ANS RA-Sb–2013, Code Case 1 [31], which the NRC staff accepted for use by letter dated March 12, 2018 [32] and later endorsed in RG 1.200, Revision 3 [22]. A subsequent independent assessment for closure of F&Os using Appendix X [29] was performed in November 2019, which resulted in closure of all finding-level F&Os. Hence, the LAR does not identify any open finding-level F&Os.

The full-scope peer review of the seismic PRA was performed in May 2019, which was before the final internal events PRA F&O closure review in December 2020. The internal events PRA provides the modeling foundation for the seismic PRA. In the LAR supplement [2] the licensee explained that the updates to the internal events PRA to close F&Os were incorporated into the seismic PRA model used for the RICT program. Based on the incorporation of the F&O model changes into the RICT program model, the NRC staff finds that this issue was appropriately addressed for this application.

In Enclosure 9 of the LAR [1], as supplemented [2], the licensee provided a discussion of potential key assumptions and sources of uncertainty, along with treatment for the application of TSTF-505. The licensee concluded that there are no key sources of uncertainty in the seismic

PRA for this application. The licensee discussed modeling of FLEX nitrogen bottles as a recovery method for drywell control air in the seismic PRA. The licensee concluded that this approach is not a key source of uncertainty. The NRC staff finds that the credit for FLEX equipment in the TSTF-505 application is appropriate because the licensee used consensus human reliability analysis methodologies and realistic approaches.

Based on its review and the above conclusions, the NRC staff finds that the seismic PRA was appropriately peer reviewed consistent with RG 1.200 [10], seismic methodologies were appropriately considered and implemented, and all finding-level F&Os were closed consistent with Appendix X [29]. The NRC staff also finds that the licensee's evaluation of the key assumptions and sources of uncertainty for its seismic PRA, including the FLEX equipment, is consistent with RG 1.200 [10]. Therefore, the Browns Ferry seismic PRA is acceptable for use in the RICT program.

3.1.4.1.3 Evaluation of PRA External Hazards Modeled

The licensee addressed the risk from other external hazards in the context of this application in Enclosure 4 to the LAR [1]. The basis for exclusion of certain hazards from consideration in the determination of RICTs due to their insignificance to the calculation of configuration risk is also provided in the same enclosure. Besides the seismic hazard, the licensee concluded that other external hazards for Browns Ferry have insignificant contribution to RICT configuration risk and proposed that these hazards be screened out from the RICT program. The hazards assessed in LAR Table E4-1 are those identified for consideration in nonmandatory Appendix 6-A of the PRA Standard [28} that provides a guide for identification of most of the possible external events for a plant site. The NRC staff also notes that the list of hazards provided in Table E4-1 of Enclosure 4 in the LAR is essentially the same list of hazards as presented in Table 4-1 of NUREG-1855 [14].

The licensee's high wind evaluation was based on the design of the structures, systems, and components (SSCs) and a site-specific analysis of extreme winds and accompanying missiles. The licensee concluded that all extreme wind and missile hazards could be screened out from consideration for the TSTF-505 application based on screening criterion PS1 (design-basis hazard cannot cause a core damage accident) and PS4 (bounding mean CDF is 1×10^{-6}/year), which correspond to EXT-C1, Criterion A and Criterion C, respectively, of the PRA Standard [28]. The NRC staff reviewed the licensee's evaluation of the extreme wind and missiles hazards, and finds that the licensee appropriately considered the risk from extreme winds and missiles in the proposed RICTs, and that the extreme winds and missiles hazards have an insignificant contribution to configuration risk and can be excluded from the calculation of the proposed RICTs.

The licensee provided its evaluation of the external flooding hazard and concluded that external flooding can be screened out from consideration for the TSTF-505 application based on the criterion C1 (event damage potential is less than events for which plant is designed), which corresponds to EXT-B1, Criterion 1 of the PRA Standard [28]. The external flooding hazard at Browns Ferry was recently documented in the flood hazard reevaluation report [30] submitted by the licensee in response to the post-Fukushima 50.54(f) request for information. The report indicated that flooding from all hazards, except local intense precipitation, is bounded by the current licensing basis and does not pose a challenge to the plant. The report included commitments describing Required Actions to provide protection against the reevaluated local intense precipitation hazard. Flooding from local intense precipitation was subsequently reviewed in a focused evaluation, which concluded that no safety-related SSCs are impacted.

The NRC staff reviewed the licensee's evaluation of the external flooding hazard and finds that the licensee appropriately considered the risk from external flooding in the proposed RICTs. The staff also finds that external flooding makes an insignificant contribution to configuration risk and can be excluded from the calculation of the proposed RICTs.

Based on its review of the LAR [1], as supplemented [2], the NRC staff finds that the contributions from other external hazards, besides seismic, make an insignificant contribution to configuration risk and can be excluded from the calculation of the proposed RICTs because they either do not challenge the plant or they are bounded by the external hazards analyzed for the plant. The NRC staff notes that the preliminary screening criteria and progressive screening criteria used and presented in Table E4-2 of the LAR [1] are the same criteria presented in supporting requirements for screening external hazards (EXT-B1, EXT-B2, and EXT-C1) of the PRA Standard [28], and thus are acceptable.

3.1.4.1.4 PRA Results and Insights

The proposed changes implement a process to determine TS RICTs rather than specific changes to individual CTs. When operating beyond the front stop CTs, NEI 06-09-A [17] states that periodic assessment of the risk is to be performed, and the result of that assessment is to be compared to the guidance of RG 1.174 [12], confirming that increases in risk remain small. In response to RAI 4 [9], the licensee provided the mean total CDF and LERF risk for each unit, which demonstrated that each unit meets the 1×10^{-4}/year CDF and 1×10^{-5}/year LERF criteria of RG 1.174 [12] consistent with the guidance in NEI 06-09-A [17], and that these guidelines will be satisfied for implementation of a RICT.

The licensee has incorporated NEI 06-09-A [17] into TS 5.5.16. The estimated current total CDF and LERF for Browns Ferry PRAs meet the guidelines of RG 1.174 [12]. Therefore, the NRC staff concludes the PRA results and insights to be used by the licensee in the RICT program will continue to be consistent with NEI 06-09-A [17].

3.1.4.1.5 Key Assumptions and Uncertainty Analyses

The licensee considered PRA modeling uncertainties and their potential impact on the RICT program and identified RMAs, when applicable, to limit the impact of these uncertainties. In Enclosure 9 of the LAR [1], as supplemented [2], the licensee discussed the identification of key assumptions and sources of uncertainty and provided the dispositions for impact on the risk-informed application of applicable sensitivities. The licensee evaluated the PRA model to identify the key assumptions and sources of uncertainty for this application consistent with the definitions in RG 1.200 [10], using sensitivity and importance analyses to place bounds on uncertain processes, to identify alternate modeling strategies, and to provide information to users of the PRA.

In response to RAI 1, the licensee clarified in the LAR supplement [2] that its review of PRA model updates subsequent to their original peer reviews did not identify any new key sources of uncertainty.

In response to RAI 17 on the uncertainty associated with the state-of-knowledge correlation (SOKC), the licensee responded that the original LAR statement of the differences between risk point estimates and means was no longer valid in assessing SOKC as a key source of uncertainty. The licensee provided additional information to justify why SOKC is not a key source of uncertainty and, in the supplement, retracted the original statement. Based on the

revision and additional justification, the NRC determined that this issue is not a key source of uncertainty.

Based on the NRC staff's review of the licensee's dispositions provided in Enclosure 9 of the LAR [1], as supplemented [2], as to the identified key assumptions and sources of modeling uncertainty and the supplemental information provided by the licensee, the NRC staff finds that the licensee performed an adequate assessment to identify the potential sources of uncertainty. The identification of the key assumptions and sources of uncertainty was appropriate and consistent with the guidance in NUREG-1855 [14], and with the associated technical reports from the Electric Power Research Institute (EPRI) [33] and [34]. Therefore, the staff finds the licensee has satisfied the guidance in RG 1.177 [26] and RG 1.174 [12] and that the identification of assumptions and treatment of model uncertainties for risk evaluation of extended CTs is consistent with the guidance in NEI 06-09-A [17] and, therefore, is appropriate for this application.

3.1.4.1.6 PRA Scope and Acceptability Conclusions

The licensee has subjected the PRA models to the peer-review processes. The NRC staff reviewed the peer-review history, which included the results and findings, the licensee's resolutions of peer-review findings, and the identification and disposition of key assumptions and sources of uncertainty. The staff concludes that: (1) the licensee's PRA models are acceptable to support the RICT program and (2) the key assumptions for the PRAs have been identified consistent with the guidance in RG 1.200 [10] and NUREG-1855 [14]. Additionally, the licensee's approach for considering the impact of seismic events, nonseismic external hazards, and other hazards using methods other than explicit PRA modeling is acceptable.

Based on the above conclusions, the NRC staff finds that the licensee has satisfied the intent of Tier 1 in RG 1.177 [26] and RG 1.174 [12] for determining the PRA acceptability, and that the scope of the PRA models (i.e., internal events PRA, fire PRA, and seismic PRA) is appropriate for this application.

3.1.4.1.7 Application of PRA Models in the RICT Program

The base PRA models will be modified as an application-specific PRA model for the CRMP tool that will be used to analyze the risk for an extended CT. The CRMP model produces results (i.e., risk metrics) that are consistent with the guidance in NEI 06-09-A [17]. Throughout the entirety of the LAR [1], as supplemented [2] as discussed below, and specifically Table E1-1, the licensee provided all information to support the requested LCO actions proposed for the Browns Ferry RICT program consistent with the limitations and conditions identified in section 4.0 of the safety evaluation for NEI 06-09-A [21].

In response to RAI 5, the licensee explained in its supplement [2] that benchmarking between individual PRA hazard models and the one-top multihazard model (OTMHM) was performed with each hazard quantified separately. Results generated with the CRMP tool (based on the OTMHM) were compared to those from the base PRA model, and the licensee identified no significant differences between them. After reviewing the results produced by these two models and the method by which the model was developed for the CRMP tool, the staff finds that benchmarking against the individual PRA hazard models is acceptable for Browns Ferry.

For planned conditions, the licensee states in LAR Enclosure 8, section 4 that adjustments to CCF grouping and associated probabilities (Browns Ferry uses alpha factors to calculate CCF)

are not necessary when a component is taken out of service for preventive maintenance because (1) the “component is not out of service for reasons subject to potential common-cause failure” and (2) “the net failure probability for the in service components includes the CCF contribution of the out of service component.” The licensee also states that “the CCF events that are related to the out-of-service component are retained” and that this is conservative. Therefore, the staff finds that the licensee’s method is acceptable because the calculations address CCFs after removing one train for maintenance in a way that is reasonable and consistent with the degree of uncertainty in the estimates.

LAR Enclosure 1, Table E1-1 identifies each TS LCO proposed for the RICT program, describes whether the systems and components involved in the TS LCO are implicitly or explicitly modeled in the PRA, and compares the PRA and design-basis success criteria. For certain TS LCO Conditions, the table explains that the associated SSCs are not modeled in the PRAs but will be represented using a surrogate event that fails the function performed by the SSC.

In the response to RAI 2.a, the licensee provided additional justification for the proposed surrogates or PRA success criteria for TS LCO 3.3.5.1 Condition B, “Reactor Vessel Level Low – Level 0 instrument signal (Function 2.e),” and explained that failure of the surrogate valves to close fails the shutdown cooling (SDC) and low pressure coolant injection (LPCI) functions of residual heat removal. Given that Function 2.e is associated only with the LPCI function, the staff determined that the surrogates are both conservative and bounding, which is in compliance with NEI 06-09-A [17].

With respect to TS LCO 3.3.6.1 Condition A, Table E1-1 regarding Function 3 (HPCI isolations), Function 4 (RCIC isolations), Function 5 (RWCU isolations), and Function 6 (SDC isolations), the licensee clarified in response to RAI 2.b that failing the surrogate valves associated with drywell floor drain penetration (X18) results in a 3-inch diameter opening (or greater). The licensee stated that drywell containment is failed for any breach greater than 2 inches. Given that the four functions are associated with drywell containment isolation, the failure of the X18 drywell penetration as a surrogate is both conservative and bounding, which is in compliance with NEI 06-09-A.

With respect to TS LCO 3.6.1.2 Condition C, Table E1-1 regarding primary containment airlocks, the licensee explained in response to RAI 2.c that the failure of the surrogate isolation valves associated with drywell containment penetration X18 fails the drywell. Given that drywell containment is failed, the NRC staff determined that the surrogates are both conservative and bounding and, therefore, are in compliance with NEI 06-09-A [17].

With respect to TS LCO 3.6.1.3, Condition A, Table E1-1 regarding primary containment isolation pathways the license states in response to RAI 2.d that the X18 drywell containment surrogate valves will be used for any containment pathways that are not modeled. Drywell containment is treated as failed, which bounds the effect of failed primary containment isolation function. The staff determined that the surrogates are both conservative and bounding and, therefore, are in compliance with NEI 06-09-A [17].

The NRC staff finds the information on the CRMP tool (real-time risk model) to be sufficient as described in the LAR [1], as supplemented in the licensee’s RAI responses [2]. Furthermore, as stated in Attachment 5 of the LAR, regarding the plant design criteria, “This LAR does not change the design, configuration, or method of operation of the plant.” The staff finds that the PRA models and CRMP tool used will continue to reflect the as-built, as-operated plant consistent with RG 1.200 [10], for ensuring the PRA will remain acceptable for the RICT

program. Therefore, the staff concludes that the proposed application of the Browns Ferry RICT program is appropriate for use in the adoption of TSTF-505 for performing RICT calculations.

Based on the above conclusions, the NRC staff finds that the licensee has satisfied the intent of Tier 1 in RG 1.177 [13] and RG 1.174 [11] for determining the PRA acceptable, and that the scope of the PRA models for internal events, internal flooding, internal fire, and seismic risk is appropriate for this application.

3.1.4.2 Tier 2: Avoidance of Risk-Significant Plant Configurations

As described in RG 1.177 [26], the second tier evaluates the capability of the licensee to recognize and avoid risk-significant plant configurations that could result if equipment, in addition to that associated with the proposed change, is taken out of service simultaneously or if other risk-significant operational factors, such as concurrent system or equipment testing, are also involved. The limits established for entry into a RICT and for RMA implementation are consistent with the guidance of NUMARC 93-01, Revision 4F [35], endorsed by RG 1.160, Revision 4 [36], as applicable to plant maintenance activities. The RICT program requirements and criteria are consistent with the principle of Tier 2 to avoid risk-significant configurations.

Consistent with NEI 06-09-A [17], Enclosure 12 of the LAR [1] identifies three kinds of RMAs: actions to provide increased risk awareness and control, actions to reduce the duration of maintenance activities, and actions to minimize the magnitude of the risk increase. The LAR also explains that for planned maintenance activities, RMAs will be implemented, following current plant procedures, no later than the time at which incremental core damage probability (ICDP) or incremental large early release probability (ILERP) is a factor of ten below the RICT limits. Under emergent conditions, after a RICT is in effect, RMAs will be implemented when the instantaneous CDF and LERF thresholds are exceeded (i.e., 1×10^{-3}/year and 1×10^{-4}/year, respectively).

Based on the licensee's incorporation of NEI 06-09-A [17] in the TS as discussed in LAR Attachment 1 and use of RMAs as discussed in LAR Enclosure 12, and because the proposed changes are consistent with the Tier 2 guidance of RG 1.177 [26], the NRC staff finds the licensee's Tier 2 program is acceptable and supports the proposed implementation of the RICT program.

3.1.4.3 Tier 3: Risk-Informed Configuration Risk Management

The third tier of RG 1.177 [26] stipulates that a licensee should develop a program that ensures that the risk impact of out-of-service equipment is appropriately evaluated prior to performing any maintenance activity.

The proposed RICT program establishes a CRMP, or real-time risk model (RTR model), which is based on the underlying PRA models. In Enclosure 8 of the LAR [1], "Attributes of the Real-Time Risk Model," the licensee explained the adjustments that were made to PRA models (e.g., adjustments to maintenance unavailability) to ensure their proper use of models in the CRMP calculations. The RTR model is then used to evaluate configuration-specific risk for planned activities associated with the RMTS extended CT, as well as emergent conditions which may arise during an extended CT. This required assessment of configuration risk, along with the implementation of compensatory measures and RMAs, is consistent with the principle of Tier 3 for assessing and managing the risk impact of out-of-service equipment.

In the same enclosure, the licensee also confirmed that future changes made to the baseline PRA models and changes made to the online model (i.e., RTR) are controlled and documented by plant procedures. In Enclosure 10 of the LAR [1], the licensee identified the attributes that the RICT program procedures will address, which are consistent with NEI 06-09-A [17].

The NRC staff reviewed the description of the training program provided in Enclosure 10 [1], and concluded that the program is consistent with the training requirements in NEI 06-09-A [17]. Therefore, the staff finds that the licensee has proposed acceptable administrative controls for the PRA and personnel implementing the RICT program and will establish appropriate programmatic and procedural controls for its RICT program, consistent with the guidance of NEI 06-09-A, section 3.2.1.

Based on the licensee's incorporation of NEI 06-09-A [17] in the TSs, as discussed in LAR Attachment 1 and use of RMAs as discussed in LAR Enclosure 12, and because the proposed changes are consistent with the Tier 3 guidance of RG 1.177 [26] the NRC staff finds the licensee's Tier 3 program is acceptable and supports the proposed implementation of the RICT program.

3.1.4.4 Key Principle 4 Conclusions

The NRC staff concludes that the licensee has demonstrated the technical acceptability and scope of its PRA models and alternative methods; this includes considering the impact of seismic events, nonseismic external hazards, and other hazards, and finding that the models can support implementation of the RICT program for determining extensions to CTs. The licensee has made proper consideration of key assumptions and sources of uncertainty. The risk metrics are consistent with the approved methodology of NEI 06-09-A [17] and the acceptance guidance in RG 1.177 [26] and RG 1.174 [11]. The RICT program will be controlled administratively through plant procedures and training and follows the NRC-approved methodology in NEI 06-09-A. The NRC staff concludes that the RICT program satisfies the fourth key principle of RG 1.177 [26] and is, therefore, acceptable.

3.1.5 Key Principle 5: Performance Measurement Strategies–Implementation and Monitoring

For TSTF-439 [6] there are two existing programs that provide a strong disincentive to licensees continuing operation with alternating Required Actions. These programs are the monitoring report program required under the Maintenance Rule (10 CFR 50.65) and the ROP.

TSTF-439 deletes the second CTs; those CTs had been based upon an NRC concern that a plant could continue to operate indefinitely without meeting an LCO by alternating compliance between two or more separate TS Conditions. TSTF-439 explains that paragraph 50.65(a)(4) of 10 CFR is a better mechanism to assure that the LCO is met than the imposition of a second CT, because the monitoring report considers all inoperable risk-significant equipment, not just the one or two systems governed by the same LCO. Furthermore, as discussed above, the monitoring report requires each licensee to monitor the performance or condition of SSCs against licensee-established goals to ensure the SSCs are capable of fulfilling their intended functions. The performance and condition monitoring activities required by 10 CFR 50.65 identify maintenance practices that would result from multiple entries into the actions of the TSs and unacceptable unavailability of these SSCs. The effectiveness of these performance monitoring activities, and associated corrective actions is evaluated at least every refueling cycle, not to exceed 24 months per 10 CFR 50.65.

In addition to the monitoring report, the reporting of performance indicator data governed by NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” [37] as endorsed by RIS 2001-11, “Voluntary Submission of Performance Indicator Data” [38], establishes an acceptable method for the submission of performance indicator data to the NRC. The ROP consists of cornerstones that include inspection of the indicators to ensure all ROP objectives are being met. The mitigating systems cornerstone specifically addresses emergency AC power systems, which encompasses the AC sources and distribution system LCOs. Any extended unavailability of the emergency AC power systems due to multiple entries into the TS Required Actions would affect the NRC staff’s evaluation of the licensee’s performance indicator data provided under the ROP. The licensee’s performance within the mitigating systems ROP cornerstone provides reasonable assurance that the inappropriate use of TS CTs will be monitored.

In addition to these regulatory programs, the administrative controls discussed above in section 3.1.1 of this safety evaluation limit the maximum time allowed for any combination of Conditions that result in a single contiguous failure to meet the LCO. The NRC staff concludes that the licensee continues to have mechanisms in place to monitor and to limit the maximum time allowed for any combination of conditions that could result in a single contiguous failure to meet the LCO. The NRC staff finds the proposed deletion of second CTs are acceptable because multiple, continuous entries into TS Conditions, without meeting the LCO, will be adequately controlled by: (1) the licensee’s administrative controls, (2) the CRMPs as implemented to meet the requirements of the monitoring report to assess and manage risk and performance indicators, (3) assessment of the licensee’s performance within the mitigating systems ROP cornerstone, and (4) the requirements described in TS 1.3, “Completion Times.” In addition, the staff finds the monitoring report provides adequate assurance against the inappropriate use of combinations of TS Conditions that result in a single contiguous occurrence of failing to meet the LCO. Accordingly, consistent with TSTF-439, Revision 2, the staff finds the proposed changes to be acceptable.

For TSTF-505 [4], the need for an implementation and monitoring program is established in RG 1.177 [26] and RG 1.174 [12] to ensure that extensions to TS CTs do not degrade operational safety over time and that no adverse condition develops due to unanticipated degradation or common-cause mechanisms. An implementation and monitoring program is intended to ensure that the impact of the proposed TS change continues to reflect the availability of SSCs impacted by the change. Revision 3 of RG 1.174 [12] states, in part, monitoring performed in conformance with the Maintenance Rule, 10 CFR 50.65, can be used when the monitoring performed is sufficient for the SSCs affected by the risk-informed application. Enclosure 11 of the LAR [1] states that the SSCs in the scope of the RICT program are also in the scope of 10 CFR 50.65 for the Maintenance Rule. The Maintenance Rule monitoring programs will support evaluation and disposition of unavailability impacts which may be incurred from implementation of the RICT program.

NEI 06-09-A [17] specifies that the RICT program will monitor cumulative risk associated with the use of RMTS beyond the front stop for equipment out of service. In Enclosure 11 of the LAR [1], the licensee states that the cumulative risk is calculated at least every refueling cycle, not to exceed 24 months. The NRC staff finds this periodicity is consistent with NEI 06-09-A and, therefore, is acceptable.

The NRC staff finds that the RICT program satisfies the fifth key principle of RG 1.177 [26] and RG 1.174 [12] because: (1) the RICT program will monitor the average annual cumulative risk increase as described in NEI 06-09-A [17], and will use this average annual increase to ensure

that the program, as implemented, meets RG 1.174 guidance; and (2) all affected SSCs are within the Maintenance Rule program, which is used to monitor changes to the reliability and availability of these SSCs.

3.2 Technical Evaluation Conclusion

The NRC staff has evaluated the proposed changes against each of the five key principles in RG 1.177 [26] and RG 1.174 [12], including the optional variations from the approved TSTF-505 discussed in section 3.1.1 of this safety evaluation. The staff concludes that the changes proposed by the licensee satisfy the key principles of risk-informed decision-making identified in RG 1.174 and RG 1.177, and therefore, the requested adoption of the proposed changes to the TSs, implementation items, and associated guidance, is acceptable to assure that the regulations identified in section 2.0 of this safety evaluation continue to be met.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Alabama State official was notified of the proposed issuance of the amendments on March 10, 2023. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the 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 NRC has previously issued a proposed finding that the amendments involve no significant hazards consideration, published in the *Federal Register* on June 14, 2022 (87 FR 36009), and there has been no public comment on such finding. 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.

6.0 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: May 2, 2023

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 - ISSUANCE OF AMENDMENT NOS. 328, 351, AND 311 REGARDING ADOPTION OF TSTF-505, REVISION 2, FOR RISK-INFORMED COMPLETION TIMES AND TSTF-439, REVISION 2, TO ELIMINATE SECOND COMPLETION TIMES (EPID L-2022-LLA-0049) DATED MAY 2, 2023

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