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

May 14, 2021

Mr. David P. Rhoades
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 - ISSUANCE OF AMENDMENTS NOS. 338 AND 341, RE: ADOPTION OF TSTF-505, REVISION 2, "PROVIDE RISK-INFORMED EXTENDED COMPLETION TIMES – RITSTF INITIATIVE 4B" (EPID L-2020-LLA-0120)

Dear Mr. Rhoades:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 338 to Subsequent Renewed Facility Operating License No. DPR-44 and Amendment No. 341 to Subsequent Renewed Facility Operating License No. DPR-56 for the Peach Bottom Atomic Power Station, Units 2 and 3, respectively. The amendments are in response to your application dated May 29, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20150A007), as supplemented by letters dated December 2, 2020, January 29, 2021, and February 4, 2021 (ADAMS Accession Nos. ML20337A301, ML21029A166, and ML21035A033, respectively).

The amendments revise technical specification requirements to permit the use of risk-informed completion times for actions to be taken when limiting conditions for operation are not met. The 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 (ADAMS Accession No. ML18183A493).

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/

Jennifer C. Tobin, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-277 and 50-278

Enclosures:
1. Amendment No. 338 to DPR-44
2. Amendment No. 341 to DPR-56
3. Safety Evaluation

cc: Listserv

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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-277

PEACH BOTTOM ATOMIC POWER STATION, UNIT 2

AMENDMENT TO SUBSEQUENT RENEWED FACILITY OPERATING LICENSE

Amendment No. 338
Subsequent Renewed License No. DPR-44

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

   A. The application for amendment by Exelon Generation Company, LLC (Exelon, the licensee) dated May 29, 2020, as supplemented by letters dated December 2, 2020, January 29, 2021, and February 4, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the renewed operating license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Subsequent Renewed Facility Operating License No. DPR-44 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 338, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

In addition, the license is amended by changes to the operating license as indicated in the attachment to this license amendment and new Paragraph 2.C.(20) of Subsequent Renewed Facility Operating License No. DPR-44 will read as follows:

(20) PRA Model Updates to Support Implementation of the Risk Informed Completion Time (RICT) Program

Exelon is approved to implement TSTF-505, Revision 2, modifying the Technical Specification requirements related to Completion Times (CT) for Required Actions to provide the option to calculate a longer, risk-informed CT. The methodology for using the new Risk-Informed Completion Time (RICT) Program is described in NEI 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007.

Exelon will complete the implementation items listed in Attachment 6 of Exelon letter to the NRC dated May 29, 2020, prior to implementation of the RICT Program. All issues identified in the attachment will be addressed and any associated changes will be made, focused-scope peer reviews will be performed on changes that are PRA upgrades as defined in the PRA standard (ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2), and any findings will be resolved and reflected in the PRA of record prior to implementation of the RICT Program.

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

FOR THE NUCLEAR REGULATORY COMMISSION

James G. Danna

Digitally signed by James G. Danna
Date: 2021.05.14 09:34:34 -04'00'

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Date of Issuance: May 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 338

SUBSEQUENT RENEWED FACILITY OPERATING LICENSE NO. DPR-44

PEACH BOTTOM ATOMIC POWER STATION, UNIT 2

DOCKET NO. 50-277

Replace the following pages of the Subsequent Renewed Facility Operating License and Appendix A, Technical Specifications, 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 No. DPR-44	License No. DPR-44
Page 3	Page 3
Page 15	Page 15
--	Page 16
TSs	TSs
Page 1.3-13	Page 1.3-13
--	Page 1.3-14
Page 3.1-20	Page 3.1-20
Page 3.3-1	Page 3.3-1
Page 3.3-2	Page 3.3-2
Page 3.3-22	Page 3.3-22
Page 3.3-29	Page 3.3-29
Page 3.3-31a	Page 3.3-31a
Page 3.3-33	Page 3.3-33
Page 3.3-34	Page 3.3-34
Page 3.3-35	Page 3.3-35
Page 3.3-36	Page 3.3-36
Page 3.3-37	Page 3.3-37
Page 3.3-44	Page 3.3-44
Page 3.3-45	Page 3.3-45
Page 3.3-48	Page 3.3-48
Page 3.3-61	Page 3.3-61
Page 3.3-62	Page 3.3-62
Page 3.5-1	Page 3.5-1
Page 3.5-2	Page 3.5-2
Page 3.5-3	Page 3.5-3
Page 3.5-12	Page 3.5-12
Page 3.6-5	Page 3.6-5
Page 3.6-8	Page 3.6-8
Page 3.6-9	Page 3.6-9
Page 3.6-11	Page 3.6-11
Page 3.6-12	Page 3.6-12
Page 3.6-18	Page 3.6-18
Page 3.6-21	Page 3.6-21
Page 3.6-27	Page 3.6-27

REMOVE	INSERT
TSs (continued)	TSs (continued)
Page 3.6-29	Page 3.6-29
Page 3.6-30a	Page 3.6-30a
Page 3.7-1	Page 3.7-1
Page 3.7-3	Page 3.7-3
Page 3.7-5	Page 3.7-5
Page 3.8-2	Page 3.8-2
Page 3.8-4	Page 3.8-4
Page 3.8-5	Page 3.8-5
Page 3.8-28	Page 3.8-28
Page 3.8-28a	Page 3.8-28a
Page 3.8-29	Page 3.8-29
Page 3.8-29a	Page 3.8-29a
Page 3.8-42	Page 3.8-42
Page 3.8-43	Page 3.8-43
Page 5.0-18c	Page 5.0-18c
--	Page 5.0-18d

(2) Exelon Generation Company, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(3) Exelon Generation Company, 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) Exelon Generation Company, 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 instrument calibration or when associated with radioactive apparatus or components;

(5) Exelon Generation Company, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear material as may be produced by operation of the facility, and such Class B and Class C low-level radioactive waste as may be produced by the operation of Limerick Generating Station, Units 1 and 2.

C. This subsequent renewed 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, Section 50.54 of Part 50, and Section 70.32 of Part 70; all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

(1) Maximum Power Level

Exelon Generation Company is authorized to operate the Peach Bottom Atomic Power Station, Unit 2, at steady state reactor core power levels not in excess of 4016 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 338, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

(3) Physical Protection

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and

Supplement is henceforth part of the UFSAR, which will be updated in accordance with 10 CFR 50.71(e). As such, Exelon Generation Company may make changes to the programs, activities, and commitments described in the Subsequent License Renewal UFSAR Supplement, provided Exelon Generation Company evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59, “Changes, Tests, and Experiments,” and otherwise complies with the requirements in that section.

(b) The Subsequent License Renewal UFSAR Supplement, as defined in subsequent renewed license condition (19)(a) above, describes programs to be implemented and activities to be completed prior to the subsequent period of extended operation, which is the period following the August 8, 2033, expiration of the initial renewed license.

1. Exelon Generation Company shall implement those new programs and enhancements to existing programs no later than 6 months before the subsequent period of extended operation.

2. Exelon Generation Company shall complete those activities by the 6-month date prior to the subsequent period of extended operation or by the end of the last refueling outage before the subsequent period of extended operation, whichever occurs later.

3. Exelon Generation Company shall notify the NRC in writing within 30 days after having accomplished item (b)1 above and include the status of those activities that have been or remain to be completed in item (b)2 above.

(20) PRA Model Updates to Support Implementation of the Risk Informed Completion Time (RICT) Program

Exelon is approved to implement TSTF-505, Revision 2, modifying the Technical Specification requirements related to Completion Times (CT) for Required Actions to provide the option to calculate a longer, risk-informed CT. The methodology for using the new Risk-Informed Completion Time (RICT) Program is described in NEI 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007.

Exelon will complete the implementation items listed in Attachment 6 of Exelon letter to the NRC dated May 29, 2020, prior to implementation of the RICT Program. All issues identified in the attachment will be addressed and any associated changes will be made, focused-scope peer reviews will be performed on changes that are PRA upgrades as defined in the PRA standard (ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2), and any findings will be resolved and reflected in the PRA of record prior to implementation of the RICT Program.

3. This subsequent renewed license is effective as of the date of issuance and shall expire at midnight on August 8, 2053.

FOR THE UNITED STATES NUCLEAR REGULATORY COMMISSION

/RA/

Ho K. Nieh, Director
Office of Nuclear Reactor Regulation

Attachments:
Appendix A - Technical Specifications Peach Bottom Atomic Power Station Unit 2
Appendix B - Environmental Protection Plan

Date of Issuance: March 5, 2020

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

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. AND B.2 Be in MODE 4.	6 hours 36 hours

(continued)

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, Conditions A and B are 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. Concentration of boron in solution > 9.82% weight.	A.1 Verify the concentration and temperature of boron in solution and pump suction piping temperature are within the limits of Figure 3.1.7-1. AND A.2 Restore concentration of boron in solution to ≤ 9.82% weight.	8 hours AND Once per 12 hours thereafter 72 hours
B. One SLC subsystem inoperable for reasons other than Condition A.	B.1 Restore SLC subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

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

----------NOTES----------
1. Separate Condition entry is allowed for each channel.

2. When Functions 2.b and 2.c channels are inoperable due to the calculated power exceeding the APRM output by more than 2% RTP while operating at ≥ 22.6% RTP, entry into associated Conditions and Required Actions may be delayed for up to 2 hours.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip. OR	12 hours OR --------NOTE-------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	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 -------NOTE-------- Only applicable when a loss of function has not occurred. ---------- 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. OR	6 hours OR --------NOTE------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	B.2 Place one trip system in trip.	6 hours OR -------NOTE-------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
C. One or more automatic Functions with RPS trip capability not maintained. OR Two or more manual 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 < 26.3% RTP.	4 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 per trip system of the Digital Feedwater Control System (DFCS) high water level trip instrumentation Function shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 22.6% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DFCS high water level trip channels inoperable.	A.1 Place channel in trip.	72 hours OR ---NOTE--- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program
B. DFCS high water level trip capability not maintained.	B.1 Restore DFCS high water level trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1 ---NOTE--- Only applicable if inoperable channel is the result of inoperable feedwater pump turbine or main turbine stop valve. --- Remove affected feedwater pump(s) and main turbine valve(s) from service. OR C.2 Reduce THERMAL POWER to < 22.6% RTP.	 4 hours 4 hours

3.3 INSTRUMENTATION

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

LCO 3.3.4.1 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 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	OR
		--------NOTE-------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	A.2 --------NOTE-------- Not applicable if inoperable channel is the result of an inoperable breaker. ----------	
	Place channel in trip.	14 days
		OR
		--------NOTE-------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

3.3 INSTRUMENTATION

3.3.4.2 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

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

1. Turbine Stop Valve (TSV)—Closure; and
2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure—Low.

OR

b. The following limits are made applicable:

1. LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," limits for inoperable EOC-RPT as specified in the COLR;
2. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for inoperable EOC-RPT as specified in the COLR; and
3. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)," limits for inoperable EOC-RPT as specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 26.3% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Restore channel to OPERABLE status.	72 hours OR ---NOTE--- Only applicable when a loss of function has not occurred. --- 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.	72 hours OR ---NOTE--- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 --------NOTE-------- Only applicable for Functions 3.a and 3.b. ---------- Declare High Pressure Coolant Injection (HPCI) System inoperable. AND B.3 Place channel in trip.	 1 hour from discovery of loss of HPCI initiation capability 24 hours OR -------NOTE-------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1 --------NOTE-------- 1. Only applicable for Functions 1.c, 1.e, 1.f, 2.c, 2.d, and 2.f. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable. AND C.2 Restore channel to OPERABLE status.	 1 hour from discovery of loss of subsystem initiation capability in both subsystems 24 hours OR --------NOTE-------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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 from discovery of loss of HPCI initiation capability
	AND		
	D.2.1	Place channel in trip.	24 hours OR ------NOTE-------- Only applicable When a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	OR		
	D.2.2	Align the HPCI pump suction to the suppression pool.	24 hours

(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 --------NOTE-------- 1. Only applicable to Functions 1.d and 2.g. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable. AND	1 hour from discovery of loss of subsystem initiation capability in both subsystems
	E.2 Restore channel to OPERABLE status.	7 days OR -----NOTE------ Only applicable when a loss of function has not occurred. ---------- 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.	1 hour from discovery of loss of ADS initiation capability in both trip systems
	AND	
	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------ Only applicable when a loss of function has not occurred. --------------- In accordance with the Risk Informed Completion Time Program AND 8 days OR -----NOTE------ Only applicable when a loss of function has not occurred. --------------- 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------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR -----NOTE------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
H. Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.	H.1 Declare associated supported feature(s) inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.5.2 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.2 The RCIC System instrumentation for each Function in Table 3.3.5.2-1 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 3.3.5.2-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	B.1 Declare RCIC System inoperable. AND B.2 Place channel in trip.	1 hour from discovery of loss of RCIC initiation capability 24 hours OR -----NOTE------ Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program
C. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	C.1 Restore channel to OPERABLE status.	24 hours OR -----NOTE------ Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1	--------NOTE-------- Only applicable if RCIC pump suction is not aligned to the suppression pool. ----------	
		Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	AND		
	D.2.1	Place channel in trip.	24 hours OR -----NOTE------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	OR		
	D.2.2	Align RCIC pump suction to the suppression pool.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1	Declare RCIC System inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.6.1 Primary Containment Isolation Instrumentation

LCO 3.3.6.1 The primary containment isolation instrumentation for each Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

ACTIONS

----------NOTES----------
1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. 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 for Functions 2.a, 2.b, 8.a, and 8.b OR -----NOTE----- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program AND 24 hours for Functions other than Functions 2.a, 2.b, 8.a, and 8.b OR -----NOTE----- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Enter the Condition referenced in Table 3.3.6.1-1 for the channel.	Immediately

(continued)

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The Unit 2 LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

AND

The Unit 3 LOP instrumentation for Functions 1, 2, 3, and 5 in Unit 3 Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: When the associated diesel generator and offsite circuit are required to be OPERABLE by LCO 3.8.1, "AC Sources—Operating," or LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One 4 kV emergency bus with one or two required Function 3 channels inoperable. OR One 4 kV emergency bus with one or two required Function 5 channels inoperable.	A.1 --------NOTE--------- Enter applicable Conditions and Required Actions of LCO 3.8.1 for offsite circuits made inoperable by LOP instrumentation. ---------- Place channel in trip.	14 days OR -----NOTE------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two 4 kV emergency buses with one required Function 3 channel inoperable. OR Two 4 kV emergency buses with one required Function 5 channel inoperable. OR One 4 kV emergency bus with one required Function 3 channel inoperable and a different 4 kV emergency bus with one required Function 5 channel inoperable.	B.1 --------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.8.1 for offsite circuits made inoperable by LOP instrumentation. ---------- Place the channel in trip.	24 hours OR -----NOTE------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL (WIC), 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 five safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) is not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 100 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 each subsystem 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.	12 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 One low pressure ECCS injection/spray subsystem is inoperable.	D.1 Restore HPCI System to OPERABLE status. OR	72 hours OR In accordance with the Risk Informed Completion Time Program
	D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One ADS valve inoperable. AND One low pressure ECCS injection/spray subsystem inoperable.	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
G. Required Action and associated Completion Time of Condition C, D, E or F not met.	G.1 Be in MODE 3.	12 hours
H. Two or more ADS valves inoperable.	H.1 Be in MODE 3. AND H.2 Reduce reactor steam dome pressure to ≤ 100 psig.	12 hours 36 hours
I. Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A. OR HPCI System and one or more ADS valves inoperable.	I.1 Enter LCO 3.0.3.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL (WIC), 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. AND	Immediately
	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

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)

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers and scram discharge volume vent and drain valves, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

ACTIONS

----------NOTES----------
1. Penetration flow paths except for purge or exhaust valve penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria.

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 for MSIV leakage not within limit.	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.	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
	AND	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 --------NOTES-------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured 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
C. (continued)	C.2 --------NOTES-------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured 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
D. One or more penetration flow paths with one or more MSIVs not within MSIV leakage rate limits.	D.1 Restore leakage rate to within limit.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Purge/Vent flowpath open for an accumulated time greater than 90 hours for the calendar year while in MODE 1 or 2 with Reactor Pressure greater than 100 psig.	E.1 Isolate the penetration. OR	4 hours OR In accordance with the Risk Informed Completion Time Program
	E.2.1 Be in MODE 3. AND	12 hours
	E.2.2 Be in MODE 4.	36 hours
F. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	F.1 Be in MODE 3. AND	12 hours
	F.2 Be in MODE 4.	36 hours
G. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during MODE 4 or 5.	G.1 Initiate action to restore valve(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	Verify nitrogen inventory is equivalent to ≥ 22 inches water column in the liquid nitrogen storage tank.	In accordance with the Surveillance Frequency Control Program.

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.1.5 Reactor Building-to-Suppression Chamber Vacuum Breakers

LCO 3.6.1.5 Each reactor building-to-suppression chamber vacuum breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more lines with one reactor building-to-suppression chamber vacuum breaker not closed.	A.1 Close the open vacuum breaker.	72 hours
B. One or more lines with two reactor building-to-suppression chamber vacuum breakers not closed.	B.1 Close one open vacuum breaker.	1 hour
C. One line with one or more reactor building-to-suppression chamber vacuum breakers inoperable for opening.	C.1 Restore the vacuum breaker(s) to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.1.6 Suppression Chamber-to-Drywell Vacuum Breakers

LCO 3.6.1.6 Nine suppression chamber-to-drywell vacuum breakers shall be OPERABLE for opening.

AND

Twelve suppression chamber-to-drywell vacuum breakers shall be closed, except when performing their intended function.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required suppression chamber-to-drywell vacuum breaker inoperable for opening.	A.1 Restore one required vacuum breaker to OPERABLE status.	72 hours 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.	12 hours
C. One suppression chamber-to-drywell vacuum breaker not closed.	C.1 Close the open vacuum breaker.	10 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Two 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 RHR suppression pool cooling subsystem 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.	12 hours
C. Two RHR suppression pool cooling subsystems inoperable.	C.1 Restore one RHR suppression pool cooling subsystem to OPERABLE status.	8 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

* The 7-day Completion Time for one RHR suppression pool cooling subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal (RHR) Suppression Pool Spray

LCO 3.6.2.4 Two 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 RHR suppression pool spray subsystem to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
B. Two RHR suppression pool spray subsystems inoperable.	B.1 Restore one RHR suppression pool spray subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	12 hours

* The 7-day Completion Time for one RHR suppression pool spray subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

3.6 CONTAINMENT SYSTEMS

3.6.2.5 Residual Heat Removal (RHR) Drywell Spray

LCO 3.6.2.5 Two 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 RHR drywell spray subsystem to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
B. Two RHR drywell spray subsystems inoperable.	B.1 Restore one RHR drywell spray 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

* The 7-day Completion Time for one RHR drywell spray subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

3.7 PLANT SYSTEMS

3.7.1 High Pressure Service Water (HPSW) System

LCO 3.7.1 Two HPSW subsystems and the HPSW cross tie shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One HPSW subsystem inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," for RHR shutdown cooling made inoperable by HPSW System. ---------- A.1 Restore HPSW subsystem to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
B. HPSW cross tie inoperable.	B.1 Restore HPSW cross tie to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	12 hours

(continued)

* The 7-day Completion Time for one HPSW subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 and the 7-day Completion Time for the HPSW cross tie inoperable may be extended to 10 days two (2) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

3.7 PLANT SYSTEMS

3.7.2 Emergency Service Water (ESW) System and Normal Heat Sink

LCO 3.7.2 Two ESW subsystems and normal heat sink shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ESW subsystem inoperable.	A.1 Restore ESW 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. OR Both ESW subsystems inoperable. OR Normal heat sink inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

3.7 PLANT SYSTEMS

3.7.3 Emergency Heat Sink

LCO 3.7.3 The emergency heat sink shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required emergency cooling tower fan inoperable.	A.1 Restore required emergency cooling tower fan to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
B. Emergency heat sink inoperable for reasons other than Condition A.	B.1 Restore emergency heat sink to OPERABLE status.	7 days
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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuits.	1 hour AND Once per 8 hours thereafter
	AND 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 4 kV emergency bus concurrent with inoperability of redundant required feature(s)
	AND A.3 Restore offsite circuit to OPERABLE status.	7 days (*) OR In accordance with the Risk Informed Completion Time Program

(continued)

(*) Or 21 days, to support installation and testing of new electrical cables routed between the 3EA Emergency Auxiliary Transformer and the J-58 junction box serving the 3SU-E 4.16 kV feed switchgear. The work shall be completed by June 30, 2020.

Prior to entry into the 21-day extended Completion Time, the SBO Line (i.e., 33kV Conowingo AAC source) shall be verified available. During the 21-day Completion Time, the 33kV SBO Line shall be verified available once per shift.

If the SBO Line becomes unavailable after the initial seven (7) days while in the extended 21-day Completion Time period, it shall be made available within 24 hours, or the unit shall be brought to MODE 3 within the next 6 hours and MODE 4 within the following 30 hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore DG to OPERABLE status.	14 days from discovery of failure to meet LCO 3.8.1.a or b OR In accordance with the Risk Informed Completion Time Program
C. Required Action B.1 and associated Completion Time not met.	C.1 Restore DG to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
D. Two or more offsite circuits inoperable.	D.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable. AND D.2 Restore all but one offsite circuit to OPERABLE status.	12 hours from discovery of Condition D 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
E. One offsite circuit inoperable. AND One DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems—Operating," when Condition E is entered with no AC power source to any 4 kV emergency bus. ----------	
	E.1 Restore offsite circuit to OPERABLE status. OR	12 hours OR In accordance with the Risk Informed Completion Time Program
	E.2 Restore DG to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
F. Two or more DGs inoperable.	F.1 Restore all but one DG to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition A, C, D, E, or F not met. OR Required Action B.2, B.3, B.4.1, B.4.2, or B.5 and associated Completion Time not met.	G.1 Be in MODE 3.	12 hours

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

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

a. Unit 2 Division I and Division II DC electrical power subsystems; and

b. Unit 3 Division I and Division II DC electrical power subsystems.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit 3 DC electrical power subsystem inoperable due to performance of SR 3.8.4.7 or SR 3.8.6.6.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems—Operating," when Condition A results in de-energization of a Unit 2 4 kV emergency bus or de-energization of a Unit 3 DC bus. ---------- A.1 Restore Unit 3 DC electrical power subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required Unit 3 battery charger on one subsystem inoperable.	B.1 Restore Unit 3 battery terminal voltage to greater than or equal to the minimum established float voltage. AND	12 hours
	B.2 Verify battery float current ≤ 2 amps. AND	24 hours AND Once per 12 hours thereafter
	B.3 Restore battery charger to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One Unit 3 DC electrical power subsystem inoperable for reasons other than Condition A.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems—Operating," when Condition C results in de-energization of a Unit 2 4 kV emergency bus. ---------- C.1 Restore Unit 3 DC electrical power subsystem to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
D. One Unit 2 battery charger on one subsystem inoperable.	D.1 Restore Unit 2 battery terminal voltage to greater than or equal to the minimum established float voltage. AND D.2 Verify battery float current $\leq$ 2 amps. AND D.3 Restore battery charger to OPERABLE status.	2 hours Once per 12 hours 72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Unit 2 DC electrical power subsystem inoperable for reasons other than Condition D.	E.1 Restore Unit 2 DC electrical power subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	12 hours 36 hours
G. Two or more inoperable DC electrical power subsystems.	G.1 Enter LCO 3.0.3.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Unit 3 AC electrical power distribution subsystems inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources—Operating," when Condition A results in a de-energization of a required Unit 3 125 V battery charger. ---------- A.1 Restore required Unit 3 AC electrical power distribution subsystem(s) to OPERABLE status.	7 days OR -------NOTE------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
B. One required Unit 3 DC electrical power distribution subsystem inoperable.	B.1 Restore Unit 3 DC electrical power distribution subsystem to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
C. One Unit 2 AC electrical power distribution subsystem inoperable.	C.1 Restore Unit 2 AC electrical power distribution subsystem to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Unit 2 DC electrical power distribution subsystem inoperable.	D.1 Restore Unit 2 DC electrical power distribution subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3.	12 hours
F. Two or more inoperable electrical power distribution subsystems that result in a loss of function.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.7.1 Verify: a. Correct breaker alignments to required AC electrical power distribution subsystems; and b. Indicated power availability to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program.

5.5 Programs and Manuals

5.5.15 Battery Monitoring and Maintenance Program (continued)

1. Actions to restore battery cells with float voltage < 2.13 V;

2. Actions to determine whether the float voltage of the remaining battery cells is ≥ 2.13 V when the float voltage of a battery cell has been found to be < 2.13 V;

3. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates;

4. Limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage; and

5. A requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations.

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.

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

5.5 Programs and Manuals

5.5.16. Risk Informed Completion Time Program (continued)

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 in Amendment No. 338, 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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-278

PEACH BOTTOM ATOMIC POWER STATION, UNIT 3

AMENDMENT TO SUBSEQUENT RENEWED FACILITY OPERATING LICENSE

Amendment No. 341
Subsequent Renewed License No. DPR-56

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

   A. The application for amendment by Exelon Generation Company, LLC (Exelon, the licensee) dated May 29, 2020, as supplemented by letters dated December 2, 2020, January 29, 2021, and February 4, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the renewed operating license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Subsequent Renewed Facility Operating License No. DPR-56 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 341, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

In addition, the license is amended by changes to the operating license as indicated in the attachment to this license amendment and new Paragraph 2.C.(20) of Subsequent Renewed Facility Operating License No. DPR-56 will read as follows:

(20) PRA Model Updates to Support Implementation of the Risk Informed Completion Time (RICT) Program

Exelon is approved to implement TSTF-505, Revision 2, modifying the Technical Specification requirements related to Completion Times (CT) for Required Actions to provide the option to calculate a longer, risk-informed CT. The methodology for using the new Risk-Informed Completion Time (RICT) Program is described in NEI 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007.

Exelon will complete the implementation items listed in Attachment 6 of Exelon letter to the NRC dated May 29, 2020, prior to implementation of the RICT Program. All issues identified in the attachment will be addressed and any associated changes will be made, focused-scope peer reviews will be performed on changes that are PRA upgrades as defined in the PRA standard (ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2), and any findings will be resolved and reflected in the PRA of record prior to implementation of the RICT Program.

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

FOR THE NUCLEAR REGULATORY COMMISSION

James G. Danna

Digitally signed by James G. Danna
Date: 2021.05.14 09:36:10 -04'00'

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Date of Issuance: May 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 341

SUBSEQUENT RENEWED FACILITY OPERATING LICENSE NO. DPR-56

PEACH BOTTOM ATOMIC POWER STATION, UNIT 3

DOCKET NO. 50-278

Replace the following pages of the Subsequent Renewed Facility Operating License and Appendix A, Technical Specifications, 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 No. DPR-56	License No. DPR-56
Page 3	Page 3
Page 15	Page 15
TSs	TSs
Page 1.3-13	Page 1.3-13
--	Page 1.3-14
Page 3.1-20	Page 3.1-20
Page 3.3-1	Page 3.3-1
Page 3.3-2	Page 3.3-2
Page 3.3-22	Page 3.3-22
Page 3.3-29	Page 3.3-29
Page 3.3-31a	Page 3.3-31a
Page 3.3-33	Page 3.3-33
Page 3.3-34	Page 3.3-34
Page 3.3-35	Page 3.3-35
Page 3.3-36	Page 3.3-36
Page 3.3-37	Page 3.3-37
Page 3.3-44	Page 3.3-44
Page 3.3-45	Page 3.3-45
Page 3.3-48	Page 3.3-48
Page 3.3-61	Page 3.3-61
Page 3.3-62	Page 3.3-62
Page 3.5-1	Page 3.5-1
Page 3.5-2	Page 3.5-2
Page 3.5-3	Page 3.5-3
Page 3.5-12	Page 3.5-12
Page 3.6-5	Page 3.6-5
Page 3.6-8	Page 3.6-8
Page 3.6-9	Page 3.6-9
Page 3.6-11	Page 3.6-11
Page 3.6-12	Page 3.6-12
Page 3.6-18	Page 3.6-18
Page 3.6-21	Page 3.6-21
Page 3.6-27	Page 3.6-27

REMOVE	INSERT
TSs (continued)	TSs (continued)
Page 3.6-29	Page 3.6-29
Page 3.6-30a	Page 3.6-30a
Page 3.7-1	Page 3.7-1
Page 3.7-3	Page 3.7-3
Page 3.7-5	Page 3.7-5
Page 3.8-2	Page 3.8-2
Page 3.8-4	Page 3.8-4
Page 3.8-5	Page 3.8-5
Page 3.8-28	Page 3.8-28
Page 3.8-28a	Page 3.8-28a
Page 3.8-29	Page 3.8-29
Page 3.8-29a	Page 3.8-29a
Page 3.8-42	Page 3.8-42
Page 3.8-43	Page 3.8-43
Page 5.0-18c	Page 5.0-18c
--	Page 5.0-18d

(2) Exelon Generation Company, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(3) Exelon Generation Company, 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) Exelon Generation Company, 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 instrument calibration or when associated with radioactive apparatus or components;

(5) Exelon Generation Company, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear material as may be produced by operation of the facility, and such Class B and Class C low-level radioactive waste as may be produced by the operation of Limerick Generating Station, Units 1 and 2.

C. This subsequent renewed 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, Section 50.54 of Part 50, and Section 70.32 of Part 70; all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

(1) Maximum Power Level

Exelon Generation Company is authorized to operate the Peach Bottom Atomic Power Station, Unit No. 3, at steady state reactor core power levels not in excess of 4016 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 341, are hereby incorporated in the license. Exelon Generation Company shall operate the facility in accordance with the Technical Specifications.

(3) Physical Protection

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and

2. Exelon Generation Company shall complete those activities by the 6-month date prior to the subsequent period of extended operation or by the end of the last refueling outage before the subsequent period of extended operation, whichever occurs later.

3. Exelon Generation Company shall notify the NRC in writing within 30 days after having accomplished item (b)1 above and include the status of those activities that have been or remain to be completed in item (b)2 above.

(20) PRA Model Updates to Support Implementation of the Risk Informed Completion Time (RICT) Program

Exelon is approved to implement TSTF-505, Revision 2, modifying the Technical Specification requirements related to Completion Times (CT) for Required Actions to provide the option to calculate a longer, risk-informed CT. The methodology for using the new Risk-Informed Completion Time (RICT) Program is described in NEI 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007.

Exelon will complete the implementation items listed in Attachment 6 of Exelon letter to the NRC dated May 29, 2020, prior to implementation of the RICT Program. All issues identified in the attachment will be addressed and any associated changes will be made, focused-scope peer reviews will be performed on changes that are PRA upgrades as defined in the PRA standard (ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2), and any findings will be resolved and reflected in the PRA of record prior to implementation of the RICT Program.

3. This subsequent renewed license is effective as of the date of issuance and shall expire at midnight on July 2, 2054.

FOR THE UNITED STATES NUCLEAR
REGULATORY COMMISSION

/RA/

Ho K. Nieh, Director
Office of Nuclear Reactor Regulation

Attachments:
Appendix A - Technical Specifications Peach Bottom Atomic Power Station Unit No. 3
Appendix B - Environmental Protection Plan

Date of Issuance: March 5, 2020

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

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. AND B.2 Be in MODE 5.	6 hours 36 hours

(continued)

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, Conditions A and B are 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. Concentration of boron in solution > 9.82% weight.	A.1 Verify the concentration and temperature of boron in solution and pump suction piping temperature are within the limits of Figure 3.1.7-1. AND A.2 Restore concentration of boron in solution to ≤ 9.82% weight.	8 hours AND Once per 12 hours thereafter 72 hours
B. One SLC subsystem inoperable for reasons other than Condition A.	B.1 Restore SLC subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

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

----------NOTES----------

1. Separate Condition entry is allowed for each channel.
2. When Functions 2.b and 2.c channels are inoperable due to the calculated power exceeding the APRM output by more than 2% RTP while operating at ≥ 22.6% RTP, entry into associated Conditions and Required Actions may be delayed for up to 2 hours.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required channels inoperable.	A.1	Place channel in trip.	12 hours OR -------NOTE------- Only applicable when a loss of function has not occurred. ---------- 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 -------NOTE------- Only applicable when a loss of function has not occurred. ---------- 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 2f. ---------- 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. OR	6 hours OR --------NOTE------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	B.2 Place one trip system in trip.	6 hours OR -------NOTE------- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
C. One or more automatic Functions with RPS trip capability not maintained. OR Two or more manual 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 < 26.3% RTP.	4 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 per trip system of the Digital Feedwater Control System (DFCS) high water level trip instrumentation Function shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 22.6% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DFCS high water level trip channels inoperable.	A.1 Place channel in trip.	72 hours OR ------NOTE------ Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
B. DFCS high water level trip capability not maintained.	B.1 Restore DFCS high water level trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1 --------NOTE--------- Only applicable if inoperable channel is the result of inoperable feedwater pump turbine or main turbine stop valve. ---------- Remove affected feedwater pump(s) and main turbine valve(s) from service. OR C.2 Reduce THERMAL POWER to < 22.6% RTP.	 4 hours 4 hours

3.3 INSTRUMENTATION

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

LCO 3.3.4.1 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 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 ---------NOTE------- Only applicable when when a loss of function has not occurred. --- 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 ---------NOTE------- Only applicable when when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program

(continued)

3.3 INSTRUMENTATION

3.3.4.2 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

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

1. Turbine Stop Valve (TSV)—Closure; and
2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure—Low.

OR

b. The following limits are made applicable:

1. LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," limits for inoperable EOC-RPT as specified in the COLR;
2. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for inoperable EOC-RPT as specified in the COLR; and
3. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)," limits for inoperable EOC-RPT as specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 26.3% RTP.

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. OR A.2 ---NOTE--- Not applicable if inoperable channel is the result of an inoperable breaker. --- Place channel in trip.	72 hours OR ---NOTE--- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program 72 hours OR ---NOTE--- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 --------NOTE-------- Only applicable for Functions 3.a and 3.b. ---------- Declare High Pressure Coolant Injection (HPCI) System inoperable. AND B.3 Place channel in trip.	 1 hour from discovery of loss of HPCI initiation capability 24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1 --------NOTE-------- 1. Only applicable for Functions 1.c, 1.e, 1.f, 2.c, 2.d, and 2.f. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable. AND C.2 Restore channel to OPERABLE status.	 1 hour from discovery of loss of subsystem initiation capability in both subsystems 24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
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 from discovery of loss of HPCI initiation capability
	AND		
	D.2.1	Place channel in trip.	24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
	OR		
	D.2.2	Align the HPCI pump suction to the suppression pool.	24 hours

(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 --------NOTE-------- 1. Only applicable to Functions 1.d and 2.g. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of subsystem initiation capability in both subsystems
	AND	
	E.2 Restore channel to OPERABLE status.	7 days OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- 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.	1 hour from discovery of loss of ADS initiation capability in both trip systems
	AND	
	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----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- 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.	1 hour from discovery of loss of ADS initiation capability in both trip systems
	AND	
	G.2 Restore channel to OPERABLE status.	96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program AND 8 days OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
H. Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.	H.1 Declare associated supported feature(s) inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.5.2 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.2 The RCIC System instrumentation for each Function in Table 3.3.5.2-1 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 3.3.5.2-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	B.1 Declare RCIC System inoperable. AND B.2 Place channel in trip.	1 hour from discovery of loss of RCIC initiation capability 24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program
C. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	C.1 Restore channel to OPERABLE status.	24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1	--------NOTE-------- Only applicable if RCIC pump suction is not aligned to the suppression pool. ----------	
		Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	AND		
	D.2.1	Place channel in trip.	24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. ----------
	OR		In accordance with the Risk Informed Completion Time Program
	D.2.2	Align RCIC pump suction to the suppression pool.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1	Declare RCIC System inoperable.	Immediately

3.3 INSTRUMENTATION

3.3.6.1 Primary Containment Isolation Instrumentation

LCO 3.3.6.1 The primary containment isolation instrumentation for each Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

ACTIONS

----------NOTES----------
1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. 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 for Functions 2.a, 2.b, 8.a, and 8.b OR ------NOTE------ Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program AND 24 hours for Functions other than Functions 2.a, 2.b, 8.a, and 8.b OR ------NOTE------ Only applicable when a loss of function has not occurred. --- In accordance with the Risk Informed Completion Time Program
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Enter the Condition referenced in Table 3.3.6.1-1 for the channel.	Immediately

(continued)

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The Unit 3 LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

AND

The Unit 2 LOP instrumentation for Functions 1, 2, 3, and 5 in Unit 2 Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: When the associated diesel generator and offsite circuit are required to be OPERABLE by LCO 3.8.1, "AC Sources—Operating," or LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One 4 kV emergency bus with one or two required Function 3 channels inoperable. OR One 4 kV emergency bus with one or two required Function 5 channels inoperable.	A.1 --------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.8.1 for offsite circuits made inoperable by LOP instrumentation. ---------- Place channel in trip.	14 days OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two 4 kV emergency buses with one required Function 3 channel inoperable. OR Two 4 kV emergency buses with one required Function 5 channel inoperable. OR One 4 kV emergency bus with one required Function 3 channel inoperable and a different 4 kV emergency bus with one required Function 5 channel inoperable.	B.1 --------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.8.1 for offsite circuits made inoperable by LOP instrumentation. ---------- Place the channel in trip.	24 hours OR ------NOTE----- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL (WIC), 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 five safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) is not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 100 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 each subsystem 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.	12 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 One low pressure ECCS injection/spray subsystem is inoperable.	D.1 Restore HPCI System to OPERABLE status. OR	72 hours OR In accordance with the Risk Informed Completion Time Program
	D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One ADS valve inoperable. AND One low pressure ECCS injection/spray subsystem inoperable.	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
G. Required Action and associated Completion Time of Condition C, D, E or F not met.	G.1 Be in MODE 3.	12 hours
H. Two or more ADS valves inoperable.	H.1 Be in MODE 3. AND H.2 Reduce reactor steam dome pressure to ≤ 100 psig.	12 hours 36 hours
I. Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A. OR HPCI System and one or more ADS valves inoperable.	I.1 Enter LCO 3.0.3.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL (WIC), 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. AND	Immediately
	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

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)

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers and scram discharge volume vent and drain valves, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

ACTIONS

----------NOTES----------
1. Penetration flow paths except for purge or exhaust valve penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria.

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 for MSIV leakage not within limit.	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.	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
	AND	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 --------NOTES-------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured 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

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2 --------NOTES-------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured 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
D. One or more penetration flow paths with one or more MSIVs not within MSIV leakage rate limits.	D.1 Restore leakage rate to within limit.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Purge/Vent flowpath open for an accumulated time greater than 90 hours for the calendar year while in MODE 1 or 2 with Reactor Pressure greater than 100 psig.	E.1 Isolate the penetration. OR	4 hours OR In accordance with the Risk Informed Completion Time Program
	E.2.1 Be in MODE 3. AND	12 hours
	E.2.2 Be in Mode 4.	36 hours
F. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	F.1 Be in MODE 3. AND	12 hours
	F.2 Be in MODE 4.	36 hours
G. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during MODE 4 or 5.	G.1 Initiate action to restore valve(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	Verify nitrogen inventory is equivalent to ≥ 22 inches water column in the liquid nitrogen storage tank.	In accordance with the Surveillance Frequency Control Program.

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.1.5 Reactor Building-to-Suppression Chamber Vacuum Breakers

LCO 3.6.1.5 Each reactor building-to-suppression chamber vacuum breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more lines with one reactor building-to-suppression chamber vacuum breaker not closed.	A.1 Close the open vacuum breaker.	72 hours
B. One or more lines with two reactor building-to-suppression chamber vacuum breakers not closed.	B.1 Close one open vacuum breaker.	1 hour
C. One line with one or more reactor building-to-suppression chamber vacuum breakers inoperable for opening.	C.1 Restore the vacuum breaker(s) to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

3.6 CONTAINMENT SYSTEMS

3.6.1.6 Suppression Chamber-to-Drywell Vacuum Breakers

LCO 3.6.1.6 Nine suppression chamber-to-drywell vacuum breakers shall be OPERABLE for opening.

AND

Twelve suppression chamber-to-drywell vacuum breakers shall be closed, except when performing their intended function.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required suppression chamber-to-drywell vacuum breaker inoperable for opening.	A.1 Restore one required vacuum breaker to OPERABLE status.	72 hours 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.	12 hours
C. One suppression chamber-to-drywell vacuum breaker not closed.	C.1 Close the open vacuum breaker.	10 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

LCO 3.6.2.3 Two 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 RHR suppression pool cooling subsystem 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.	12 hours
C. Two RHR suppression pool cooling subsystems inoperable.	C.1 Restore one RHR suppression pool cooling subsystem to OPERABLE status.	8 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

* The 7-day Completion Time for one RHR suppression pool cooling subsystem inoperable may be extended to 10 days (3) times and to 14 days one (1) time (A-C subsystem only) until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system and repairs to Unit 3 RHR Heat Exchanger 3CE024.

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal (RHR) Suppression Pool Spray

LCO 3.6.2.4 Two 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 RHR suppression pool spray subsystem to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
B. Two RHR suppression pool spray subsystems inoperable.	B.1 Restore one RHR suppression pool spray subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	12 hours

* The 7-day Completion Time for one RHR suppression pool spray subsystem inoperable may be extended to 10 days three (3) times and 14 days one (1) time (A-C subsystem only) until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system and repairs to Unit 3 RHR Heat Exchanger 3CE024.

3.6 CONTAINMENT SYSTEMS

3.6.2.5 Residual Heat Removal (RHR) Drywell Spray

LCO 3.6.2.5 Two 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 RHR drywell spray subsystem to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
B. Two RHR drywell spray subsystems inoperable.	B.1 Restore one RHR drywell spray 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

* The 7-day Completion Time for one RHR drywell spray subsystem inoperable may be extended to 10 days three (3) times and 14 days one (1) time (A-C subsystem only) until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system and repairs to Unit 3 RHR Heat Exchanger 3CE024.

3.7 PLANT SYSTEMS

3.7.1 High Pressure Service Water (HPSW) System

LCO 3.7.1 Two HPSW subsystems and the HPSW cross tie shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One HPSW subsystem inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," for RHR shutdown cooling made inoperable by HPSW System. ---------- A.1 Restore HPSW subsystem to OPERABLE status.	7 days* OR In accordance with the Risk Informed Completion Time Program
B. HPSW cross tie inoperable.	B.1 Restore HPSW cross tie to OPERABLE status	7 days* OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	12 hours

(continued)

* The 7-day Completion Time for one HPSW subsystem inoperable may be extended to 10 days three (3) times and 14 days one (1) time until December 31, 2021; and the 7-day Completion Time for HPSW cross tie inoperable may be extended to 10 days one (1) time and 14 days one (1) time (A-C subsystems only) until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system and repairs to Unit 3 RHR Heat Exchanger 3CE024.

3.7 PLANT SYSTEMS

3.7.2 Emergency Service Water (ESW) System and Normal Heat Sink

LCO 3.7.2 Two ESW subsystems and normal heat sink shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ESW subsystem inoperable.	A.1 Restore ESW 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. OR Both ESW subsystems inoperable. OR Normal heat sink inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

3.7 PLANT SYSTEMS

3.7.3 Emergency Heat Sink

LCO 3.7.3 The emergency heat sink shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required emergency cooling tower fan inoperable.	A.1 Restore required emergency cooling tower fan to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program
B. Emergency heat sink inoperable for reasons other than Condition A.	B.1 Restore emergency heat sink to OPERABLE status.	7 days
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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuits.	1 hour AND Once per 8 hours thereafter
	AND	
	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 4 kV emergency bus concurrent with inoperability of redundant required feature(s)
	AND	
	A.3 Restore offsite circuit to OPERABLE status.	7 days (*) OR In accordance with the Risk Informed Completion Time Program

(continued)

(*) Or 21 days, to support installation and testing of new electrical cables routed between the 3EA Emergency Auxiliary Transformer and the J-58 junction box serving the 3SU-E 4.16 kV feed switchgear. The work shall be completed by June 30, 2020.

Prior to entry into the 21-day extended Completion Time, the SBO Line (i.e., 33kV Conowingo AAC source) shall be verified available. During the 21-day Completion Time, the 33kV SBO Line shall be verified available once per shift.

If the SBO Line becomes unavailable after the initial seven (7) days while in the extended 21-day Completion Time period, it shall be made available within 24 hours, or the unit shall be brought to MODE 3 within the next 6 hours and MODE 4 within the following 30 hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore DG to OPERABLE status.	14 days from discovery of failure to meet LCO 3.8.1.a or b OR In accordance with the Risk Informed Completion Time Program
C. Required Action B.1 and associated Completion Time not met.	C.1 Restore DG to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
D. Two or more offsite circuits inoperable.	D.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable. AND D.2 Restore all but one offsite circuit to OPERABLE status.	12 hours from discovery of Condition D 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
E. One offsite circuit inoperable. AND One DG inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems—Operating," when Condition E is entered with no AC power source to any 4 kV emergency bus. ----------	
	E.1 Restore offsite circuit to OPERABLE status. OR	12 hours OR In accordance with the Risk Informed Completion Time Program
	E.2 Restore DG to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
F. Two or more DGs inoperable.	F.1 Restore all but one DG to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition A, C, D, E, or F not met. OR Required Action B.2, B.3, B.4.1, B.4.2, or B.5 and associated Completion Time not met.	G.1 Be in MODE 3.	12 hours

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

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

a. Unit 3 Division I and Division II DC electrical power subsystems; and

b. Unit 2 Division I and Division II DC electrical power subsystems.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Unit 2 DC electrical power subsystem inoperable due to performance of SR 3.8.4.7 or SR 3.8.6.6.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems—Operating," when Condition A results in de-energization of a Unit 3 4 kV emergency bus or de-energization of a Unit 2 DC bus. ---------- A.1 Restore Unit 2 DC electrical power subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required Unit 2 battery charger on one subsystem inoperable.	B.1 Restore Unit 3 battery terminal voltage to greater than or equal to the minimum established float voltage. AND B.2 Verify battery float current ≤ 2 amps. AND B.3 Restore battery charger to OPERABLE status.	12 hours 24 hours AND Once per 12 hours thereafter 72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One Unit 2 DC electrical power subsystem inoperable for reasons other than Condition A or B.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems—Operating," when Condition C results in de-energization of a Unit 3 4 kV emergency bus. ---------- C.1 Restore Unit 2 DC electrical power subsystem to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
D. One Unit 3 battery charger on one subsystem inoperable.	D.1 Restore Unit 3 battery terminal voltage to greater than or equal to the minimum established float voltage. AND D.2 Verify battery float current $\leq$ 2 amps. AND D.3 Restore battery charger to OPERABLE status.	2 hours Once per 12 hours 72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Unit 3 DC electrical power subsystem inoperable for reasons other than Condition C.	E.1 Restore Unit 3 DC electrical power subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	12 hours 36 hours
G. Two or more inoperable DC electrical power subsystems.	G.1 Enter LCO 3.0.3.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Unit 2 AC electrical power distribution subsystems inoperable.	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources—Operating," when Condition A results in a de-energization of a required Unit 2 125 V battery charger. ---------- A.1 Restore required Unit 2 AC electrical power distribution subsystem(s) to OPERABLE status.	7 days OR -------NOTE---- Only applicable when a loss of function has not occurred. ---------- In accordance with the Risk Informed Completion Time Program
B. One required Unit 2 DC electrical power distribution subsystem inoperable.	B.1 Restore Unit 2 DC electrical power distribution subsystem to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
C. One Unit 3 AC electrical power distribution subsystem inoperable.	C.1 Restore Unit 3 AC electrical power distribution subsystem to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Unit 3 DC electrical power distribution subsystem inoperable.	D.1 Restore Unit 3 DC electrical power distribution subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3.	12 hours
F. Two or more inoperable electrical power distribution subsystems that result in a loss of function.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.7.1 Verify: a. Correct breaker alignments to required AC electrical power distribution subsystems; and b. Indicated power availability to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program.

5.5 Programs and Manuals

5.5.15 Battery Monitoring and Maintenance Program (continued)

1. Actions to restore battery cells with float voltage < 2.13 V;

2. Actions to determine whether the float voltage of the remaining battery cells is ≥ 2.13 V when the float voltage of a battery cell has been found to be < 2.13 V;

3. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates;

4. Limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage; and

5. A requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations.

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.

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

5.5 Programs and Manuals

5.5.16. Risk Informed Completion Time Program (continued)

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 in Amendment No. 341, 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. 338 TO SUBSEQUENT RENEWED

FACILITY OPERATING LICENSE NO. DPR-44 AND AMENDMENT NO. 341 TO

SUBSEQUENT RENEWED FACILITY OPERATING LICENSE NO. DPR-56

EXELON GENERATION COMPANY, LLC

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277 AND 50-278

1.0 INTRODUCTION

By application dated May 29, 2020 (Reference 1), as supplemented by letters dated December 2, 2020 (Reference 2), January 29, 2021 (Reference 3), and February 4, 2021 (Reference 4), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) for Peach Bottom Atomic Power Station, Units 2 and 3 (Peach Bottom).

The amendment would revise technical specification (TS) requirements to permit the use of risk-informed completion times (RICTs) for actions to be taken when 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 (Reference 5). The U.S. Nuclear Regulatory Commission (NRC, or the Commission) staff issued a final model safety evaluation (SE) approving TSTF-505, Revision 2, on November 21, 2018 (Reference 6).

The licensee has proposed variations from the TS changes described in TSTF-505, Revision 2. The variations are described in Section 2.2.4 of this SE.

From November 9, 2020, through November 12, 2020, the NRC staff participated in a regulatory audit. The NRC staff performed the audit to ascertain the information needed to support its review of the LAR and develop requests for additional information (RAIs), as needed. On February 11, 2021, the NRC staff issued an audit summary (Reference 7). By electronic mail dated December 21, 2020 (Reference 8), and January 12, 2021 (Reference 9), the NRC staff sent the licensee RAIs. By supplemental letters dated January 29, 2021, and February 4, 2021, the licensee responded to the RAIs.

The supplemental letters dated December 2, 2020, January 29, 2021, and February 4, 2021, 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 July 14, 2020 (85 FR 42438).

2.0 REGULATORY EVALUATION

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) permitted by the TSs until the condition can be met. The remedial actions (i.e., ACTIONS) associated with an LCO contain Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and completion times (CTs). The CTs are referred to as the "front stops" in the context of this SE. For certain conditions, the TS require exiting the Mode of Applicability of an LCO (i.e., shut down the reactor).

The Nuclear Energy Institute (NEI) Topical Report (TR) 06-09, Revision 0-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," May 17, 2007 (NEI 06-09-A) (Reference 10), provides a methodology for extending existing CTs, and thereby, delay exiting the operational mode of applicability or taking Required Actions if risk is assessed and managed within the limits and programmatic requirements established by a RICT Program. The NRC issued a final model SE approving NEI 06-09-A on May 17, 2007 (Reference 11).

2.2 Description of Technical Specification Changes

The licensee's submittal requested approval to add a RICT Program to the Administrative Controls section of the TS and modify selected CTs to permit extending the CTs provided risk is assessed and managed as described in NEI 06-09-A. The licensee's application proposed to use NEI 06-09-A and included documentation regarding the technical acceptability of the probabilistic risk assessment (PRA) models for the RICT Program, consistent with the guidance of Regulatory Guide (RG) 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," March 2009 (Reference 12).

2.2.1 Technical Specification 1.0, “Use and Application”

Example 1.3-8, would be added to TS 1.3, “Completion Times,” and reads 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.	6 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 subsystem is restored to

OPERABLE status after Condition B is entered, Conditions A and B are exited, and therefore, the required actions of Condition B may be terminated.

2.2.2 Technical Specification 5.5.16 Risk-Informed Completion Time Program

Technical Specification 5.5.16, which describes the RICT Program, would be added to the TS and reads as follows:

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 Action allowed outage time[1] (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 ACTION allowed outage 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

[1] The Standard Technical Specifications in NUREG-1433, Revision 4, "Standard Technical Specifications, General Electric BWR/4 Plants," April 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12104A192; Reference 45), use the terminology "Completion Time" in place of "Allowed Outage Time" and are the same in this SE.

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 in Amendment No. 338 for Unit 2 and 341 for Unit 3, 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.

2.2.3 Application of the RICT Program to Existing LCOs and Conditions

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

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*

Where necessary, conforming changes are made to CTs to make them accurate following use of a RICT. For example, most TSs have requirements to close/isolate containment isolation devices if one or more containment penetrations have inoperable devices. This is followed by a requirement to periodically verify the penetration is isolated. By adding the flexibility to use a RICT to determine a time to isolate the penetration, the periodic verifications must then be based on the time "following isolation."

Individual LCO Required Actions and CTs modified by the proposed change are identified below. The TS LCO Conditions and Required Actions listed in this section of the SE are for Unit 2. The Unit 3 TSs are the same, except for opposite unit number designation.

TS 3.1.7, "Standby Liquid Control (SLC) System"

- Action B With one SLC subsystem inoperable for reasons other than Condition A, restore SLC subsystem to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program*.

TS 3.3.1.1, “Reactor Protection System (RPS) Instrumentation”

- Action A.1 With one or more required channels inoperable, place channel in trip within 12 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action A.2 Place associated trip system in trip within 12 hours *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

- Action B.1 With one or more functions with one or more required channels inoperable in both trip systems, place channel in one trip system in trip within 6 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action B.2 Place one trip system in trip within 6 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

TS 3.3.2.2, “Feedwater and Main Turbine High Water Level Trip Instrumentation”

- Action A.1 With one or more DFCS high water level trip channels inoperable, place channel in trip within 72 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

TS 3.3.4.1, “Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation”

- Action A.1 With one or more channels inoperable, restore channel to OPERABLE status within 14 days *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action A.2 Place channel in trip within 14 days *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

TS 3.3.4.2, “End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation”

- Action A.1 With one or more required channels inoperable, restore channel to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

- Action A.2 Place channel in trip within 72 hours *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

TS 3.3.5.1, “Emergency Core Cooling Systems (ECCS) Instrumentation”

- Action B.3 As required by Required Action A.1 and referenced in Table 3.3.5.1-1, place channel in trip within 24 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action C.2 As required by Required Action A.1 and referenced in Table 3.3.5.1-1, restore channel to OPERABLE status within 24 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action D.2.1 As required by Required Action A.1 and referenced in Table 3.3.5.1-1, place channel in trip within 24 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action E.2 As required by Required Action A.1 and referenced in Table 3.3.5.1-1, restore channel to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action F.2 As required by Required Action A.1 and referenced in Table 3.3.5.1-1, place channel in trip within 96 hours from discovery of inoperable channel concurrent with HPCI [high pressure coolant injection] or reactor core isolation cooling (RCIC) inoperable *or in accordance with the Risk Informed Completion Time Program* AND within 8 days *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action G.2 As required by Required Action A.1 and referenced in Table 3.3.5.1-1, restore channel to OPERABLE status within 96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable *or in accordance with the Risk Informed Completion Time Program* AND within 8 days *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

TS 3.3.5.2, “Reactor Core Isolation Cooling (RCIC) System Instrumentation”

- Action B.2 As required by Required Action A.1 and referenced in Table 3.3.5.2-1, place channel in trip within 24 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

- Action C.1 As required by Required Action A.1 and referenced in Table 3.3.5.2-1, restore channel to OPERABLE status within 24 hours *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

- Action D.2.1 As required by Required Action A.1 and referenced in Table 3.3.5.2-1, place channel in trip within 24 hours *or in accordance with the Risk Informed Completion Time Program.*
- Note Only applicable when a loss of function has not occurred.

TS 3.3.6.1, “Primary Containment Isolation Instrumentation”

- Action A.1 With one or more required channels inoperable, place channel in trip within 12 hours for Functions 2.a, 2.b, 8.a, and 8.b *or in accordance with the Risk Informed Completion Time Program* AND within 24 hours for Functions other than Functions 2.a, 2.b, 8.a, and 8.b *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

TS 3.5.1, “ECCS – Operating”

- Action A.1 With one low pressure ECCS injection/spray subsystem inoperable OR one low pressure coolant injection (LPCI) pump in each subsystem inoperable, restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program*.

- Action C.2 With HPCI System inoperable, restore HPCI System to OPERABLE status within 14 days *or in accordance with the Risk Informed Completion Time Program*.

- Action D.1 With HPCI System inoperable AND one low pressure ECCS injection/spray subsystem inoperable, restore HPCI System to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action D.2 With HPCI System inoperable AND one low pressure ECCS injection/spray subsystem inoperable, restore low pressure ECCS injection/spray subsystem to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action E.1 With one ADS [Automatic Depressurization System] valve inoperable, restore ADS valve to OPERABLE status within 14 days *or in accordance with the Risk Informed Completion Time Program*.

- Action F.1 With one ADS valve inoperable AND one low pressure ECCS injection/spray subsystem inoperable, restore ADS valve to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action F.2 With one ADS valve inoperable AND one low pressure ECCS injection/spray subsystem inoperable, restore low pressure ECCS injection/spray subsystem to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.5.3, “RCIC System”

- Action A.2 With RCIC System inoperable, restore RCIC System to OPERABLE status within 14 days *or in accordance with the Risk Informed Completion Time Program*.

TS 3.6.1.2, “Primary Containment Air Lock”

- Action C.3 With primary containment air lock inoperable for reasons other than Condition A or B, restore air lock to OPERABLE status within 24 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.6.1.3, “Primary Containment Isolation Valves (PCIVs)”

- Action A.1 With one or more penetration flow paths with one PCIV inoperable except for MSIV [main steam isolation valve] leakage not within limit, 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 within 4 hours except for main steam line *or in accordance with the Risk Informed Completion Time Program* AND within 8 hours for main steam line *or in accordance with the Risk Informed Completion Time Program*.

- Action A.2 The CT for the Required Action to verify the affected penetration flow path is isolated, has been modified by adding the words “following isolation” after “once per 31 days.”

- Action C.2 The CT for the Required Action to verify the affected penetration flow path is isolated, has been modified by adding the words “following isolation” after “once per 31 days.”

TS 3.6.1.5, “Reactor Building-to-Suppression Chamber Vacuum Breakers”

- Action C.1 With one line with one or more reactor building-to-suppression chamber vacuum breakers inoperable for opening, restore the vacuum breaker(s) to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completions Time Program*.

TS 3.6.1.6, “Suppression Chamber-to-Drywell Vacuum Breakers”

- Action A.1 With one required suppression chamber-to-drywell vacuum breaker inoperable for opening, restore one required vacuum breaker to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.6.2.3, “Residual Heat Removal (RHR) Suppression Pool Cooling”

- Action A.1 With one RHR suppression pool cooling subsystem inoperable, restore RHR suppression pool cooling subsystem to OPERABLE status within 7 days* *or in accordance with the Risk Informed Completion Time Program*.

  * The 7-day Completion Time for one RHR suppression pool cooling subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

TS 3.6.2.4, “Residual Heat Removal (RHR) Suppression Pool Spray”

- Action A.1 With one RHR suppression pool spray subsystem inoperable, restore RHR suppression pool spray subsystem to OPERABLE status within 7 days* *or in accordance with the Risk Informed Completion Time Program*.

  * The 7-day Completion Time for one RHR suppression pool spray subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

TS 3.7.1, “High Pressure Service Water (HPSW) System”

- Action A.1 With one HPSW subsystem inoperable, restore HPSW subsystem to OPERABLE status within 7 days* *or in accordance with the Risk Informed Completion Time Program*.

  * The 7-day Completion Time for one HPSW subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 and the 7-day Completion Time for the HPSW cross tie inoperable may be extended to 10 days two (2) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

TS 3.7.2, “Emergency Service Water (ESW) System and Normal Heat Sink”

- Action A.1 With one ESW subsystem inoperable, restore ESW subsystem to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program*.

TS 3.7.3, “Emergency Heat Sink”

- Action A.1 With one required emergency cooling tower fan inoperable, restore required emergency cooling tower fan to OPERABLE status within 14 days *or in accordance with the Risk Informed Completion Time Program*.

TS 3.8.1, “AC [Alternating Current] Sources – Operating”

- Action A.3 With one offsite circuit inoperable, restore offsite circuit to OPERABLE status within 7 days (*) *or in accordance with the Risk Informed Completion Time Program*.

  (*) Or 21 days, to support installation and testing of new electrical cables routed between the 3EA Emergency Auxiliary Transformer and the J-58 junction box serving the 3SU-E 4.16 kV feed switchgear. The work shall be completed by June 30, 2020.

  Prior to entry into the 21-day extended Completion Time, the SBO Line (i.e., 33kV Conowingo AAC source) shall be verified available. During the 21-day Completion Time, the 33kV SBO Line shall be verified available once per shift.

  If the SBO Line becomes unavailable after the initial seven (7) days while in the extended 21-day Completion Time period, it shall be made available within 24 hours, or the unit shall be brought to MODE 3 within the next 6 hours and MODE 4 within the following 30 hours.

- Action B.5 With one DG [diesel generator] inoperable, restore DG to OPERABLE status within 14 Days from discovery of failure to meet LCO 3.8.1.a or b *or in accordance with the Risk Informed Completion Time Program*.

- Action D.2 With two or more offsite circuits inoperable, restore all but one offsite circuit to OPERABLE status within 24 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action E.1 With one offsite circuit inoperable AND one DG inoperable, restore offsite circuit to OPERABLE status within 12 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action E.2 Restore DG to OPERABLE status within 12 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.8.4, “DC [Direct Current] Sources – Operating”

- Action D.3 With one Unit 2 battery chargers on one subsystem inoperable, restore battery charger to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action E.1 With one Unit 2 DC electrical power subsystem inoperable for reasons other than Condition D, restore Unit 2 DC electrical power subsystem to OPERABLE status within 2 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.8.7, “Distribution Systems – Operating”

- Action C.1 With one Unit 2 AC electrical power distribution subsystem inoperable, restore Unit 2 AC electrical power distribution subsystem to OPERABLE status within 8 hours *or in accordance with the Risk Informed Completion Time Program*.

- Action D.1 With one Unit 2 DC electrical power distribution subsystem inoperable, restore Unit 2 DC electrical power distribution subsystem to OPERABLE status within 2 hours *or in accordance with the Risk Informed Completion Time Program*.

2.2.4 Variations from TSTF-505, Revision 2

2.2.4.1 Application of the RICT Program to Modified Conditions, Required Actions, and Completion Times

The TS LCO Conditions and Required Actions listed in this section of the SE are for Unit 2. The Unit 3 TSs are the same, except for opposite unit number designation. The following Conditions are modified to permit the application of a RICT:

TS 3.8.4, “DC Sources – Operating”

- Action C.1 With one Unit 3 DC electrical power subsystem inoperable for reasons other than Condition A or B, restore Unit 3 DC electrical power subsystem to OPERABLE status within 12 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.8.7, “Distribution Systems – Operating”

- Action A.1 With one or more required Unit 3 AC electrical power distribution subsystems inoperable, restore required Unit 3 AC electrical power distribution subsystem(s) to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

2.2.4.2 Application of the RICT to Additional ACTIONS Requirements

The TS LCO Conditions and Required Actions listed in this section of the SE are for Unit 2. The Unit 3 TSs are the same, except for opposite unit number designation. The following individual

LCO Actions and CTs identified below are modified by the proposed change to permit the application of a RICT and are in addition to those included in TSTF-505.

TS 3.3.8.1, "Loss of Power (LOP) Instrumentation"

- Action A.1 With one 4 kV [kilovolt] emergency bus with one or two required Function 3 channels inoperable OR one 4 kV emergency bus with one or two required Function 5 channels inoperable, place channel in trip within 14 days *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

- Action B.1 With two 4 kV emergency buses with one required Function 3 channel inoperable OR two 4 kV emergency buses with one required Function 5 channel inoperable OR one 4 kV emergency bus with one required Function 3 channel inoperable and a different 4 kV emergency bus with one required Function 5 channel inoperable, place channel in trip within 24 hours *or in accordance with the Risk Informed Completion Time Program*.
- Note Only applicable when a loss of function has not occurred.

TS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)"

- Action E.1 With purge/vent flowpath open for an accumulated time greater than 90 hours for the calendar year while in MODE 1 or 2 with Reactor Pressure greater than 100 psig, isolate the penetration within 4 hours *or in accordance with the Risk Informed Completion Time Program*.

TS 3.6.2.5, "Residual Heat Removal (RHR) Drywell Spray"

- Action A.1 With one RHR drywell spray subsystem inoperable, restore RHR drywell spray subsystem to OPERABLE status within 7 days* *or in accordance with the Risk Informed Completion Time Program*.

  * The 7-day Completion Time for one RHR drywell spray subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

TS 3.7.1, "High Pressure Service Water (HPSW) System"

- Action B.1 With HPSW cross tie inoperable, restore HPSW cross tie to OPERABLE status within 7 days* *or in accordance with the Risk Informed Completion Time Program*.

  * The 7-day Completion Time for one HPSW subsystem inoperable may be extended to 10 days four (4) times until December 31, 2021 and the 7-day Completion Time for the HPSW cross tie inoperable may be extended to 10 days two (2) times until December 31, 2021 with compensatory measures identified in EGC License Amendment Request letter dated September 28, 2018 established and in effect, to allow for modifications to the HPSW system.

TS 3.8.1, “AC Sources – Operating”

- Action C.1 With required Action B.1 and associated Completion Time not met, restore DG to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program*.

TS 3.8.4, “DC Sources – Operating”

- Action A.1 With one Unit 3 DC electrical power subsystem inoperable due to performance of SR [Surveillance Requirement] 3.8.4.7 or 3.8.6.6, restore Unit 3 DC electrical power subsystem to OPERABLE status within 7 days *or in accordance with the Risk Informed Completion Time Program*

- Action B.3 With one required Unit 3 battery charger on one subsystem inoperable, restore battery charger to OPERABLE status within 72 hours *or in accordance with the Risk Informed Completion Time Program.*

TS 3.8.7, “Distribution Systems – Operating”

- Action B.1 With one required Unit 3 DC electrical power distribution subsystem inoperable, restore Unit 3 DC electrical power distribution subsystem to OPERABLE status within 12 hours *or in accordance with the Risk Informed Completion Time Program*.

2.2.4.3 Proposed Changes to TSs Not Associated with TSTF-505, Revision 2

Attachment 1, Section 2.3, “Optional Variations,” items 7 and 8, of the LAR included a description of proposed administrative changes to the TSs. The proposed administrative changes include:

- Section 3.3 TS Notes “Only applicable when a loss of function has not occurred”
- Correction of a typographical error in TS 3.8.7 (Unit 3 only)
- Example 1.3-8 replace “MODE 5” with “MODE 4”
- RICT Program Item (e) revision to specifically point to an Amendment number

2.3 Regulatory Review

2.3.1 Applicable Regulations

In accordance with Section 50.90, “Application for amendment of license, construction permit, or early site permit,” of Title 10 of the *Code of Federal Regulations* (10 CFR), whenever a holder of a license wishes to amend the license, including TSs in the license, an application for amendment must be filed, fully describing the changes desired. Under 10 CFR 50.92(a), determinations on whether to grant an applied-for license amendment are to be guided by the considerations that govern the issuance of initial licenses or construction permits to the extent applicable and appropriate.

The regulation under 10 CFR 50.36(c)(2) requires that TSs contain LCOs, which 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 shutdown the reactor or follow any remedial action permitted by the TSs until the LCO can be met. Typically, the TSs require restoration of equipment in a timeframe commensurate with its safety significance, along with other engineering considerations. The regulation under 10 CFR 50.36(b) requires that TSs be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto.

In determining whether the proposed TS remedial actions should be granted, the Commission will apply the "reasonable assurance" standards of 10 CFR 50.40(a) and 50.57(a)(3). The regulation at 10 CFR 50.40(a) states that in determining whether to grant the licensing request, the Commission will be guided by, among other things, consideration about whether "the processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals, in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with the regulations in this chapter, including the regulations in Part 20 of this chapter, and that the health and safety of the public will not be endangered."

The regulation under 10 CFR 50.36(c)(5) states that administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.

The regulation under 10 CFR 50.55a(h), "Protection and safety systems," states, in part, that protection systems of nuclear power reactors of all types must meet the requirements specified in this paragraph.

Section 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants" (i.e., the Maintenance Rule), requires licensees to monitor the performance or condition of SSCs against licensee-established goals in a manner sufficient to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. The regulation under 10 CFR 50.65(a)(4) requires the assessment and management of the increase in risk that may result from a proposed maintenance activity.

2.3.2 Commission Policy

The NRC provided details concerning the use of PRA in the "Final Policy Statement: Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities," published in the *Federal Register* (60 FR 42622; August 16, 1995). In this publication, the Commission wrote, in part:

> The Commission believes that an overall policy on the use of PRA methods in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that would promote regulatory stability and efficiency. In addition, the Commission believes that the use of PRA technology in NRC regulatory activities should be increased to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach….
>
> PRA addresses a broad spectrum of initiating events by assessing the event frequency. Mitigating system reliability is then assessed, including the potential for multiple and common cause failures. The treatment

therefore goes beyond the single failure requirements in the deterministic approach. The probabilistic approach to regulation is, therefore, considered an extension and enhancement of traditional regulation by considering risk in a more coherent and complete manner….

Therefore, the Commission believes that an overall policy on the use of PRA in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that promotes regulatory stability and efficiency. This policy statement sets forth the Commission's intention to encourage the use of PRA and to expand the scope of PRA applications in all nuclear regulatory matters to the extent supported by the state-of-the-art in terms of methods and data….

Therefore, the Commission adopts the following policy statement regarding the expanded NRC use of PRA:

(1) The use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

(2) PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices. Where appropriate, PRA should be used to support the proposal for additional regulatory requirements in accordance with 10 CFR 50.109 (Backfit Rule). Appropriate procedures for including PRA in the process for changing regulatory requirements should be developed and followed. It is, of course, understood that the intent of this policy is that existing rules and regulations shall be complied with unless these rules and regulations are revised.

(3) PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.

(4) The Commission's safety goals for nuclear power plants and subsidiary numerical objectives are to be used with appropriate consideration of uncertainties in making regulatory judgements on the need for proposing and backfitting new generic requirements on nuclear power plant licensees.

2.3.3 Regulatory Guidance

Revision 1 of RG 1.93, "Availability of Electric Power Sources," dated March 2012 (Reference 13), provides guidelines that the NRC staff considers acceptable when the number of available electric power sources are less than the number of sources required by the LCOs for a facility.

Revision 3 of RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” dated January 2018 (Reference 14), describes an acceptable risk-informed approach for assessing the nature and impact of proposed permanent licensing basis changes by considering engineering issues and applying risk insights. This regulatory guide also provides risk acceptance guidelines for evaluating the results of such evaluations.

Revision 1 of RG 1.177, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications,” dated May 2011 (Reference 15), describes an acceptable risk-informed approach specifically for assessing proposed TS changes. This regulatory guide identifies a three-tiered approach for a licensee’s evaluation of the risk associated with a proposed TS CT change, as follows.

- Tier 1 assesses the risk impact of the proposed change in accordance with acceptance guidelines consistent with the Commission’s Safety Goal Policy Statement, as documented in RG 1.174 and RG 1.177. The first tier assesses the impact on plant risk as expressed by the change in core damage frequency (ΔCDF) and change in large early release frequency (ΔLERF). It also evaluates plant risk while equipment covered by the proposed CT is out-of-service, as represented by incremental conditional core damage probability (ICCDP) and incremental conditional large early release probability (ICLERP). Tier 1 also addresses PRA acceptability of the licensee’s plant-specific PRA for the subject application.

- Tier 2 identifies and evaluates any potential risk-significant plant equipment outage configurations that could result if equipment, in addition to that associated with the proposed license amendment, is removed from service simultaneously, or if other risk-significant operational factors, such as concurrent system or equipment testing, are also involved. The purpose of this evaluation is to ensure that there are appropriate restrictions in place such that risk-significant plant equipment outage configurations will not occur while equipment covered by the proposed CT is implemented.

- Tier 3 addresses the licensee’s Configuration Risk Management Program (CRMP) to ensure that adequate programs and procedures are in place for identifying risk-significant plant configurations resulting from maintenance or other operational activities and appropriate compensatory measures are taken to avoid risk-significant configurations that may not have been considered when the Tier 2 evaluation was performed. Compared with Tier 2, Tier 3 provides additional coverage to ensure risk-significant plant equipment outage configurations are identified in a timely manner and that the risk impact of out-of-service equipment is appropriately evaluated prior to performing any maintenance activity over extended periods of plant operation. Tier 3 guidance can be satisfied by the Maintenance Rule, which requires a licensee to assess and manage the increase in risk that may result from activities such as surveillance testing and corrective and preventative maintenance, subject to the guidance provided in RG 1.177, Section 2.3.7.1 and the adequacy of the licensee’s program and PRA model for this application. The CRMP ensures that equipment removed from service prior to or during the proposed extended CT will be appropriately assessed from a risk perspective.

Revision 2 of RG 1.200 describes an acceptable approach for determining whether the PRA acceptability, in total or the parts that are used to support an application, is sufficient to provide confidence in the results, such that the PRA can be used in regulatory decision making for

light-water reactors. This RG provides guidance for assessing the technical adequacy of a PRA. Revision 2 of RG 1.200 endorses, with clarifications and qualifications, the use of the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Standard, 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" (PRA Standard), dated February 2009 (Reference 16).

As discussed in RG 1.177, Revision 1, and RG 1.174, Revision 3, a risk-informed application should be evaluated to ensure that the proposed licensing basis changes meet the following key principles:

- The proposed licensing basis change meets the current regulations unless it is explicitly related to a requested exemption;
- The proposed licensing basis change is consistent with the defense-in-depth philosophy;
- The proposed licensing basis change maintains sufficient safety margins;
- When proposed licensing basis changes result 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; and
- The impact of the proposed licensing basis change should be monitored using performance measurement strategies.

3.0 TECHNICAL EVALUATION

The licensee's adoption of TSTF-505, Revision 2, provides for the addition of a RICT Program to the Administrative Controls section of the TS and modifies selected Required Action CTs to permit extending the CTs, provided risk is assessed and managed as described in NEI 06-09-A. In accordance with NEI 06-09-A, PRA methods are used to justify each extension to a Required Action CT based on the specific plant configuration that exists at the time of the applicability of the Required Action and are updated when plant conditions change. The licensee's LAR included documentation regarding the technical acceptability of the PRA models used in the CRMP, also known as Real-Time Risk (RTR), consistent with the guidance of RG 1.200, Revision 2.

Most TSs identify one or more Conditions for which the LCO may not be met, to permit a licensee to perform required testing, maintenance, or repair activities. Each Condition has an associated Required Action for restoration of the LCO or for other actions, each with some fixed time interval, referred to as the CT, which identifies the time interval permitted to complete the Required Action. Upon expiration of the CT, the licensee is required to shut down the reactor or follow the Required Action(s) stated in the ACTIONS requirements. The RICT Program provides the necessary administrative controls to permit extension of CTs, and thereby, delay reactor shutdown or Required Actions, if risk is assessed and managed within specified limits and programmatic requirements. The specified safety function or performance level of TS required equipment is unchanged, and the Required Action(s), including the requirement to shutdown the reactor, are also unchanged; only the CTs for the Required Actions are extended by the RICT Program.

The NRC staff reviewed the licensee's PRA peer review history and results, alternative methods, and proposed approaches to determine whether they are acceptable for use in the proposed risk-informed completion time extensions. The NRC staff also reviewed the licensee's proposed RICT program to determine if it provides the necessary administrative controls to permit completion time extensions.

3.1 Review of Key Principles

Revision 1 of RG 1.177 and RG 1.174, Revision 3, identify five key safety principles to be applied to risk-informed changes to the TSs. Each of these principles are addressed in NEI 06-09-A. The NRC staff's evaluation of the licensee's proposed use of RICTs against these key safety principles is discussed below.

3.1.1 Key Principle 1: Evaluation of Compliance with Current Regulations

As stated in 10 CFR 50.36(c)(2):

> Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

When the necessary redundancy is not maintained (e.g., one train of a two-train system is inoperable), the TSs permit a limited period of time to restore the inoperable train to operable status and/or take other remedial measures. If these actions are not completed within the CT, the TSs normally require that the plant exit the mode of applicability for the LCO. With one train of a two-train system inoperable, the TS safety function is accomplished by the remaining operable train. In the current TSs, the CT is specified as a fixed time period (termed the "front stop"). The addition of the option to determine the CT in accordance with the RICT program would allow an evaluation to determine a configuration-specific CT. The evaluation would be done in accordance with the methodology prescribed in NEI 06-09-A and TS 5.5.16. The RICT is limited to a maximum of 30 days (i.e., "back stop"). The CTs in the current TSs were established using experiential data, risk insights, and engineering judgment. The RICT program provides the necessary administrative controls to permit extension of CTs, and thereby, delay reactor shutdown or Required Actions, if risk is assessed and managed appropriately within specified limits and programmatic requirements.

When the necessary redundancy is not maintained, and the system loses the capability to perform its safety function(s) without any further failures (e.g., two trains of a two-train system are inoperable), the plant must exit the mode of applicability for the LCO, or take remedial actions, as specified in the TSs. A configuration-specific RICT may not be used in this condition. With the incorporation of the RICT program, the required performance levels of equipment specified in LCOs are not changed. Only the required CT for the Required Actions are modified by the RICT program.

Based on the discussion provided above, the NRC staff finds that the proposed changes meet the first key safety principle of RG 1.174, Revision 3, and RG 1.177, Revision 1.

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

Defense-in-depth is an approach to designing and operating nuclear facilities that prevents and mitigates accidents that release radiation or hazardous materials. The key is creating multiple independent and redundant layers of defense to compensate for potential human and mechanical failures so that no single layer, no matter how robust, is exclusively relied upon. Defense-in-depth includes the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures.

As discussed throughout RG 1.174, consistency with the defense-in-depth philosophy is maintained by the following measures:

- 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 CCFs,
- Maintain multiple fission product barriers,
- Preserve sufficient defense against human errors, and
- Continue to meet the intent of the plant's design criteria.

The proposed changes represent a robust technical approach that preserves a reasonable balance among prevention of core damage, prevention of containment failure, and consequence mitigation is preserved. The three-tiered approach to risk-informed TS CT changes provides additional assurance that defense-in-depth will not be significantly impacted by such changes to the licensing basis. The licensee is proposing no changes to the design of the plant or any operating parameter, no new operating configurations, and no new changes to the design basis in the proposed changes to the TS.

The effect of the proposed changes 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). A configuration-specific RICT may not be used if the system has lost the capability to perform its safety function(s). 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. In some cases, the RICT program may use compensatory actions to reduce calculated risk in some configurations. Where credited in the PRA, these actions are incorporated into station

procedures or work instructions and have been modeled using appropriate human reliability considerations. Application of the RICT program determines the risk significance of plant configurations. It also permits the operator to identify the equipment that has the greatest effect on the existing configuration risk. With this information, the operator can manage the out-of-service duration and determine the consequences of removing additional equipment from service.

The application of the RICT program places high value on key safety functions and works to ensure they remain a top priority over all plant conditions. The RICT will be applied to extend CTs on key electrical power distribution systems. Failures in electrical power distribution systems can simultaneously affect multiple safety functions; therefore, potential degradation to defense-in-depth during the extended CTs is discussed further below.

3.1.2.1 Use of Compensatory Measures to Retain Defense-in-Depth

Application of the RICT program provides a structure to assist the operator in identifying effective compensatory actions for various plant maintenance configurations to maintain and manage acceptable risk levels. Topical Report NEI 06-09-A addresses potential compensatory actions and RMA measures by stating, in generic terms, that compensatory measures may include but are not limited to the following:

- Reduce the duration of risk-sensitive activities,
- Remove risk-sensitive activities from the planned work scope,
- Reschedule work activities to avoid high risk-sensitive equipment outages or maintenance states that result in high-risk plant configurations,
- Accelerate the restoration of out-of-service equipment, and
- Determine and establish the safest plant configuration.

Topical Report NEI 06-09-A requires that compensatory measures be initiated when the PRA calculated RMA time (RMAT) is exceeded, or for preplanned maintenance for which the RMAT is expected to be exceeded, RMAs shall be implemented at the earliest appropriate time. Therefore, quantitative risk analysis, the qualitative considerations, and the prohibition on loss of all trains of a required system assure a reasonable balance of defense-in-depth is maintained to ensure protection of public health and safety.

3.1.2.2 Evaluation of Electrical Power Systems

According to the Peach Bottom Updated Final Safety Analysis Report, Revision 26, dated April 2017 (Reference 17) (UFSAR), the plant is designed such that the safety functions are maintained assuming a single failure within the electrical power system. By incorporating an electrical power supply perspective, this concept is further reflected in a number of principal design criteria. Single-failure requirements are typically suspended for the time that a plant is not meeting an LCO (i.e., in an ACTION statement). This section considers the plant configurations from a defense-in-depth perspective.

3.1.2.2.1 Electrical System Description

The 22 kilovolt (kV) generators are the normal source of power during operations for all loads except the emergency buses and the cooling tower loads. Offsite power is supplied by two independent, qualified sources, one through the south substation and one through the north substation. Power from the north substation can be supplied through either the #3 startup (SU) transformer or the #343 SU transformer. This design configuration prevents a loss of function under some electrical system LCOs. Each offsite source can be used to supply the unit auxiliary buses for plant startup and shutdown and the cooling tower equipment. In addition, each source is stepped down from 13 kV to 4 kV through an emergency auxiliary transformer and is connected through interlocked circuit breakers to every 4 kV emergency switchgear bus.

Each Peach Bottom unit has four 4 kV buses supplied by two offsite power supplies and four emergency DGs. Each unit has two safety divisions with two, 4 kV buses each. The alternate or preferred power supply for any 4 kV bus is, in order of preference, the remaining offsite power source, then the DG. One preferred power supply feeds one 4 kV bus in each division; the other is supplied by the alternate offsite power supply. Each DG feeds one 4 kV safety bus in each unit.

The capacity of each DG is such that with one out of service, the standby AC supply system is capable of furnishing power for safe shutdown of both reactors, assuming the design-basis accident has occurred in one reactor. The engineered safeguards loads are so divided among the four, 4 kV emergency buses for each reactor that the failure of one DG or one 4 kV emergency bus would not prevent a safe shutdown of both reactor units.

There are two independent safety-related 125/250-volt (V), 3-wire, direct current (DC) systems per unit. Each system is comprised of two 125 V batteries, each with its own charger panel consisting of two, 100 percent capacity chargers. There is a total of four safety-related 125/250 V batteries in the station: two for Unit 2, and two for Unit 3. Each safety-related 125/250 V battery is in a separate ventilated battery room. The two batteries for each unit are redundant. Loads are diversified between these systems so that each system serves loads which are (1) identical and redundant, (2) different but redundant to plant safety, or (3) back up AC equipment.

3.1.2.2.2 Technical Evaluation

The licensee has requested to use the RICT program to extend the existing CTs for the following TS 3.8, “Electrical Power Systems,” conditions. The NRC staff’s evaluation of the proposed changes considered a number of potential plant conditions allowed by the proposed RICTs. The NRC staff also considered the available redundant or diverse means to respond to various plant conditions. In these evaluations, the NRC staff examined the safety significance of different plant conditions resulting in both shorter and longer CTs. The plant conditions evaluated are discussed in more detail below.

The NRC staff reviewed information pertaining to the proposed electrical power systems TS conditions in the application, the Peach Bottom UFSAR (Reference 17), TS Bases, and applicable TS LCOs to verify the capability of the affected electrical power systems to perform their safety functions (assuming no additional failures) is maintained. To achieve that objective, the NRC staff verified whether each proposed TS condition’s design success criteria (DSC) reflect the redundant or absolute minimum electrical power source/subsystem/ component required to be operable by the LCOs to support the safety functions necessary to

mitigate postulated design-basis accidents, safely shutdown the reactor, and maintain the reactor in a safe shutdown condition. The NRC staff further reviewed the remaining credited power source/equipment to verify whether the proposed TS condition satisfies its DSC. In conjunction with reviewing the remaining credited power source/equipment, the NRC staff considered supplemental electrical power sources/equipment (not necessarily required by the LCOs and can be either safety or non-safety-related) that are/is available at Peach Bottom and capable of performing the same safety function of the inoperable electrical power source/equipment. In addition, the NRC staff reviewed the proposed RMA examples in Enclosure 12 of the LAR and in the licensee's supplemental letter dated December 2, 2020, for reasonable assurance that these RMAs are appropriate to monitor and control risk and to ensure adequate defense-in-depth.

The Peach Bottom electrical power system is designed to provide a diversity of dependable power sources which are physically isolated so that any failure affecting one source of supply does not propagate to alternate sources. The auxiliary electrical power systems are designed to provide electrical and physical independence, and to supply the necessary power for startup, operation, shutdown, and other station requirements.

The onsite safeguards AC distribution system is divided into redundant trains so that the loss of any one train does not prevent the minimum safety functions from being performed. Each train has two connections to the offsite power sources, and one to an onsite DG. Offsite power is supplied to the unit switchyard(s) from the transmission network by five transmission lines. From the switchyard(s), electrically and physically separated paths provide AC power, through step down transformers, to the 4 kV emergency buses. Each unit has four, 4 kV buses (eight total for Units 2 and 3) that make up two independent, redundant trains per unit that split each trains' emergency loads over two separate 4 kV buses. Each 4 kV bus can be powered from the preferred offsite source, switched to the alternate offsite source, or powered by one of four DGs. Each DG supplies one 4 kV bus from each unit. The sources have capacity and loads are organized such that the loss of any one of the four buses will not prevent safe shutdown of both units.

During the RICT program entry for the proposed electrical TS conditions, when the LCO is not met due to the inoperable electrical power source or equipment, the redundancy required by the TS LCO (in operating modes), as specified by the Peach Bottom UFSAR, will not be maintained. Therefore, the NRC staff finds that the design requirements are not temporarily met during the RICT program entry for the proposed electrical power systems TS conditions since the redundancy required by the design criteria is not maintained. The NRC staff notes that operating the plant while remedial actions are being taken, during the period the redundancy required by the design criteria and LCO is not maintained, is allowed by 10 CFR 50.36(c)(2), which states, "[W]hen 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."

When the necessary redundancy is not maintained (e.g., one train of a two-train system is inoperable), the TSs permit a limited period to restore the inoperable train to operable status and/or take other remedial measures. If these actions are not completed within the CT, the TSs normally require that the plant exit the mode of applicability for the LCO. With one train of a two-train system inoperable, the TS safety function is accomplished by the remaining operable train. In the current TSs, the CT is specified as a fixed time. The addition of the option to determine the CT in accordance with the RICT program would allow an evaluation to determine a configuration-specific CT. The evaluation would be done in accordance with the methodology prescribed in NEI-06-09-A and Peach Bottom Units 2 and 3 TS 5.5.16. The RICT is limited to a

maximum of 30 days and can only be used when there is no TS or PRA loss of function. The RICT program provides the necessary administrative controls to permit extension of CTs and thereby delay reactor shutdown or required actions if risk is assessed and managed appropriately within specified limits and programmatic requirements.

In the LAR, the licensee stated that the proposed amendments would modify the TS requirements related to CTs for various required actions to provide the option to calculate a longer risk-informed CT. The licensee is proposing to incorporate the RICT program into its TSs for applicability only during Modes 1 and 2. The RICT program has a maximum limit of 30 days for any required action.

The licensee has requested to use the RICT program to extend the existing CTs for the Peach Bottom Units 2 and 3 TS 3.8, "Electrical Power Systems," LCO condition(s). The NRC staff reviewed Attachment 4 of the LAR where the licensee identified the Peach Bottom Units 2 and 3 TS Electrical Power Systems LCO Conditions to be included as part of RICT program in accordance with TSTF-505, Revision 2.

In addition, the NRC staff reviewed Table E1-1 provided in Enclosure 1 of the LAR for each Electrical Power System TS LCO condition to which the RICT program is proposed to be applied. The NRC staff also reviewed information regarding the TSs such as proposed TS LCO condition, SSCs covered by TS LCO condition, SSCs modeled in PRA, function covered by TS LCO condition, DSC, and PRA success criteria.

In Table E1-1 of Enclosure 1 of the LAR, the licensee stated that the DSC for TS 3.8.1, Condition D – Two or More Offsite Alternating Current Power Circuits Inoperable, is "one of two offsite AC power sources." The NRC staff notes that the terms "power circuits" and "power sources" seem interchangeable. The NRC staff requested the licensee to clarify how each path/circuit satisfies the DSC in terms of independence and capacity. In its supplemental letter dated December 2, 2020, the licensee stated the following:

> The Design Success Criteria provided in LAR Table E1-1 for Technical Specification 3.8.1.D, Two or More Offsite Alternating Current Power Circuits Inoperable, would apply under two discrete scenarios: 1) a loss of Offsite Circuits due to onsite equipment conditions, and 2) a loss of Offsite Circuits due to a loss of offsite power supplies resulting from a Loss of GRID.
>
> Under scenario 1: Loss of Qualified Offsite Circuits, the offsite power supplies remain available; however, the onsite portion of the offsite circuit is degraded.
>
> For example:
>
> With an initial condition of the 2 Emergency Auxiliary (EA) transformer out of service for planned maintenance, all eight 4 kV buses would be powered from 3EA transformer via the second preferred offsite source, 343 Startup (SU) transformer (220-34 Line). Assume 343 SU transformer Load Tap Changer malfunctions and is declared TS inoperable resulting in both offsite power circuits being declared inoperable. The robust design of the PBAPS [Peach Bottom] offsite power supply configuration would allow the Design Success criteria to be met by transferring the source of power to 3EA transformer from 343 SU transformer to 3SU transformer, maintaining 3EA powered from the Grid. In this scenario RICT would apply.

Under scenario 2, Loss of Grid, would result in a complete loss of the 500 kV Grid and a complete loss of the 230 kV Grid. In this scenario both PBAPS units would proceed to a normal shutdown using Onsite AC Sources (i.e., EDGs [emergency diesel generators]). RICT would not apply as the units would no longer be in Mode 1 or 2.

Background:

PBAPS UFSAR Section 8.3.2 provides a description of the off-site power supplies:

Startup auxiliary power is provided from any of the three offsite sources:

1. The tap on the 230 kV Nottingham-Cooper line feeds the 230/13 kV regulating transformer (startup and emergency auxiliary transformer no. 2) at the station.

2. At the North Substation, 13 kilovolts (13 kV) from the tertiary winding on the 500/230 kV auto-transformer feeds the 13/13 kV regulating transformer (startup and emergency auxiliary regulating transformer no. 3) which connects to the 13 kV switchgear at the station.

3. At the North Substation, 13 kV can be supplied from the 230/13 kV regulating transformer (startup transformer no. 343) which is supplied by the 230 kV Peach Bottom-Newlinville line and connects to the 13 kV switchgear.

   The PBAPS design includes two “qualified offsite circuits consisting of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite Class 1E emergency bus or buses.”

The NRC staff reviewed the LAR and the supplement dated December 2, 2020 to verify the Table E1-1 DSC for TS 3.8.1, Condition D, “Two or more offsite AC power circuits inoperable.” The NRC staff determined that TS 3.8.1, Condition D does not involve a loss of safety function under specific scenarios when the third offsite source is available to perform the design safety function, and therefore acceptable.

The NRC staff notes that TS LCO conditions for AC Sources 3.8.1 A-C, and E, DC Sources 3.8.4 A-E, and Distribution Systems 3.8.7 A-D included in the RICT program do not cause a loss of safety function because the remaining power sources and distribution systems would have capacity and capability to provide the required safety functions. Therefore, the NRC staff concludes that the Peach Bottom TS 3.8 for Electrical Power Systems to be included as part of the RICT program is consistent with TSTF-505, Revision 2, and therefore acceptable.

In addition, the NRC staff notes that when one or more trains (i.e., subsystems) in electrical systems become inoperable, either from a failure of equipment or from a voluntary action, an LCO will not be met, and the appropriate TS conditions must be identified and entered by the licensee. Single failure requirements, surveillance, and maintenance requirements of the redundant trains are typically suspended for the time that a plant is not meeting an LCO for preserving the safety function of an electrical system (i.e., in an action statement). This could

introduce unmonitored failures of redundant components and potential challenge to reliability assumptions for the remaining operable train or channel(s). When an LCO of an electrical system cannot be met at the train level or the subsystem level, it results in a temporary reduction in defense-in-depth and safety margins (redundancy, capacity, capability, single failure, and testability are reduced) because less equipment is available to fulfill the safety functions until the inoperable train or channel is restored.

The NRC staff reviewed LAR Enclosure 12 that describes the process for identification and implementation of RMAs applicable during extended CTs and provides examples of RMAs. Section 4 of the enclosure provides the specific examples for unavailability of one DG, one Offsite Circuit, one DG and one Offsite Circuit, and one DC electrical power subsystem. The NRC staff also reviewed page 55 of the attachment to the supplemental letter dated December 2, 2020, which provides examples of RMAs related to the AC and DC electrical distribution systems.

The NRC staff notes that the Peach Bottom's protected equipment program identifies equipment that should be protected as part of compensatory measures and RMAs to ensure that the minimum required equipment remains available to support plant operation. In addition, the actions specified above would provide additional assurance of the availability of the remaining equipment and adequate defense-in-depth. The NRC staff finds that the examples of the RMAs associated with inoperable power sources are reasonable.

Table E1-2 of Enclosure 1 of the LAR provides RICT estimates for TS 3.8 actions proposed to be in the scope of the RICT program. The NRC staff found that, consistent with NEI 06-09-A, none of the proposed RICTs for TS 3.8 exceed 30 days.

Based on the NRC staff's review of the information provided in the LAR, the NRC staff determined that the compensatory measures or RMAs for maintaining operability of the remaining train or channel(s) are reasonable and consistent with the guidance provided in NEI 06-09-A and TSTF-505, Revision 2. The NRC staff also determined that at least one operable train (i.e., subsystem) is available to support the safety function(s) of an onsite electrical power system and offsite electric power subsystem to perform the safety function.

3.1.2.2.3 Electrical Systems Conclusion

The NRC staff finds that while the redundancy is not maintained (e.g., one train of a two-train system is inoperable), the CT extensions in accordance with the RICT program are acceptable because: (a) the capability of the systems to perform their safety functions (assuming no additional failures) is maintained, and (b) the licensee's demonstration of identifying and implementing compensatory measures or RMAs, in accordance with the RICT program, are appropriate to monitor and control risk.

3.1.2.3 Evaluation of Instrumentation and Control Systems

As described in detail above, the licensee has requested to use the RICT program to extend the existing CT for certain instrumentation and control (I&C) related TS conditions, listed below. The NRC staff's evaluation of the proposed changes considered a number of potential plant conditions allowed by the new TSs and considered what redundant or diverse means were available to assist the licensee in responding to various plant events. Specifically, Attachment 5 of the LAR provides one explanation for both units (for each I&C condition that can be risk-informed) of the diverse means to address each event. In addition, by supplemental letter

dated January 29, 2021, the licensee explained that manual actions for failed automatic functions are, by definition, recovery actions and if risk significant are required to be included in the PRA model. Furthermore, the licensee stated that manual actions that recover automatic functional failures are defined in plant operation procedures to which operators are trained, including the Emergency Operating Procedures. The plant conditions evaluated are discussed in more detail below.

Unit 2	LCO 3.3.1.1	Conditions A and B
Unit 2	LCO 3.3.2.2	Condition A
Unit 2	LCO 3.3.4.1	Condition A
Unit 2	LCO 3.3.4.2	Condition A
Unit 2	LCO 3.3.5.1	Conditions B, C, D, E, F, and G
Unit 2	LCO 3.3.5.2	Conditions B, C, and D
Unit 2	LCO 3.3.6.1	Condition A
Unit 2	LCO 3.3.8.1	Conditions A and B
Unit 3	LCO 3.3.1.1	Conditions A and B
Unit 3	LCO 3.3.2.2	Condition A
Unit 3	LCO 3.3.4.1	Condition A
Unit 3	LCO 3.3.4.2	Condition A
Unit 3	LCO 3.3.5.1	Conditions B, C, D, E, F, and G
Unit 3	LCO 3.3.5.2	Conditions B, C, and D
Unit 3	LCO 3.3.6.1	Condition A
Unit 3	LCO 3.3.8.1	Conditions A and B

The NRC staff followed the guidance in RG 1.174, Revision 3, and further elaborated in RG 1.177, Revision 1, to assess the proposed changes' consistency with defense-in-depth criteria. The applicable criteria to the affected I&C systems are:

- System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system (e.g., there are no risk outliers).

- Defenses against potential CCFs are maintained and the potential for the introduction of new CCF mechanisms is assessed.

- The intent of the plant's design criteria is maintained.

- Adequate capability of design features without an overreliance on programmatic activities as compensatory measures

As described in the LAR, for all of these I&C LCOs and conditions, the addition of a RICT is accompanied by a note which only allows the use of the RICT when a loss of function has not occurred. Therefore, there is no loss of function when in one of these RICTs. Because there is not loss of function, this amendment would preserve: (1) system independence; (2) diversity (note: no loss of function can only infer the proposed changes do not alter the original diversity scheme during the RICT, this original diversity may not be adequate during the extended RICT, and therefore, diversity is evaluated in each subsection below); (3) the balance among the layers of defense; and (4) the multiple fission product barriers. The period of time in which redundancy is allowed to be reduced is potentially increased by this amendment. The NRC

staff evaluated the diversity described in LAR Attachment 5 and concluded that the consequences of failures in the presence of challenges is acceptable, and therefore, adequate system redundancy is preserved commensurate with the expected frequency and consequences of challenges to the system.

3.1.2.3.1 Unit 2 and Unit 3 LCO 3.3.1.1 Conditions A and B

LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," identifies a number of functions in Table 3.3.1.1-1. The LAR proposes to add risk-informed CTs to Conditions A and B, as described above. Condition A is applicable to all of the functions listed in Table 3.3.1.1-1, while Condition B is applicable to all functions but 2.a, 2.b, 2.c, 2.d, and 2.f.

Attachment 5 of the LAR describes the voting (or coincidence) logic associated with each RPS function and provides a table which identifies the diverse RPS instrumentation for each transient/accident. This diverse instrumentation always includes manual SCRAM.

In addition to the diverse means within the RPS, there are also diverse systems which also initiate a reactor trip, as described in LAR Attachment 5 (these diverse systems are particularly effective at providing defense against potential CCFs):

> In addition, the PBAPS [Peach Bottom Atomic Power Station] configuration includes the Alternate Rod Insertion (ARI) instrumentation and logic to limit the consequences of a Reactor Protection System (RPS) failure to scram during an anticipated transient. The ARI System is electrically diverse from the RPS logic and actuation circuitry, which significantly reduces the potential for ATWS events caused by common mode electrical failures in the RPS. The ARI trip settings are chosen at a level away from the normal operating range to prevent inadvertent actuation of the ARI System and exposure to abnormal situations. The ARI System was installed to satisfy 10 CFR 50.62 requirements.
>
> The PBAPS configuration also has a Standby Liquid Control System (SLCS) as an independent backup system. A signal is transmitted to initiate the SLCS to inject boron into the Reactor Vessel and to initiate closure of the Reactor Water Clean-Up (RWCU) isolation valves to prevent removal of the injected boron.

Based on the automatic diverse means, both within the RPS and within the systems to address the ATWS rule, the NRC staff determined there is adequate diversity and no overreliance on programmatic activities as compensatory measures for initiating a reactor trip. In addition, the NRC staff determined that these diverse means provide sufficient defense against human errors.

3.1.2.3.2 Unit 2 and Unit 3 LCO 3.3.2.2 Condition A

LCO 3.3.2.2, "Feedwater and Main Turbine High Water Level Trip Instrumentation," requires that "[t]wo channels per trip system of the Digital Feedwater Control System (DFCS) high water level trip instrumentation Function shall be OPERABLE."

Attachment 5 of the LAR describes the voting (or coincidence) logic associated with the Feedwater and Main Turbine High Water Level Trip and provides a table which identifies the diverse instrumentation for each transient/accident. For each event, both an automatic and manual diverse means exist.

Based on the automatic diverse means, the NRC staff determined there is adequate diversity and no overreliance on programmatic activities as compensatory measures for initiating a feedwater trip. In addition, the NRC staff determined these diverse means provide sufficient defense against human errors.

3.1.2.3.3 Unit 2 and Unit 3 LCO 3.3.4.1 Condition A

LCO 3.3.4.1, "Anticipated Transient Without Scram Recirculation Pump Trip (Recirculation Pump Trip ATWS-RPT) Instrumentation," requires that "[t]wo 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 Pressure--High."

Attachment 5 of the LAR describes the voting (or coincidence) logic associated with this instrumentation and provides a table which identifies the diverse instrumentation for each transient/accident. For each event, both an automatic and manual diverse means exist.

This system has two automatic means (one is diverse) to address event. Based on these automatic diverse means, the NRC staff determined there is adequate diversity and no overreliance on programmatic activities (e.g., manual means) as compensatory measures for initiating a Recirculation Pump Trip. In addition, the NRC staff determined the two automatic and diverse means provide sufficient defense against human errors.

3.1.2.3.4 Unit 2 and Unit 3 LCO 3.3.4.2 Condition A

LCO 3.3.4.2, "End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation," requires that "[t]wo channels per trip system for each EOC-RPT instrumentation Function listed below shall be OPERABLE: 1. Turbine Stop Valve (TSV)-Closure; and 2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure-Low." Or a specific set of limits are made applicable.

Attachment 5 of the LAR describes the purpose of the EOC-RPT is to improve the response to plant pressurization transients (e.g. turbine trip generator load rejection) by disconnecting the recirculation pumps from the ADS immediately upon receipt of a turbine stop valve or turbine control valve trip signal to reduce system inertia and effect a quicker pump coastdown.

Attachment 5 of the LAR describes the voting (or coincidence) logic associated with this instrumentation and provides a table which identifies the diverse instrumentation for each transient/accident. For each event, two to three automatic and one manual means exist (i.e., one to two diverse automatic means and the diverse manual means).

This system has two to three automatic means (one to two are diverse) to address event. Based on these automatic diverse means, the NRC staff determined there is adequate diversity and no overreliance on programmatic activities (e.g., manual means) as compensatory measures for initiating a Recirculation Pump Trip. In addition, the NRC staff determined the two to three automatic and diverse means provide sufficient defense against human errors.

3.1.2.3.5 Unit 2 and Unit 3 LCO 3.3.5.1 Conditions B, C, D, E, F, and G

LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," requires the various ECCS instrumentation functions be OPERABLE. Conditions B, C, D, E, F, and G are each

applicable to specific functions as stipulated in TS Table 3.3.5.1-1, “Emergency Core Cooling System Instrumentation.”

Attachment 5 of the LAR describes the voting (or coincidence) logic associated with this instrumentation and provides a table which identifies the diverse instrumentation for each transient/accident. For each event, at least one diverse means exists (i.e., manual and in some cases automatic diverse means).

3.1.2.3.6 Unit 2 and Unit 3 LCO 3.3.5.2 Conditions B, C, and D

LCO 3.3.5.2, “Reactor Core Isolation Cooling (RCIC) System Instrumentation,” requires that the various RCIC instrumentation functions be OPERABLE. Conditions B, C, and D are each applicable to a different function.

Attachment 5 of the LAR describes that the RCIC system is redundant to HPCI system for the safe shutdown function and, therefore, RCIC as a system by itself is not required to be redundant.

Attachment 5 of the LAR also describes the voting (or coincidence) logic associated with this instrumentation and provides a table which identifies the diverse instrumentation for each transient/accident. For each event, only one diverse means exists (i.e., manual). However, as described in the previous paragraph, RCIC is also diverse from HPCI (or vice versa).

3.1.2.3.7 Unit 2 and Unit 3 LCO 3.3.6.1 Condition A

LCO 3.3.6.1, “Primary Containment Isolation Instrumentation,” requires that the various primary containment isolation instrumentation functions be OPERABLE. Condition A applies to all functions.

Attachment 5 of the LAR also describes the voting (or coincidence) logic associated with this instrumentation and provides a table which identifies the diverse instrumentation for each transient/accident. For most events, multiple automatic diverse means are available; however, for some events the only diverse means is manual actuation.

3.1.2.3.8 Unit 2 and Unit 3 LCO 3.3.8.1 Conditions A and B

LCO 3.3.8.1, “Loss of Power (LOP) Instrumentation,” requires that all the functions for a given unit be OPERABLE, and some of the functions for the other unit be OPERABLE.

Attachment 5 of the LAR also describes the voting (or coincidence) logic associated with this instrumentation and describes the various means to determine whether a loss of power condition exists for each electrical bus monitored.

3.1.2.3.9 Summary of I&C Evaluation

Since the licensee did not propose any changes to the design basis, the independency and the fail-safe principles remain unchanged. The licensee stated in the LAR that the proposed changes did not include any TS loss of function conditions. However, NRC recognized that while in an ACTION statement, redundancy of the given protective feature will be temporarily reduced, and, accordingly, the system reliability will be reduced. In the LAR, the licensee stated in the description of proposed changes to the instrumentation and control systems that at least

one redundant or diverse means (e.g., other automatic features or manual action) to accomplish the safety functions (e.g., reactor trip, safety injection, or containment isolation) remain available during the use of the RICT. The NRC staff reviewed the licensee's proposed TS changes to assess the availability of the redundant or diverse means to accomplish the safety function(s). The NRC staff finds that the availability of the redundant or diverse protective features provide sufficient defense-in-depth to accomplish the safety functions, allowing for the extension of CTs in accordance with the RICT program. The NRC staff finds that the licensee's proposed RICT program to the identified I&C systems is in compliance with 10 CFR 50.36(b) and 10 CFR 50.55a(h).

The NRC staff reviewed the licensee's proposed TS changes and supporting documentation. The NRC staff finds that while the instrumentation and control redundancy is reduced, the CT extensions implemented in accordance with the RICT program are acceptable because: (a) the capability of the instrumentation and control systems to perform their safety functions is maintained, (b) redundant or diverse means to accomplish the safety functions exist, and (c) the licensee will identify and implement RMAs to monitor and control risk in accordance with the RICT program.

3.1.2.4 Key Principle 2 Conclusions

The LAR proposes to modify the TS requirements to permit extending selected CTs using the RICT program in accordance with NEI 06-09-A. The NRC staff has reviewed the licensee's proposed TS changes and supporting documentation. The NRC staff finds that extending the selected CTs within the RICT program following loss of redundancy, but maintaining the capability of the system to perform its safety function, is an acceptable reduction in defense-in-depth during the proposed RICT period provided that the licensee identifies and implements compensatory measures as appropriate during the extended CT.

Quantitative risk analysis, qualitative considerations including compensatory measures, and retaining the current CT for loss of all trains of a required system, assure that defense-in-depth is maintained to assure adequate protection of public health and safety. The NRC staff finds that the proposed changes are consistent with the defense-in-depth philosophy because:

- System redundancy (with the exceptions discussed above), independence, and diversity commensurate with the expected frequency and consequences of challenges to the system is preserved.

- Adequate capability of design features without an overreliance on programmatic activities as compensatory measures is preserved.

- The intent of the plant's design criteria continues to be met.

Therefore, NRC staff finds that these proposed changes meet the second key safety principle of RG 1.177, Revision 1, and are, therefore, acceptable. Additionally, the NRC staff concludes that the proposed changes are consistent with the defense-in-depth philosophy as described in RG 1.174, Revision 3.

3.1.3 Key Principle 3: Evaluation of Safety Margins

Section 2.2.2 of RG 1.177, Revision 1, states, in part, that sufficient safety margins are maintained when:

- 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, the licensee proposed to add a new program, "Risk Informed Completion Time Program," in Section 5.5.16, "Administrative Controls," of the TSs, which would require adherence to NEI 06–09, Revision 0-A.

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 sufficient 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 TS allow, any increase in unavailability is expected to be insignificant, and is addressed by the consideration of the single failure criterion in the design basis analyses. Acceptance criteria for operability of equipment are not changed and, if sufficient trains remain operable to fulfill the TS safety function, the operability of the remaining train(s) ensures that the current safety margins are maintained. The NRC staff finds that if the specified TS safety function remains operable, sufficient safety margins would be maintained during the extended CT of the RICT program. The NRC staff has evaluated specific proposed changes to the TS as described in Section 3.2 of this SE.

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-A, is limited to the inoperable train, loop, or component. The reduced but available functionality may support a further increase in the CT consistent with the risk of the configuration. During this increased CT, the specified safety function is still being met by the operable train, and therefore, no evaluation of PRA functionality is required to meet the design basis success criteria.

As discussed above, the NRC staff finds that the design-basis analyses for Peach Bottom remain applicable. Although the licensee will be able to have design-basis equipment out-of-service longer than the current TS allow and the likelihood of successful fulfillment of the function will be decreased when redundant train(s) are not available, the capability to fulfill the function will be retained when the available equipment functions as designed. Any increase in unavailability because less equipment is available for a longer time is included in the RICT evaluation. Therefore, the NRC staff finds that sufficient safety margins are maintained by the implementation of the RICT program. The NRC staff concludes that the proposed changes meet the third key safety principle of RG 1.177, Revision 1, and are acceptable.

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

Section 5.5.16, "Risk Informed Completion Time Program," of the TSs states that the RICT "must be implemented in accordance with NEI 06-09-A." Topical Report NEI 06-09-A provides

a methodology for a licensee to evaluate and manage the risk impact of extensions to TS CTs. Changes to the fixed TS CTs are typically evaluated by using the three-tiered approach described in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Chapter 16.1, "Risk-Informed Decision Making: Technical Specifications," dated March 2007 (Reference 18), and RG 1.177, Revision 1. This approach addresses the calculated change in risk as measured by the change in core damage frequency (CDF) and large early release frequency (LERF), as well as the ICCDP and ICLERP; 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, as discussed below. The NRC staff evaluated the licensee's proposed changes against the three-tiered approach in RG 1.177, Revision 1. The results of the staff's review are discussed below.

3.1.4.1 Tier 1: PRA Capability and Insights

Tier 1 evaluates the impact of the proposed changes on plant operational risk. The Tier 1 review involves two aspects: (1) the technical 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.

3.1.4.1.1 PRA Acceptability

RG 1.174, Revision 3, states that the scope, level of detail, conformance with the technical elements needed in a PRA, and plant representation 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 SE for NEI 06-09-A states that the PRA models should conform to the guidance in RG 1.200, Revision 1, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," dated January 2007 (Reference 19). The current version applicable to this application is RG 1.200, Revision 2, which endorses, with clarifications and qualifications, PRA Standard ASME/ANS RA-Sa-2009. ASME/ANS RA-Sa-2009 is the industry consensus standard for PRAs for internal events, internal flooding, internal fires, and other external events (e.g.,, seismic, external flooding, high winds, etc.), and defines the technical elements needed to develop and quantify a PRA model. ASME/ANS RA-Sa-2009 provides technical supporting requirements for each technical element in terms of "capability categories" (CCs). The CCs increase from a lower to a higher number (i.e., CC I, II, III) depending on the degree of detail, plant specificity, and realism. Per RG 1.200, CC-II of the PRA Standard is the level of detail that is adequate for the majority of applications. However, for some applications, meeting a lower capability category may be sufficient for some requirements; for other applications, it may be necessary to meet a higher capability category for specific requirements.

The licensee should address conformance of the PRA with the technical elements of ASME/ANS RA-Sa-2009 by following the peer review and self-assessment processes in RG 1.200, Revision 2. In accordance with Regulatory Position C.2 of RG 1.200, the PRA should be peer reviewed according to an established process to determine whether the intent of

the supporting requirements and technical elements in the ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, have been met. In addition, the peer review determines whether:

- The methods used to develop the PRA are implemented correctly,
- The PRA represents the as-built and as-operated plant,
- The PRA assumptions and approximations are reasonable, and
- The licensee has procedures or guidelines in place for updating the PRA to reflect changes in plant design, operation, or experience.

The peer review identifies any issues or discrepancies (i.e., finding-level facts and observations (F&Os) that impact conformance with the technical elements. Appendix X to NEI 05-04/07-12/12-[13], "Close-Out of Facts and Observations (F&Os)" (NEI Appendix X), dated February 1, 2017 (Reference 20), as accepted with conditions by NRC letter dated May 3, 2017 (Reference 21), provides guidance for closing F&Os. The NEI Appendix X states in part, "[o]nce an F&O is closed out, the utility is not required to present and explain them in peer reviews, NRC submittals, or other requests excluding NRC audits." The NRC's letter dated May 3, 2017, states in part, "[t]he NRC also intends to periodically conduct audits of a licensee's implementation of the Appendix X F&O closure process, as well as review a sampling of the final independent assessment team reports."

The NRC staff evaluated the PRA acceptability information provided by the licensee in LAR Enclosure 2 against the guidance in RG 1.200, Revision 2. This information included industry peer review results of the PRA models for internal events (includes internal floods) and internal fire events, and the disposition of peer review findings. The licensee screened out all external hazard events, except for seismic and high winds as described in Section 3.1.4.1.2 of this SE, as insignificant contributors to RICT calculations. The Peach Bottom PRA model with modifications is used as the CRMP model as described in Section 3.1.4.1.3 of this SE.

Internal Events PRA (Includes Internal Floods)

The NRC staff's review of the Peach Bottom internal events PRA (IEPRA), which includes internal floods, is based on: (1) the results of the peer reviews of the IEPRA and the associated F&O closure reviews described in LAR Enclosure 2; and (2) the previously docketed information relevant to the NRC staff's review of the IEPRA for Peach Bottom's adoption of 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components for Nuclear Power Reactors," dated October 25, 2018 (Reference 22).

The Peach Bottom IEPRA was subject to a full-scope peer review in November 2010 in accordance with the guidance in NEI 05-04, "Process for Performing Internal Events PRA Peer Reviews Using the ASME/ANS PRA Standard," dated November 2008 (Reference 23). This peer review was performed against the applicable supporting requirements (at CC-II) of ASME/ANS RA-Sa-2009 and RG 1.200, Revision 2. The licensee performed two F&O closure reviews in November 2016 and December 2019. The two F&O closure reviews were performed against ASME/ANS RA-Sa-2009 and RG 1.200, Revision 2, by an Independent Assessment team consistent with guidance in NEI Appendix X and the clarifications in the NRC's acceptance letter dated May 3, 2017. Following the second F&O closure review, no open F&Os remained. Regarding the November 2016 F&O closure review, which was conducted prior to the issuance of the approved guidance in letter dated May 3, 2017, the licensee provided a gap assessment

in its 10 CFR 50.69 supplement dated October 24, 2017 (Reference 24), which was found to be acceptable by the NRC staff in the Peach Bottom 10 CFR 50.69 SE.

The licensee performed a focused-scope peer review of the Peach Bottom IEPRA in February 2020 of a PRA upgrade using ASME/ANS RA-Sa-2009 and RG 1.200, Revision 2. This peer review resulted in three open IEPRA F&Os, which were described and dispositioned in Table E2-1 of the LAR. Each F&O was dispositioned by providing a description of how the F&O was resolved in the PRA. The NRC staff evaluated each open F&O and the associated disposition to determine whether the F&O had any significant impact on the application. The NRC staff finds the open IEPRA F&Os were properly assessed and dispositioned to support the RICT program.

The licensee specified two implementation items in Attachment 6 of the LAR, as supplemented by its response to APLA Question 04 in the licensee's supplemental letter dated December 2, 2020, that the IEPRA (as well as the fire PRA) will be updated to model the reactor building-to-suppression chamber and the suppression chamber-to-drywell vacuum breakers prior to implementation of the RICT program. This will facilitate performing RICT calculations for TS LCOs 3.6.1.5.C and 3.6.1.6.A. The licensee stated that these updates will meet the requirements of the PRA Standard at CC-II, as endorsed by RG 1.200, Revision 2, and the PRA success criteria will use the system design criteria.

Based on its review of the licensee's submittals and assessments, the NRC staff concludes that the Peach Bottom IEPRA (includes internal floods) used in the RICT program satisfies the guidance of RG 1.200, Revision 2. The NRC staff based this conclusion on the findings that the IEPRA model conforms sufficiently to the applicable industry PRA standards at an appropriate capability category, considering the licensee's acceptable disposition of the peer review F&Os, the proposed implementation items, and NRC staff review. Therefore, for the IEPRA, the NRC staff finds that the licensee has satisfied the intent of Sections 2.3.1, 2.3.2, and 2.3.3 of RG 1.177, Revision 1, and Sections 2.3 and 2.5 of RG 1.174, Revision 3; and that the Peach Bottom IEPRA acceptability is sufficient to implement RMTS in accordance with the RICT program and NEI 06-09-A.

Internal Fire PRA

The NRC staff review of the Peach Bottom internal fire PRA (FPRA) was based on the results of a full-scope peer review of the FPRA and two F&O closure reviews described in Enclosure 2 of the LAR. The full-scope peer review of the FPRA was performed in December 2012 using the process of NEI 07-12, Revision 1, "Fire Probabilistic Risk Assessment (FPRA) Peer Review Process Guidelines," dated June 2010 (Reference 25), against the ASME/ANS RA-Sa-2009 PRA Standard and followed the guidance in RG 1.200, Revision 2. The first Peach Bottom FPRA F&O closure review was performed in November 2016 in conjunction with a focused-scope peer review related to the supporting requirements of fire scenario selection. The second Peach Bottom FPRA F&O closure review was performed in December 2019 to review the remaining open F&Os. Both F&O closure reviews were performed against the ASME/ANS RA-Sa-2009 PRA Standard consistent with guidance in Appendix X of NEI 07-12 and clarifications to that guidance in the NRC's letter dated May 3, 2017. The second Peach Bottom FPRA F&O closure review closed all but three finding-level F&Os. A second focused-scope peer review was conducted in February 2020 on both human reliability and fire risk quantification supporting requirements and resulted in 12 additional finding-level F&Os. These 15 F&Os (three remaining after the closure reviews and 12 generated after the focused-scope peer-review) were presented in the LAR Enclosure 2, Table E2-1 along with

corresponding dispositions for this application. The NRC staff reviewed the dispositions and finds that the dispositions of the open finding-level F&Os were adequate for this application because either the technical concerns in the findings were addressed appropriately for this application or the findings did not impact this application.

The licensee identified three implementation items that would be completed prior to implementing the RICT program in Attachment 6 of the LAR and the December 2, 2020, supplement. The completion of these implementation items will be controlled via the licensee's proposed license condition. The three implementation items are to update the FPRA model as follows:

> Item 1: Failure of the reactor building-to-suppression chamber vacuum breakers to open is currently not modeled in the PRA. Prior to implementation, logic will be added to the PRA to model the impact of these vacuum breakers failing to open.
>
> Item 2: Failure of the suppression chamber-to-drywell vacuum breakers to open is currently not modeled in the PRA. Prior to implementation, logic will be added to the PRA to model the impact of these vacuum breakers failing to open.
>
> Item 3: The standby liquid control cable data will be obtained and the fire PRA model will be updated to account for the standby liquid control cabling and potential random anticipated transient without scram scenarios.

This will facilitate performing RICT calculations for TS LCOs 3.6.1.5.C, 3.6.1.6.A, and 3.1.7.B. The licensee stated that these updates will meet the requirements of the ASME/ANS PRA Standard CC-II requirements, and the PRA success criteria will use the system design criteria. The third implementation item will ensure the FPRA model will incorporate the standby liquid control system in completing the equipment and cable selection tasks.

The NRC staff requested that the licensee describe the treatment of sensitive electronics for the FPRA and explain whether it is consistent with the guidance in Frequently Asked Question (FAQ) 13-0004, "Close-Out of Fire Probabilistic Risk Assessment Frequently Asked Question 13-0004 on Clarifications Regarding Treatment of Sensitive Electronics," dated December 3, 2013 (Reference 26), including the caveats about configurations that can invalidate the approach (i.e., sensitive electronics mounted on the surface of cabinets and the presence of louver or vents). In the December 2, 2020, supplement, the licensee stated that the treatment of sensitive electronics for the FPRA is consistent with the guidance in FAQ 13-0004. Sensitive electronics mounted inside a control panel are considered qualified up to the heat flux damage threshold for thermoset cables provided that the component is not mounted on the surface of the cabinet and the presence of louvers or other typical ventilation means do not invalidate the guidance provided in the FAQ. Sensitive electronics not shielded by a robust enclosure consider the lower damage thresholds for sensitive electronics per NUREG/CR-6850, "Fire PRA Methodology for Nuclear Power Facilities," dated September 2005 (Reference 27) and Supplement 1 dated September 2010 (Reference 28).

Based on its review of the information provided in the LAR, as supplemented, the NRC staff determined that Peach Bottom FPRA appropriately models certain complex FPRA methods because the modeling is either consistent with NRC-endorsed guidance or is technically justified.

PRA Conclusions

Based on the NRC staff's review of the licensee's submittal and supplements, and the three implementation items controlled via the proposed license condition, the NRC staff concludes that the Peach Bottom PRA models for internal events (which includes internal floods) and internal fires used to implement the RICT program are consistent with the guidance of RG 1.200, Revision 2, for this application. The NRC staff based this conclusion on its findings that the PRA models conform sufficiently to the applicable industry PRA standards for internal events (which includes internal floods) and internal fires at an appropriate capability category for this application, considering the licensee's acceptable disposition of the peer review's F&Os and NRC staff review. Therefore, the NRC staff finds that the licensee has satisfied the intent of RG 1.177, Revision 1 (Sections 2.3.1, 2.3.2, and 2.3.3), and RG 1.174, Revision 3 (Sections 2.3 and 2.5); and that the Peach Bottom PRA acceptability is sufficient to implement RMTS in accordance with the RICT program and NEI 06-09-A.

PRA Update Process

Section 4.0 of the SE for NEI 06-09-A requires the LAR provide a discussion of the licensee's programs and procedures to ensure that the PRA models that provide the foundation for the RTR model are maintained consistent with the as-built, as-operated plant. The terms RTR model and CRMP model are used interchangeably in the LAR. The licensee has established a periodic update and review process for the PRA models that are used in the RTR model, which is described in Enclosure 7 of the LAR. The NRC staff reviewed the licensee's PRA model update process to assess whether the PRA models that support the RICT program are maintained consistent with the as-built, as-operated and maintained plant.

In LAR Enclosure 7, the licensee explains its PRA update process which includes: (1) review of plant changes and discovered conditions for potential impact on the PRA models and the CRMP model, including risk calculations to support the RICT program; (2) review of plant changes that meet the plant procedure criteria for updating the PRA models, before the periodic update; (3) periodic update of the PRA models at least every two refueling outages; and (4) performance of interim risk analyses or imposing administrative restrictions on use of the RICT program, if significant plant changes, or discovered conditions cannot be implemented immediately. Regarding Item 2, above, Enclosure 7 of the LAR states that an unscheduled update of the PRA model will be implemented if a plant change or condition is identified that has a significant impact to the RICT program, as defined by plant procedure.

Section 2.3.4 of NEI 06-09-A specifies that "criteria shall exist in PRA configuration risk management to require PRA model updates concurrent with implementation of facility changes that significantly impact RICT calculations." In response to APLA Question 07 in the LAR supplement dated December 2, 2020, the licensee explained under what conditions an unscheduled update of the PRA model would be performed and the criteria that will be used to initiate the update. The NRC staff reviewed the licensee's PRA model update process to assess whether the PRA models that support the RICT program are maintained consistent with the as-built/as-operated and maintained plant. The NRC staff concludes the licensee's PRA model update process is consistent with applicable guidance in RG 1.200, Revision 2, and NEI 06-09-A, and therefore is acceptable.

Risk Assessment Approaches and Methods

Changes to the PRA are expected to occur over time to reflect changes in PRA methods, and changes to the as-built, as-operated, and maintained plant to reflect the operating experience at the plant as specified in RG 1.200, Revision 2. Changes in PRA methods are addressed by constraint (e) in TS Section 5.5.16:

> 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 in Amendment No. [XXX], 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.

The NRC staff finds that this constraint is acceptable because it adequately implements the RICT program using models, methods, and approaches consistent with applicable guidance that are acceptable to the NRC.

PRA Acceptability Conclusions

The NRC staff finds that the licensee (1) has reviewed the PRA models using NRC endorsed guidance and adequately addressed all identified issues for this application; (2) has established a periodic update and review process to update the PRA and associated CRMP model to incorporate changes made to the plant and PRA methods and data, consistent with the RICT program; and (3) will calculate RICTs using NRC-accepted PRA methods. Therefore, the NRC staff concludes that the licensee has and will maintain a PRA that is technically acceptable to support implementation of the RICT program.

3.1.4.1.2 Scope of the PRA

Topical Report NEI 06-09-A stipulates a quantitative assessment of the potential impact on risk due to impacts from internal and external events, including internal fires, internal floods, and significant external events. As discussed in Section 3.1.4.1.1 of this SE, the Peach Bottom PRA used for the RICT program includes contributions from internal events (which includes internal floods) and internal fires. In addition, the NRC staff finds that the seismic and other external hazard analyses (i.e., the licensee does not have seismic margins analysis, and does not use its seismic PRA models) provide a bounding approach for the RICT program consistent with the NEI 06-09-A guidance on bounding analyses.

The licensee provided its assessment of external hazard risk for the RICT program in LAR Enclosure 4, “Information Supporting Justification of Excluding Sources of Risk Not Addressed by the PRA Models.” In Enclosure 4, the licensee states that this assessment is based on an update of the Peach Bottom Individual Plant Examination of External Events (IPEEE) external hazard screening evaluation. The licensee states that the hazards assessed in LAR Enclosure 4, Table E4-7 are those identified for consideration in non-mandatory Appendix 6-A of the ASME/ANS PRA Standard, which provides a guide for identification of most of the possible external events for a plant site. The NRC staff notes that this list is essentially the same list of hazards as presented in Table 4-1 of NUREG-1855, Revision 1, “Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision-making,” dated

March 2017 (Reference 29). According to the LAR, the licensee evaluated the following external hazards:

- Aircraft Impacts
- Avalanche
- Biological Events
- Coastal Erosion
- Drought
- External Flooding
- Extreme Wind or Tornado
- Fog
- Forest or Range Fire
- Frost
- Hail
- High Summer Temperature
- High Tide, Lake Level or River Stage
- Hurricane
- Ice Cover
- Industrial or Military Facility Accident
- Internal Fires (evaluated in an internal fire PRA)
- Internal Flooding (evaluated in the internal events PRA)
- Landslide
- Lightning
- Low Lake Level or River Stage
- Low Winter Temperature
- Meteorite or Satellite Impact
- Pipeline Accident
- Release of Chemicals in Onsite Storage
- River Diversion
- Sand or Dust Storm
- Seiche
- Seismic Activity (treated by adding the bounding seismic risk to all RICT calculations)
- Snow
- Soil Shrink-Swell
- Storm Surge
- Toxic Gas
- Transportation Accidents
- Tsunami
- Turbine-Generated Missiles
- Volcanic Activity
- Waves

The NRC staff's review finds that the list of external hazards considered by the licensee is consistent with the hazards listed in Appendix 6-A of the ASME/ANS RA-Sa-2009 PRA Standard, which is endorsed by the NRC staff in RG 1.200, Revision 2.

In LAR Enclosure 4, Section 2, the licensee states for the overall process, consistent with NUREG-1855, Revision 1, that external hazards may be addressed by (1) screening the hazard on low frequency of occurrence, (2) bounding the potential impact and including it in the

decision-making, or (3) developing a PRA model to be used in the RMAT/RICT calculation. The licensee states that as part of this process the following two aspects of the external hazard contribution to risk were considered.

- The first is the contribution from the occurrence of beyond design basis conditions, e.g., winds greater than design-basis speeds, seismic events greater than design-basis earthquake (DBE), etc. These beyond design basis conditions challenge the capability of the structures, systems and components (SSCs) to maintain functionality and support safe shutdown of the plant.

- The second aspect addressed is the challenges caused by external conditions that are within the design basis, but still require some plant response to assure safe shutdown, e.g., high winds or seismic events causing loss of offsite power, etc. While the plant design basis assures that the safety related equipment necessary to respond to these challenges are protected, the occurrence of these conditions nevertheless cause a demand on these systems that presents a risk.

In LAR Table E4-7, the licensee provided a screening disposition for each non-seismic external hazard as well as other hazards and concludes that no unique PRA model for these hazards is required in order to assess configuration risk for the RICT program (with the exception of internal flooding and internal fire, which are addressed by a PRA).

The NRC staff's review notes that the preliminary screening criteria and progressive screening criteria used and presented LAR Table E4-8 is the same criteria presented Supporting Requirements EXT-B1 and EXT-C1 of the ASME/ANS PRA Standard for screening external hazards.

3.1.4.1.2.1 External Hazards

The NRC staff's SE on NEI 06-09-A states that sources of risk besides internal events and internal fires (i.e., seismic and other external events) must be quantitatively assessed if they contribute significantly to configuration-specific risk. The SE further states that bounding analyses or other conservative quantitative evaluations are permitted where realistic PRA models are unavailable. In addition, the SE concludes that if sources of risk can be shown to be insignificant contributors to configuration risk, then they may be excluded from the RMTS.

The licensee addressed the risk from seismic events and other external hazards in the context of this application in Enclosure 4 to the LAR. This enclosure provided bounding estimate for the risk from seismic events for use in determining the configuration risk for the RICTs identified in the LAR as discussed below. The basis for exclusion of certain hazards from consideration in the determination of RICTs due to their insignificance to the calculation of configuration risk was also provided in the same enclosure as discussed below. The licensee stated that its IPEEE external screening evaluation was updated to support this LAR.

The NRC staff reviewed Enclosure 4 to the LAR and supplemental information to determine the acceptability of the consideration of risk from seismic events and other external hazards for this application.

Seismic

In response to the Near-Term Task Force (NTTF) recommendation 2.1 dated March 12, 2012 (Reference 30), the licensee developed a seismic probabilistic risk assessment (SPRA) model. That same SPRA was peer reviewed as documented in its submittal to the NRC staff dated August 28, 2018 (Reference 31). In its SPRA, the licensee determined that the point estimate seismic CDF (or SCDF) for both Units 2 and 3 were 2.1E-05 per year and the point estimate seismic LERF (or SLERF) of 4.0E-06 and 4.1E-06 per year for Units 2 and 3, respectively. The NRC staff assessment for the licensee's SPRA report is documented in a letter dated June 10, 2019 (Reference 32). However, the licensee explained in the LAR Enclosure 4, Section 3.0 that RICT calculations will include a risk contribution from seismic events using a "seismic penalty" approach.

The seismic penalty for estimation of SCDF is performed by a mathematical convolution of the seismic hazard and plant level seismic capacity curves. The SLERF is obtained by multiplying the calculated SCDF by an average seismic conditional large early release probability (SCLERP). The licensee's approach for including the seismic risk contribution in the RICT calculation is to add a constant SCDF and SLERF to each RICT calculation. Section 3.3.5 of NEI 06-09-A states that, for stations without external events PRAs, the station should apply one of three acceptable methods to determine external event risk. The second method identified in NEI 06-09-A, is a reasonable bounding analysis which must be case-specific and technically verifiable and must be shown to be conservative from the perspective of RICT determination.

To estimate a RICT, the licensee proposed to add an SCDF contribution of 2.2E-05 per year and an SLERF contribution of 4.4E-06 per year for an inerted containment and 2.2E-05 per year for a de-inerted containment, to the configuration-specific delta risk contribution from internal events (includes internal floods) and internal fire events.

The proposed bounding SCDF estimate is based on the plant-specific seismic hazard curves developed in response to the NTTF recommendation 2.1, and a plant-level high confidence of low probability of failure (HCLPF) capacity of 0.20g referenced to peak ground acceleration (PGA). The HCLPF is the capacity representing 95 percent confidence that the conditional probability of failure of an SSC is 5 percent or less. The uncertainty parameter for seismic capacity was represented by a combined beta factor of 0.4. The HCLPF parameters used for the Peach Bottom SCDF estimate are those cited for Peach Bottom in Table B-2 and C-1 of NRC Generic Issue 199 (GI-199), "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants, Safety/Risk Assessment," dated August 2, 2010 (Reference 33). The 0.20g PGA value is consistent with the Peach Bottom IPEEE review level earthquake. Estimation of the seismic CDF is performed by convolving the PGA based seismic hazard curve for the Peach Bottom site using eight seismic hazard intervals with the Peach Bottom PGA based HCLPF. The staff's review finds that the method to determine the baseline SCDF acceptable because it is consistent with the approach used in GI-199.

Concerning the proposed SLERF penalty, the licensee states in LAR Enclosure 4, Section 3 that the SLERF penalty of 4.4E-06 per year was based on estimating the average SCLERP and multiplying that by the estimated SCDF of 2.2E-05 per year. The licensee explained that an estimate of the average SCLERP (i.e., 0.2) was determined using the Peach Bottom SPRA model. To assess when containment is de-inerted, the licensee used a SCLERP of 1.0, which assumes containment failure.

The NRC staff finds the licensee's development of SCLERP values of 0.2 and 1.0 acceptable because these were derived using plant-specific information and because the seismic penalty values are greater than the SPRA model results.

For RICTs associated with SSCs credited in the design basis to mitigate seismic events, the NRC staff finds that the licensee's proposed methodology captures the risk associated with seismically induced failures of redundant SSCs because such SSCs are assumed to be fully correlated. By assuming full correlation, the seismic risk for those RICTs will not increase if one of the redundant SSCs is unavailable because simultaneous failure of all redundant trains would be assumed in an SPRA. During RICTs for SSCs not credited in the design-basis seismic event, but which could be used when credited SSCs fail, the proposed methodology for considering seismic risk contributions may be non-conservative because the seismically induced failure of such SSCs during the RICT may not be included in the risk increase. However, the occurrence and degree of non-conservatism depends on the plant HCLPF value used for the RICT calculations, as compared to the HCLPF values for such SSCs. The degree of non-conservatism will be low or nonexistent if the plant HCLPF value is lower than most or all SSCs impacted by a seismic event. During RICTs for SSCs that are not used to mitigate a seismic event, the proposed methodology for considering seismic risk contributions is conservative because the seismically induced failure of such SSCs would not result in a risk increase associated with the plant configuration during the RICT, but the baseline seismic risk is still included in the calculation.

In its December 2, 2020, supplemental letter, the licensee provided the results of determining the delta in SCDF and SLERF risk, using the SPRA model, when an SSC is placed out of service (for several risk significant SSCs) and compared these delta risks to the proposed seismic penalty values. Most of the SPRA delta risk values ranged from 0.2 to 15 percent of the proposed seismic penalty. The NRC staff determined that these results demonstrate that the seismic penalty values are conservatively bounding for this application.

In summary, the NRC staff's review finds acceptable the licensee's proposal to use the SCDF contributions of 2.2E-05 per year, an SLERF contribution of 4.4E-06 per year with an inerted containment, and an SLERF contribution of 2.2E-05 per year with an de-inerted containment for the licensee's RICT program for Peach Bottom because (1) the licensee used the most current site-specific seismic hazard information for Peach Bottom, (2) the licensee used an acceptably low plant HCLPF value of 0.2g and a combined beta factor of 0.4 consistent with the information for Peach Bottom in the GI-199 evaluation, (3) the licensee used its SPRA to determine an SCLERP of 0.2 for inerted containment and 1.0 for an de-inerted containment, and (4) the seismic penalty values are conservative when compared to the Peach Bottom SPRA results provided in the licensees NTTF 2.1 SPRA submittal.

Extreme Winds and Tornado Hazards

LAR Enclosure 4, Section 4 discusses the licensee's evaluation of the extreme winds and tornadoes impact on this application. Evaluation of the extreme winds and tornado hazard has been significantly updated since the licensee's IPEEE. The basis for the insignificant impact of extreme winds and tornadoes (including tornado-generated missiles) for this application and relies on the design of SSCs and tornado missile analysis. Table E4-7 of the same enclosure presents the licensee's screening criteria used to disposition the risk for the extreme wind and tornado hazards. Table E4-7 indicates that criterion "C1" (event damage potential is less than events for which plant is designed) and "PS4" (bounding mean CDF is less than 1E-06 per year) were used to screen the extreme wind and tornado hazard.

The licensee stated in the LAR that wind damage is bounded by tornadoes and that the tornado windspeed corresponding to a 1E-07 per year exceedance frequency is less than the Peach Bottom design windspeed value according to NUREG/CR-4461, Revision 2, "Tornado Climatology of the Contiguous United States," dated February 2007 (Reference 34), using the enhanced Fujita Scale. The licensee stated that subsequent to its IPEEE screening evaluation of extreme winds, it performed a tornado missile protection evaluation of the Peach Bottom site. The licensee stated that the tornado missile evaluation was performed in response to Regulatory Issue Summary (RIS) 2015-06, "Tornado Missile Protection," dated June 10, 2015 (Reference 35)) and NRC Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," dated June 10, 2015 (Reference 36). The licensee stated that several non-conformances were identified and evaluated for risk impact. The study determined, for both units, that CDF risk to be < 1E-06 per year and LERF risk < 1E-07 per year. However, the licensee identified, with regard to CDF risk, that certain plant configurations to be above 1E-06 per year and therefore impose a tornado missile penalty on each RICT calculation. Therefore, a CDF delta penalty of 1E-05 per year and 1E-06 per year for LERF for all plant configurations RICT calculations is conservative because it bounds the CDF for certain plant configurations and because it provides sufficient margin from the CDF and LERF values documented in response to RIS 2015-06.

In summary, the NRC staff's review finds acceptable the licensee's proposal to use the high-winds penalty CDF of 1E-05 per year and high winds LERF of 1E-06 per year for the licensee's RICT program for Peach Bottom because (1) the licensee used the most current site-specific wind hazard information for the Peach Bottom site, (2) the licensee included in their risk calculations recently identified missile protection non-conformances, and (3) the high-wind penalty risk values bound the licensee's worst case plant configurations.

External Flooding

LAR Enclosure 4, Section 5 discusses the licensee's evaluation of the risk from the external flooding hazard. The licensee's evaluation of the external flooding has also been significantly updated since the licensee's IPEEE. The licensee's conclusions that the impact on this application is insignificant are based on the results documented in the licensee's flood hazard reevaluation report for Peach Bottom dated August 12, 2015 (Reference 37). Table E4-7 of the same enclosure presents the licensee's screening criteria used to disposition the risk for the external flooding hazard. Table E4-7 indicates that criterion "C1" (event damage potential is less than events for which plant is designed) and "PS2" (Design basis for the event meets the criteria in the NRC 1975 Standard Review Plan (SRP)) was used to screen the extreme flooding hazard.

In LAR Enclosure 4, Section 5, the licensee states that the results of the flood hazard reevaluation report show that flooding from all mechanisms except local intense precipitation were bounded by the current licensing basis and the plant response is considered adequate. A focused evaluation was submitted to NRC for which an NRC staff evaluation dated November 6, 2017 (Reference 38), identifies the impact of six permanently installed doors in the Reactor Building, in their normally closed position, will not impact any relevant SSCs in a local intense precipitation event. The NRC staff concluded that the licensee has demonstrated, if appropriately implemented, that effective flood protection exists from the reevaluated flood hazards.

In summary, the NRC staff's evaluation of the licensee's considerations of external flooding hazards for Peach Bottom finds that the external flooding hazard has an insignificant contribution to configuration risk and can be excluded from the calculation of the proposed RICTs.

Other External Hazards

Besides the external flooding and high winds and tornadoes discussed above, the licensee provided rationale for the insignificant impact of non-seismic external hazards and other hazards for Peach Bottom in Table E4-7 of Enclosure 4 to the LAR. The NRC staff's review of the information in the submittal finds that the contributions from the other external hazards have 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.

3.1.4.1.2.2 PRA Scope Conclusions

According to the LAR, the proposed RICT program is only applicable to Operational Conditions (or Modes) 1 and 2; therefore, risk evaluations for Modes 3, 4, 5, and 6 are not relevant to the proposed RICT program.

Based on the above discussion, the NRC staff finds that the licensee has satisfied the intent of RG 1.177, Revision 1 (Section 2.3.2), and RG 1.174, Revision 3 (Sections 2.3 and 2.5), and that the scope of the PRA model and the use of a bounding analysis for seismic and high-wind events is appropriate for this application.

3.1.4.1.3 PRA Modeling

Section 3.2.2 of NEI 06-09-A specifies that to evaluate a RICT for a given Required Action, the specific systems or components involved should be directly modeled in the PRA or, if not directly modeled, the functions directly correlated to the specific systems or components are modeled in the PRA. Also, TSTF-505, Revision 2, states Required Actions for systems that do not affect CDF or LERF or for which a RICT cannot be quantitatively determined are not in scope of the program. The licensee identified for each TS LCO Required Action for which the RICT program is proposed to apply, the following: (1) the SSCs that are included within the scope of the PRA models, or the surrogate SSCs or operator actions that are modeled that bound the functions of the TS SSCs; and (2) that the PRA success criteria parameters used to determine PRA functional determination are the same as the design-basis success criteria parameters or, if different, that plant-specific analyses that were used to support the PRA are justified; (3) common cause failures are appropriately addressed; and (4) the CRMP provides the capability to select the system as out-of-service in order to calculate a RICT, and the CRMP is maintained consistent with the baseline PRA model.

3.1.4.1.3.1 System and Surrogate Modeling

The NRC SE to NEI 06-09-A specifies that the LAR is to provide a comparison of the TS functions to the PRA-modeled functions and that justification be provided to show that the scope of the PRA model is consistent with the licensing basis assumptions. This SE also specifies that a RICT can be applied to SSCs that are either modeled in the PRA, or whose impact can be quantified using conservative or bounding approaches. Table E1-1 in Enclosure 1 to the LAR, as supplemented by letter dated December 2, 2020: (1) identifies each TS LCO condition

in scope of the RICT program and the SSCs covered by the LCO, as applicable; (2) indicates whether these SSCs are modeled in the PRA; and (3) for the cases where the SSCs are not explicitly modeled in the PRA, an explanation is provided on how the PRA uses surrogate events that bound the functions of the TS LCO SSCs.

The following TS LCOs in scope of the RICT program, whose associated SSCs are not explicitly modeled in the PRA, use conservative surrogates for their respective RICT calculations: LCO 3.3.4.2.A (one or more required End of Cycle Recirculation Pump Trip channels inoperable), LCO 3.6.1.2.C (primary containment air lock inoperable for other reasons than door or mechanical interlock), LCO 3.6.1.3.A (one or more penetration flow paths with one PCIV inoperable except MSIVs), and LCO 3.6.1.3.E (purge/vent flow path open for an accumulated time greater than 90 hours for the calendar year). The NRC staff concludes the licensee's proposed surrogates are acceptable because their use leads to conservative RICT calculations.

3.1.4.1.3.2 Success Criteria

The NRC SE to NEI 06-09-A specifies that the LAR is to provide a comparison of the TS functions to the PRA-modeled functions and that sufficient justification is to be provided to show that the scope of the PRA model, including applicable success criteria, is consistent with the licensing basis assumptions. Table E1-1 of LAR Enclosure 1, as supplemented by letter dated December 2, 2020, provides the PRA and design basis success criteria for SSCs covered by each TS LCO within the RICT program, and the basis for the PRA success criteria when it differed from the design basis success criteria. Consistent with NEI 06-09-A and the associated SE, the RICTs calculated from the PRA will be based on the PRA success criteria, which have been peer reviewed and determined to meet ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2, and, therefore, is acceptable.

3.1.4.1.3.3 Common Cause Failure (CCF) Modeling

Section 3.3.6 of NEI 06-09-A states that for all RICT assessments of planned configurations, the treatment of CCF in the quantitative configuration risk management tools may be performed by considering only the removal of the out-of-service equipment and not adjusting the CCF terms. In Section 2 of LAR Enclosure 8, the licensee explained that CCF basic events are explicitly modeled in the PRA and are calculated using common cause alpha factors. The licensee stated that CCF basic events are not adjusted in the PRA models when a component is taken out-of-service for planned maintenance. Therefore, the NRC staff concludes that the licensee's general treatment of CCFs for planned maintenance is acceptable, because the calculations reasonably include CCFs and the licensee's approach is consistent with the approach described in NEI 06-09-A.

RG 1.177, Revision 1, states that when a component is rendered inoperable due to a failure, the CCF probability for the remaining redundant components should be increased to represent the conditional failure probability due to common cause failure of these components, in order to account for the possibility that the first failure was caused by a CCF mechanism. Consistent with TSTF-505, Revision 2, the administrative TS requirement (i.e., TS 5.5.16, item d) specifies that in an emergent condition, if the extent of condition for the inoperable SSC is not complete prior to exceeding the completion time, then the RICT program will account for the increased possibility of CCF by either: (1) numerically accounting for the increased possibility of CCF in the RICT calculation, or (2) implementing RMAs not already credited in the RICT calculation 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. In Section 2 of LAR Enclosure 8, the licensee explained that the numerical adjustment of CCF events would not typically be performed for a RICT calculation, but that RMAs would generally be put in place, in accordance with TS Section 5.5.16, item d, when common cause failure cannot be ruled out. The licensee also stated that, if a numerical adjustment is performed, the guidance in RG 1.177, as specified in Section A-1.3.2.1 of Appendix A, would be followed. The NRC staff concludes that the licensee's general treatment of CCFs for emergent conditions is acceptable because the calculations reasonably include CCFs and the licensee's approach is consistent with the approach described in TSTF-505, Revision 2, and RG 1.177, Revision 1.

3.1.4.1.3.4 CRMP Model

The CRMP tool (or RTR) uses the PRA model to perform the RICT calculations. This tool provides a user interface that supports the RICT program by providing a method to evaluate plant configurations.

In LAR Enclosure 8, the licensee describes the necessary changes to the peer-reviewed baseline PRA models for use in the configuration risk software to support RICT calculations that preserves the CDF and LERF quantitative results; maintains the quality of the peer-reviewed PRA models; and correctly accommodates changes in risk due to configuration-specific considerations.

LAR Enclosure 8, as supplemented by letter dated December 2, 2020, explains that the peer-reviewed internal events (which includes internal floods) PRA model and the internal fires PRA model are maintained as separate models. However, for RICT program implementation, these baseline models are incorporated into the RTR tool software and modified/adjusted as follows for use in configuration risk calculations: (a) the unit availability factor is set to 1.0 (unit available); (b) maintenance unavailability is set to zero/false unless unavailable due to the configuration; (c) mutually exclusive combinations, including normally disallowed maintenance combinations, are adjusted to allow accurate analysis of the configuration; (d) for systems where some trains are in service and some in standby, the RTR tool addresses the actual configuration of the plant including defining in-service trains as needed; and (e) the impact of outside temperatures on system requirements (i.e., success criteria for emergency DG ventilation cooling). These adjustments are the same as those used for the evaluation of risk under the Maintenance Rule program (i.e., 10 CFR 50.65(a)(4)). The RTR tool is designed to quantify the unit-specific configuration for both internal events (includes internal floods) and internal fire events, and includes the seismic risk contribution when calculating the RMAT and RICT.

In LAR Enclosure 8, the licensee also discusses administrative controls for the CRMP such as quality and updates requirements. The licensee explained that plant procedures require an acceptance test after every RTR model update. This test verifies proper translation of the baseline PRA models and acceptance of all changes made to the baseline PRA models into the RTR model. This test also verifies correct mapping of plant components to the basic events in the RTR model. For maintenance of an existing RTR model, changes made to the baseline PRA model in translation to the RTR model are controlled and documented.

The NRC staff concludes that the RICTs can be appropriately calculated from the CRMP (or RTR) model because the underlying PRA models will remain acceptable and the licensee will verify the CRMP (or RTR) model is consistent with the underlying baseline PRA. The tool used

to perform the RICT calculations provides a user interface which supports the RICT program by providing a method to evaluate the plant configuration.

3.1.4.1.3.5 PRA Modeling Conclusions

The NRC staff reviewed the information provided by the licensee and concluded that the PRA modeling used to support the RICT program can appropriately model alignments of components during periods when the RICT will be calculated. Therefore, the NRC staff finds that the licensee has satisfied the intent of RG 1.177, Revision 1 (Section 2.3.3), and RG 1.174, Revision 3 (Section 2.3), and that the PRA modeling is appropriate for the application of the RICT program.

3.1.4.1.4 Key PRA Assumptions and Sources of Modeling Uncertainty

According to RG 1.177, Revision 1, using PRAs to evaluate TS changes requires consideration of the assumptions made within the PRA that can have a significant influence on the ultimate acceptability of the proposed changes. Risk-informed analyses of TS changes can be affected by uncertainties regarding the assumptions made during the PRA model's development and application. In general, the risk resulting from TS CT changes is expected to be relatively insensitive to most uncertainties because the uncertainties tend to affect similarly both the pre-TS change case and the post-TS change case. The NRC SE to NEI 06-09-A specifies that the LAR is to provide a discussion of how the key assumptions and sources of modeling uncertainty of the PRA models were identified, and how their impact on the RMTS was assessed and dispositioned.

3.1.4.1.4.1 Identification of Key PRA Assumptions and Sources of Modeling Uncertainty

In Enclosure 9 of the LAR, as supplemented by its response to APLA Question 10 in the letter dated December 2, 2020, the licensee discussed their process for determining the assumptions and sources of modeling uncertainty for the PRA models, and for determining which of those are key for the application. The licensee also identified and dispositioned each of the key PRA assumptions and sources of modeling uncertainty for its impact on the RICT calculations.

Based on LAR Enclosure 9, as supplemented, the IEPRA uncertainty analysis was performed based on guidance in NUREG-1855, Revision 1. The licensee stated that plant-specific PRA assumptions and sources of modeling uncertainty were identified from a review of the internal events PRA notebooks and from generic sources of uncertainty in the Electric Power Research Institute (EPRI) Technical Report 1016737, "Treatment of Parameter and Modeling Uncertainty for Probabilistic Risk Assessments," dated December 2008 (Reference 39), and EPRI Technical Report 1026511, "Practical Guidance of the Use of Probabilistic Risk Assessment in Risk-Informed Applications with a Focus on the Treatment of Uncertainty," dated December 2012 (Reference 40), which are cited in NUREG-1855, Revision 1.

Based on LAR Enclosure 9, as supplemented by letter dated December 2, 2020, the FPRA uncertainty analysis was performed based on guidance in NUREG-1855, Revision 1, and guidance for FPRA development including NUREG/CR-6850 and its Supplement 1. The licensee stated that plant-specific PRA assumptions and sources of modeling uncertainty were identified from a review of the fire PRA notebooks and from generic sources of uncertainty in EPRI Technical Report 1026511. The licensee used consensus modeling approaches from NUREG/CR-6850, recently issued NUREGs pertaining to FPRA methods, and NRC published "frequently asked questions" (FAQs) for the FPRA.

The licensee evaluated each identified PRA assumption and source of modeling uncertainty for the IEPRA and FPRA against definitions and guidance for "key" specified in RG 1.200, Revision 2, and NUREG-1855, Revision 1. Any PRA assumptions or sources of modeling uncertainty that did not meet these definitions were screened by the licensee as not being key. Based on these definitions, the licensee used the following considerations in LAR Enclosure 9 to disposition the PRA assumptions and sources of modeling uncertainty as not key to the RICT application:

- The uncertainty or assumption is implementing a consensus model,
- The uncertainty or assumption has negligible impact on the PRA results,
- There is no reasonable alternative to the assumption,
- The uncertainty or assumption implements a slight realistic conservatism that does not influence the PRA results,
- The uncertainty or assumption implements a model that has extensive historical precedence.

The NRC staff finds the licensee's process for the identification and assessment of the significant PRA assumptions and sources of modeling uncertainties is reasonable, because it follows the guidance in NUREG-1855, Revision 1, and considered both generic and plant-specific PRA assumptions and sources of modeling uncertainty.

3.1.4.1.4.2 Disposition of Key PRA Assumptions and Sources of Modeling Uncertainty

Tables E9-1, E9-2, and E9-3 of LAR Enclosure 9, as supplemented by its letter dated December 2, 2020, presented the PRA assumptions and sources of modeling uncertainty for the IEPRA, translation of the baseline PRA models into the RTR model, and FPRA, respectively, that the licensee determined to be potentially key to the RICT application and their associated disposition. The licensee determined, with the exception of that pertaining to crediting diverse and flexible coping strategies (FLEX) in the PRA, the impact of the key PRA assumptions and sources of modeling uncertainty on the risk results is small and the impact on the RICT application is negligible.

The NRC staff evaluated the licensee's dispositions of the key PRA assumptions and sources of modeling uncertainty in Tables E9-1, E9-2, and E9-3 of LAR Enclosure 9, including those related to: (1) crediting FLEX in the PRA, (2) systems not credited in the FPRA, (3) FPRA parametric uncertainties, and (4) digital I&C modeling in the PRA. The following discussion presents the NRC staff findings of this evaluation.

Crediting FLEX

The NRC memorandum, "Assessment of the Nuclear Energy Institute NEI 16-06, 'Crediting Mitigating Strategies in Risk-Informed Decision Making,' Guidance for Risk-Informed Changes to Plants Licensing Basis," dated May 30, 2017 (Reference 41), provides the NRC staff's assessment of challenges to incorporating FLEX into a PRA model in support of risk-informed decision-making in accordance with the guidance in RG 1.200, Revision 2. The NRC memorandum dated May 30, 2017, highlights two main areas of uncertainties for crediting FLEX

in the PRA: equipment failure probabilities of FLEX equipment and human reliability analysis (HRA) of the credited operator actions for deploying FLEX. The guidance in NEI 06-09-A states that sensitivity studies should be performed on the base model prior to initial implementation of the RICT program on uncertainties that could potentially impact the results of the RICT calculation, and that the insights from the sensitivity studies should be used to develop appropriate compensatory RMAs, including highlighting risk-significant operator actions, confirming availability and operability of important standby equipment, and assessing the presence of severe or unusual environmental conditions.

In its LAR, as supplemented by its response to APLA Question 05 in the letter dated December 2, 2020, and its response to RAI 1 in the letter dated February 4, 2021, the licensee stated that credit is taken for FLEX equipment in the IEPRA (includes internal floods) and FPRA models and identifies the FLEX equipment and FLEX operator actions that were credited in these PRA models. The licensee further stated that credited FLEX operator actions include those activities described in Sections 7.5.4 and 7.5.5 of NEI 16-06, Revision 0, "Crediting Mitigating Strategies in Risk-Informed Decision Making," dated August 26, 2016 (Reference 42), for which current HRA methods may not be applicable. The licensee stated that the human error probability (HEP) for each FLEX operator action were developed using the same PRA methodology as used in the peer reviewed PRA models.

In its LAR, as supplemented, the licensee provided the results of various sensitivity studies to assess the impact of FLEX modeling uncertainties on calculated RICTs, where FLEX equipment failure probabilities were increased by a factor of 5 and the failure probabilities for FLEX operator actions (i.e., FLEX HEPs and joint HEPs) were increased to their 95th percentile values to represent the likely upper bound values. The sensitivity studies demonstrated that the RICTs were not sensitive to the uncertainties associated with FLEX equipment failure probabilities. However, the RICTs for two TS LCOs (i.e., TS LCOs 3.8.1.D and 3.8.4.A) were significantly impacted by the uncertainties associated with FLEX HEPs. Consistent with the guidance in NEI 06-09-A, the licensee will identify RMAs on a case-by-case basis, as needed, to appropriately address the impact of FLEX HEP uncertainties.

Systems Not Credited in the Fire PRA

The NRC staff notes that some conservative PRA modeling assumptions could have a nonconservative impact on the RICT calculations. If an SSC is part of a system not credited in the FPRA or is supported by a system that is assumed to always fail, then the risk increases due to taking that SSC out of service are masked.

In its December 2, 2020, supplement, the licensee stated that as part of the FPRA, some components were assumed to be failed due to lack of detailed cable data. This included cables related to shutdown cooling, containment isolation signals, reactor core isolation cooling restart capabilities, and standby liquid control. The licensee stated that a sensitivity analysis was performed to measure the risk associated with the assumption that these components fail in all fire scenarios and stated that the results introduced a small change in the risk to both CDF and LERF from internal fires and that the identification of important operator actions, important fire areas, and protected equipment priorities did not change given the results of these sensitivity cases.

In the December 2, 2020, supplement, the licensee explained that the standby liquid control system cable data was obtained and the FPRA model would be modified based on that data. The licensee included an implementation item controlled via the proposed license condition that

will ensure the Peach Bottom FPRA will be revised to incorporate the standby liquid control system control cable data and potential ATWS scenarios prior to implementation of the RICT program at Peach Bottom.

Fire PRA Parametric Uncertainties

RG 1.174, Revision 3, clarifies that, because of the way the acceptance guidelines in RG 1.174 have been developed, the appropriate numerical measures to use when comparing the PRA results with the risk acceptance guidelines are mean values. The risk management threshold values for the RICT program are also mean values. Point estimates do not account for the state-of-knowledge correlation (SOKC) between nominally independent basic event probabilities. Mean values do reflect the SOKC and are always larger then point estimates. NUREG-1855, Revision 1, provides guidance on evaluating the impact of SOKC (i.e., uncertainty arising from the propagation of the uncertainty in parameter values of the PRA inputs) on the comparison of the point estimate PRA results with the guideline mean values.

LAR Enclosure 9, Table E9-3, identifies post-fire HRA as a source of FPRA modeling uncertainty because internal fire HEPs must be adjusted to consider the additional challenges to performing human actions during a fire. In the December 2, 2020 supplement, the licensee provided the results for the parametric uncertainty analysis for the FPRA risk results. The results show an increase in fire CDF risk of 5 percent for both Units 2 and 3; however, the increase in fire LERF risk was 31 and 40 percent for Units 2 and 3, respectively. The supplement states that a relay panel in each unit, 20C032 in Unit 2 and 30C032 in Unit 3, were the significant contributors to the increase in fire LERF risk. The applicant stated that these panels contain cables associated with safety relief valves and low pressure injection lines valves. The related cutsets involve fire-induced hot shorts that cause spurious depressurization and spurious valve closures that prevent low pressure injection. When the fire scenarios associated with these components were removed from the analysis the increase in fire LERF risk was 10 and 4 percent, respectively, for Units 2 and 3. In its supplement dated February 4, 2021, the licensee provided a sensitivity study that demonstrated that this source of uncertainty had a negligible impact on any RICT calculations. Based on its review, the NRC staff finds that the uncertainty associated with post-fire HRA is appropriately considered for this application because the uncertainty has negligible impact on RICT calculations.

Digital I&C Modeling

The NRC staff noted that the lack of consensus industry guidance for modeling digital I&C systems in plant PRAs is a source of uncertainty. In its LAR supplement dated December 2, 2020, in response to APLA Question 06, the licensee explained that the only digital components modeled in the Peach Bottom PRA are those associated with digital feedwater level control. The licensee explained that the reliability data for these components is obtained from NUREG/CR-6928, “Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants,” February 2007 (Reference 43). The licensee performed a sensitivity study that increased the failure probabilities of the digital feedwater basic events by a factor of 100 in the IEPRA and FPRA. The licensee stated that the results of this sensitivity study showed negligible impact on the RICTs for the impacted LCOs. Based on its review, the NRC staff finds that the uncertainty associated with digital feedwater level control is appropriately considered for this application because the uncertainty has negligible impact on RICT calculations.

Other PRA Assumptions and Sources of Modeling Uncertainty

The NRC staff evaluated the dispositions of the other potentially key PRA assumptions and sources of modeling uncertainty in Tables E9-1, E9-2, and E9-3 of LAR Enclosure 9. The NRC staff finds these dispositions to be appropriate, because these assumptions and uncertainties: (1) implemented a consensus model, (2) had a negligible impact on the PRA results and RICT calculations as demonstrated through sensitivity studies, (3) implemented a slight realistic conservatism that does not influence the PRA results, or (4) implemented a model that has extensive historical precedence.

Conclusions

The NRC staff determined that the licensee performed an adequate assessment of potential sources of PRA uncertainty, and the identification of the key PRA assumptions and sources of modeling uncertainty was appropriate and consistent with the guidance in NUREG-1855, Revision 1. Therefore, the NRC staff finds that the licensee has satisfied the guidance in RG 1.177, Revision 1 (Sections 2.3.4 and 2.3.5), and RG 1.174, Revision 3 (Section 2.2.2), and that the identification of PRA assumptions and treatment of model uncertainties for risk evaluation of extended CTs is appropriate for this application and consistent with the guidance identified in NEI 06-09-A.

3.1.4.1.5 PRA Results and Insights

The proposed LAR implements a process to determine TS RICTs rather than specific changes to individual TS CTs. Topical Report NEI 06-09-A requires periodic assessment of the risk incurred due to operation beyond the “front stop” CTs due to implementation of a RICT program and comparison to the guidance of RG 1.174, Revision 3, for small increases in risk.

As with other unique risk-informed applications, supplemental risk acceptance guidelines that complement the RG 1.174 guidance are appropriate. NEI 06-09-A instructs that configuration risk should be assessed to determine the RICT and establishes the criteria for incremental core damage probability (ICDP) and incremental large early release probability (ILERP) (consistent with that in RG 1.177 for ICCDP and ICLERP, respectively) on which to base the RICT. An ICDP of 1E-05 and an ILERP of 1E-06 are used as the risk measures for calculating individual RICTs. These limits are consistent with NUMARC 93-01, Revision 4F, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” dated April 27, 2018 (Reference 44). The use of these limits in NEI 06-09-A aligns the TS CTs with the risk management guidance used to support plant programs for the Maintenance Rule (10 CFR 50.65), and the NRC staff accepted these supplemental risk acceptance guidelines for RMTS programs in its approval of NEI 06-09-A.

Topical Report NEI 06-09-A, as modified by the limitations and conditions in the associated SE, instructs that the cumulative impact of implementation of an RMTS program be periodically assessed and shown to result in: (1) a total risk impact below 1E-05 per year for changes to CDF, (2) a total risk impact below 1E-06 per year for changes to LERF, and (3) the total CDF and total LERF must be reasonably shown to be less than 1E-04 per year and 1E-05 per year, respectively. The licensee indicated in Enclosure 5 of the LAR that the estimated total CDF and LERF meet the 1E-04 per year and 1E-05 per year criteria, respectively, of RG 1.174 consistent with the guidance in NEI 06-09-A and that these guidelines be satisfied whenever a RICT is implemented.

The licensee has incorporated NEI 06-09-A in the RICT program of TS 5.5.16, and therefore, can calculate the RICT consistently with its criteria and assesses the RICT program to assure any risk increases are small per the guidance of RG 1.174, Revision 3, and RG 1.177, Revision 1. Also, the licensee's estimates of the current total CDF and LERF meets the RG 1.174, Revision 3, guidelines. Therefore, the NRC staff finds that the licensee's RICT program is consistent with NEI 06-09-A guidance and is acceptable.

3.1.4.1.6 Implementation of the RICT Program

Because NEI 06-09-A involves the real time application of PRA results and insights by the licensee, the NRC staff reviewed the licensee's description of programs and procedures associated with implementation of the RICT program in LAR Enclosure 10. The administrative controls on the PRA and on changes to the PRA should provide confidence that the PRA results are reasonable, and the administrative controls on the plant personnel using the RICT should provide confidence that the RICT program will be appropriately applied.

The means for demonstrating the technical acceptability of the PRA models include assessment against the ASME/ANS PRA standards and RG 1.200, which includes guidance for performing peer reviews and focused-scope peer reviews. The technical acceptability of the PRA models is discussed in Enclosure 2, "Information Supporting Consistency with Regulatory Guide 1.200, Revision 2," and Enclosure 7, "PRA Model Update Process," of the LAR. According to LAR Enclosure 8, "Attributes of the Real Time Risk (RTR) Model," future changes made to the baseline PRA model, changes made to the baseline PRA model for translation to the online model, and changes made to the online model configuration files are controlled and documented by plant procedures.

Topical Report NEI 06-09-A specifies that the RMTS risk assessment process should be integrated into station-wide work control processes and defines the necessary attributes of the RMTS program structure. In the conduct of RMTS, procedural guidance is needed for conducting and using the results of the risk assessment. These procedures should specify the station functional organizations and personnel, including operations, engineering, work management and PRA personnel, responsible for each step of the procedures. The procedures should also clearly specify the process for calculating the applicable RICTs, implementing RMAs, conducting, reviewing, and approving decisions to exceed the front stop CT and remove equipment from service.

Enclosure 10, "Program Implementation," of the LAR describes the implementing programs and procedures and the associated personnel training. The licensee explained that a RICT program description and implementing procedures will be developed. The program description will establish the management responsibilities and general requirements for risk management, training, implementation, and monitoring of the RICT program. More detailed procedures will provide specific responsibilities, limitations, and instructions for implementing the RICT program. The program description and implementing procedures will incorporate the programmatic guidance for RMTS included in NEI 06-09-A. The program will be integrated with the existing Peach Bottom online work control process. Entry into the RICT program will require management approval prior to pre-planned activities and as soon as practicable following emergent conditions. These and other attributes that will be addressed in the RICT program are identified in the LAR. Because the licensee's procedures will be developed using the guidance in NEI 06-09-A, and will be subject to inspection by the NRC staff, the NRC staff concludes that the licensee's proposed development of appropriate implementing programs and procedures is acceptable.

The NRC staff concludes that the licensee will establish appropriate programmatic and procedural controls for its RICT program consistent with the guidance of NEI 06-09-A, Section 3.2.1.

Topical Report NEI 06-09-A specifies that stations implementing an RMTS program shall provide training, in the programmatic requirements associated with the RMTS program and of the individual RICT evaluations, to personnel responsible for determining TS operability decisions or conducting RICT assessments. NEI 06-09-A further specifies that training of plant personnel should be provided for organizations with functional responsibilities for performing or administering the CRMP (or RTR) commensurate with each position's responsibilities, in accordance with 10 CFR 50.120(b)(3) and other applicable regulations, within the RICT program, as described in NEI 06-09-A. In furtherance of its adherence to this guidance, the licensee identified the categories of plant personnel that will be trained and the different types of training that the different categories of plant personnel receive.

The NRC staff reviewed the description of the training program provided in the LAR and concluded that the program is consistent with the training guidance set forth in NEI 06-09-A. Therefore, the NRC staff finds that the licensee has proposed acceptable administrative controls on procedures and training for the RICT program.

3.1.4.1.7 Tier 1 Conclusions

The NRC staff reviewed the information provided by the licensee and concluded that the Tier 1 evaluation used to support the RICT program appropriately evaluates the impact of the proposed changes on plant operational risk, which includes the technical acceptability of the PRA models and their application to the proposed changes, and a review of the PRA results and insights. Therefore, the NRC staff finds that the licensee has satisfied the intent of the Tier 1 evaluation described in RG 1.177, Revision 1, and NEI 06-09-A.

3.1.4.2 Tier 2: Avoidance of Risk-Significant Plant Configurations

In the Tier 2 evaluation, the licensee should provide reasonable assurance that risk-significant plant equipment outage configurations will not occur when specific plant equipment is taken out of service in accordance with the proposed TS changes.

Topical Report NEI 06-09-A would not permit voluntary entry into high risk configurations, which would exceed instantaneous CDF and LERF limits of 1E-03 per year and 1E-04 per year, respectively. The guidance in NEI 06-09-A specifies that if the instantaneous CDF and LERF limits are exceeded for emergent conditions, then implementation of RMAs is needed. It further specifies the need for implementation of RMAs when the actual or anticipated risk accumulation during a RICT will exceed one tenth of the ICDP or ILERP limit (i.e., the RMAT). Such RMAs may include rescheduling planned activities to lower risk periods or implementing risk reduction measures. 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, Enclosure 12 of the LAR identifies three categories of RMAs (i.e., 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 RMAs will be implemented in accordance with plant procedures: (1) no later than the time at which the 1E-06 ICDP or 1E-07 ILERP thresholds are reached; (2) under

emergent conditions when the instantaneous CDF or LERF thresholds are exceeded; and (3) under emergent conditions, if the extent of condition is not known prior to exceeding the Completion Time, to account for the increased possibility of CCF (see Section 3.1.4.1.3.3 of this SE). Additionally, if an emergent event occurs in which an existing RMAT has been exceeded, the RMAs already implemented will be reevaluated to determine if new RMAs are appropriate. Enclosure 12 of the LAR, as supplemented by letters dated December 2, 2020, and February 4, 2021, also provides several examples of RMAs for several selected LCO conditions.

In Enclosure 12 of the LAR, the licensee further explained that determination of RMAs is performed using plant procedures and involves both qualitative and quantitative considerations based on configuration-specific risk. The development of RMAs is performed in a graded manner based on risk levels, with increasing risk levels prescribing more RMAs with increased scope, for example, protect equipment, brief operators, etc. For emergent issues, if the extent of condition is not known, RMAs related to the success of redundant and diverse SSCs and reducing the likelihood of initiating events relying on the affected function will be developed to address the increased likelihood of a common cause failure. If the planned activity or emergent condition includes an SSC that is identified to impact the FPRA, then FPRA specific RMAs associated with that SSC will be implemented per the current plant procedure. Examples of qualitatively determined RMAs, quantitatively determined RMAs, and common cause RMAs are provided in the LAR, as supplemented.

The NRC staff concludes the licensee's process for developing RMAs is in accordance with NEI 06-09-A because it utilizes configuration-specific risk insights and specifically considers the potential for CCFs in emergent conditions.

Based on the licensee's incorporation of NEI 06-09-A in the TS, as discussed in the LAR, and use of RMAs as discussed in LAR Enclosure 12, as supplemented, and because the proposed changes are consistent with the guidance of RG 1.174, Revision 3, and RG 1.177, Revision 1, 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

In the Tier 3 evaluation, the licensee should develop a program that ensures the risk impact of out-of-service equipment is appropriately evaluated prior to performing any maintenance activity.

Topical Report NEI 06-09-A addresses Tier 3 guidance by specifying that assessment of the RICT is to be based on the plant configuration of all SSCs that might impact the RICT, including safety-related and non-safety-related SSCs. If a risk-significant plant configuration exists, based on the expectation of exceeding a threshold of one tenth of the risk on which the RICT is based, compensatory measures and RMAs are required to be implemented. Therefore, the NRC staff finds that the RICT program provides an acceptable methodology to assess and address risk-significant configurations. Consistent with NEI 06-09-A, a reassessment of any plant configuration changes will need to be completed in a timely manner based on the more restrictive limit of any applicable TS action requirement or a maximum of 12 hours after the configuration change occurs.

Based on the licensee's incorporation of NEI 06-09-A in the TS, as discussed in the LAR, and use of RMAs as discussed in LAR Enclosure 12, as supplemented, and because the proposed changes are consistent with the Tier 3 guidance of RG 1.177, Revision 1, 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 licensee has demonstrated the technical acceptability and scope of its PRA models, and that the models can support implementation of the RICT program for determining CTs. In addition, the use of a bounding analysis for seismic and high-wind events is appropriate for this application. Proper consideration of key assumptions and sources of uncertainty have been made. The risk metrics are consistent with the approved methodology of NEI 06-09-A and the acceptance guidelines in RG 1.177, Revision 1, and RG 1.174, Revision 3. The RICT program is controlled administratively through plant procedures and training. The RICT program follows the NRC approved methodology in NEI 06-09-A. The NRC staff concludes that the RICT program satisfies the fourth key safety principle of RG 1.177 and is, therefore, acceptable.

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

RG 1.177, Revision 1, and RG 1.174, Revision 3, establish the need for an implementation and monitoring program to ensure that extensions to TS CTs do not degrade operational safety over time and that no adverse degradation occurs due to unanticipated degradation or common cause mechanisms. An implementation and monitoring program is intended to ensure that the impact of the proposed TS changes continues to reflect the reliability and availability of SSCs impacted by the changes. Revision 3 of RG 1.174 states that 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. According to LAR Enclosure 11, the SSCs in the scope of the RICT program are also in the scope of the Maintenance Rule. In response to RAI 1 in its letter dated January 29, 2021, the licensee described the approach and methods used for SSC performance monitoring as described in Regulatory Position C.3.2 referenced in RG 1.177, Revision 1, for meeting the fifth key safety principle. The NRC staff concludes that the licensee's Maintenance Rule monitoring programs will provide for evaluation and disposition of unavailability impacts incurred from implementation of the RICT program.

Section 3.3.3 of NEI 06-09-A instructs the licensee to track the risk associated with all entries beyond the "front stop" CT, and Section 2.3.1 provides a requirement for assessing cumulative risk, including a periodic evaluation of any increase in risk due to the use of the RMTS program to extend the CTs. According to LAR Enclosure 11, the licensee calculates cumulative risk at least every refueling cycle, but the recalculation period does not exceed 24 months, which is consistent with NEI 06-09-A. The licensee converts the cumulative ICDP and the ILERP into average annual values that are then compared to the acceptance guidelines of RG 1.174. If any acceptance guidelines are exceeded, corrective actions are taken to ensure that future plant operational risk is within the acceptance guidelines. This evaluation assures that RMTS program implementation meets RG 1.174 guidance for small risk increases.

The NRC staff concludes that the RICT program satisfies the fifth key safety principle of RG 1.177, Revision 1, and RG 1.174, Revision 3, because (1) the RICT program will monitor the average annual cumulative risk increase as described in NEI 06-09-A and use this average annual increase to ensure the program, as implemented, meets RG 1.174 guidance for small risk increases, and (2) all SSCs in scope of the RICT program are within the Maintenance Rule program, which is used to monitor changes to the reliability and availability of these SSCs.

3.2 Variations from TSTF-505

The NRC staff evaluated the proposed use of RICTs in the variations stated above in Section 2.2.4 in conjunction with evaluating the proposed use of RICTs in each of the individual LCO, Required Actions, and CTs stated above in Section 2.2.3. The NRC staff's evaluation of the licensee's proposed use of RICTs in the variations against the key safety principles is discussed above in Sections 3.1.1 through 3.1.5. Based on the above Sections 3.1.1 through 3.1.5, the NRC staff finds that each of the five key principles in RG 1.177, Revision 1, and RG 1.174, Revision 3, have been met and concludes that the proposed variations are acceptable.

3.2.1 Proposed Changes to TSs not associated with TSTF-505, Revision 2

For several of the Section 3.3 TSs pertaining to instrumentation, the licensee proposed a revised Note for loss of function that differs from TSTF-505, Revision 2. TSTF-505, Revision 2 specifies the addition of a Note that reads, "[n]ot applicable when [all] required [channels] are inoperable." The licensee stated that because the loss of function is dependent upon not only the number of inoperable channels, but also the combination of inoperable channels within the trip systems, the licensee replaced the TSTF-505 Note with a Note which reads, "[o]nly applicable when a loss of function has not occurred." The NRC staff reviewed the proposal and finds that the note accomplishes the intended purpose of the TSTF-505 Note and is, therefore, acceptable.

The licensee proposed to correct a minor editorial error in the wording of the Unit 3 LCO 3.8.7, Condition B, to make it consistent with the wording in the same LCO Condition for Unit 2. The word "required" is missing in the Unit 3 LCO 3.8.7, Condition B. Therefore, the licensee proposes the following wording for LCO 3.8.7, Condition B, for Unit 3: "[o]ne required Unit 2 DC electrical power distribution subsystem inoperable." The NRC staff reviewed this correction and finds it acceptable as it is administrative and makes the LCOs consistent between units.

The licensee proposed to make a minor editorial change to the Required Action in the new proposed Example 1.3-8 relative to the Example 1.3-8 provided in TSTF-505, Revision 2. TSTF-505, Revision 2, Example 1.3-8 provides a standard default Condition of "Required Action and associated Completion Time not met," with a Required Action of "Be in MODE 3 [in 6 hours] AND Be in MODE 5 [in 36 hours]." However, the typical default Required Action found in TS Section 1.3 Examples as well as TS Section 3 LCOs is "Be in MODE 3 [in 6 hours] AND Be in MODE 4 [in 36 hours]." Therefore, the licensee specifies MODE 4 rather than MODE 5 in the Required Action of the default Condition in the new proposed Example 1.3-8. The NRC staff reviewed this proposal and finds that this change is editorial in nature and does not affect the applicability of TSTF-505, Revision 2 and is, therefore, acceptable.

The TSTF-505, Revision 2 insert for the proposed RICT program, item (e), describes requirements regarding "risk assessment approaches and methods" as it relates to this application. Within this item is the statement that "[m]ethods to assess the risk from extending the completion times must be PRA methods used to support this license amendment, or other methods …." The licensee proposed to clarify the statement to read, "[m]ethods to assess the risk from extending the completion times must be PRA methods approved for use with this program in Amendment No. [XXX], or other methods …." The NRC staff reviewed this proposal and finds that the change clarifies the statement and does not affect the applicability of TSTF-505, Revision 2 and is, therefore, acceptable.

3.3 Technical Specification Administrative Controls Section

The NRC staff reviewed the licensee's proposed addition of a new program, the RICT program, to the Administrative Controls section of the TS. The NRC staff evaluated the elements of the new program to ensure alignment with the requirements in 10 CFR 50.36(c)(5) and to ensure the programmatic controls are consistent with the RICT program described in NEI 06-09-A.

Technical Specification 5.5.16 requires that the RICT program be implemented in accordance with NEI 06-09-A. This is acceptable because NEI 06-09-A establishes an appropriate framework for an acceptable RICT program.

The TS states that a RICT may not exceed 30 days. The NRC staff determined that the 30-day limit is appropriate because it allows sufficient time to restore SSCs to operable status while avoiding excessive out-of-service times for TS SSCs.

The TS states that the RICT may only be used in Operational Conditions (or Modes) 1 and 2. This provision ensures that the RICT is only used for determination of CDF and LERF for modes of operation modeled in the PRA.

The TS requires that while in a RICT, any change in plant configuration as defined in NEI 06-09-A must be considered for the effect on the RICT. The TS also specifies time limits for determining the effect on the RICT. These time limitations are consistent with those specified in NEI 06-09-A.

The TS contains requirements for the treatment of CCFs for emergent conditions in which the common cause evaluation is not complete. The requirements are to either (a) numerically account for the increased probability of CCF, or (b) implement RMAs that support redundant or diverse SSCs that perform the functions of the inoperable SSCs and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs. Key Principle 2 of risk-informed decision-making is to assure that the change is consistent with defense-in-depth philosophy. The seven considerations supporting the evaluation of the impact of the change on defense-in-depth are discussed in RG 1.174, Revision 3, including one to preserve adequate defense against potential CCF. The NRC staff finds that numerically accounting for an increased probability of failure will shorten the estimated RICT based on the particular SSCs involved, thereby, limiting the time when a CCF could affect risk. Alternatively, implementing actions that can increase the availability of other mitigating SSCs or decrease the frequency of demand on the affected SSCs will decrease the likelihood that a CCF could affect risk. The NRC staff concludes that both the quantitative and the qualitative actions minimize the impact of CCF, and therefore, support meeting Key Principle 2 as described in RG 1.174, Revision 3. These methods either limit the exposure time, help ensure the availability of alternate SSCs, or decrease the probability of plant conditions requiring the safety function to be performed. The NRC staff finds that these methods contribute to maintaining defense-in-depth because the methods limit the exposure time or ensure the availability of alternate SSCs.

The TS contains a provision that risk assessment approaches and methods used 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 RG 1.200, Revision 2. Methods to assess the risk from extending the CTs must be PRA methods used to

support this LAR, or other methods approved by the NRC for generic use. As stated in the NRC staff's SE for NEI 06-09-A:

> TR NEI 06-09, Revision 0, requires an evaluation of the PRA model used to support the RMTS against the requirements of RG 1.200, Revision 1, and ASME RA-S-2002, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications", for capability Category II. This assures that the PRA model is technically adequate for use in the assessment of configuration risk. This capability category of PRA is sufficient to support the evaluation of risk associated with out-of-service SSCs and establishing risk-informed CTs.

Technical Specification 5.5.16 was updated to reflect the current revision of RG 1.200, which incorporates ASME/ANS RA-Sa-2009 by reference.

The NRC staff's SE for NEI 06-09-A also states:

> As part of its review and approval of a licensee's application requesting to implement the RMTS, the NRC staff intends to impose a license condition that will explicitly address the scope of the PRA and non-PRA methods approved by the NRC staff for use in the plant-specific RMTS program. If a licensee wishes to change its methods, and the change is outside the bounds of the license condition, the licensee will need NRC approval, via a license amendment, of the implementation of the new method in its RMTS program. The focus of the NRC staff's review and approval will be on the technical adequacy of the methodology and analyses relied upon for the RMTS application.

This limitation and condition is being relocated from a license condition to the Administrative Controls section of the TS. Proposed TS 5.5.16 restates this limitation and condition from the NRC staff's SE in language that is appropriate for the Administrative Controls section of the Peach Bottom TS. This constraint appropriately requires the licensee to utilize the risk assessment approaches and methods previously approved by the NRC and/or incorporated in the RICT program, and requires prior NRC approval for any change in PRA methods to assess risk that are outside those approval boundaries. The NRC staff finds that this requirement is appropriately reflected in the Administrative Controls section of the Peach Bottom TS.

The regulations in 10 CFR 50.36(c)(5) require the TS to contain administrative controls providing "provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner." The NRC staff has determined that Administrative Controls section of the TS will assure operation of the facility in a safe manner when the facility uses the RICT program. Therefore, the NRC staff has determined that the requirements of 10 CFR 50.36(c)(5) are satisfied.

4.0 ADDITIONAL CHANGES TO THE OPERATING LICENSE

In Attachment 7 of the LAR dated May 29, 2020, the licensee proposed the following license condition to be added to Subsequent Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom, Units 2 and 3, respectively:

> PRA Model Updates to Support Implementation of the Risk Informed Completion Time (RICT) Program
>
> Exelon is approved to implement TSTF-505, Revision 2, modifying the Technical Specification requirements related to Completion Times (CT) for Required Actions to provide the option to calculate a longer, risk-informed CT. The methodology for using the new Risk-Informed Completion Time (RICT) Program is described in NEI 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007.
>
> Exelon will complete the implementation items listed in Attachment 6 of Exelon letter to the NRC dated May 29, 2020, prior to implementation of the RICT Program. All issues identified in the attachment will be addressed and any associated changes will be made, focused-scope peer reviews will be performed on changes that are PRA upgrades as defined in the PRA standard (ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2), and any findings will be resolved and reflected in the PRA of record prior to implementation of the RICT Program.

The NRC staff notes that prior approval would be required for a change to the RICT program or the implementation of the RICT program as described in the Administrative Controls section of TS 5.5.16. Prior NRC approval will also be required for changes to the PRA methods that have not been previously approved by the NRC in this SE or methods approved for generic use. The NRC staff finding on the acceptability of the implementation of the RICT program for the TS LCOs in this SE is dependent on the completion of the implementation items listed below:

> The table below identifies the items that are required to be completed prior to implementation of the Risk Informed Completion Time (RICT) Program at Peach Bottom Atomic Power Station, Units 2 and 3. All issues identified below will be addressed and any associated changes will be made, focused-scope peer reviews will be performed on changes that are PRA upgrades as defined in the PRA standard (ASME/ANS RA-Sa-2009, as endorsed by RG 1.200, Revision 2), and any findings will be resolved and reflected in the PRA of record prior to implementation of the RICT Program.

Source	Description	Implementation Item
Enclosure 1, Table E1-1, TS 3.6.1.5.C	One line with one or more reactor building-to-suppression chamber vacuum breakers inoperable for opening.	Failure of the reactor building-to-suppression chamber vacuum breakers to open is currently not modeled in the PRA. Prior to implementation, logic will be added to the PRA to model the impact of these vacuum breakers failing to open.

Source	Description	Implementation Item
Enclosure 1, Table E1-1, 3.6.1.6.A	One required suppression chamber-to-drywell vacuum breaker inoperable for opening.	Failure of the suppression chamber-to-drywell vacuum breakers to open is currently not modeled in the PRA. Prior to implementation, logic will be added to the PRA to model the impact of these vacuum breakers failing to open.
Enclosure 9, Table E9-3, Task #2	Component Selection	The Standby Liquid Control (SLC) out of service cases may not represent the true delta risk without having the appropriate cable data for that system. The SLC cable data will be obtained and the Fire PRA model will be updated to account for the SLC cabling and potential random Anticipated Transient Without Scram (ATWS) scenarios.

The NRC staff finds that the licensee's proposed incorporation of these measures in a license condition, and the implementation of the items referenced above prior to implementation of the RICT program is acceptable because they adequately implement the RICT program using models, methods, and approaches consistent with applicable guidance that are acceptable to the NRC. For each implementation item, the licensee and the NRC staff have reached a satisfactory resolution involving the level of detail and main attributes that will be incorporated into the program upon completion. The NRC staff, through an onsite audit or during future inspections, may choose to examine the closure of the implementation items, with the expectation that any issues discovered during this review, or concerns with regard to adequate completion of the implementation items, would be tracked and dispositioned appropriately under the licensee's corrective action program and could be subject to appropriate NRC enforcement action.

5.0 SUMMARY

The NRC staff finds that the licensee's proposed implementation of the RICT Program for the identified scope of Required Actions is consistent with the guidance of NEI 06-09-A. The licensee's methodology for assessing the risk impact of extended CTs, including the individual CT extension impacts in terms of ICDP and ILERP, and the overall program impact in terms of ΔCDF and ΔLERF, is accomplished using internal events (includes internal floods) and fire PRA models of sufficient scope and technical acceptability based on consistency with the guidance of RG 1.200, Revision 2. For seismic and high-wind hazards, the licensee will use bounding analyses in accordance with NEI 06-09-A guidance and the Administrative Control TS. The RICT calculation uses the PRA model as translated into the CRMP [Real-Time Risk] tool, and the licensee has an acceptable process in place to ensure the quality of the translation. In addition, the NRC staff finds that the proposed implementation of the RICT Program addresses the RG 1.177 defense-in-depth philosophy and safety margins to ensure that they are adequately maintained and includes adequate administrative controls as well as performance monitoring programs.

The regulation at 10 CFR 50.36(a)(1) states, in part: "[a] summary statement of the bases or reasons for such specifications other than those covering administrative controls shall also be included in the application, but shall not become part of the technical specifications." Accordingly, along with the proposed TS changes, the licensee also submitted TS Bases changes that correspond to the proposed TS changes, to provide the reasons for those TSs. The NRC staff found the TS Bases changes to be consistent with the bases changes in the model TSTF-505, Revision 2, application dated July 2, 2018.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Commonwealth of Pennsylvania official was notified of the proposed issuance of the amendment on March 15, 2021. The Commonwealth official had no comments.

7.0 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 Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on July 14, 2020 (85 FR 42438). 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.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the 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 of Issuance: May 14, 2021

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 - ISSUANCE OF AMENDMENTS NOS. 338 AND 341, RE: ADOPTION OF TSTF-505, REVISION 2, "PROVIDE RISK-INFORMED EXTENDED COMPLETION TIMES – RITSTF INITIATIVE 4B" (EPID L-2020-LLA-0120) DATED MAY 14, 2021

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