

Facility: Peach Bottom Atomic Power Station		Date of Examination: 06/01/21
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R/D	G2.1.32 (3.8), Evaluation of High CRD Temperatures on Control Rod Scram Time (PLOR-348C)
Conduct of Operations	R/M	G2.1.5 (2.9), Application of Work Hour Rules (PLOR-391C)
Equipment Control	R/D	G2.2.6 (3.0), Initiating a Temporary Procedure Change (PLOR-245C)
Radiation Control		Not Required
Emergency Plan	S/N	G2.4.39 (3.9), Perform State/Local Notifications for a Declared Emergency (PLOR-418C)
<p>NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).</p>		
<p>* Type Codes and Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes) 2 (N)ew or (M)odified from bank (≥ 1) 2 (P)revious 2 exams (≤ 1, randomly selected) 0</p>		

Facility: <u>Peach Bottom Atomic Power Station</u> Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>	Date of Examination: <u>06/01/21</u> Operating Test Number: <u>1</u>	
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R/D	G2.1.25 (4.2), Perform SRO Review of Completed Surveillance (PLOR-393C)
Conduct of Operations	R/M	G2.1.7 (4.7), Resolution of Thermal Limit Violation (PLOR-218C)
Equipment Control	R/N	G2.2.6 (3.6), Approve a Partial Procedure (PLOR-416C)
Radiation Control	R/N	G2.3.14 (3.8), Review and Authorize Issuance of Thyroid Blocking Agent (KI) (PLOR-417C)
Emergency Plan	S/M	G2.4.41 (4.6), EAL Classification and State/Local Notifications for SAE – Control Room Evacuation (PLOR-180C)
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
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Facility: <u>PBAPS</u>	Date of Examination: <u>06/01/21</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test Number: <u>1</u>

Control Room Systems: 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U		
System/JPM Title	Type Code*	Safety Function
a. 295037 EA1.01 4.6/4.6, Insert Control Rods using Individual Scram Test Switches (PLOR-412CA)	A, N, S	1
b. 295001 A4.02 3.9/3.7, Start the "C" Reactor Feedwater Pump with Vessel Level Control Through AO-8091 (PLOR-012C)	M, L, S	2
c. 239001 A4.01 4.2/4.0, Perform a Slow Closure and Restoration of a Main Steam Isolation Valve (PLOR-413C)	N, S	3
d. 202001 A4.04 3.8/3.8, Raise Reactor Power with Recirculation Flow (Alternate Path) (PLOR-396CA)	A, D, S, P	4
e. 295024 EA1.11 4.2/4.2, Spray the Containment using HPSW per T-205 (PLOR-079C)	M, EN, S	5
f. 262001 A4.04 3.6, Transfer House Loads to the Unit Auxiliary Transformer (PLOR-039C)	D, S	6
g. 201005 A2.02 2.8/3.2, Withdraw Control Rod (Alternate Path – Loss of Control Rod Position Indication) (PLOR-415CA)	A, N, S	7
h. 261000 A2.05 3.0/3.1, Manually Place SGBT on the Equipment Cell Exhaust (Alternate Path – 1 ST Fan Fails to Align) (PLOR-265CA)	A, EN, D, S	9

In-Plant Systems: 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. 295029 EA2.01 3.9/3.9, Lowering Torus Level using the Torus Water Filter Pump (PLOR-409P)	N, E, R	5
j. 239002 A2.03 4.1/4.2, Remove Fuses per OT-114 for Stuck Open SRV (PLOR-191P)	M, E, R	3
k. 201001 A2.06 2.9/2.9, Loss of CRD Regulating Function (Outside Control Room Actions) (PLOR-073P)	D, E, R	1

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.	
* Type Codes	Criteria for R /SRO-I/SRO-U

(A)lternate path	4-6/4-6 /2-3	4
(C)ontrol room		
(D)irect from bank	$\leq 9/\leq 8/\leq 4$	4
(E)mergency or abnormal in-plant	$\geq 1/\geq 1/\geq 1$	3
(EN)gineered safety feature	$\geq 1/\geq 1/\geq 1$ (control room system)	2
(L)ow-Power/Shutdown	$\geq 1/\geq 1/\geq 1$	1
(N)ew or (M)odified from bank including 1(A)	$\geq 2/\geq 2/\geq 1$	7(3)
(P)revious 2 exams	$\leq 3/\leq 3/\leq 2$ (randomly selected)	1
(R)CA	$\geq 1/\geq 1/\geq 1$	3
(S)imulator		

Facility: <u>PBAPS</u>	Date of Examination: <u>06/01/21</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test Number: <u>1</u>

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a. 295037 EA1.01 4.6/4.6, Insert Control Rods using Individual Scram Test Switches (PLOR-412CA)	A, N, S	1
b. 295001 A4.02 3.9/3.7, Start the "C" Reactor Feedwater Pump with Vessel Level Control Through AO-8091 (PLOR-012C)	M, L, S	2
c. 239001 A4.01 4.2/4.0, Perform a Slow Closure and Restoration of a Main Steam Isolation Valve (PLOR-413C)	N, S	3
d. 202001 A4.04 3.8/3.8, Raise Reactor Power with Recirculation Flow (Alternate Path) (PLOR-396CA)	A, D, S, P	4
e. 295024 EA1.11 4.2/4.2, Spray the Containment using HPSW per T-205 (PLOR-079C)	M, EN, S	5
f. Not Required		
g. 201005 A2.02 2.8/3.2, Withdraw Control Rod (Alternate Path – Loss of Control Rod Position Indication) (PLOR-415CA)	A, N, S	7
h. 261000 A2.05 3.0/3.1, Manually Place SBT on the Equipment Cell Exhaust (Alternate Path – 1 ST Fan Fails to Align) (PLOR-265CA)	A, EN, D, S	9

In-Plant Systems: * 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. 295029 EA2.01 3.9/3.9, Lowering Torus Level using the Torus Water Filter Pump (PLOR-409P)	N, E, R	5
j. 239002 A2.03 4.1/4.2, Remove Fuses per OT-114 for Stuck Open SRV (PLOR-191P)	M, E, R	3
k. 201001 A2.06 2.9/2.9, Loss of CRD Regulating Function (Outside Control Room Actions) (PLOR-073P)	D, E, R	1

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for R /SRO-I/SRO-U	

(A)lternate path	4-6/4-6 /2-3	4
(C)ontrol room		
(D)irect from bank	$\leq 9/\leq 8/\leq 4$	3
(E)mergency or abnormal in-plant	$\geq 1/\geq 1/\geq 1$	3
(EN)gineered safety feature	$\geq 1/\geq 1/\geq 1$ (control room system)	2
(L)ow-Power/Shutdown	$\geq 1/\geq 1/\geq 1$	1
(N)ew or (M)odified from bank including 1(A)	$\geq 2/\geq 2/\geq 1$	7(3)
(P)revious 2 exams	$\leq 3/\leq 3/\leq 2$ (randomly selected)	1
(R)CA	$\geq 1/\geq 1/\geq 1$	3
(S)imulator		

Simulation Facility Peach BottomScenario No. #1Op Test No. 2021 NRC

Examiners _____

Operators CRS (SRO)

URO (ATC)

PRO (BOP)

Initial Conditions

IC-71 Approximately 3-4% power

Turnover

- Unit 2 startup is in progress.
- Reactor Power is approximately 3-4% with direction to continue to raise Reactor power with control rod withdrawal using GP-2-2.
- Nitrogen inerting of the Primary Containment is to be commenced. The PRO will begin inerting the Primary Containment following shift turnover.

Critical Tasks

Critical Task 1: Prior to reaching 450 psig, close the Inboard and/or Outboard MSIVs to stop Reactor Depressurization.

Critical Task 2: Inhibit ADS before an automatic depressurization occurs.

Critical Task 3: Perform an Emergency Blowdown when RPV water level cannot be restored and maintained above -172", or within 10 minutes of dropping below -172".

Event No.	Malfunction No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Secure the Mechanical Vacuum Pump
2	See Scenario Guide	R URO CRS	Raise reactor power by withdrawing control rods.
3	See Scenario Guide	C URO TS/C CRS	Control Rod Drift/URO inserts rod
4	See Scenario Guide	TS CRS	DW Pressure Instrument Failure
5	See Scenario Guide	C PRO C/TS CRS	"A" Core Spray loop spuriously starts / PRO secures pumps and CRS enters Tech Specs.

Appendix D**Scenario Outline****ES-D-1**

6	See Scenario Guide	C	ALL	Pressure Regulator Failure/Scram/T-101 Entry	
7	See Scenario Guide	M	ALL	Recirc Water Leak in PC	
8	See Scenario Guide	C	URO CRS	HPCI Fails to Start	
9	See Scenario Guide	C	URO CRS	HPCI/RCIC Trip	
10	See Scenario Guide	C	URO CRS	CRD Pump Trip	

* **(N)**ormal, **(R)**eactivity, **(I)**nstrument, **(C)**omponent, **(M)**ajor, **(TS)** Tech Spec

Simulation Facility Peach BottomScenario No. #2Op Test No. 2021 NRC

Examiners _____

Operators CRS (SRO)

URO (ATC)

PRO (BOP)

Initial Conditions IC-14, 100% power

Turnover • Reactor power is 100% power.

Critical Tasks **Critical Task #1:** Scram the reactor or restore charging header pressure above 940 psig within 20 minutes of charging header pressure lowering below 940 psig and 2 or more accumulator alarms in.

Critical Task #2: Perform an RPV Blowdown within 10 minutes of the second Reactor Building area temperature exceeding an Action Level.

Event No.	Malfunction No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Perform SO 28B.1.A to start a cooling tower
2	See Scenario Guide	C URO CRS	CRD Pump Trip
3	See Scenario Guide	R URO CRS C	Main turbine high vibrations require lowering power to address the vibrations
4	See Scenario Guide	C ALL TS CRS	ADS Valve Fails Open. CRS enters Tech Specs.
5	See Scenario Guide	C PRO CRS TS/C	Shutdown E-4 diesel generator following inadvertent start. CRS enters Tech Specs.
6	See Scenario Guide	C ALL	Loss of TBCCW
7	See Scenario Guide	C ALL	Loss of #2 Bus/T-101 Entry
8	See Scenario Guide	M ALL	RWCU Steam Leak/T-103 Entry

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec

Appendix D**Scenario Outline****ES-D-1****Simulation Facility** Peach Bottom**Scenario No.** #4**Op Test No.** 2021 NRC**Examiners** _____**Operators** CRS (SRO)

URO (ATC)

PRO (BOP)

**Initial
Conditions**

IC-14, 100% power (Reactor power is lowered to 97% power)

Turnover

- Reactor power is approximately 97% for rod coupling checks.

**Critical
Tasks****Critical Task #1: Attempt to shutdown the reactor by performing one or more of the following:**

- T-213, Scram Solenoid Deenergization
- T-214, Isolating and Venting the Scram Air Header
- T-220, Driving Control Rods during a Failure to Scram
- Injecting Standby Liquid before Torus Temperature exceeds 110°F

Critical Task #2: Perform T-240, Termination and Prevention of Injection into the RPV to minimize thermal-hydraulic instabilities (THI) until RPV water level is below -60".

Event No.	Malfunction No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Swap RBCCW Pumps
2	See Scenario Guide	C URO TS/C CRS	Control rod becomes uncoupled / attempt to recouple using ON-105
3	See Scenario Guide	R URO CRS	Raise reactor power with recirculation flow.
4	See Scenario Guide	C PRO TS/C CRS	Loss of power to RPS breaker and transfer of RPS to alternate power supply. CRS enter/apply Technical Specifications.
5	See Scenario Guide	C ALL	Loss of RBCCW

6	See Scenario Guide	C	URO CRS	Both Recirc Pumps Trip
7	See Scenario Guide	M	ALL	ATWS
8	See Scenario Guide	C	URO CRS	SBLC Pump Trip

* **(N)**ormal, **(R)**eactivity, **(I)**nstrument, **(C)**omponent, **(M)**ajor, **(TS)** Tech Spec

Facility Name:		Date of Exam:															
Tier	Group	RO K/A Category Points											SRO-Only Points				
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total	
1. Emergency & Abnormal Plant Evolutions	1	4	3	4	N/A			3	3	N/A			3	20	4	3	7
	2	1	2	0				2	1				1	7	2	1	3
	Tier Totals	5	5	4				5	4				4	27	6	4	10
2. Plant Systems	1	3	2	3	2	2	2	3	3	3	1	2	26	3	2	5	
	2	1	1	1	1	2	1	2	1	0	1	1	12	0	2	3	
	Tier Totals	4	3	4	3	4	3	5	4	3	2	3	38	5	3	8	
3. Generic Knowledge and Abilities Categories					1	2	3	4	10			1	2	3	4	7	
					3	3	2	2				2	2	1	2		

Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two). (One Tier 3 Radiation Control K/A is allowed if the K/A is replaced by a K/A from another Tier 3 Category).

2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.

3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.

4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.

5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.

7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.

8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.

9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

G* Generic K/As

ES-401		BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)										
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4				0 2			Ability to operate and/or monitor the following as they apply to Partial or Complete Loss of Forced Core Flow Circulation: RPS	3.3	1	
295003 Partial or Complete Loss of AC / 6	0 3						Knowledge of the operational implications of the following concepts as they apply to Partial or Complete Loss of AC: Under voltage/degraded voltage effects on electrical loads	2.9	1	
295004 Partial or Total Loss of DC Pwr / 6		0 1					Knowledge of the interrelations between Partial or Total Loss of DC Pwr and the following: Battery charger	3.1	1	
295005 Main Turbine Generator Trip / 3			0 3				Knowledge of the reasons for the following responses as they apply to Main Turbine Generator Trip: Feedwater temperature decrease	2.8	1	
295006 SCRAM / 1						01. 19	Ability to use plant computers to evaluate system or component status.	3.9	1	
295016 Control Room Abandonment / 7				0 7			Ability to operate and/or monitor the following as they apply to Control Room Abandonment: Control room/local control transfer mechanisms	4.2	1	
295018 Partial or Total Loss of CCW / 8		0 1					Knowledge of the interrelations between Partial or Total Loss of CCW and the following: System loads	3.3	1	
295019 Partial or Total Loss of Inst. Air / 8			0 3				Knowledge of the reasons for the following responses as they apply to Partial or Total Loss of Inst. Air: Service air isolations; Plant-Specific	3.2	1	
295021 Loss of Shutdown Cooling / 4			0 1				Knowledge of the reasons for the following responses as they apply to Loss of Shutdown Cooling: Raising reactor water level	3.3	1	
295023 Refueling Acc / 8		0 6					Knowledge of the interrelations between Refueling Accidents and the following: Containment ventilation: Mark-III	3.4	1	
295024 High Drywell Pressure / 5				1 4			Ability to operate and/or monitor the following as they apply to High Drywell Pressure: Drywell ventilation system	3.4	1	
295025 High Reactor Pressure / 3					0 1		Ability to determine and/or interpret the following as they apply to High Reactor Pressure: Reactor pressure	4.3	1	
295026 Suppression Pool High Water Temp. / 5	0 2						Knowledge of the operational implications of the following concepts as they apply to Suppression Pool High Water Temp.: Steam condensation	3.5	1	
295027 High Containment Temperature / 5									0	
295028 High Drywell Temperature / 5					0 3		Ability to determine and/or interpret the following as they apply to High Drywell Temperature: Reactor water level	3.7	1	
295030 Low Suppression Pool Wtr Lvl / 5						04. 20	Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	1	
295031 Reactor Low Water Level / 2			0 2				Knowledge of the reasons for the following responses as they apply to Reactor Low Water Level: Core coverage	4.4	1	
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	0 5						Knowledge of the operational implications of the following concepts as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Cold shutdown boron weight: Plant-Specific	3.4	1	
295038 High Off-site Release Rate / 9	0 2						Knowledge of the operational implications of the following concepts as they apply to High Off-site Release Rate: Protection of the general public	4.2	1	
600000 Plant Fire On Site / 8					0 2		Ability to determine and/or interpret the following as they apply to Plant Fire On Site: Damper position	2.8	1	
700000 Generator Voltage and Electric Grid Disturbances / 6						02. 36	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	3.1	1	
K/A Category Totals:	4	3	4	3	3	3	Group Point Total:		20	

ES-401		BWR Examination Outline						Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3									0
295007 High Reactor Pressure / 3									0
295008 High Reactor Water Level / 2				0 8			Ability to operate and/or monitor the following as they apply to High Reactor Water Level: Feedwater system	3.5	1
295009 Low Reactor Water Level / 2									0
295010 High Drywell Pressure / 5									0
295011 High Containment Temp / 5									0
295012 High Drywell Temperature / 5									0
295013 High Suppression Pool Temp. / 5				0 1			Ability to operate and/or monitor the following as they apply to High Suppression Pool Temp.: Suppression pool cooling	3.9	1
295014 Inadvertent Reactivity Addition / 1									0
295015 Incomplete SCRAM / 1		0 4					Knowledge of the interrelations between Incomplete SCRAM and the following: RPS	4.0	1
295017 High Off-site Release Rate / 9									0
295020 Inadvertent Cont. Isolation / 5 & 7									0
295022 Loss of CRD Pumps / 1					0 2		Ability to determine and/or interpret the following as they apply to Loss of CRD Pumps: CRD system status	3.3	1
295029 High Suppression Pool Wtr Lvl / 5									0
295032 High Secondary Containment Area Temperature / 5									0
295033 High Secondary Containment Area Radiation Levels / 9									0
295034 Secondary Containment Ventilation High Radiation / 9		0 3					Knowledge of the interrelations between Secondary Containment Ventilation High Radiation and the following: SBTG/FRVS: Plant-Specific	4.3	1
295035 Secondary Containment High Differential Pressure / 5	0 2						Knowledge of the operational implications of the following concepts as they apply to Secondary Containment High Differential Pressure: Radiation release	3.7	1
295036 Secondary Containment High Sump/Area Water Level / 5									0
500000 High CTMT Hydrogen Conc. / 5						04 01	Knowledge of EOP entry conditions and immediate action steps.	4.6	1
K/A Category Totals:	1	2	0	2	1	1	Group Point Total:		7

ES-401		BWR Examination Outline												Form ES-401-1	
Plant Systems - Tier 2/Group 1 (RO)															
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	
203000 RHR/LPCI: Injection Mode					0 1							Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: Injection Mode: Testable check valve operation	2.7	1	
205000 Shutdown Cooling			0 2			0 8						Knowledge of the effect that a loss or malfunction of the Shutdown Cooling will have on following: Reactor water level: Plant-Specific; Knowledge of the effect that a loss or malfunction of the following will have on the Shutdown Cooling: RHR service water: Plant-Specific	3.2; 3.5	2	
206000 HPCI											04 31	Knowledge of annunciator alarms, indications, or response procedures.	4.2	1	
207000 Isolation (Emergency) Condenser														0	
209001 LPCS									0 3			Ability to monitor automatic operations of the LPCS including: System pressure	3.5	1	
209002 HPCS														0	
211000 SLC											01 31	Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.6	1	
212000 RPS	1 2											Knowledge of the physical connections and/or cause-effect relationships between RPS and the following: Reactor/turbine pressure control system: Plant-Specific	3.4	1	
215003 IRM		0 1										Knowledge of electrical power supplies to the following: IRM channels/detectors	2.5	1	
215004 Source Range Monitor			0 4									Knowledge of the effect that a loss or malfunction of the Source Range Monitor will have on following: Reactor power and indication	3.7	1	
215005 APRM / LPRM	0 3											Knowledge of the physical connections and/or cause-effect relationships between APRM / LPRM and the following: RBM: Plant-Specific	3.4	1	
217000 RCIC						0 3						Knowledge of the effect that a loss or malfunction of the following will have on the RCIC: Suppression pool water supply	3.5	1	
218000 ADS								0 6	0 3			Ability to (a) predict the impacts of the following on the ADS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS initiation signals present; Ability to monitor automatic operations of the ADS including: ADS valve acoustical monitor noise: Plant-Specific	4.2; 3.7	2	
223002 PCIS/Nuclear Steam Supply Shutoff							0 1		0 1			Ability to predict and/or monitor changes in parameters associated with operating the PCIS/Nuclear Steam Supply Shutoff controls including: System indicating lights and alarms; Ability to manually operate and/or monitor in the control room: Valve closures	3.5; 3.6	2	
239002 SRVs								0 1				Ability to (a) predict the impacts of the following on the SRVs; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Stuck open vacuum breakers	3.0	1	
259002 Reactor Water Level Control				0 6								Knowledge of Reactor Water Level Control design feature(s) and/or interlocks which provide for the following: Control signal failure	3.1	1	
261000 SGTS									0 1			Ability to monitor automatic operations of the SGTS including: System flow	3.2	1	
262001 AC Electrical Distribution							0 4					Ability to predict and/or monitor changes in parameters associated with operating the AC Electrical Distribution controls including: Load currents	2.7	1	
262002 UPS (AC/DC)			1 7	0 1								Knowledge of the effect that a loss or malfunction of the UPS (AC/DC) will have on following: Process monitoring: Plant-Specific; Knowledge of UPS (AC/DC) design feature(s) and/or interlocks which provide for the following: Transfer from preferred power to alternate power supplies	2.9; 3.1	2	
263000 DC Electrical Distribution							0 1					Ability to predict and/or monitor changes in parameters associated with operating the DC Electrical Distribution controls including: Battery charging/discharging rate	2.5	1	
264000 EDGs	0 4				0 5							Knowledge of the physical connections and/or cause-effect relationships between EDGs and the following: Emergency generator cooling water system; Knowledge of the operational implications of the following concepts as they apply to EDGs: Paralleling A.C. power sources	3.2; 3.4	2	
300000 Instrument Air		0 1										Knowledge of electrical power supplies to the following: Instrument air compressor	2.8	1	
400000 Component Cooling Water							0 1					Ability to (a) predict the impacts of the following on the Component Cooling Water; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of CCW pump	3.3	1	
K/A Category Totals:	3	2	3	2	2	2	3	3	3	1	2	Group Point Total:		26	

BWR Examination Outline											Form ES-401-1			
Plant Systems - Tier 2/Group 2 (RO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic	0	3										Knowledge of the physical connections and/or cause-effect relationships between CRD Hydraulic System and the following: Recirculation pumps (seal purge); Plant-Specific	3.1	1
201002 RMCS						0	1					Knowledge of the effect that a loss or malfunction of the following will have on the RMCS: Select matrix power	2.5	1
201003 Control Rod and Drive Mechanism						0	2					Ability to predict and/or monitor changes in parameters associated with operating the Control Rod and Drive Mechanism controls including: CRD drive pressure	2.8	1
201004 RSCS														0
201005 RCIS														0
201006 RWM														0
202001 Recirculation														0
202002 Recirculation Flow Control														0
204000 RWCU			0	6								Knowledge of the effect that a loss or malfunction of the RWCU will have on following: Area radiation levels	2.6	1
214000 RPIS														0
215001 Traversing In-core Probe														0
215002 RBM														0
216000 Nuclear Boiler Inst.					0	8						Knowledge of the operational implications of the following concepts as they apply to Nuclear Boiler Inst.: Steam flow effect on reactor water level	3.1	1
219000 RHR/LPCI: Torus/Pool Cooling Mode														0
223001 Primary CTMT and Aux.				1	3							Knowledge of the operational implications of the following concepts as they apply to Primary CTMT and Aux.: Oxygen concentration measurement: Plant-Specific	2.7	1
226001 RHR/LPCI: CTMT Spray Mode														0
230000 RHR/LPCI: Torus/Pool Spray Mode														0
233000 Fuel Pool Cooling/Cleanup			0	3								Knowledge of Fuel Pool Cooling/Cleanup design feature(s) and/or interlocks which provide for the following: Maintenance of adequate pool temperature	2.8	1
234000 Fuel Handling Equipment											02	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	1
239001 Main and Reheat Steam														0
239003 MSIV Leakage Control														0
241000 Reactor/Turbine Pressure Regulator							0	8				Ability to (a) predict the impacts of the following on the Reactor/Turbine Pressure Regulator; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Main turbine overspeed	3.3	1
245000 Main Turbine Gen. / Aux.														0
256000 Reactor Condensate														0
259001 Reactor Feedwater									0	4		Ability to manually operate and/or monitor in the control room: System valves	3.1	1
268000 Radwaste														0
271000 Offgas														0
272000 Radiation Monitoring						0	2					Ability to predict and/or monitor changes in parameters associated with operating the Radiation Monitoring controls including: Lights, alarms, and indications associated with surveillance testing	2.9	1
286000 Fire Protection	0	2										Knowledge of electrical power supplies to the following: Pumps	2.9	1
288000 Plant Ventilation														0
290001 Secondary CTMT														0
290003 Control Room HVAC														0
290002 Reactor Vessel Internals														0
K/A Category Totals:	1	1	1	1	2	1	2	1	0	1	1	Group Point Total:		12

ES-401		BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)										
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4										0
295003 Partial or Complete Loss of AC / 6					0 5		Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of AC: Whether a partial or complete loss of A.C. power has occurred	4.2		1
295004 Partial or Total Loss of DC Pwr / 6					0 3		Ability to determine and/or interpret the following as they apply to Partial or Total Loss of DC Pwr: Battery voltage	2.9		1
295005 Main Turbine Generator Trip / 3					0 5		Ability to determine and/or interpret the following as they apply to Main Turbine Generator Trip: Reactor power	3.9		1
295006 SCRAM / 1										0
295016 Control Room Abandonment / 7										0
295018 Partial or Total Loss of CCW / 8										0
295019 Partial or Total Loss of Inst. Air / 8					0 2		Ability to determine and/or interpret the following as they apply to Partial or Total Loss of Inst. Air: Status of safety-related instrument air system loads (see AK2.1-AK2.19)	3.7		1
295021 Loss of Shutdown Cooling / 4										0
295023 Refueling Acc / 8										0
295024 High Drywell Pressure / 5										0
295025 High Reactor Pressure / 3										0
295026 Suppression Pool High Water Temp. / 5										0
295027 High Containment Temperature / 5										0
295028 High Drywell Temperature / 5										0
295030 Low Suppression Pool Wtr Lvl / 5						04. 06	Knowledge of EOP mitigation strategies.	4.7		1
295031 Reactor Low Water Level / 2						04. 18	Knowledge of the specific bases for EOPs.	4.0		1
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1										0
295038 High Off-site Release Rate / 9										0
600000 Plant Fire On Site / 8										0
700000 Generator Voltage and Electric Grid Disturbances / 6						04. 41	Knowledge of the emergency action level thresholds and classifications.	4.6		1
K/A Category Totals:	0	0	0	0	4	3	Group Point Total:			7

ES-401		BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)										
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)		IR	#
295002 Loss of Main Condenser Vac / 3						04. 11	Knowledge of abnormal condition procedures.		4.2	1
295007 High Reactor Pressure / 3										0
295008 High Reactor Water Level / 2										0
295009 Low Reactor Water Level / 2										0
295010 High Drywell Pressure / 5										0
295011 High Containment Temp / 5										0
295012 High Drywell Temperature / 5										0
295013 High Suppression Pool Temp. / 5										0
295014 Inadvertent Reactivity Addition / 1										0
295015 Incomplete SCRAM / 1										0
295017 High Off-site Release Rate / 9										0
295020 Inadvertent Cont. Isolation / 5 & 7										0
295022 Loss of CRD Pumps / 1										0
295029 High Suppression Pool Wtr Lvl / 5										0
295032 High Secondary Containment Area Temperature / 5										0
295033 High Secondary Containment Area Radiation Levels / 9					0 3		Ability to determine and/or interpret the following as they apply to High Secondary Containment Area Radiation Levels: Cause of high area radiation		4.2	1
295034 Secondary Containment Ventilation High Radiation / 9										0
295035 Secondary Containment High Differential Pressure / 5										0
295036 Secondary Containment High Sump/Area Water Level / 5					0 1		Ability to determine and/or interpret the following as they apply to Secondary Containment High Sump / Area Water Level: Operability of components within the affected area		3.2	1
500000 High CTMT Hydrogen Conc. / 5										0
K/A Category Totals:	0	0	0	0	2	1	Group Point Total:			3

BWR Examination Outline													Form ES-401-1	
Plant Systems - Tier 2/Group 1 (SRO)														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection														0
205000 Shutdown Cooling Mode														0
206000 HPCI														0
207000 Isolation (Emergency) Condenser														0
209001 LPCS											02. 42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	4.6	1
209002 HPCS														0
211000 SLC														0
212000 RPS											02. 37	Ability to determine operability and/or availability of safety related equipment.	4.6	1
215003 IRM														0
215004 Source Range Monitor														0
215005 APRM / LPRM														0
217000 RCIC								0 9				Ability to (a) predict the impacts of the following on the RCIC; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of vacuum pump	3.0	1
218000 ADS														0
223002 PCIS/Nuclear Steam Supply Shutoff														0
239002 SRVs								0 6				Ability to (a) predict the impacts of the following on the SRVs; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reactor high pressure	4.3	1
259002 Reactor Water Level Control														0
261000 SGTS								0 7				Ability to (a) predict the impacts of the following on the SGTS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. electrical failure	2.8	1
262001 AC Electrical Distribution														0
262002 UPS (AC/DC)														0
263000 DC Electrical Distribution														0
264000 EDGs														0
300000 Instrument Air														0
400000 Component Cooling Water														0
K/A Category Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:		5

ES-401		BWR Examination Outline												Form ES-401-1	
Plant Systems - Tier 2/Group 2 (SRO)															
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	
201001 CRD Hydraulic														0	
201002 RMCS														0	
201003 Control Rod and Drive Mechanism														0	
201004 RSCS														0	
201005 RCIS														0	
201006 RWM														0	
202001 Recirculation											02 40	Ability to apply Technical Specifications for a system.	4.7	1	
202002 Recirculation Flow Control														0	
204000 RWCU														0	
214000 RPIS														0	
215001 Traversing In-core Probe														0	
215002 RBM														0	
216000 Nuclear Boiler Inst.														0	
219000 RHR/LPCI: Torus/Pool Cooling Mode								0 4				Ability to (a) predict the impacts of the following on the RHR/LPCI: Torus/Pool Cooling Mode; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve openings	3.2	1	
223001 Primary CTMT and Aux.														0	
226001 RHR/LPCI: CTMT Spray Mode														0	
230000 RHR/LPCI: Torus/Pool Spray Mode														0	
233000 Fuel Pool Cooling/Cleanup														0	
234000 Fuel Handling Equipment														0	
239001 Main and Reheat Steam								0 1				Ability to (a) predict the impacts of the following on the Main and Reheat Steam; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Malfunction of reactor turbine pressure regulating system	3.9	1	
239003 MSIV Leakage Control														0	
241000 Reactor/Turbine Pressure Regulator														0	
245000 Main Turbine Gen. / Aux.														0	
256000 Reactor Condensate														0	
259001 Reactor Feedwater														0	
268000 Radwaste														0	
271000 Offgas														0	
272000 Radiation Monitoring														0	
286000 Fire Protection														0	
288000 Plant Ventilation														0	
290001 Secondary CTMT														0	
290003 Control Room HVAC														0	
290002 Reactor Vessel Internals														0	
K/A Category Totals:	0	0	0	0	0	0	0	2	0	0	1	Group Point Total:		3	

Facility Name:		Date of Exam:					
Category	K/A #	Topic	RO		SRO-Only		
			IR	#	IR	#	
1. Conduct of Operations	2.1. 20	Ability to interpret and execute procedure steps.	4.6	1	4.6		
	2.1. 30	Ability to locate and operate components, including local controls.	4.4	1	4.0		
	2.1. 44	Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.9	1	3.8		
	2.1. 05	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.	2.9		3.9	1	
	2.1. 41	Knowledge of the refueling process.	2.8		3.7	1	
	2.1.						
	Subtotal			3		2	
2. Equipment Control	2.2. 01	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	4.5	1	4.4		
	2.2. 03	Knowledge of the design, procedural, and operational differences between units.	3.8	1	3.9		
	2.2. 44	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.2	1	4.4		
	2.2. 25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	3.2		4.2	1	
	2.2. 18	Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.	2.6		3.9	1	
	2.2.						
	Subtotal			3		2	
3. Radiation Control	2.3. 15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	1	3.1		
	2.3. 11	Ability to control radiation releases.	3.8	1	4.3		
	2.3. 05	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9		2.9	1	
	2.3.						
	2.3.						
	2.3.						
	Subtotal			2		1	
4. Emergency Procedures / Plan	2.4. 21	Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	4.0	1	4.6		
	2.4. 49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6	1	4.4		
	2.4. 43	Knowledge of emergency communications systems and techniques.	3.2		3.8	1	
	2.4. 05	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	3.7		4.3	1	
	2.4.						
	2.4.						
	Subtotal			2		2	
Tier 3 Point Total				10		7	

Tier / Group	Randomly Selected K/A	Reason for Rejection
SRO 1/1 (79)	295031 G2.4.02	Supports testing the RO level, but not the SRO level. Replaced with 295031 G2.4.18
SRO 1/2 (85)	295002 G2.4.04	Overlap with NRC item 295031 G2.4.04. Replaced with 295002 G2.4.11
RO 1/2 (56)	295033EK1.03	Overlap with NRC item 295033 A2.03. Replaced with 295034 K2.03
RO 2/2 (1)	239003 K4.02	System not at Peach Bottom. Replaced with 233000 K4.03
RO 1/1 (40)	295037 EK1.07	Unable to write adequate question. Replaced with 295037 EK1.05
RO 1/1 (53)	295016 AA1.03	Unable to develop adequate question. Replaced with 295016 AA1.07
SRO 1/1 (82)	295005 AA2.03	Unable to develop adequate question. Replaced with 295006 AA2.05
SRO 1/2 (86)	295036 AA2.03	Unable to develop SRO level question. Replaced with 295036 AA2.01
SRO 2/2 (94)	233000 G2.42	Oversample issue. Replaced with 202001 G2.40
SRO 2/2 (88)	234000 K4.02	Oversample issue. Replaced with 239001 A2.05
3 (22)	G2.3.7	Unable to develop adequate question. Replaced with G2.3.11
SRO 2/1 (91)	209001 G2.4.50	Unable to develop adequate question. Replaced with G2.2.42
3 (92)	G2.2.4	Unable to develop SRO level question. Replaced with G2.2.25
RO 1/2 (43)	500000 G2.4.03	Unable to develop adequate question. Replaced with G2.4.01
RO 2/1 (26)	218000 A3.09	Unable to develop adequate question. Replaced with 218000 A3.03
RO 1/1 (13)	295030 G2.4.30	Unable to develop adequate question due to overlap. Replaced with G2.4.20
RO 2/2 (65)	201003 A3.01	Unable to develop adequate question. Replaced with 201003 A1.02
RO 1/2 (30)	295035 EK2.03	Unable to develop adequate question. Replaced with 295035 K1.02
SRO 2/1 (99)	239002 A2.04	Overlap issue. Replaced with 239002 A2.06
3 (6)	G2.1.19	Unable to develop adequate question. Replaced with 2.1.20
3 (97)	G2.1.39	Unable to develop adequate question. Replaced with 2.1.41
3 (48)	G2.2.4	Unable to develop adequate question. Replaced with 2.2.3
3 (89)	G2.3.7	Too many G2.3 topic questions. Replaced with 2.2.18

RO 1/2 (47)	295015 AK3.01	Overlap with question 71. Replaced with 295015 AK2.04
3 (57)	G2.4.35	Unable to develop adequate question. Replaced with G2.4.49
RO 2/1 (61)	261000 A4.02	Unable to develop adequate question. Replaced with 261000 A3.01
SRO 2/1 (76)	261000 A2.05	Unable to develop adequate question. Replaced with 261000 A2.07
SRO 2/2 (88)	239001 A2.05	Unable to develop adequate question. Replaced with 239001 A2.01
3 (96)	G2.1.13	Unable to develop adequate question. Replaced with G2.1.5.