

Facility: Peach Bottom		Date of Examination: 2/25/2019		
Item	Task Description	Initials		
		a	b*	c**
WRITTEN	1. a. Verify that the outline(s) fit(s) the appropriate model in accordance with ES-401 or ES-401N.	C/F	W	TF
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 or ES-401N and whether all K/A categories are appropriately sampled.	C/F	W	TF
	c. Assess whether the outline overemphasizes any systems, evolutions, or generic topics.	C/F	W	TF
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	C/F	W	TF
SIMULATOR	2. a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	C/F	W	TF
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.	C/F	W	TF
	c. To the extent possible, assess whether the outline(s) conforms with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D and in Section D.5, "Specific Instructions for the 'Simulator Operating Test,'" of ES-301 (including overlap).	C/F	W	TF
WALKTHROUGH	3. a. Verify that the systems walkthrough outline meets the criteria specified on Form ES-301-2: (1) The outline(s) contains the required number of control room and in-plant tasks distributed among the safety functions as specified on the form. (2) Task repetition from the last two NRC examinations is within the limits specified on the form. (3) No tasks are duplicated from the applicant's audit test(s). (4) The number of new or modified tasks meets or exceeds the minimums specified on the form. (5) The number of alternate-path, low-power, emergency, and radiologically controlled area tasks meets the criteria on the form.	C/F	W	TF
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) The tasks are distributed among the topics as specified on the form. (2) At least one task is new or significantly modified. (3) No more than one task is repeated from the last two NRC licensing examinations.	C/F	W	TF
	c. Determine whether there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.	C/F	W	TF
GENERAL	4. a. Assess whether plant-specific priorities (including probabilistic risk assessment and individual plant examination insights) are covered in the appropriate exam sections.	C/F	W	TF
	b. Assess whether the 10 CFR 55.41, 55.43, and 55.45 sampling is appropriate.	C/F	W	TF
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	C/F	W	TF
	d. Check for duplication and overlap among exam sections and the last two NRC exams.	C/F	W	TF
	e. Check the entire exam for balance of coverage.	C/F	W	TF
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	C/F	W	TF
a. Author b. Facility Reviewer (*) c. NRC Chief Examiner (#) d. NRC Supervisor		Printed Name/Signature Christopher Ferrara Christopher Weichler Todd Fish Donald [Signature]		Date 9/10/18 9/11/18 10/2/18 10/3/18

\* Not applicable for NRC-prepared examination outlines.  
 # The independent NRC reviewer initials items in column "c"; the chief examiner's concurrence is required.

Facility: Peach BottomDate of Examination: 02/25/2019Examination Level: RO ☒ SRO ☐Operating Test Number: 2019 NRC

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, S	G2.1.29( 4.1) - Lineup Standby Gas Treatment System For Automatic Operation (PLOR 337C)
Conduct of Operations	N, R	G2.1.25 (3.9) Perform AO 10.12-2 "Alternate Shutdown Cooling" (PLOR 384C)
Equipment Control	D, R, P	G2.2.41 (3.5) - Determine Status of Instrument Nitrogen Compressor Discharge Solenoid Valve Using Station Piping and Instrumentation Drawings (PLOR-220C) (2015 NRC)
Radiation Control	N/A	Not Required
Emergency Plan	D, R	G2.4.43 (2.8) – Direct a Site Evacuation (PLOR-94C)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

\* Type Codes & Criteria:

- (C)ontrol room, (S)imulator, or Class(R)oom
- (D)irect from bank ( $\leq 3$  for ROs;  $\leq 4$  for SROs & RO retakes)
- (N)ew or (M)odified from bank ( $\geq 1$ )
- (P)revious 2 exams ( $\leq 1$ ; randomly selected)

Facility: Peach BottomDate of Examination: 02/25/2019Examination Level: RO ☐ SRO ☒Operating Test Number: 2019 NRC

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	G2.1.20 (4.6) - Review Daily Jet Pump Operability Surveillance (PLOR 282C)
Conduct of Operations	D, R	G2.1.32 (4.0) - Evaluation Of High CRD Temperature On Control Rod Scram Time (PLOR 347C)
Equipment Control	D, R	G2.2.40 (4.7) - Compensatory Actions for an Inoperable Fire Door (273C)
Radiation Control	D, R	G2.3.4 (3.7) - Review and Authorize Two Emergency Exposures (287C)
Emergency Plan	N, R	G2.4.41 (3.6) Classification of Emergencies and PARS

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

\* Type Codes & Criteria:

- (C)ontrol room, (S)imulator, or Class(R)oom
- (D)irect from bank ( $\leq 3$  for ROs;  $\leq 4$  for SROs & RO retakes)
- (N)ew or (M)odified from bank ( $\geq 1$ )
- (P)revious 2 exams ( $\leq 1$ ; randomly selected)

Facility: Peach BottomDate of Examination: 02/25/2019Exam Level: RO ☒ SRO-I ☐ SRO-U ☐Operating Test Number: 2019 NRCControl Room Systems<sup>®</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. 202002 A4.07 (3.3/3.2) - Recirculation Flow Control System / Reset the Recirculation System Upper Flow Limit [PLOR-007C]	D, S	1
b. 206000 A2.09 (3.5/3.7) - High Pressure Coolant Injection / Raise HPCI Flow (Alternate Path - Suction Valves Fail to Swap on Low Condensate Storage Tank Level) (PLOR-333CA)	A, D, EN, S	2
c. 239001 A4.01(4.2/4.0) - Main Steam System / Open Main Steam Isolation Valves After a Group-1 Isolation (PLOR-083C)	D, L, S	3
d. 209001 A4.03 (3.7/3.6) - Manual Startup of CS for Injection (Alternate Path - CS Valve Trips on Thermal Overload) (PLOR-383CA)	A, N, L, S	4
e. 223002 A4.03 (3.6/3.5) - Primary Containment Isolation System / Perform a Group 1 PCIS Isolation Reset (GP-8A) (PLOR-024C)	D, L, S	5
f. 262001 A4.04 (3.6/3.7) - AC Distribution / Excite The Main Generator (PLOR-031C)	D, S	6
g. 212000 A4.01 (4.6/4.6) - Inputting RPS trip IAW GP-25 (Alternate Path - Initial Channel Fails to Input Trip) (PLOR-385CA)	A, N, EN, S	7
h. 400000 A2.01 (3.3/3.4) Diesel Generator Quick Start from the Control Room (Alternate Path - ESW Pump Trips After Auto Start) (PLOR-284CA)	A, D, S	8
In-Plant Systems <sup>®</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 217000 A1.04 (3.6/3.6) - Reactor Core Isolation Cooling / Defeat RCIC Interlocks IAW T-251-2 (PLOR156P)	D, E, R	4
j. 218000 K4.04 (3.5/3.6) - Bypass of SV-9130A IAW T-331-3 (PLOR-386P) (Unit 3)	D, E, R	3
k. 286000 A2.02 (2.6/2.7) - Fire Protection System / Diesel Driven Fire Pump Manual Start (PLOR-327P)	D	8

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

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

Facility: Peach BottomDate of Examination: 02/25/2019Exam Level: RO ☐ SRO-I ☒ SRO-U ☐Operating Test Number: 2019 NRC

Control Room Systems® (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. 202002 A4.07 (3.3/3.2) - Recirculation Flow Control System / Reset the Recirculation System Upper Flow Limit [PLOR-007C]	D, S	1
b. 206000 A2.09 (3.5/3.7) - High Pressure Coolant Injection / Raise HPCI Flow (Alternate Path - Suction Valves Fail to Swap on Low Condensate Storage Tank Level) (PLOR-333CA)	A, D, EN, S	2
c. 239001 A4.01(4.2/4.0) - Main Steam System / Open Main Steam Isolation Valves After a Group-1 Isolation (PLOR-083C)	D, L, S	3
d. 209001 A4.03 (3.7/3.6) – Manual Startup of CS for Injection (Alternate Path – CS Valve Trips on Thermal Overload) (PLOR-383CA)	A, N, L, S	4
e. 223002 A4.03 (3.6/3.5) - Primary Containment Isolation System / Perform a Group 1 PCIS Isolation Reset (GP-8A) (PLOR-024C)	D, L, S	5
g. 212000 A4.01 (4.6/4.6) – Inputting RPS trip IAW GP-25 (Alternate Path – Initial Channel Fails to Input Trip) (PLOR-385CA)	A, N, EN, S	7
h. 400000 A2.01 (3.3/3.4) Diesel Generator Quick Start from the Control Room (Alternate Path – ESW Pump Trips After Auto Start) (PLOR-284CA)	A, D, S	8

In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. 217000 A1.04 (3.6/3.6) – Reactor Core Isolation Cooling / Defeat RCIC Interlocks IAW T-251-2 (PLOR156P)	D, E, R	4
j. 218000 K4.04 (3.5/3.6) – Bypass of SV-9130A IAW T-331-3 (PLOR-386P) (Unit 3)	D, E, R	3
k. 286000 A2.02 (2.6/2.7) - Fire Protection System / Diesel Driven Fire Pump Manual Start (PLOR-327P)	D	8

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

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

Facility: Peach BottomDate of Examination: 02/25/2019Exam Level: RO ☐ SRO-I ☐ SRO-U ☒Operating Test Number: 2019 NRCControl Room Systems<sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a.		
b.		
c.		
d. 209001 A4.03 (3.7/3.6) – Manual Startup of CS for Injection (Alternate Path – CS Valve Trips on Thermal Overload) (PLOR-383CA)	A, N, L, S	4
e.		
f.		
g. 212000 A4.01 (4.6/4.6) – Inputting RPS trip IAW GP-25 (Alternate Path – Initial Channel Fails to Input Trip) (PLOR-385CA)	A, N, EN, S	7
h. 400000 A2.01 (3.3/3.4) Diesel Generator Quick Start from the Control Room (Alternate Path – ESW Pump Trips After Auto Start) (PLOR-284CA)	A, D, S	8

In-Plant Systems<sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. 217000 A1.04 (3.6/3.6) – Reactor Core Isolation Cooling / Defeat RCIC Interlocks IAW T-251-2 (PLOR156P)	D, E, R	4
j. 218000 K4.04 (3.5/3.6) – Bypass of SV-9130A IAW T-331-3 (PLOR-386P) (Unit 3)	D, E, R	3
k.		



@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

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

Facility: Peach Bottom Scenario No.: 1 Op-Test No.: 2019 NRC

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: Unit 2 is at approximately 85% power with no equipment out of service.

Turnover: Lower power to approximately 80%, then perform RT-O-001-408-2, "Cycling of Combined Intermediate Valves" for the # 1 CIV only.

Critical Tasks: 1. When a Primary System is discharging into Secondary Containment through an unisolable leak, scram the Reactor prior to performing an Emergency Blowdown. 2. Perform an Emergency Blowdown when the second Reactor Building area Temperature exceeds an Action level.

Event No.	Malf. No.	Event Type*	Event Description
1	See Scenario Guide	R URO CRS	Lower Reactor Power to approximately 80%
2	See Scenario Guide	N PRO CRS	Perform RT-O-001-408-2, "Cycling of Combined Intermediate Valves".
3	See Scenario Guide	C URO TS CRS	"A" Recirc pump speed oscillates, place speed hold on "A" Recirc pump
4	See Scenario Guide	C PRO TS CRS	RCIC Logic Bus Power Loss, Close RCIC CST suction
5	See Scenario Guide	C URO CRS	"B" Service water pump trips, enter ON-127 and start the standby Service water pump
6	See Scenario Guide	C PRO CRS	Trip of 2R4 Transformer BKR. Cross tie 480 vac load centers.
7	See Scenario Guide	M ALL	HPCI steam leak. Conditions will degrade requiring a Reactor Scram
8	See Scenario Guide	C PRO CRS	Isolation fails and conditions degrade requiring a blowdown
9	See Scenario Guide	C URO CRS	Bypass valves fail closed. Use SRVs for depressurization
10	See Scenario Guide	M ALL	Blowdown when two areas in the Reactor Building exceed the action level.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: Peach Bottom Scenario No.: 2 Op-Test No.: 2019 NRC

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: IC-14, 100% power with no equipment out of service

Turnover: The "A" TBCCW pump is making an unusual noise requiring the PRO to swap TBCCW pumps.

Critical Tasks: 1. Attempt to shut down the Reactor by performing one or more of the following: T-216, "Control Rod Insertion by Manual Scram of Individual Scram Test Switches", T-220, "Driving Control Rods During a Failure to Scram", Injecting Standby Liquid Control Before Torus Temperature exceeds 110 degrees Fahrenheit. (T-101-4) 2. Perform T-240, "Termination and Prevention of Injection into the RPV to minimize Thermal-hydraulic instabilities (THI) until RPV level is below -60 inches. (T-117-1) 3. Inhibit ADS initiation during an ATWS with Feedwater available within 10 minutes and 12 seconds. (T-117-7)

Event No.	Malf. No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Swap operating TBCCW Pumps
2	See Scenario Guide	TS CRS	Individual control rod drive scram accumulator low pressure (Tech Spec)
3	See Scenario Guide	C PRO TS CRS	E4 Diesel Generator spurious start / Diesel Generator shutdown (Tech Spec)
4	See Scenario Guide	C PRO CRS	Failure of Steam Jet Air Ejector Steam Supply valve / re-open by placing additional valve air supply in service
5	See Scenario Guide	R URO CRS	Fast Reactor power reduction (w/ Recirc) for lowering Main Condenser vacuum
6	See Scenario Guide	C URO CRS	"A" RWCU pump motor winding high temperature, remove the "A" RWCU pump from service and isolate the system
7	See Scenario Guide	C URO CRS	"B" and "A" Recirc pump trip. Mode switch to Shutdown
8	See Scenario Guide	M ALL	ATWS (hydraulic), lower RPV level to minimize THI
9	See Scenario Guide	C URO CRS	Standby Liquid Control (SBLC) pump trips / start second SBLC pump
10	See Scenario Guide	C URO CRS	"C" RFP trips, control RPV level with HPCI or another RFP

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: Peach Bottom Scenario No.: 3 Op-Test No.: 2019 NRC

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: Unit 2 is operating at approximately 5% power with the "D" HPSW pump out of service for motor inspection.

Turnover: When the Crew takes the shift the PRO will be required to secure the Drywell Purge lineup. The URO will begin withdrawing control rods until 3 bypass valves are open.

Critical Tasks: 1. Shutdown the reactor when a second control rod drifts into the core. 2. Perform an Emergency Blowdown when Torus level cannot be maintained above 10.5 feet.

Event No.	Malf. No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Secure the Drywell Purge lineup
2	See Scenario Guide	R URO CRS	Continue the Reactor Startup by withdrawing control rods
3	See Scenario Guide	C PRO CRS	"A" Drywell Chiller trips, start a Drywell chiller
4	See Scenario Guide	TS CRS	"C" SRV Bellows Leaking
5	See Scenario Guide	C URO CRS	"Master Feedwater Controller Failure, recover level with the bypass in manual
6	See Scenario Guide	C URO C PRO TS CRS	Control Rod 02-31 Drifts In followed by a second drifting control rod, inset control rod.
7	See Scenario Guide	M ALL	Torus leak, Fill the Torus with river water
8	See Scenario Guide	C PRO CRS	Instrument Nitrogen fails to bypass, place the backup bottles in service
9	See Scenario Guide	C PRO CRS	"B" HPSW pump trip, place the "A" loop of HPSW pumps in service
10	See Scenario Guide	M ALL	RPV Blowdown based on low Torus level
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: Peach Bottom Scenario No.: 4 Op-Test No.: NRC 2019

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: Unit 2 is operating at 100% power with no equipment out of service.

Turnover: Place the "D" RHR and HPSW in Torus cooling. Insert control rods in accordance with the REMa to support testing.

Critical Tasks: 1. Inhibit ADS before an automatic depressurization occurs. (T-101-9) 2. Perform an Emergency Blowdown when RPV level reaches -172 inches. (T-111-4) 3. Following an Emergency Blowdown, open a low pressure ECCS injection valve to restore RPV level above -172 inches before RPV pressure is less than 270 psig and RPV level is less than -205 (T-111-6) inches.

Event No.	Malf. No.	Event Type*	Event Description
1	See scenario guide	N PRO CRS	Place Torus cooling in service
2	See scenario guide	R URO CRS	Insert control rods in accordance with the ReMA
3	See scenario guide	C URO CRS	Stuck Control Rod, control rod moves when drive pressure is raised.
4	See scenario guide	C PRO TS CRS	"D" HPSW pump Over Current, secure HPSW pump and the Torus Cooling lineup
5	See scenario guide	C PRO TS CRS	"D" RHR room flood, isolate the suction valves to stop the leak
6	See scenario guide	C URO CRS	"A" Condensate pump trip with Recirc Runback Failure, URO reduces Recirc flow
7	See scenario guide	M ALL	Loss of High Pressure Feed (Loss of feedwater, HPCI trip, RCIC trip)
8	See scenario guide	C URO CRS	RCIC trip, can be manually reset
9	See scenario guide	M ALL	Recirc leak greater than RCIC flow rate, requires an Emergency Blow down
10	See scenario guide	C PRO CRS	ECCS Injection Valves Fail to open, manually align Core Spray for injection
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility Name: Peach Bottom														Date of Exam: 2/25/2019			
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	3	3	4	N/A			4	3	N/A			3	20	4	3	7
	2	1	2	1				1	1				1	7	1	2	3
	Tier Totals	4	5	5				5	4				4	27	5	5	10
2. Plant Systems	1	3	2	2	2	2	2	2	3	2	3	3	26	2	3	5	
	2	1	1	1	2	1	1	1	1	1	1	1	12	0	1	3	
	Tier Totals	4	3	3	4	3	3	3	4	3	4	4	38	3	5	8	
3. Generic Knowledge and Abilities Categories					1	2	3	4	10				1	2	3	4	7
					3	2	2	3					1	2	2	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  $\pm 1$  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)										
Q#	E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
51	295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					0 2		Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of Forced Core Flow Circulation: Neutron monitoring	3.1	1
58	295003 Partial or Complete Loss of AC / 6			0 6				Knowledge of the reasons for the following responses as they apply to Partial or Complete Loss of AC: Containment isolation	3.7	1
43	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
56	295005 Main Turbine Generator Trip / 3						04. 01	Knowledge of EOP entry conditions and immediate action steps.	4.6	1
39	295006 SCRAM / 1	0 1						Knowledge of the operational implications of the following concepts as they apply to SCRAM: Decay heat generation and removal.	3.7	1
53	295016 Control Room Abandonment / 7					0 1		Ability to determine and/or interpret the following as they apply to Control Room Abandonment: Reactor power	4.1	1
45	295018 Partial or Total Loss of CCW / 8			0 1				Knowledge of the reasons for the following responses as they apply to Partial or Total Loss of CCW: Isolation of non-essential heat loads: Plant-Specific	2.9	1
49	295019 Partial or Total Loss of Inst. Air / 8				0 2			Ability to operate and/or monitor the following as they apply to Partial or Total Loss of Inst. Air: Instrument air system valves: Plant-Specific	3.3	1
54	295021 Loss of Shutdown Cooling / 4						01. 19	Ability to use plant computers to evaluate system or component status.	3.9	1
40	295023 Refueling Acc / 8	0 3						Knowledge of the operational implications of the following concepts as they apply to Refueling Accidents: Inadvertent criticality	3.7	1
50	295024 High Drywell Pressure / 5				1 1			Ability to operate and/or monitor the following as they apply to High Drywell Pressure: Drywell spray: Mark-I&II	4.2	1
42	295025 High Reactor Pressure / 3		0 9					Knowledge of the interrelations between High Reactor Pressure and the following: Reactor power	3.9	1
46	295026 Suppression Pool High Water Temp. / 5			0 2				Knowledge of the reasons for the following responses as they apply to Suppression Pool High Water Temp.: Suppression pool cooling	3.9	1
	295027 High Containment Temperature / 5									0
41	295028 High Drywell Temperature / 5	0 1						Knowledge of the operational implications of the following concepts as they apply to High Drywell Temperature: Reactor water level measurement	3.5	1
57	295030 Low Suppression Pool Wtr Lvl / 5				0 1			Ability to operate and/or monitor the following as they apply to Low Suppression Pool Wtr Lvl: ECCS systems (NPSH considerations): Plant-Specific	3.6	1
48	295031 Reactor Low Water Level / 2				0 8			Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Alternate injection systems: Plant-specific	3.8	1
47	295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1			0 1				Knowledge of the reasons for the following responses as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Recirculation pump trip/runback: Plant-Specific	4.1	1
55	295038 High Off-site Release Rate / 9						04. 18	Knowledge of the specific bases for EOPs.	3.3	1
52	600000 Plant Fire On Site / 8					0 3		Ability to determine and/or interpret the following as they apply to Plant Fire On Site: Fire alarm	2.8	1
44	700000 Generator Voltage and Electric Grid Disturbances / 6		0 1					Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Motors	3.1	1
K/A Category Totals:		3	3	4	4	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)										
Q#	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
61	295007 High Reactor Pressure / 3			0 4				Knowledge of the reasons for the following responses as they apply to High Reactor Pressure: Safety/relief valve operation: Plant-Specific	4.0	1
	295008 High Reactor Water Level / 2									0
65	295009 Low Reactor Water Level / 2						01 07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	1
64	295010 High Drywell Pressure / 5		0 4					Knowledge of the interrelations between High Drywell Pressure and the following: Nitrogen makeup system: Plant-Specific	2.6	1
	295011 High Containment Temp / 5									0
	295012 High Drywell Temperature / 5									0
63	295013 High Suppression Pool Temp. / 5					0 2		Ability to determine and/or interpret the following as they apply to High Suppression Pool Temp.: Localized heating/stratification	3.2	1
	295014 Inadvertent Reactivity Addition / 1									0
60	295015 Incomplete SCRAM / 1		0 5					Knowledge of the interrelations between Incomplete SCRAM and the following: Rod worth minimizer: Plant-Specific	2.6	1
62	295017 High Off-site Release Rate / 9				0 1			Ability to operate and/or monitor the following as they apply to High Off-site Release Rate: Radwaste	2.7	1
	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
59	295033 High Secondary Containment Area Radiation Levels / 9	0 2						Knowledge of the operational implications of the following concepts as they apply to High Secondary Containment Area Radiation Levels: Personnel protection	3.9	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
	500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:		1	2	1	1	1	1	Group Point Total:		7



ES-401		BWR Examination Outline												Form ES-401-1	
		Plant Systems - Tier 2/Group 1 (RO)													
Q#	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	#
12	203000 RHR/LPCI: Injection Mode						0 9						Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: Injection Mode: Nuclear boiler instrumentation	3.4	1
9	205000 Shutdown Cooling					0 3							Knowledge of the operational implications of the following concepts as they apply to Shutdown Cooling: Heat removal mechanisms	2.8	1
17,2 6	206000 HPCI									0 7	0 7		Ability to monitor automatic operations of the HPCI including: Lights and alarms: BWR-2, 3, 4; Ability to manually operate and/or monitor in the control room: Condensate storage tank level: BWR-2, 3, 4	3.9; 3.5	2
	207000 Isolation (Emergency) Condenser														0
3	209001 LPCS		0 2										Knowledge of electrical power supplies to the following: Valve power	2.5	1
	209002 HPCS														0
16,2 3	211000 SLC								0 4			02 12	Ability to (a) predict the impacts of the following on the SCC, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadequate system flow: Knowledge of surveillance procedures	3.1; 3.7	2
5	212000 RPS			1 0									Knowledge of the effect that a loss or malfunction of the RPS will have on following: The ability of the core cooling systems to provide adequate core cooling during loss of coolant accidents	3.5	1
4	215003 IRM		0 1										Knowledge of electrical power supplies to the following: IRM channels/detectors	2.5	1
	215004 Source Range Monitor														0
2	215005 APRM / LPRM	1 0											Knowledge of the physical connections and/or cause-effect relationships between APRM / LPRM and the following: Reactor manual control system: Plant-Specific	3.3	1
20	217000 RCIC										0 1		Ability to manually operate and/or monitor in the control room: RCIC turbine speed	3.7	1
1	218000 ADS	0 5											Knowledge of the physical connections and/or cause-effect relationships between ADS and the following: Remote shutdown system: Plant-Specific	3.9	1
7,24	223002 PCIS/Nuclear Steam Supply Shutoff	0 4			0 8								Knowledge of the physical connections and/or cause-effect relationships between PCIS/Nuclear Steam Supply Shutoff and the following: High pressure coolant injection: Plant-Specific; Knowledge of PCIS/Nuclear Steam Supply Shutoff design feature(s) and/or interlocks which provide for the following:	3.5; 3.3	2
18	239002 SRVs									0 4			Ability to monitor automatic operations of the SRVs including: Acoustical monitor noise: Plant-Specific	3.6	1
15,2 2	259002 Reactor Water Level Control								0 5			01 28	Ability to (a) predict the impacts of the following on the Reactor Water Level Control; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of applicable plant air systems: Knowledge of the purpose and function of	3.2; 4.1	2
11	261000 SGTS						0 5						Knowledge of the effect that a loss or malfunction of the following will have on the SGTS: Reactor protection system: Plant-Specific	3.1	1
14,2 1	262001 AC Electrical Distribution							0 3				01 20	Ability to predict and/or monitor changes in parameters associated with operating the AC Electrical Distribution controls including: Bus voltage; Ability to interpret and execute procedure steps	2.9; 4.6	2
19	262002 UPS (AC/DC)										0 1		Ability to manually operate and/or monitor in the control room: Transfer from alternative source to preferred source	2.8	1
8	263000 DC Electrical Distribution				0 1								Knowledge of DC Electrical Distribution design feature(s) and/or interlocks which provide for the following: Manual/ automatic transfers of control: Plant-Specific	3.1	1
10	264000 EDGs					0 5							Knowledge of the operational implications of the following concepts as they apply to EDGs: Paralleling A.C. power sources	3.4	1
6,25	300000 Instrument Air			0 1					0 1				Knowledge of the effect that a loss or malfunction of the Instrument Air will have on following: Containment air system; Ability to (a) predict the impacts of the following on the Instrument Air; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal	2.7; 2.9	2
13	400000 Component Cooling Water						0 1						Ability to predict and/or monitor changes in parameters associated with operating the Component Cooling Water controls including: CCW flow rate	2.8	1
K/A Category Totals:		3	2	2	2	2	2	2	3	2	3	3	Group Point Total:		26

ES-401		BWR Examination Outline												Form ES-401-1	
Plant Systems - Tier 2/Group 2 (RO)															
Q#	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	#
27	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
	201003 Control Rod and Drive Mechanism														0
	201004 RSCS														0
	201005 RCIS														0
	201006 RWM														0
	202001 Recirculation														0
	202002 Recirculation Flow Control														0
	204000 RWCU														0
	214000 RPIS														0
	215001 Traversing In-core Probe														0
32	215002 RBM						0 4						Knowledge of the effect that a loss or malfunction of the following will have on the RBM: APRM reference channel: BWR-3, 4, 5	2.8	1
33	216000 Nuclear Boiler Inst.							0 1					Ability to predict and/or monitor changes in parameters associated with operating the Nuclear Boiler Inst. controls including: Recorders and meters	3.4	1
	219000 RHR/LPCI: Torus/Pool Cooling Mode														0
	223001 Primary CTMT and Aux.														0
37	226001 RHR/LPCI: CTMT Spray Mode											04 49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6	1
	230000 RHR/LPCI: Torus/Pool Spray Mode														0
36	233000 Fuel Pool Cooling/Cleanup										0 5		Ability to manually operate and/or monitor in the control room: Pool temperature	2.7	1
	234000 Fuel Handling Equipment														0
	239001 Main and Reheat Steam														0
	239003 MSIV Leakage Control														0
35	241000 Reactor/Turbine Pressure Regulator									0 1			Ability to monitor automatic operations of the Reactor/Turbine Pressure Regulator including: Turbine speed control: Plant-Specific	2.8	1
	245000 Main Turbine Gen. / Aux.														0
28	256000 Reactor Condensate		0 1										Knowledge of electrical power supplies to the following: System pumps	2.7	1
34	259001 Reactor Feedwater								0 2				Ability to (a) predict the impacts of the following on the Reactor Feedwater; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Feedwater heater	3.1	1
31	268000 Radwaste						0 1						Knowledge of the operational implications of the following concepts as they apply to Radwaste: Units of radiation, dose and dose rate	2.7	1
	271000 Offgas														0
38	272000 Radiation Monitoring				0 3								Knowledge of Radiation Monitoring design feature(s) and/or interlocks which provide for the following: Fail safe tripping of process radiation monitoring logic during conditions of instrument failure	3.6	1
29	286000 Fire Protection			0 3									Knowledge of the effect that a loss or malfunction of the Fire Protection will have on following: Plant protection	3.6	1
30	288000 Plant Ventilation				0 1								Knowledge of Plant Ventilation design feature(s) and/or interlocks which provide for the following: Automatic initiation of standby gas treatment system	3.7	1
	290001 Secondary CTMT														0
	290003 Control Room HVAC														0
	290002 Reactor Vessel Internals														0
K/A Category Totals:		1	1	1	2	1	1	1	1	1	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)										
Q#	E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
77	295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					0 4		Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of Forced Core Flow Circulation: Individual jet pump flows: Not-BWR-1&2	3.1	1
	295003 Partial or Complete Loss of AC / 6									0
	295004 Partial or Total Loss of DC Pwr / 6									0
81	295005 Main Turbine Generator Trip / 3					04 45		Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	1
	295006 SCRAM / 1									0
	295016 Control Room Abandonment / 7									0
	295018 Partial or Total Loss of CCW / 8									0
76	295019 Partial or Total Loss of Inst. Air / 8					0 1		Ability to determine and/or interpret the following as they apply to Partial or Total Loss of Inst. Air: Instrument air system pressure	3.6	1
	295021 Loss of Shutdown Cooling / 4									0
80	295023 Refueling Acc / 8					04 08		Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	4.5	1
	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									0
78	295031 Reactor Low Water Level / 2					0 3		Ability to determine and/or interpret the following as they apply to Reactor Low Water Level: Reactor pressure	4.2	1
82	295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1					0 6		Ability to determine and/or interpret the following as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Reactor pressure	4.1	1
79	295038 High Off-site Release Rate / 9					01 31		Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.3	1
	600000 Plant Fire On Site / 8									0
	700000 Generator Voltage and Electric Grid Disturbances / 6									0
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)										
Q#	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
85	295008 High Reactor Water Level / 2					04	04	Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.7	1
	295009 Low Reactor Water Level / 2									0
	295010 High Drywell Pressure / 5									0
	295011 High Containment Temp / 5									0
84	295012 High Drywell Temperature / 5					04	47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	1
	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
83	295029 High Suppression Pool Wtr Lvl / 5					0	3	Ability to determine and/or interpret the following as they apply to High Suppression Pool Wtr Lvl: Drywell/containment water level	3.5	1
	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
	295035 Secondary Containment High Differential Pressure / 5									0
	295036 Secondary Containment High Sump/Area Water Level / 5									0
	500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:		0	0	0	0	1	2	Group Point Total:		3

ES-401		BWR Examination Outline												Form ES-401-1	
Plant Systems - Tier 2/Group 1 (SRO)															
Q#	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
90	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
86	212000 RPS								19				Ability to (a) predict the impacts of the following on the RPS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Partial system activation (half SCRAM).	3.9	1
89	215003 IRM											02.44	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.	4.4	1
	215004 Source Range Monitor														0
	215005 APRM / LPRM														0
87	217000 RCIC								05				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: D.C. power loss	3.3	1
	218000 ADS														0
	223002 PCIS/Nuclear Steam Supply Shutoff														0
	239002 SRVs														0
	259002 Reactor Water Level Control														0
	261000 SGTS														0
	262001 AC Electrical Distribution														0
	262002 UPS (AC/DC)														0
88	263000 DC Electrical Distribution											02.22	Knowledge of limiting conditions for operations and safety limits.	4.7	1
	264000 EDGs														0
	300000 Instrument Air														0
	400000 Component Cooling Water														0
K/A Category Totals:		0	0	0	0	0	0	0	2	0	0	3	Group Point Total:		5

ES-401		BWR Examination Outline												Form ES-401-1		
Plant Systems - Tier 2/Group 2 (SRO)																
Q#	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														0	
	202002 Recirculation Flow Control														0	
92	204000 RWCU												02.40 Ability to apply Technical Specifications for a system.	4.7	1	
	214000 RPIS														0	
	215001 Traversing In-core Probe														0	
	215002 RBM														0	
	216000 Nuclear Boiler Inst.														0	
91	219000 RHR/LPCI: Torus/Pool Cooling Mode								1 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	4.3	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	
	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	
93	271000 Offgas												01.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2	1	
	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	0	1	0	0	2	Group Point Total:		3

Facility Name: Peach Bottom      Date of Exam: 2/25/2019							
Q#	Category	K/A #	Topic	RO		SRO-Only	
				IR	#	IR	#
66	1. Conduct of Operations	2.1. 32	Ability to explain and apply system limits and precautions.	3.8	1	4.0	
67		2.1. 40	Knowledge of refueling administrative requirements.	2.8	1	3.9	
75		2.1. 45	Ability to identify and interpret diverse indications to validate the response of another indicator.	4.3	1	4.3	
94		2.1. 42	Knowledge of new and spent fuel movement procedures.	2.5		3.4	1
		2.1.					
		2.1.					
		Subtotal				3	
68	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	
69		2.2. 39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	1	4.5	
95		2.2. 21	Knowledge of pre- and post-maintenance operability requirements.	2.9		4.1	1
99		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.					
		2.2.					
		Subtotal				2	
70	3. Radiation Control	2.3. 14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4	1	3.8	
71		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	1	2.9	
96		2.3. 15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9		3.1	1
100		2.3. 13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.4		3.8	1
		2.3.					
		2.3.					
		Subtotal				2	
72	4. Emergency Procedures / Plan	2.4. 29	Knowledge of the emergency plan.	3.1	1	4.4	
73		2.4. 30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	2.7	1	4.1	
74		2.4. 25	Knowledge of fire protection procedures.	3.3	1	3.7	
97		2.4. 34	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	4.2		4.1	1
98		2.4. 50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2		4.0	1
		2.4.					
		Subtotal				3	
Tier 3 Point Total					10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	<p>Question 46</p> <p>295026 – Suppression Pool High Water Temperature</p> <p>EK3.03- Knowledge of the reasons for the following responses as they apply to Suppression Pool High Water Temp: Suppression pool spray: Plant specific</p>	<p>Does not apply. Peach Bottom does not spray torus for high torus water temperature.</p> <p>Randomly resampled K/A 295026 – Suppression Pool High Water Temperature</p> <p>EK3.02 - Knowledge of the reasons for the following responses as they apply to Suppression Pool High Water Temp: Suppression pool cooling</p>
1/1	<p>Question 48</p> <p>295031 – Reactor Low Water Level</p> <p>EA1.01 – Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Low pressure coolant injection (RHR)</p>	<p>Could not write a question that would not overlap with Question 37 K/A 226000 - RHR/LPCI: CTMT Spray Mode 2.4.49 – ability to perform without reference to procedures those actions that require immediate operation of system components and controls and Question 12 K/A 203000 – RHR/LPCI injection mode K6.09 – Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI injection mode: Nuclear boiler instrumentation</p> <p>Randomly resampled K/A 295031 – Reactor Low Water Level</p> <p>EA1.08 - Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Alternate injection systems</p>
1/1	<p>Question 52</p> <p>600000 – Plant Fire On site</p> <p>AA2.11 – Ability to determine and interpret the following as they apply to Plant Fire On site: Time Limit for Use of Respirators</p>	<p>Does not apply. There are no time limits for use of respirators while fighting a fire. There is a time limit of 2 hours for a radioactive trip of Control room ventilation, but not a fire.</p> <p>Randomly resampled K/A 600000 – Plant Fire On Site</p> <p>AA2.03 - Ability to determine and interpret the following as they apply to Plant Fire On site: Fire Alarm</p>
1/1	<p>Question 55</p> <p>295038 – High Off Site Release Rate</p> <p>G2.4.41 – Knowledge of the Emergency action level thresholds and classifications</p>	<p>Does not apply for RO. Emergency action level thresholds and classifications is SRO knowledge.</p> <p>Randomly resampled K/A 295038 - High Off Site Release Rate</p> <p>G2.4.18 – Knowledge of the specific bases for EOPs</p>
2/1	<p>Question 11</p> <p>261000 – SGTS</p> <p>K6.04 – Knowledge or the effect that a loss of malfunction of the following will have on the SGTS: Process radiation monitoring</p>	<p>Could not create a question for this K/A without giving an answer to question 30 K/A 288000 K4.01 – Knowledge of Plant Ventilation design feature(s) and/or interlocks which provide for the following: Automatic initiation of standby gas treatment system.</p> <p>Randomly resampled K/A 261000 – SGTS</p> <p>K6.05 – Knowledge or the effect that a loss of malfunction of the following will have on the SGTS: Reactor Protection System: Plant-Specific</p>



3	<p>Question 68</p> <p>General 2.2.36 – Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.</p>	<p>Does not apply for RO. Analyzing effects of maintenance activities on status of limiting conditions for operations is SRO knowledge.</p> <p>Randomly resampled K/A 2.2.36</p> <p>2.2.1 – Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity</p>
2/1 SRO	<p>Question 88</p> <p>263000 - DC Electrical Distribution</p> <p>2.2.04 – Ability to explain the variations in control board layouts, systems, instrumentation, and procedural actions between units at a facility</p>	<p>There are no unit differences for DC Electrical Distribution.</p> <p>Randomly resampled K/A 263000 – DC Electrical Distribution</p> <p>2.2.22 – Knowledge of limiting condition for operations and safety limits</p>
3 SRO	<p>Question 95</p> <p>Generic 2.2.21 – Knowledge of pre and post maintenance operability requirements</p>	<p>Unable to produce a multiple choice generic SRO question for selected K/A.</p> <p>Randomly resampled K/A 2.2 – Equipment Control</p> <p>2.2.05 – Knowledge of the process for making design or operating changes to the facility</p>
3 SRO	<p>Question 97</p> <p>Generic 2.4.34 – Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects</p>	<p>Unable to produce an SRO only knowledge question based on the selected K/A as an RO task requires RO knowledge.</p> <p>Randomly resampled K/A 2.4 – Emergency Procedures / Plan</p> <p>2.4.38 – Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required</p>
3 SRO	<p>Question 98</p> <p>Generic 2.4.50 – Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.</p>	<p>Unable to produce a generic SRO only knowledge question based on selected K/A. Verifying system setpoints and operating controls involves a system and therefore cannot make a generic question.</p> <p>Randomly resampled K/A 2.4 – Emergency Procedures / Plan</p> <p>2.4.44 – Knowledge of emergency plan protective action recommendations</p>
2/1	<p>Question 13</p> <p>400000 – Component Cooling Water</p> <p>A1.01 – Ability to predict and / or monitor changes in parameters associated with the operating the CCWS controls including: CCW flow rate</p>	<p>Does not apply. Peach Bottom would adjust service water flow rate to change parameters, not CCW flow.</p> <p>Randomly resampled K/A 400000 – Component Cooling Water</p> <p>A1.01 – Ability to predict and / or monitor changes in parameters associated with the operating the CCWS controls including: CCW temperature</p>

3	Question 67 Generic 2.1.40 – Knowledge of refueling administrative requirements	Does not apply. Not RO knowledge. Randomly resampled K/A 2.1 – Conduct of Operations 2.1.8 – Ability to coordinate personnel activities outside the control room

Random selection was using an online random number generator. [www.random.org](http://www.random.org)