Appendix D

Event	vent Malfunction		Malfunction Event		/ent	Event
No.	No.	Туре*		Description		
1	See Scenario Guide	N	PRO CRS	Cross-tie 1PS4 with 3PS4		
2	See Scenario Guide	C TS	URO CRS	"A" CRD pump trips on low suction pressure. Swap to the "B" CRD pump after suction filter is bypassed.		
3	See Scenario Guide	R TS	URO CRS	#3 stop valve fails closed. Lower Reactor power to 84.5%.		
4	See Scenario Guide	C TS	PRO CRS	Inadvertent HPCI start. Secure HPCI.		
5	See Scenario Guide	С	URO CRS	"B" RFP speed fails low. Take manual control and raise the speed of the "B" RFP.		
6	See Scenario Guide	С	PRO CRS	Vent Stack high radiation caused by a spill. Place Reactor Building ventilation on SBGT.		
7	See Scenario Guide	м	ALL	HPCI steam leak into the Reactor Building. Scram the Reactor as Reactor Building Temperatures rise.		
8	See Scenario Guide	С	PRO	Main Generator fails to lock out on the turbine trip. Manually trip the generator output breakers and field breaker.		
9	See Scenario Guide	С	URO	MO 8090 fails to open. Control RPV level using RFP discharge valve and RFP speed.		
10	See Scenario Guide	м	ALL	Second Reactor Building exceeds and action level requiring an emergency depressurization.		

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

Appendix D

Event Malfunction		Event		Event
No.	No.	No. Type*		Description
1	See Scenario Guide	R	URO CRS	Raise power with Recirc to 100%
2	See Scenario Guide	N	PRO CRS	Lower Torus level to 14.55 feet
3	See Scenario Guide	C TS	PRO CRS	Spurious E-2 Diesel Generator Start. Must secure the D/G due to a fuel oil leak.
4	See Scenario Guide	C TS	URO CRS	Control rod 30-35 drifts into the Core. Must insert and disarm the control rod.
5	See Scenario Guide	С	PRO CRS	HWC controller fails open resulting in high Main Steam Line Radiation levels. The automatic isolation will not occur and the PRO must trip the HWC system.
6	See Scenario Guide	с	URO CRS	"A" Recirc pump trips requiring the URO to insert control rods.
7	See Scenario Guide	С	URO CRS	A loss of Stator cooling occurs requiring the URO to attempt to scram the Reactor.
8	See Scenario Guide	м	ALL	ATWS
9	See Scenario Guide	с	URO	RWCU fails to isolate on SLC injection requiring the URO to manually isolate RWCU.
10	See Scenario Guide	с	PRO CRS	Drywell Instrument Nitrogen bypass will fail, the PRO will need to use the backup nitrogen bottles and/or the CAD tank.

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

Appendix D

Event	nt Malfunction		Malfunction Event		/ent	Event
No.	No.	Type*		Description		
1	See Scenario Guide	Ν	PRO CRS	Place Torus Cooling in service		
2	See Scenario Guide	R	URO CRS	Control Rod insertion. Insert the four Control Rods listed on the ReMA		
3	See Scenario Guide	C TS	PRO CRS	"D" HPSW pump over current. Remove the "D" HPSW pump from service and secure the RHR lineup.		
4	See Scenario Guide	С	URO CRS	"A" CRD pump leak. Place the "B" CRD pump in service and remove the "A" CRD pump from service.		
5	See Scenario Guide	। TS	PRO CRS	Drywell pressure Transmitter fails high. Insert an "A" channel half Scram.		
6	See Scenario Guide	С	URO CRS	"A" Condensate pump trip with Recirc runback failure. URO reduces recirc flow to stabilize RPV level.		
7	See Scenario Guide	М	ALL	Loss of High Pressure Feed (Loss of Off Site power and HPCI Trip)		
8	See Scenario Guide	С	URO CRS	RCIC trip. Reset and restart RCIC for RPV level control.		
9	See Scenario Guide	м	PRO CRS	Steam leak in the Drywell. PRO should spray containment.		
10	See Scenario Guide	С	PRO CRS	RHR loop initially selected for containment spray fails. The PRO should align the other loop of RHR for containment sprays.		

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

Administrative Topics Outline

Form ES-301-1

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Facility: <u>Peach Bottom</u> Examination Level: RO 🛛 SI		Date of Examination: <u>3/20/17</u> Operating Test Number: <u>2017 NRC</u>
		Operating rest Number. 2017 NRC
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, S	G2.1.23 (4.3) - Monitor Reactor Vessel Temperatures During Cooldown (PLOR 154C)
Conduct of Operations	N, R	G2.1.25 (3.9) – Manually Calculate Drywell Bulk Average Temperature (PLOR 061C)
Equipment Control	D, R	G2.2.13 (3.6) - Knowledge of Tagging and Clearance Procedures (PLOR 204C)
Radiation Control	N/A	Not Required
Emergency Plan	D, S, P	G2.4.29 (3.1) - Emergency Response Organization Response Augmentation Using the Everbridge Web- based Call Out System (PLOR-92C)
		SROs. RO applicants require only 4 items unless they are pics, when 5 are required.
* Type Codes & Criteria:	(D)irect (N)ew c	ol room, (S)imulator, or Class(R)oom from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) or (M)odified from bank (≥ 1) ous 2 exams (≤ 1; randomly selected)

ES 301, Page 22 of 27

Administrative Topics Outline

Form ES-301-1

Facility: Peach Bottom		Date of Examination: 3/20/17
Examination Level: RO 🗌 SI	ro 🛛	Operating Test Number: 2017 NRC
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R, P	G2.1.7 (4.7) - Resolution of Thermal Limit Violation (PLOR-218C)
Conduct of Operations	D,R	G2.1.25 (4.2) Perform Reactor Coolant Leakage Test – SRO Version (PLOR-354C)
Equipment Control	M, R	G2.2.22 (4.7) -Asymmetric Feedwater Temperature Operation (AFTO) (PLOR-252C)
Radiation Control	D, R	G2.3.14 (3.8) – Review and Authorize Issuance of Thyroid Blocking Agent (KI) (PLOR-215C)
Emergency Plan	D, R	G2.4.41 (3.6) - Classification of Emergencies and PARs (PLOR-236C)
		SROs. RO applicants require only 4 items unless they are pics, when 5 are required.
* Type Codes & Criteria:	(D)irect (N)ew c	ol room, (S)imulator, or Class(R)oom from bank ( $\leq$ 3 for ROs; $\leq$ 4 for SROs & RO retakes) or (M)odified from bank ( $\geq$ 1) bus 2 exams ( $\leq$ 1; randomly selected)

ES 301, Page 22 of 27

## **Control Room/In-Plant Systems Outline**

Form ES-301-2

Facility: <u>Peach Bottom</u>	nination: <u>3/20/1</u>	7	
Exam Level: RO 🛛 SRO-I 🗌 SRO-U 🗌	est No.: <u>2017 N</u>	RC	
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRC	D-I); (2 or 3 for SRO-U, includin	g 1 ESF)	
System / JPM Title	)	Type Code*	Safety Function
a. 259001A4.02 ( 3.9/3.7) Shutdown The "A' R Min Flow Valve Fails Closed) (PLOR-303CA		A, D, S	2
b. 239001A4.01( 4.2/ 4.0) Recover a Single Ma	ain Steam Line (PLOR-379C)	D, S	3
c. 295031EA1.05 (4.3/4.3) Manually Initiate RC Controller Fails Low) (PLOR-302CA)	CIC (Alternate Path –	A, D, S	4
d. 295024EA1.19 (3.3/3.4) Vent the Primary Co Hardened Vent for Gas or Pressure Control		M, S, EN	5
e. 264000A4.04 (3.7/3.7) Diesel Generator Loa (D/G will not load) (PLOR-322CA)	ad Test (Alternate Path -	A, M, S	6
<ul> <li>f. 212000 A4.03 (3.9/3.9) Perform Actions For Unexpected/Unexplained Change In Core F Path Control Rods Will Not Insert) (PLOR 35</li> </ul>	low Per OT-112 (Alternate	A, E, N, S	7
g. 400000 A4.01 (3.1/3.0) ECW System Makeu Pump (PLOR-270C) 2015 NRC Exam	up to Tower using a HPSW	D, EN, P, S	8
<ul> <li>h. 295002 AK2.07 – Steam Jet Air Ejector Ope Low Vacuum Transient (OT-106) (PLOR-130</li> </ul>		D, E, S	9
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3	or 2 for SRO-U)		
i. 295037EA1.05 (3.9/4.0) Rod Insertion By W Unit 2 (PLOR-64P)	/ithdraw Line Venting (T-215) -	D, E, L, R	1
j. 295031EA1.08 (3.8/3.9) Alternate RPV Injec Tank (PLOR-105P)	ction Using the SBLC Test	D, E, L, P, R	2
k. 295029EA1.01 (3.4/3.5) Defeating HPCI Hig Transfer (PLOR-198P)	gh Torus Level Suction	D, E, L, EN, R	4
@ All RO and SRO-I control room (and in-pla functions; all 5 SRO-U systems must serve overlap those tested in the control room.			
* Type Codes	Criteria for RO / S	RO-I / SRO-U	

,

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

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ES-301-2 Rev 1

#### **Control Room/In-Plant Systems Outline**

Facility: <u>Peach Bottom</u>	Date of Exar	nination: <u>3/20/1</u>	7				
Exam Level: RO 🗌 SRO-I 🛛 SRO-U 🗌	Operating Te	est No.: <u>2017_N</u>	RC				
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRC	D-I); (2 or 3 for SRO-U, includin	g 1 ESF)					
System / JPM Title	)	Type Code*	Safety Function				
a. 259001A4.02 ( 3.9/3.7) Shutdown The "A' R Min Flow Valve Fails Closed) (PLOR-303CA		A, D, S	2				
b. 239001A4.01( 4.2/ 4.0) Recover a Single Ma	D, S	3					
c. 295031EA1.05 (4.3/4.3) Manually Initiate RC Controller Fails Low) (PLOR-302CA)	c. 295031EA1.05 (4.3/4.3) Manually Initiate RCIC (Alternate Path –						
d. 295024EA1.19 (3.3/3.4) Vent the Primary C Hardened Vent for Gas or Pressure Control		M, S, EN	5				
e. 264000A4.04 (3.7/3.7) Diesel Generator Loa Load Control Difficulty) (PLOR-322CA)	ad Test (Alternate Path -	A, M, S	6				
<ul> <li>f. 212000 A4.03 (3.9/3.9) Perform Actions For Unexpected/Unexplained Change In Core F Path Control Rods Will Not Insert) (PLOR 35</li> </ul>	low Per OT-112 (Alternate	A, E, N, S	7				
g. 400000 A4.01 (3.1/3.0) ECW System Maker Pump (PLOR-270C) 2015 NRC Exam	up to Tower using a HPSW	D, EN, P, S	8				
h.							
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3	or 2 for SRO-U)						
i. 295037EA1.05 (3.9/4.0) Rod Insertion By W Unit 2 (PLOR-64P)	/ithdraw Line Venting (T-215) -	D, E, L, R	1				
j. 295031EA1.08 (3.8/3.9) Alternate RPV Injec Tank (PLOR-105P)	ction Using the SBLC Test	D, E, L, P, R	2				
k. 295029EA1.01 (3.4/3.5) Defeating HPCI Hig Transfer (PLOR-198P)	gh Torus Level Suction	D, E, L, EN, R	4				
@ All RO and SRO-I control room (and in-pla functions; all 5 SRO-U systems must serv overlap those tested in the control room.							
* Type Codes	Criteria for RO / S	RO-I / SRO-U					

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

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#### **Control Room/In-Plant Systems Outline**

Facility: <u>Peach Bottom</u>	Date of Exan	nination: <u>3/20/1</u>	7
Exam Level: RO 🗌 SRO-I 🗌 SRO-U 🛛	Operating Te	est No.: <u>2017 N</u>	RC
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRC	D-I); (2 or 3 for SRO-U, includin	g 1 ESF)	
System / JPM Title	3	Type Code*	Safety Function
a.			
b.			
С.			
d. 295024EA1.19 (3.3/3.4) Vent the Primary Co Hardened Vent for Gas or Pressure Control		M, S, EN	5
e. 264000A4.04 (3.7/3.7) Diesel Generator Loa Load Control Difficulty) (PLOR-322CA)	ad Test (Alternate Path -	A, <b>M</b> , S	6
<ul> <li>f. 212000 A4.03 (3.9/3.9) Perform Actions For Unexpected/Unexplained Change In Core F Path Control Rods Will Not Insert) (PLOR 35</li> </ul>	low Per OT-112 (Alternate	A, E, N, S	7
g.			
h.			
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3	or 2 for SRO-U)		
i. 295037EA1.05 (3.9/4.0) Rod Insertion By W Unit 2 (PLOR-64P)	/ithdraw Line Venting (T-215) -	D, E, L, R	1
j. 295029EA1.01 (3.4/3.5) Defeating HPCI Hig Transfer (PLOR-198P)	gh Torus Level Suction	D, E, L, EN, R	4
k.			
All RO and SRO-I control room (and in-pla functions; all 5 SRO-U systems must servious overlap those tested in the control room.			
* Type Codes	Criteria for RO / S	RO-I / SRO-U	
(A)lternate path (C)ontrol room	4-6 / 4-6 / 3	2-3	
(D)irect from bank	<u>&lt;9/ &lt;8/</u>	<u>&lt;</u> 4	
(E)mergency or abnormal in-plant	<u>≥</u> 1/ <u>&gt;</u> 1/ <u>&gt;</u> 1/	<u>&gt;</u> 1	
(EN)gineered safety feature	- / - /	> 1 (control roc	om system
(L)ow-Power / Shutdown	<u>≥</u> 1/ <u>≥</u> 1/	<u>&gt;</u> 1	
(N)ew or (M)odified from bank including 1(A)	<u>≥</u> 2/ <u>≥</u> 2/	<u>&gt;</u> 1	
(P)revious 2 exams	<u>≤</u> 3/ <u>≤</u> 3/	2 (randomly set in the set is a set if the set is a set if the set is a	selected)
(R)CA	<u>&gt;</u> 1/ <u>&gt;</u> 1/	<u>&gt;</u> 1	
(S)imulator			

					BW	/R E	xan	IIIIa				_					FOR	M ES-401-
acility Name:	Peach Bottom						Da	ate o	fEx	am:	3/2	0/17	Rev 1					
,						RO		Cat					-		SI	RO-01	nly Po	ints
Tier	Group	K 1	K 2	К 3	K 4		К 6	A 1	A 2	A 3	A 4	G *	Total	A		G		Total
1. Emergency & Abnormal Plant	1	3	4	3			3	4			3	20		4		3	7	
	2	1	1	1		N/A		1	1	N	/A	2	7		2		1	3
Evolutions	Tier Totals	4	5	4				4	5			5	27		6	4	1	10
2.	1	3	2	3	3	2	2	2	2	2	3	2	26		3	2	2	5
Plant Systems	2	1	1	1	1	0	2	1	1	1	2	1	12	0	1		2	3
	Tier Totals	4	3	4	4	2	4	3	3	3	5	3	38	<u> </u>	1	4	1	8
	3. Generic Knowledge and Abilities					1		2		3		4	10	1	2	3	4	7
Categories						2		2		3	:	3		2	1	2	2	
2.	only outlines ( shall not be le another Tier 3 The point tota	i.e., ss th Cat I for	exce nan tr egor each	ept fc wo). y). n gro	or on (Or up a	ie ca ne Ti ind ti	tego er 3 ier in	ry in Rad	Tier iatior prop	3 of n Co osec	f the introl d out	SRC I K/A tline	is allowed if the must match the must match the match th	the "Ti he K/A nat spe	er Tota is repl cified i	als" in laced l in the t	each l by a K able.	K/A category /A from The final
2. 3.	only outlines ( shall not be le another Tier 3 The point total for final RO exam Systems/evolu apply at the fa included on th of inappropria	i.e., ss th Cat for each mu: ution cility e ou te K/	exce egor each st tot s wit s wit s ho tline (A st	ept fo wo). y). up a tal 7 thin e buld l sho atem	or on (Or up a nd ti 5 poi each be de uld t	ie ca ne Ti ier m ints a grou elete be ac s.	tego er 3 ier in and f and f and f ad ar dded	the Street in th	Tier iation prop te by RO- entifie stifie	3 of n Co osec ±1 1 only ied o d; op o Se	f the introl d out from exa on the perate ection	SRC I K/A thine that e ass tiona n D.1	D-only outline, is allowed if the specified in the ust total 25 per sociated outlin illy important, s 1.b of ES-401	the "Ti ne K/A ne table ints. ne; syst site-sp for guid	er Tota is rep cified e base e base cems o ecific s dance	als" in laced I in the t in the	each F oy a Ko able. IRC re Itions s that ling the	(/A category /A from The final visions. The that do not are not e eliminatior
2.	only outlines ( shall not be le another Tier 3 The point total point total for final RO exam Systems/evolu apply at the fa included on th	i.e., ss th Cat for each ution cility e ou te K/ rom	exce nan tr egor each s tol s wit s wit s sho tline (A sta as n	ept fo wo). y). up a tal 7 thin e uld l sho atem nany	or on (Or nd ti 5 poi be de uld t ients	ie ca ne Ti int ti ints a grou elete be ac s.	tego er 3 ier in ay d and t up a ed ar dded s and	n the levia the S re ide nd jus I. Re	Tier iation prop te by SRO- entifies stifies efer t	3 of n Co ooseo ±1 f oonly ied o d; op o Se ons a	f the ontrol from r exa on the peratection as po	SRC I K/A tline that m m e ass tiona n D.1	D-only outline, is allowed if the specified in the ust total 25 per sociated outlin illy important, s 1.b of ES-401	the "Ti ne K/A ne table ints. ne; syst site-sp for guid	er Tota is rep cified e base e base cems o ecific s dance	als" in laced I in the t in the	each F oy a Ko able. IRC re Itions s that ling the	(/A category /A from The final visions. The that do not are not e eliminatior
3.	only outlines ( shall not be le another Tier 3 The point total for final RO exam Systems/evolu apply at the fa included on th of inappropria Select topics f	i.e., ss th Cate for each ution cility e ou te K/ from ng a t-spe	exce each gro st tol s wit s wit s so tline (A st as n secc ecific	ept fo wo). y). up a tal 7 thin e build l sho aterr nany ond t ; prio	r on (Or up a nd ti 5 poi each be de uld t eents sys opic rity,	ie ca ne Ti ind ti ier m ints a o grou elete be ac s. tems: for a only	tego er 3 ier in iay d and t up a ed ar dded s ano any s r thos	the S re identified of	Tier iation prop te by SRO- entifi stifie efer t olutio	3 of n Co 2 ±1 f only ded o d; op o Se ns a r evo navin	f the ontrol d out from exa on the berat ection as po blutic ig an	SRC I K/A tline that e as tiona n D.1 ossib on.	D-only outline, is allowed if the specified in the specified in the sociated outline sociated outline sociat	the "Ti he K/A hat spe he table ints. he; syst site-sp for guid ery sys	er Tota is rep cified i e base cems o ecific s dance tem or	als" in laced I in the t or evolu- system regard	each h cable. IRC re Itions s that ling the	(/A category /A from The final visions. The that do not are not are not e elimination the group
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### Form ES-401-1

ES-401							Form E	S-401-1			
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)											
E/APE # / Name / Safety Function	К 1	К 2	К 3	A 1	A 2 G	K/A Topic(s)	IR	#			
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			0 6		1000	Knowledge of the reasons for the following responses as they apply to Partial or Complete Loss of Forced Core Flow Circulation: Core flow indication	2.9	1			
295003 Partial or Complete Loss of AC / 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			
295004 Partial or Total Loss of DC Pwr / 6					0 4	Ability to determine and/or interpret the following as they apply to Partial or Total Loss of DC Pwr: System lineups	3.2	1			
295005 Main Turbine Generator Trip / 3				0 1		Ability to operate and/or monitor the following as they apply to Main Turbine Generator Trip: Recirculation system: Plant-Specific	3.1	1			
295006 SCRAM / 1				0 7		Ability to operate and/or monitor the following as they apply to SCRAM: Control rod position	4.1	1			
295016 Control Room Abandonment / 7			0 2			Knowledge of the reasons for the following responses as they apply to Control Room Abandonment: Turbine trip	3.7	1			
295018 Partial or Total Loss of CCW / 8				0 1		Ability to operate and/or monitor the following as they apply to Partial or Total Loss of CCW: Backup systems	3.3	1			
295019 Partial or Total Loss of Inst. Air / 8		1 4				Knowledge of the interrelations between Partial or Total Loss of Inst. Air and the following: Plant air systems	3.2	1			
295021 Loss of Shutdown Cooling / 4					0	Ability to determine and/or interpret the following as they apply to Loss of Shutdown Cooling: Reactor water heatup/cooldown rate	3.5	1			
295023 Refueling Acc / 8					02. 39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	1			
295024 High Drywell Pressure / 5					04. 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			
295025 High Reactor Pressure / 3			0 2			Knowledge of the reasons for the following responses as they apply to High Reactor Pressure: Recirculation pump trip: Plant-Specific	3.9	1			
295026 Suppression Pool High Water Temp. / 5					0	Ability to determine and/or interpret the following as they apply to Suppression Pool High Water Temp.: Suppression pool water temperature	4.1	1			
295027 High Containment Temperature / 5								0			
295028 High Drywell Temperature / 5		0 2			· 1	Knowledge of the interrelations between High Drywell Temperature and the following: Components internal to the drywell	3.2	1			
295030 Low Suppression Pool Wtr Lvl / 5	0 1				1	Knowledge of the operational implications of the following concepts as they apply to Low Suppression Pool Wtr Lvt. Steam condensation	3.8	1			
295031 Reactor Low Water Level / 2	0 1				1	Knowledge of the operational implications of the following concepts as they apply to Reactor Low Water Level: Adequate core cooling.	4.6	1			
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1					0 4	Ability to determine and/or interpret the following as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Suppression pool temperature	4.0	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 1			- 18-11-1 - 19-1	Knowledge of the interrelations between Plant Fire On Site and the following: Sensors, detectors and valves	2.6	1			
700000 Generator Voltage and Electric Grid Disturbances / 6		0 2				Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Breakers, relays	3.1	1			
K/A Category Totals:	3	4	3	3	4 3	Group Point Total:		20			

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ES-401						tion Outline	Form E	S-401-1
Eme	rgeno	:y an	d Abr	norm	nal Plant E	volutions - Tier 1/Group 2 (RO)		
E/APE # / Name / Safety Function	K 1	К 2	К 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 1				Knowledge of the interrelations between High Reactor Pressure and the following: Reactor/turbine pressure regulating system	3.5	1
295008 High Reactor Water Level / 2								0
295009 Low Reactor Water Level / 2				0 3		Ability to operate and/or monitor the following as they apply to Low Reactor Water Level: Recirculation system: Plant-Specific	3.0	1
295010 High Drywell Pressure / 5								0
295011 High Containment Temp / 5								0
295012 High Drywell Temperature / 5					0 2	Ability to determine and/or interpret the following as they apply to High Drywell Temperature: Drywell pressure	3.9	1
295013 High Suppression Pool Temp. / 5								0
295014 Inadvertent Reactivity Addition / 1	0 5					Knowledge of the operational implications of the following concepts as they apply to Inadvertent Reactivity Addition: Fuel thermal limits	3.7	1
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					01		4.6	1
295029 High Suppression Pool Wtr Lvl / 5					04		3.8	1
295032 High Secondary Containment Area Temperature / 5			0 2			Knowledge of the reasons for the following responses as they apply to High Secondary Containment Area Temperature: Reactor SCRAM	3.6	1
295033 High Secondary Containment Area Radiation Levels / 9					2.2.4 3 3			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:	1	1	1	1	1 2	Group Point Total:		7

ES-401						PI	lan					ion Outline Form E 2/Group 1 (RO)	S-401-1
System # / Name	k 1	k 2	k 3	< 4	< 5	< 6	A ·	4///////		A 4	G	K/A Topic(s)	#
203000 RHR/LPCI: Injection Mode		0 2										Knowledge of electrical power supplies to the following: Valves 2.5	1
205000 Shutdown Cooling							0 9					Ability to predict and/or monitor changes in parameters associated with operating the Shutdown Cooling controls including: SDC/RHR pump/system 2.8 discharge pressure	1
206000 HPCI			0 2									Knowledge of the effect that a loss or malfunction of the HPCI will have on following: Reactor pressure control: BWR-2, 3, 4 3.8	1
207000 Isolation (Emergency) Condenser													0
209001 LPCS		0 3									· · · · · · · · · · · · · · · · · · ·	Knowledge of electrical power supplies to the following: Initiation logic 2.9	1
209002 HPCS											.244		0
211000 SLC						0 3					1995 ( 2* 783	Knowledge of the effect that a loss or malfunction of the following will have on the SLC: A.C. power 3.2	1
212000 RPS					0 2							Knowledge of the operational implications of the following concepts as they apply to RPS: Specific logic arrangements 3.3	1
215003 IRM									0 1		-89457 -89457	Ability to monitor automatic operations of the IRM including: Meters and recorders 3.3	1
215004 Source Range Monitor								17437					0
215005 APRM / LPRM			0 1									Knowledge of the effect that a loss or malfunction of the APRM / LPRM will have on following: RPS 4.0	1
217000 RCIC				0 5		0 3						Knowledge of RCIC design realize(s) and/of interlocks which provide for the following: Prevents radioactivity release to auxiliary/reactor building; Knowledge of the effect that a loss or malfunction of the following will have on the RCIC:         3.2;           3.5         3.5	2
218000 ADS	0 2										04. 08	KHOWe609 On the bityStcarContractions and/or cause-enect relationships           between ADS and the following: Low pressure core spray: Plant-Specific;           Knowledge of how abnormal operating procedures are used in conjunction with	2
223002 PCIS/Nuclear Steam Supply Shutoff							0 2				592	Ability to predict and/or monitor changes in parameters associated with operating the PCIS/Nuclear Steam Supply Shutoff controls including: Valve 3.7 closures	1
239002 SRVs				0 7								Knowledge of SRVs design feature(s) and/or interlocks which provide for the following: Minimum steam pressure required to keep SRV open or to open SRV 3.1	1
259002 Reactor Water Level Control										0 1		Ability to manually operate and/or monitor in the control room: All individual component controllers in the manual mode 3.8	1
261000 SGTS								0 4			10 10 P	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: High train moisture 2.5	1
262001 AC Electrical Distribution									0 2			Ability to monitor automatic operations of the AC Electrical Distribution including: Automatic bus transfer 3.2	1
262002 UPS (AC/DC)	1 9									0 1		knowledge or the physical connections and/or cadse-enect relationships     between UPS (AC/DC) and the following: Power range neutron monitoring     system: Plant-Specific; Ability to manually operate and/or monitor in the control     2.8	2
263000 DC Electrical Distribution	0 1							11.11.2 1		0 1	ić.,	Knowledge of the physical comfections and of calls even bc Electrical Distribution and the following: A.C. electrical distribution; Ability to manually operate and/or monitor in the control room: Major breakers and exercise Direct Electrical distribution; 3.3;	2
264000 EDGs					0 6						04 47	Rndwetige onthe openational infinitations on the rollowing concepts as they apply to EDGs: Load sequencing; Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference activity.         3.4;	2
300000 Instrument Air		T		0 1							armer Kor Sorre	Knowledge of Instrument Air design feature(s) and/or interlocks which provide for the following: Manual/automatic transfers of control	1
400000 Component Cooling Water			0 1					03			15.22	Knowledge of the effect that a loss of maintification of the component Cooling           Water will have on following: Loads cooled by CCWS; Ability to (a) predict the impacts of the following on the Component Cooling Water, and (b) based on         2.9;	2
											· · · · ·	these predictions use precedures to correct control or mitigate the	
K/A Category Totals:	3	2	3	3	2	2	2	2	2	3	2	Group Point Total:	26

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ES-401 BWR Examination Outline Form ES-401-1 Plant Systems - Tier 2/Group 2 (RO)								S-401-1							
System # / Name	К 1	K 2	K 3	K 4	K 5				A 3			<b>8</b> 8	K/A Topic(s)	IR	#
201001 CRD Hydraulic	ŀ	-	Ŭ	-	Ū		ŀ			ľ	10.4				0
201002 RMCS										┢					0
201003 Control Rod and Drive Mechanism						0		ġ.,		┢╴			Knowledge of the effect that a loss or malfunction of the following will have on the Control Rod and Drive Mechanism: Control rod drive hydraulic system	3.3	1
201004 RSCS										╞					0
201005 RCIS										T		35			0
201006 RWM				_						05			Ability to manually operate and/or monitor in the control room: Rod insert error indication: P-Spec(Not-BWR6)	3.2	1
202001 Recirculation							F			T					0
202002 Recirculation Flow Control				-											0
204000 RWCU			0 2										Knowledge of the effect that a loss or malfunction of the RWCU will have on following: Reactor water level	3.1	1
214000 RPIS							Γ								0
215001 Traversing In-core Probe	Γ	Γ					Γ								0
215002 RBM							Γ								0
216000 Nuclear Boiler Inst.							Γ								0
219000 RHR/LPCI: Torus/Pool Cooling Mode		Γ						197	0		1		Ability to monitor automatic operations of the RHR/LPCI: Torus/Pool Cooling Mode including: Valve operation	3.3	1
223001 Primary CTMT and Aux.							Γ	1		Γ	5		Aminy to (a) predict the impacts or the rollowing on the Himary CTMT and Aux.; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or constraints; High	3.6	1
226001 RHR/LPCI: CTMT Spray Mode							Γ								0
230000 RHR/LPCI: Torus/Pool Spray Mode															0
233000 Fuel Pool Cooling/Cleanup				0 3						Γ			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			-18		1	 24	52	1000		0	a frage	2533	Ability to manually operate and/or monitor in the control room: Neutron monitoring system	3.7	1
239001 Main and Reheat Steam										Γ	1225				0
239003 MSIV Leakage Control												<b>k</b> 7			0
241000 Reactor/Turbine Pressure Regulato	r										01	686	Ability to use plant computers to evaluate system or component status.	3.9	1
245000 Main Turbine Gen. / Aux.												5			0
256000 Reactor Condensate		0 1											Knowledge of electrical power supplies to the following: System pumps	2.7	1
259001 Reactor Feedwater											8.4 1				0
268000 Radwaste															0
271000 Offgas											177 M	1977 177			0
272000 Radiation Monitoring						0 1							Knowledge of the effect that a loss or malfunction of the following will have on the Radiation Monitoring: Reactor protection system	3.0	1
286000 Fire Protection							0 1				in the second		Ability to predict and/or monitor changes in parameters associated with operating the Fire Protection controls including: System pressure	2.9	1
288000 Plant Ventilation	0 5												Knowledge of the physical connections and/or cause-effect relationships between Plant Ventilation and the following: Process radiation monitoring system	3.3	1
290001 Secondary CTMT															0
290003 Control Room HVAC															0
290002 Reactor Vessel Internals												-1			0
											31.847 - 348				
K/A Category Totals:	1	1	1	1	0	2	1	Set.	1	2			Group Point Total:		12

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ES-401			-			ion Outline olutions - Tier 1/Group 1 (SRO)	Form E	S-401-1
	K K	y and K	K	A				
E/APE # / Name / Safety Function	1	2	3	1	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
295004 Partial or Total Loss of DC Pwr / 6								0
295005 Main Turbine Generator Trip / 3								0
295006 SCRAM / 1					04. 47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	1
295016 Control Room Abandonment / 7								0
295018 Partial or Total Loss of CCW / 8					0 5	Ability to determine and/or interpret the following as they apply to Partial or Total Loss of CCW: System pressure	2.9	1
295019 Partial or Total Loss of Inst. Air / 8					01. 07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	1
295021 Loss of Shutdown Cooling / 4					02. 25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	1
295023 Refueling Acc / 8								0
295024 High Drywell Pressure / 5					and an and a second			0
295025 High Reactor Pressure / 3					0 5	Ability to determine and/or interpret the following as they apply to High Reactor Pressure: Decay heat generation	3.6	1
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					10	Ability to determine and/or interpret the following as they apply to Low Suppression Pool Wtr LvI: Suppression pool level	4.2	1
295031 Reactor Low Water Level / 2								0
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					0 9	Ability to determine and/or interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Operational status of emergency diesel generators	4.3	1
K/A Category Totals:	0	0	0	0	4 3	Group Point Total:		7

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ES-401 BWR Examination Outline Form ES-40									
Emer	-			orma	al Plant Ev	olutions - Tier 1/Group 2 (SRO)			
E/APE # / Name / Safety Function	К 1	К 2	К 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	Ability to determine and/or interpret the following as they apply to High Reactor Water Level: Reactor water level	3.9	1	
295009 Low Reactor Water Level / 2					8212 (J 			0	
295010 High Drywell Pressure / 5					04. 06	Knowledge of EOP mitigation strategies.	4.7	1	
295011 High Containment Temp / 5								0	
295012 High Drywell Temperature / 5				-				0	
295013 High Suppression Pool Temp. / 5								0	
295014 Inadvertent Reactivity Addition / 1					Coloran Coloran Coloran			0	
295015 Incomplete SCRAM / 1					a de la companya de l			0	
295017 High Off-site Release Rate / 9								0	
295020 Inadvertent Cont. Isolation / 5 & 7								0	
295022 Loss of CRD Pumps / 1					0 3	Ability to determine and/or interpret the following as they apply to Loss of CRD Pumps: CRD mechanism temperatures	3.2	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	
295035 Secondary Containment High Differential Pressure / 5								0	
295036 Secondary Containment High Sump/Area Water Level / 5					and the second			0	
500000 High CTMT Hydrogen Conc. / 5								0	
K/A Category Totals:	0	0	0	0	2 1	Group Point Total:		3	

ES-401 BWR Examination Outline Form ES-401									5-401-1					
						Pla	int :	Sys	tem	s - '	Tier	2/Group 1 (SRO)		
System # / Name	< 1	< 2	< 3	< 4	( 5	( 6	<b>\</b> 1	A~2	A 3	4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection											1			0
205000 Shutdown Cooling Mode														0
206000 HPCI								and a second						0
207000 Isolation (Emergency) Condenser														0
209001 LPCS														0
209002 HPCS											ALC: NOT			0
211000 SLC											04. 45	Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	1
212000 RPS														0
215003 IRM														0
215004 Source Range Monitor														0
215005 APRM / LPRM														0
217000 RCIC														0
218000 ADS								0 6			and the second	those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS initiation signals present	4.3	1
223002 PCIS/Nuclear Steam Supply Shutoff											02. 22	Knowledge of limiting conditions for operations and safety limits.	4.7	1
239002 SRVs								12.52 ( 4.44			-1-1-45			0
259002 Reactor Water Level Control								0				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 sustance	3.4	1
261000 SGTS											8 10 10 10 10 12			0
262001 AC Electrical Distribution								0 6			*	Ability to (a) predict the impacts of the following on the AC Electrical Distribution, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Deconcrising a plant bus	2.9	1
262002 UPS (AC/DC)								1			No.			0
263000 DC Electrical Distribution											1000			0
264000 EDGs								13 						0
300000 Instrument Air								11						0
400000 Component Cooling Water														0
								74.						
K/A Category Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:		5

4

ES-401

ES-401 BWR Examination Outline Form ES-401 Plant Systems - Tier 2/Group 2 (SRO)										5-401-1				
System # / Name	K 1	K 2	K 3	K 4	K 5				A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic		2	3	4	5	0	1		3	4				0
201002 RMCS			_											0
201003 Control Rod and Drive Mechanism														0
201004 RSCS				-					┫					0
201005 RCIS									1		201.			0
201006 RWM									1		5. 10-			0
202001 Recirculation											1.10			0
202002 Recirculation Flow Control														0
204000 RWCU											04. 41	Knowledge of the emergency action level thresholds and classifications.	4.6	1
214000 RPIS	T								1					0
215001 Traversing In-core Probe				[										0
215002 RBM														0
216000 Nuclear Boiler Inst.														0
219000 RHR/LPCI: Torus/Pool Cooling Mode											4			0
223001 Primary CTMT and Aux.														0
226001 RHR/LPCI: CTMT Spray Mode											 2011			0
230000 RHR/LPCI: Torus/Pool Spray Mode								1221						0
233000 Fuel Pool Cooling/Cleanup											ND-1			0
234000 Fuel Handling Equipment			1994) 2014						A-20.3		2 2			0
239001 Main and Reheat Steam		Γ												0
239003 MSIV Leakage Control														0
241000 Reactor/Turbine Pressure Regulator		Γ												0
245000 Main Turbine Gen. / Aux.														0
256000 Reactor Condensate														0
259001 Reactor Feedwater														0
268000 Radwaste								5-1-1-1 5-1-2-1-1			490 NAR			0
271000 Offgas											2000 2000			0
272000 Radiation Monitoring								~~ 4595			01. 27	Knowledge of system purpose and/or function.	4.0	1
286000 Fire Protection														0
288000 Plant Ventilation														0
290001 Secondary CTMT								Red.			5135. 5553			0
290003 Control Room HVAC								02				noming to (a) predict the impacts of the holowing on the control Room HVAC, and (b) based on those predictions, use procedures to correct, control, or miliate the consequences of those abnormal conditions or operations: Extreme	3.4	1
290002 Reactor Vessel Internals														0
											2			
K/A Category Totals:	0	0	0	0	0	0	0	1	0	0	2	Group Point Total:		3

5

Conduct of Operations         2.1.         41         Knowledge of the refueling process.         2.8         3.7         1           2.1.         1.1.<	ES-401		Generic Knowledge and Abilities Outline (Tier 3)		FC	orm ES	-401-
Category         NA #         Iopic         IR         #         IR         #         IR         #           21.09         Ability to direct personnel activities inside the correl from.         2.9         1         4.5           21.143         Ability to direct personnel activities inside the correl from.         2.9         1         4.5           21.143         Ability to direct personnel activities inside the correl from activity of plant charges, such as         4.1         1         4.3         1           21.143         Ability to use procedures to determine the effects on reactivity of plant charges, such as         4.1         4.3         1           21.143         Ability to use procedures to determine the effects on reactivity of plant charges, such as         4.1         4.3         1           21.1         Intervieweige of the reflecting process.         2.8         3.7         1           21.1         Intervieweige of the reflecting process.         2.6         1         3.8           22.1         Intervieweige of the setue conder controls as merging mananeos activities of the fact in the transmission as a steam control on control control as a steam control on control control and steam control on control controls as mergine to conder controls as mergine to control controls and immation the fact in the transmission         2.6         1         3.8           22.1         Subt	Facility Nam	e:Peach	Bottom Date of Exam:3/20/17 Rev 1				
In         In<	Category	K/A #	Торіс				
2.1. 43         Ability to use proceedures to determine the effects on reactivey of plant changes, such as eactor coulter system temperature, secondary plant, fuel deplation, etc.         4.1         1         4.3           2.1. 43         Ability to use process the determine the effect and reactivey of plant changes, such as eactor coulter system temperature, secondary plant, fuel deplation, etc.         4.1         1         4.3         1           2.1. 43         Ability to use process the determine the effect an reactivey of plant changes, such as eactor coulter system temperature, secondary plant, fuel deplation, etc.         2.8         3.7         1           2.1. 41         Knowledge of the reducting process.         2.8         3.7         1           2.1. 1							#
I			Ability to use procedures to determine the effects on reactivity of plant changes, such as				
Conduct of Operations         2.1.         4         Knowledge of the refueling process.         2.8         3.7         1           2.1.         1.1. </td <td>1.</td> <td>2.1. 43</td> <td>Ability to use procedures to determine the effects on reactivity of plant changes, such as</td> <td>4.1</td> <td></td> <td>4.3</td> <td>1</td>	1.	2.1. 43	Ability to use procedures to determine the effects on reactivity of plant changes, such as	4.1		4.3	1
2.1.         1.1.         1.1.         1.1.         2.1.         2.1.         1.1. <td< td=""><td>Conduct of</td><td>2.1. 41</td><td>Knowledge of the refueling process.</td><td>2.8</td><td></td><td>3.7</td><td>1</td></td<>	Conduct of	2.1. 41	Knowledge of the refueling process.	2.8		3.7	1
Subtotal         2         2           2.2.17         strowledge of the process for managing maintenance activities during power operations. avidem operator.         2.6         1         3.8         2           2.2.17         strowledge of the process for managing maintenance activities during power operations. avidem operator.         2.6         1         3.8         1           2.2.02         2.2.38         Knowledge of conditions and limitations in the facility license.         3.6         4.5         1           2.2.38         Knowledge of conditions and limitations in the facility license.         3.6         4.5         1           2.2.         2.2         1         1         1         1           2.2.         2.2         1         1         1         1         1           2.2.         2.2         1         1         2         1         1         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.3         2         2.9         1         3.1         1         3.1         3.1         3.3         2         1         <		2.1.					
2.2. 17         Knowledge of the process for managing maintenance activities during power operations. system operator.         2.6         1         3.8           2.2. 17         c.4.         1         4.1         4.1           2.2. 17         c.4.         1         4.1         4.1           2.2. 02         2.1.         1         4.6         1         4.1           2.2. 38         Knowledge of conditions and limitations in the facility license.         3.6         4.5         1           2.2.         2.2.         1         1         1         1         1           2.2.         2.2.         1         1         1         1         1           2.2.         1         1         1         1         3.8         1           2.2.         1         1         2.1         1         1         3.8         1           2.2.         1         1         3.4         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.8         1         3.1         1.1         3.1         <							
2.2. 17         such as risk assessments, work prioritization, and coordination with the transmission         2.6         1         3.8           2.2. 02         Ability to manipulate the console controls as required to operate the facility between         4.6         1         4.1           2.2. 03         Monity to manipulate the console controls as required to operate the facility between         4.6         1         4.1           2.2. 38         Knowledge of conditions and limitations in the facility license.         3.6         4.5         1           2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.           2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         1           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal.         3.4         1         3.8         2.9         1         3.1           2.3. 14         Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, 2.9         1         3.1         2.3         1         4.3         1           2.3. 11         Ability to control radiation releases.         3.8         1         4.3         1           2.3. 14         Knowledge of radiation or contamination hazards that may arise during norma		Subtota			2		2
2.2. 02         atudown and designated power levels.         4.6         1         4.1           2.2. 38         Knowledge of conditions and limitations in the facility license.         3.6         4.5         1           2.2. 38         Knowledge of conditions and limitations in the facility license.         3.6         4.5         1           2.2. 2.         2.2. 2.         2.2. 2.         2.2. 2.         2.2. 2.         2.2. 2.         1           2.2. 3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal.         3.4         1         3.8           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal.         3.4         1         3.8           2.3. 15         Knowledge of radiation or contamination hazards that may arise during normal, abnormal.         3.4         1         3.8           2.3. 11         Ability to control radiation releases.         3.8         1         4.3         1           2.3. 11         Ability to control radiation or contamination hazards that may arise during normal, abnormal.         3.4         3.8         1           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal.         3.4         3.8         1           2.3. 14         Knowledge of radiation or contaminatio		2.2. 17	such as risk assessments, work prioritization, and coordination with the transmission	2.6	1	3.8	
Equipment Control         2.2.         1         1         1         1           2.2.         2.2.         2.2.         2         1		2.2. 02		4.6	1	4.1	
Control         2.2.         Image: Control         2.2.           2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.2.         2.3.         14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.         2.3.         1         3.8.         2.3.         15         Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, or emergency conditions or activities.         2.9         1         3.1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         4.3         1         3.8         1         3.3         2         3.3         2         3.3         2         3.3         2	2.	2.2. 38	Knowledge of conditions and limitations in the facility license.	3.6		4.5	1
2.2.         Subtotal         2         1           Subtotal         2         1           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           2.3. 15         Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.         3.8         1         4.3           2.3. 11         Ability to control radiation releases.         3.8         1         4.3           2.3. 11         Ability to control radiation releases.         3.8         1         4.3           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.         3.8         1         3.8         1           2.3. 14         Knowledge of procedures relating to a security event.         3.4         3.8         1           2.3.         Subtotal         3         2         1         4.1         1           2.3.         1         Knowledge of procedures relating to a security event.         3.2         1         4.1           2.4.         28         Knowledge of EOP entry conditions and immediate action steps.         4.6         1         4.8	Equipment Control	2.2.					
Subtotal         2         1           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         1         3.8           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         1           2.3. 11         Ability to control radiation releases.         3.8         1         4.3         1           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.         3.8         1         4.3         1           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.         3.8         1         4.3         1           2.3. 14         Knowledge of procedures relating to a security event.         3.2         1         4.1         1           2.4. 28         Knowledge of EOP entry conditions and immediate action steps.         4.6         1         4.8         1           2.4. 28         Knowledge of the emergency plan.         3.1 <td>2.2.</td> <td></td> <td></td> <td></td> <td></td> <td></td>		2.2.					
A.         2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, 3.4         1         3.8           3.         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. 11         Ability to control radiation releases.         3.8         1         4.3           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, abnormal, and the control radiation or contamination hazards that may arise during normal, abnormal, 3.4         3.8         1         4.3           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, and the control radiation or contamination hazards that may arise during normal, abnormal, 3.4         3.8         1           2.3. 14         Knowledge of radiation or contamination hazards that may arise during normal, abnormal, 3.4         3.8         1           2.3. 14         Knowledge of radiation or activities.         3.8         4.3         1           2.3.         2         2.4         2.8         Knowledge of procedures relating to a security event.         3.2         1         4.1           2.4. 2							
2.3. 14       or emergency conditions or activities.       3.4       1       3.0         2.3. 15       Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms.       2.9       1       3.1         2.3. 15       portable survey instruments, personnel monitoring equipment, etc.       3.8       1       4.3         2.3. 11       Ability to control radiation releases.       3.8       1       4.3       1         2.3. 11       Ability to control radiation releases.       3.8       1       4.3       1         2.3. 14       Knowledge of radiation or contamination hazards that may arise during normal, abnormal, and or emergency conditions or activities.       3.8       1       4.3       1         2.3.       1       Knowledge of procedures relating to a security event.       3.2       1       4.1       1         2.4. 28       Knowledge of procedures relating to a security event.       3.2       1       4.1       1         2.4. 28       Knowledge of operator response to loss of all annunciators.       4.6       1       4.8       1       4.2         Plan       2.4. 29       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1		Subtota	· · · · · · · · · · · · · · · · · · ·		2		1
A.       2.3. 13       portable survey instruments, personnel monitoring equipment, etc.       2.9       1       3.1         Radiation Control       2.3. 11       Ability to control radiation releases.       3.8       1       4.3       1         2.3. 11       Ability to control radiation releases.       3.8       1       4.3       1         2.3. 14       Ability to control radiation or contamination hazards that may arise during normal, abnormal, and or emergency conditions or activities.       3.8       4.3       1         2.3. 14       Knowledge of radiation or contamination hazards that may arise during normal, abnormal, and or emergency conditions or activities.       3.4       3.8       1         2.3. 14       Knowledge of procedures relating to a security event.       3.2       1       4.1       1         2.4. 28       Knowledge of EOP entry conditions and immediate action steps.       4.6       1       4.8       1         2.4. 46       Ability to verify that the alarms are consistent with the plant conditions.       4.2       1       4.2       1         Plan       2.4. 29       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1         2.4. 29       Knowledge of the em		2.3. 14		3.4	1	3.8	
A. Emergency Procedures Plan A. Subtotal A. Subtotal A		2.3. 15		2.9	1	3.1	
Control       2.3. 11 Addity to control radiation releases.       3.0       4.3       1         2.3. 14       Knowledge of radiation or contamination hazards that may arise during normal, abnormal, abnormal, and or emergency conditions or activities.       3.4       3.8       1         2.3.       Subtotal       3       2         2.4. 28       Knowledge of procedures relating to a security event.       3.2       1       4.1         2.4. 28       Knowledge of EOP entry conditions and immediate action steps.       4.6       1       4.8         2.4. 46       Ability to verify that the alarms are consistent with the plant conditions.       4.2       1       4.2         Procedures       2.4. 29       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1	3.	2.3. 11	Ability to control radiation releases.	3.8	1	4.3	
2.3. 14 or emergency conditions or activities.       3.4       3.6       1         2.3.       Subtotal       3       2         Subtotal       3.2       1       4.1         2.4. 28 knowledge of procedures relating to a security event.       3.2       1       4.1         2.4. 01 knowledge of EOP entry conditions and immediate action steps.       4.6       1       4.8         2.4. 46 Ability to verify that the alarms are consistent with the plant conditions.       4.2       1       4.2         Plan       2.4. 29 knowledge of operator response to loss of all annunciators.       3.6       4.0       1         2.4. 29 knowledge of the emergency plan.       3.1       4.4       1         2.4. 10       Knowledge of the emergency plan.       3.1       4.4       1	Radiation Control	2.3. 11	Ability to control radiation releases.	3.8		4.3	1
Subtotal         3         2           2.4. 28         Knowledge of procedures relating to a security event.         3.2         1         4.1           2.4. 10         Knowledge of EOP entry conditions and immediate action steps.         4.6         1         4.8           2.4. 46         Ability to verify that the alarms are consistent with the plant conditions.         4.2         1         4.2           Procedures Plan         2.4. 29         Knowledge of operator response to loss of all annunciators.         3.6         4.0         1           2.4. 29         Knowledge of the emergency plan.         3.1         4.4         1           2.4.         Subtotal         3         2		2.3. 14		3.4		3.8	1
A.       2.4. 28       Knowledge of procedures relating to a security event.       3.2       1       4.1         2.4. 01       Knowledge of EOP entry conditions and immediate action steps.       4.6       1       4.8         2.4. 46       Ability to verify that the alarms are consistent with the plant conditions.       4.2       1       4.2         Procedures       2.4. 32       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         Plan       2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1         Subtotal       3       2							
A. Emergency Procedures Plan 2.4. 01 Knowledge of EOP entry conditions and immediate action steps. 4.6 1 4.8 4.2 4.4 Ability to verify that the alarms are consistent with the plant conditions. 4.2 1 4.2 4.0 1 2.4. 32 Knowledge of operator response to loss of all annunciators. 3.6 4.0 1 2.4. 29 Knowledge of the emergency plan. 3.1 4.4 1 2.4. 5.4. 5.4. 5.4. 5.4. 5.4. 5.4. 5.4.		Subtota			3		2
A.       2.4. 46       Ability to verify that the alarms are consistent with the plant conditions.       4.2       1       4.2         Procedures       2.4. 32       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         Plan       2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1         Subtotal       3       2		2.4. 28	Knowledge of procedures relating to a security event.	3.2	1	4.1	
Emergency       2.4. 32       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         Plan       2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1         2.4.       Subtotal       3       2		2.4. 01	Knowledge of EOP entry conditions and immediate action steps.	4.6	1	4.8	
Procedures       2.4. 32       Knowledge of operator response to loss of all annunciators.       3.6       4.0       1         Plan       2.4. 29       Knowledge of the emergency plan.       3.1       4.4       1         2.4.       Subtotal       3       2	4. Emergency	2.4. 46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	1	4.2	
2.4. 29 Knowledge of the emergency plan.       3.1       4.4       1         2.4.       Subtotal       3       2	Procedures	2.4. 32	Knowledge of operator response to loss of all annunciators.	3.6		4.0	1
Subtotal 3 2		2.4. 29	Knowledge of the emergency plan.	3.1		4.4	1
				at 1. de la c	3	n an	

#### Generic Knowledge and Abilities Outline (Tier 3)

#### Record of Rejected K/As

Tier / Group	Randomly Selected K/A	Reason for Rejection
The system suppression		s utilized the pre-approved Peach Bottom K/A
The follow	ng K/As were rejected following the	e systematic and random sampling process:
1 / 1	Question 76 295030 Low Suppression Pool Wtr Lvl A2.04 - Ability to determine and/or interpret the following as they apply to Low Suppression Pool Wtr Lvl: Drywell/ suppression chamber differential pressure: Mark-I&II	An acceptable question could not be developed at the SRO level for with randomly sampled K/A due to lack of requirements related to Drywell / Suppression Chamber differential pressure at the facility. Randomly resampled K/A 295030 Low Suppression Pool Wtr LvI A2.01 - Ability to determine and/or interpret the following as they apply to Low Suppression Pool Wtr LvI: Suppression pool level.
1/2	Question 84 295007 High Reactor Pressure 2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	The randomly sampled K/A resulted in oversampling of concepts on the SRO exam (Question 82 also tests High Reactor Pressure, Question 89 also tests alarm response). Randomly resampled K/A 295010 High Drywell Pressure 2.4.6 - Knowledge of EOP mitigation strategies.
2/1	Question 86 205000 Shutdown Cooling Mode A2.09 - Ability to (a) predict the impacts of the following on the Shutdown Cooling; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reactor low water level	The randomly sampled K/A resulted in oversampling of Shutdown Cooling concepts on the SRO exam (Question 79) and the overall exam (Question 14 + 51). Randomly resampled K/A 218000 ADS A2.06 - 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.

2/1	Question 87 300000 Instrument Air A2.01 - 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 conditions or operations: Air dryer and filter malfunctions	The randomly sampled K/A resulted in oversampling of Instrument Air concepts on the SRO exam (Question 81) and the overall exam (Questions 8 + 44). Randomly resampled K/A 262001 AC Electrical Distribution A2.06 - Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: De- energizing a plant bus.
2/2	Question 91 259001 Reactor Feedwater A2.05 - 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: Loss of applicable plant air systems	The randomly sampled K/A resulted in oversampling of Feedwater concepts on the SRO exam (Questions 83 + 90). Randomly resampled K/A 290003 Control Room HVAC A2.02 - Ability to (a) predict the impacts of the following on the CONTROL ROOM HVAC; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Extreme environmental conditions.
2/2	Question 93 204000 RWCU 2.4.31 - Knowledge of annunciator alarms, indications, or response procedures.	An acceptable question could not be developed at the SRO level for the combination of system and generic K/A. The K/A also resulted in oversampling of alarm response concepts on the SRO exam (Question 89 also tests alarm response). Randomly resampled K/A 204000 RWCU 2.4.41 - Knowledge of the emergency action level thresholds and classifications.
2/1	Question 9 212000 RPS K5.01 - Knowledge of the operational implications of the following concepts as they apply to RPS: Fuel thermal time constant	An acceptable question could not be written without testing primarily GFES knowledge. Randomly resampled K/A 212000 RPS K5.02 - - Knowledge of the operational implications of the following concepts as they apply to RPS: Specific logic arrangements.

2 / 1	Question 18 262001 AC Electrical Distribution A3.04 - Ability to monitor automatic operations of the AC Electrical Distribution including: Load sequencing	An acceptable question could not be written without overlap with Question 10. Randomly resampled K/A 262001 AC Electrical Distribution A3.02 - Ability to monitor automatic operations of the AC Electrical Distribution including: Automatic bus transfer.
2/2	Question 33 286000 Fire Protection A1.03 - Ability to predict and/or monitor changes in parameters associated with operating the Fire Protection controls including: Fire doors	An acceptable question could not be written at the license level due to limited association between operating Fire Protection control and Fire doors. Randomly resampled K/A 286000 Fire Protection A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the Fire Protection controls including: System pressure.
3	Question 72 2.4.32 - Knowledge of operator response to loss of all annunciators.	An acceptable question could not be written without overlap with Question 97 (same generic K/A with limited scope). Randomly resampled K/A 2.4.28 - Knowledge of procedures relating to a security event (non- safeguards information).
3	Question 73 2.4.47 - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	The randomly sampled generic K/A is oversampled because it is also used in Questions 22 and 80. Randomly resampled K/A 2.4.1 - Knowledge of EOP entry conditions and immediate action steps.
2/2	Question 29 204000 RWCU K3.01 - Knowledge of the effect that a loss or malfunction of the RWCU will have on following: Reactor water quality	An acceptable question could not be written at the license level for the randomly sampled K/A. Randomly resampled K/A 204000 RWCU K3.02 - Knowledge of the effect that a loss or malfunction of the RWCU will have on following: Reactor water level.

Question 31 272000 Radiation Monitoring K5.01 - Knowledge of the operational implications of the following concepts as they apply to RADIATION MONITORING SYSTEM: Hydrogen injection operation's effect on process radiation indications: Plant-Specific	An acceptable question could not be written for the randomly sampled K/A without overlapping a scenario event on the operating exam. Randomly resampled K/A 272000 Radiation Monitoring K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the RADIATION MONITORING SYSTEM: Reactor protection system.
Question 83 295008 High Reactor Water Level A2.02 - Ability to determine and/or interpret the following as they apply to High Reactor Water Level: Steam flow/feed flow mismatch	An acceptable question could not be written for the randomly sampled K/A at the SRO level. Randomly resampled K/A 295008 High Reactor Water Level A2.01 - Ability to determine and/or interpret the following as they apply to High Reactor Water Level: Reactor water level.
Question 90 259002 Reactor Water Level Control A2.06 - 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 controller signal output	An acceptable question could not be written for the randomly sampled K/A at the SRO level. Randomly resampled K/A 259002 Reactor Water Level Control A2.05 - 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.
	<ul> <li>272000 Radiation Monitoring</li> <li>K5.01 - Knowledge of the operational implications of the following concepts as they apply to RADIATION</li> <li>MONITORING SYSTEM: Hydrogen injection operation's effect on process radiation indications: Plant-Specific</li> <li>Question 83</li> <li>295008 High Reactor Water Level</li> <li>A2.02 - Ability to determine and/or interpret the following as they apply to High Reactor Water Level: Steam flow/feed flow mismatch</li> <li>Question 90</li> <li>259002 Reactor Water Level Control</li> <li>A2.06 - 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 controller</li> </ul>