

ILT 18-1 NRC Exam

Facility: <u>Oconee Nuclear Station</u>	Date of Examination: <u>6/04/2018</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>	Operating Test Number: <u>1</u>

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations [KA: G2.1.25 (3.9/4.2)] (10 min)	M, R	ADM-113, Determine Time for SFP to Reach 180°F
Conduct of Operations [KA: G2.1.4 (3.3/3.8)] (10 min)	D, R	ADM-107, Determine If RO License Requirements Are Met
Equipment Control [KA: G2.2.12 (3.7/4.1)] (15 min)	N, R	ADM-207, Surveillance of 1A Bleed Transfer Pump Following Maintenance
Radiation Control [KA: G2.3.4 (3.2/3.7)] (15 min)	M, R	ADM-306, Determine the Maximum Permissible Stay Time Within Emergency Dose Limits (EDL)
Emergency Plan		N/A

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes and Criteria:

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

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Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations [KA: G2.1.7 (4.4/4.7)] (15 min)	M, R	ADM-S110, Calculation of Primary to Secondary Leak Rate and Determination of Shutdown Requirements
Conduct of Operations [KA: G2.1.25 (3.9/4.2)] (25 min)	D, R	ADM-S105, Perform a Power Imbalance Verification and Determine any Required Actions and Completion Times
Equipment Control [KA: G2.2.40 (3.4/4.7)] (15 min)	D, R	ADM-S201, Determine Tech Spec Requirements for Inoperable PZR Heaters
Radiation Control [KA: G2.3.4 (3.2/3.7)] (15 min)	N, R	ADM-S300, Calculate Dose Received and Determine Approval Level Required to Exceed Emergency Dose Limits (EDL)
Emergency Plan [KA: G2.4.41 (2.9/4.6)] (15 min)	N, R	ADM-S406, Determine the Appropriate Emergency Action Level

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ILT 18-1 NRC Exam

Facility: <u>Oconee Nuclear Station</u>	Date of Examination: <u>06/04/2018</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test Number: <u>1</u>

Control Room Systems:* 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U		
System/JPM Title	Type Code*	Safety Function
a. RO-302a, Perform Required Actions For Failed LPI Train EOP Enclosure 5.1 (ES Actuation) [KA: EPE 011 EA1.04 (4.4/4.4)]	A, D, E, EN, L, S	3
b. RO-P403a, Initiate HPI Forced Cooling EOP Rule 4 (Initiation of HPI Forced Cooling) [KA: EPE 074 EA1.08 (4.2/4.2)]	A, E, L, M, S	4P
c. RO-503, Respond to Inadvertent Actuation of ES Channel 7 AP/1/A/1700/042 (Inadvertent ES Actuation) [KA: SYS026 A4.01 (4.5/4.3)]	EN, N, S	5
d. RO-104, Withdrawal of Safety Rod Group 1 to 50% OP/1/A/1105/019 (Control Rod Drive System) Enclosure 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: SYS001 A4.06 (2.9/3.2)]	D, L, S	1
e. RO-205a, Respond to RCS Leak While on DHR AP/1/A/1700/026 (Loss of Decay Heat Removal) Enclosure 5.12 (RCS Makeup) [KA: APE025 AA1.02 (3.8/3.9)]	A, D, E, L, S	2
f. RO-S401a, Alignment of Condensate Recirc EOP Enclosure 5.23 (Alignment of Condensate Recirc) [KA: APE054 G2.1.20 (4.6/4.6)]	A, D, L, S	4S
g. RO-605, Functional Verification of SK Breakers PT/0/A/0610/017 (Operability Test of 4160V Breakers) Enclosure 13.12 (Functional Verification of SK Breakers) [KA: SYS062 A4.01 (3.3/3.1)]	N, S	6
h. RO-801, OATC Actions For Control Room Evacuation Following a Fire AP/1/A/1700/050 (Challenging Plant Fire) [KA: APE068 AA1.02 (4.3/4.5)]	D, E, L, S	8

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In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. AO-101, Swap Control Rod Drive Filters OP/1/A/1104/008 (Component Cooling System) Enclosure 4.19 (Placing 1A or 1B CRD Filter in Service) [KA: SYS001 G2.1.29 (4.1/4.0)]	D, R	1
j. AO-603, Shutdown of Inverters During Station Blackout EOP Enclosure 5.32 (Load Shed of Inverters During SBO) [KA: EPE055 EA1.04 (3.5/3.9)]	D, E, L	6
k. AO-802a, Isolate HPSW and LPSW During an Auxiliary Building Flood AP/3/A/1700/030 (Auxiliary Building Flood) Enclosures 5.1 (HPSW AB Flood) & 5.2 (LPSW AB Flood) [KA: BW/A07 AA2.2 (3.3/3.7)]	A, D, E	8
* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for R /SRO-I/SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power/Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6/4-6 /2-3 $\leq 9/\leq 8/\leq 4$ $\geq 1/\geq 1/\geq 1$ $\geq 1/\geq 1/\geq 1$ (control room system) $\geq 1/\geq 1/\geq 1$ $\geq 2/\geq 2/\geq 1$ $\leq 3/\leq 3/\leq 2$ (randomly selected) $\geq 1/\geq 1/\geq 1$	

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b. RO-P403a, Initiate HPI Forced Cooling EOP Rule 4 (Initiation of HPI Forced Cooling) [KA: EPE 074 EA1.08 (4.2/4.2)]	A, E, L, M, S	4P
c. RO-503, Respond to Inadvertent Actuation of ES Channel 7 AP/1/A/1700/042 (Inadvertent ES Actuation) [KA: SYS026 A4.01 (4.5/4.3)]	EN, N, S	5
d. RO-104, Withdrawal of Safety Rod Group 1 to 50% OP/1/A/1105/019 (Control Rod Drive System) Enclosure 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: SYS001 A4.06 (2.9/3.2)]	D, L, S	1
e. RO-205a, Respond to RCS Leak While on DHR AP/1/A/1700/026 (Loss of Decay Heat Removal) Enclosure 5.12 (RCS Makeup) [KA: APE025 AA1.02 (3.8/3.9)]	A, D, E, L, S	2
f. RO-S401a, Alignment of Condensate Recirc EOP Enclosure 5.23 (Alignment of Condensate Recirc) [KA: APE054 G2.1.20 (4.6/4.6)]	A, D, L, S	4S
g. RO-605, Functional Verification of SK Breakers PT/0/A/0610/017 (Operability Test of 4160V Breakers) Enclosure 13.12 (Functional Verification of SK Breakers) [KA: SYS062 A4.01 (3.3/3.1)]	N, S	6
h. N/A		

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In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. AO-101, Swap Control Rod Drive Filters OP/1/A/1104/008 (Component Cooling System) Enclosure 4.19 (Placing 1A or 1B CRD Filter in Service) [KA: SYS001 G2.1.29 (4.1/4.0)]	D, R	1
j. AO-603, Shutdown of Inverters During Station Blackout EOP Enclosure 5.32 (Load Shed of Inverters During SBO) [KA: EPE055 EA1.04 (3.5/3.9)]	D, E, L	6
k. AO-802a, Isolate HPSW and LPSW During an Auxiliary Building Flood AP/3/A/1700/030 (Auxiliary Building Flood) Enclosures 5.1 (HPSW AB Flood) & 5.2 (LPSW AB Flood) [KA: BW/A07 AA2.2 (3.3/3.7)]	A, D, E	8
* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for R /SRO-I/SRO-U	
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ES-301**Control Room/In-Plant Systems Outline****Form ES-301-2**

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a. RO-302a, Perform Required Actions For Failed LPI Train EOP Enclosure 5.1 (ES Actuation) [KA: EPE 011 EA1.04 (4.4/4.4)]	A, D, E, EN, L, S	3
b. RO-P403a, Initiate HPI Forced Cooling EOP Rule 4 (Initiation of HPI Forced Cooling) [KA: EPE 074 EA1.08 (4.2/4.2)]	A, E, L, M, S	4P
c. RO-503, Respond to Inadvertent Actuation of ES Channel 7 AP/1/A/1700/042 (Inadvertent ES Actuation) [KA: SYS026 A4.01 (4.5/4.3)]	EN, N, S	5
d. N/A		
e. N/A		
f. N/A		
g. N/A		
h. N/A		

ILT 18-1 NRC Exam

In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. AO-101, Swap Control Rod Drive Filters OP/1/A/1104/008 (Component Cooling System) Enclosure 4.19 (Placing 1A or 1B CRD Filter in Service) [KA: SYS001 G2.1.29 (4.1/4.0)]	D, R	1
j. AO-603, Shutdown of Inverters During Station Blackout EOP Enclosure 5.32 (Load Shed of Inverters During SBO) [KA: EPE055 EA1.04 (3.5/3.9)]	D, E, L	6
k. N/A		
* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.		
* Type Codes	Criteria for R /SRO-I/SRO-U	
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Site name:					Exam Date:	
OPERATING TEST TOTALS						
	Total	Total Unsat.	Total Edits	Total Sat.	% Unsat.	Explanation
Admin. JPMs	9	1	4	4	11	
Sim./In-Plant JPMs	11	0	4	7	0	
Scenarios	4	0	6	4	0	
Op. Test Totals:	24	1	14	15	11	

Instructions for Completing This Table:

Update data for this table from quality reviews and totals in the previous tables and then calculate the percentage of total items that are unsatisfactory and give an explanation in the space provided.

- Enter the total number of items submitted for the operating test in the "Total" column. For example, if nine administrative JPMs were submitted, enter "9" in the "Total" items column for administrative JPMs. For scenarios, enter the total number of simulator scenarios.
- Enter the total number of (U)nsatisfactory JPMs and scenarios from the two JPMs column 5 and simulator scenarios column 8 in the previous tables. Provide an explanation in the space provided.
- Enter totals for (E)nhancements needed and (S)atisfactory JPMs and scenarios from the previous tables. This task is for tracking only.
- Total each column and enter the amounts in the "Op. Test Totals" row.
- Calculate the percentage of the operating test that is (U)nsatisfactory ($\text{Op. Test Total Unsat.} / \text{Op. Test Total}$) and place this value in the bolded "% Unsat." cell.

Refer to ES-501, E.3.a, to rate the overall operating test as follows:
 - satisfactory, if the "Op. Test Total" "% Unsat." is $\leq 20\%$
 - unsatisfactory, if "Op. Test Total" "% Unsat." is $> 20\%$
- Update this table and the tables above with post-exam changes if the "as-administered" operating test required content changes, including the following:
 - The JPM performance standards were incorrect.
 - The administrative JPM tasks/keys were incorrect.
 - CTs were incorrect in the scenarios (not including postscenario critical tasks defined in Appendix D).
 - The EOP strategy was incorrect in a scenario(s).
 - TS entries/actions were determined to be incorrect in a scenario(s).

Facility:												Exam Date:	
Admin	JPMs	1 ADMIN Topic and K/A	2 LOD (1-5)	3 Attributes						4 Job Content		5 U/E/S	6 Explanation
				I/C Focus	Cues	Critical Steps	Scope (N/B)	Overlap	Perf. Std.	Key	Minutia		
ADM-S110 S		Conduct of Operations G 2.1.7										S	Okay after review.
ADM-S105 S		Conduct of Operations G 2.1.25	2									S	COLR not provided to verify against. Procedure path seems convoluted. Licensee will provide the COLR.
ADM-S201 S		Equipment Control G 2 2.40	2									E	This implies there is a loss. Would be better in a scenario. How would a failure of the bank heater normally be reported? What alarms are received? Providing the TS to look at is not necessary in the direction to the applicants. Change to determine if the minimum number of pressurizer heaters are operable. Evaluate all technical specification if any. This would raise the LOD to 2 or 3 and make the JPM sat pending validation.
ADM-S300 S		Radiation Control G2.3.4	2									S	Reviewed and agreed to rewrite cue statement.
ADM-S406 S		Emergency Plan G2.4.41	2									S	OK
ADM-113		Conduct of Operations G 2.1.25	3									E	AP-35 procedure steps missing from the proc column of the JPM. Step 4 standard has incorrect # days and temperature given.
ADM-107		Conduct of Operations G 2.1.4	2									S	Will correct the wording of the JPM standard.
ADM-206		Equipment Control G 2.2.44	3									S	ADM-107, need to ensure someone doesn't get the final answer correct but for an incorrect reasoning.
												U	Task standard implies that this is just a math test and doesn't involve an equipment assessment aspect? Could not open the attachments believe that they are vsd attachments. Unable to evaluate what items are actually given to the applicant.
												S	Will readdress with a different JPM. 4/23/18 Reviewed replacement JPM. SAT

[illegible]

Facility: Oconee 2018-301					Scenario: 1,3,4				Exam Date: 6/4/18	
1	2	3	4	5	6	7	8	9	10	
Event	Realism/Cred.	Required Actions	Verifiable actions	L O D	TS	CTs	Scen. Overlap	U/E/S	Explanation	
									Generic comment: Check background attributes of critical task statements. Add statement for Tech Specs that are addressed but are not applicable.	
S#1, E#2									Add statement that TS 3.5.1 is not applicable.	
E#3									Change in plant feedback for sheared shaft from the operator since the operator cannot see if the shaft is sheared or not.	
E#5									Add comment for no TS entry for this event.	
S#3, CT#2									CT#2 is bounded by a procedure step. Verify no safety related plant limit could be used instead.	
S#4									No reactivity, no normal for the BOP. Verify not needed.	
E#2									Page 8 of 9 requires a Reactor Trip if <6% CTP. Look to move this event to just prior to the major.	

Facility: Oconee		Date of Exam: June 2018															
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	3	N/A			3	3	N/A			3	18	3	3	6
	2	1	2	1				2	1				2	9	2	2	4
	Tier Totals	4	5	4				5	4				5	27	5	5	10
2. Plant Systems	1	3	3	2	3	2	2	2	3	3	3	2	28	3	2	5	
	2	1	1	1	1	0	1	1	1	1	1	10	2	1	3		
	Tier Totals	4	4	3	4	2	3	3	4	4	4	3	38		3	8	
3. Generic Knowledge and Abilities Categories					1	2	3	4	10				1	2	3	4	7
					3	3	2	2					2	2	1	2	
<p>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, 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).</p> <p>2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.</p> <p>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 KAs.</p> <p>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.</p> <p>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..</p>																	

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
008AG2.1.30	Pressurizer Vapor Space Accident / 3	4.4	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate and operate components, including local controls.
011EK2.02	Large Break LOCA / 3	2.6	2.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pumps
015AK2.10	RCP Malfunctions / 4	2.8	2.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP indicators and controls
022AK1.04	Loss of Rx Coolant Makeup / 2	2.9	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reason for changing from manual to automatic control of charging flow valve controller
025AA1.12	Loss of RHR System / 4	3.6	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS temperature indicators
026AA2.03	Loss of Component Cooling Water / 8	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition
027AK3.04	Pressurizer Pressure Control System Malfunction / 3	2.8	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Why, if PZR level is lost and then restored, that pressure recovers much more slowly
029EK1.03	ATWS / 1	3.6	3.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effects of boron on reactivity
040AA2.03	Steam Line Rupture - Excessive Heat Transfer / 4	4.6	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Difference between steam line rupture and LOCA
054AA2.04	Loss of Main Feedwater / 4	4.2	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Proper operation of AFW pumps and regulating valves
055EK1.02	Station Blackout / 6	4.1	4.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Natural circulation cooling

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
056AA1.25	Loss of Off-site Power / 6	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Main steam supply valve control switch
057AK3.01	Loss of Vital AC Inst. Bus / 6	4.1	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in EOP for loss of vital ac electrical instrument bus
058AA1.01	Loss of DC Power / 6	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross-tie of the affected dc bus with the alternate supply
062AG2.4.3	Loss of Nuclear Svc Water / 4	3.7	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to identify post-accident instrumentation.
065AK3.04	Loss of Instrument Air / 8	3	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross-over to backup air supplies
077AK2.01	Generator Voltage and Electric Grid Disturbances / 6	3.1	3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Motors
BE10EG2.4.4 / 1	Reactor Trip - Stabilization - Recovery	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
001AA1.02	Continuous Rod Withdrawal / 1	3.6	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rod in-out-hold switch
024AA2.01	Emergency Boration / 1	3.8	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Whether boron flow and/or MOVs are malfunctioning from plant conditions
033AG2.1.20	Loss of Intermediate Range NI / 7	4.6	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to execute procedure steps.
067AK3.04	Plant Fire On-site / 8	3.3	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in EOP for plant fire on site
074EA1.07	Inad. Core Cooling / 4	4.2	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AFW System
BA04AK2.1	Turbine Trip / 4	3.5	3.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.
BA08AK2.2	Refueling Canal Level Decrease / 8	3.8	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.
BE08EK1.2	LOCA Cooldown - Depress. / 4	3.5	3.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Normal, abnormal and emergency operating procedures associated with (LOCA Cooldown).
BE14EG2.4.18	EOP Enclosures	3.3	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the specific bases for EOPs.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
003K1.10	Reactor Coolant Pump	3.0	3.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS
004A2.05	Chemical and Volume Control	4.0	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP seal failures
004K6.29	Chemical and Volume Control	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reason for excess letdown and its relationship to CCWS
005A1.02	Residual Heat Removal	3.3	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RHR flow rate
005K2.01	Residual Heat Removal	3.0	3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RHR pumps
006A3.07	Emergency Core Cooling	3.6	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RHR pumps
006K2.02	Emergency Core Cooling	2.5	2.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Valve operators for accumulators
007A4.10	Pressurizer Relief/Quench Tank	3.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recognition of leaking PORV/code safety
008A1.03	Component Cooling Water	2.7	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CCW pressure
010A2.03	Pressurizer Pressure Control	4.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PORV failures
010K5.01	Pressurizer Pressure Control	3.5	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Determination of condition of fluid in PZR, using steam tables

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
012A3.06	Reactor Protection	3.7	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Trip logic
012K4.08	Reactor Protection	2.8	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Logic matrix testing
013G2.2.25	Engineered Safety Features Actuation	3.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
013K1.03	Engineered Safety Features Actuation	3.8	4.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CCS
022K4.02	Containment Cooling	3.1	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Correlation of fan speed and flowpath changes with containment pressure
026K2.01	Containment Spray	3.4	3.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment spray pumps
039K3.06	Main and Reheat Steam	2.8	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SDS
059K1.02	Main Feedwater	3.4	3.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AFW system
061K6.01	Auxiliary/Emergency Feedwater	2.5	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controllers and positioners
062A4.01	AC Electrical Distribution	3.3	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All breakers (including available switchyard)
062A4.04	AC Electrical Distribution	2.6	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Local operation of breakers

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
063A2.01	DC Electrical Distribution	2.5	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grounds
059A3.07	Main Feedwater (MFW) System	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ICS
073K5.03	Process Radiation Monitoring	2.9	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relationship between radiation intensity and exposure limits
076K4.03	Service Water	2.9	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic opening features associated with SWS isolation valves to CCW heat exchanges
078G2.1.32	Instrument Air	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to explain and apply all system limits and precautions.
103K3.03	Containment	3.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of containment integrity under refueling operations.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
001A1.03	Control Rod Drive	3.6	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S/G level and pressure
002K4.02	Reactor Coolant	3.5	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Monitoring reactor vessel level
015K6.02	Nuclear Instrumentation	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Discriminator/compensation circuits
011K2.01	Pressurizer level control	3.1	3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Charging Pumps
029K3.01	Containment Purge	2.9	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment parameters
033G2.4.8	Spent Fuel Pool Cooling	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.
056A2.04	Condensate	2.6	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of condensate pumps
072A3.01	Area Radiation Monitoring	2.9	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Changes in ventilation alignment
075A4.01	Circulating Water	3.2	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Emergency/essential SWS pumps
079K1.01	Station Air	3.0	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IAS

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.1.4	Conduct of operations	3.3	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55 etc.
G2.1.40	Conduct of operations	2.8	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of refueling administrative requirements
G2.1.43	Conduct of operations	4.1	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to use procedures to determine the effects on reactivity of plant changes
G2.2.11	Equipment Control	2.3	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for controlling temporary design changes.
G2.2.38	Equipment Control	3.6	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of conditions and limitations in the facility license.
G2.2.4	Equipment Control	3.6	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.
G2.3.13	Radiation Control	3.4	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiological safety procedures pertaining to licensed operator duties
G2.3.5	Radiation Control	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to use radiation monitoring systems
G2.4.14	Emergency Procedures/Plans	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of general guidelines for EOP usage.
G2.4.27	Emergency Procedures/Plans	3.4	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of fire in the plant procedures

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
022AG2.4.30	Loss of Rx Coolant Makeup / 2	2.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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
038EA2.09	Steam Gen. Tube Rupture / 3	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Existence of natural circulation, using plant parameters.
056AG2.4.20	Loss of Off-site Power / 6	3.8	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of operational implications of EOP warnings, cautions and notes.
065AG2.4.35	Loss of Instrument Air / 8	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects
077AA2.08	Generator Voltage and Electric Grid Disturbances / 6	4.3	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Criteria to trip the turbine or reactor
BE04EA2.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.6	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
003AA2.03	Dropped Control Rod / 1	3.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dropped rod, using in-core/ex-core instrumentation in-core or loop temperature measurements
024AA2.01	Emergency Boration / 1	3.8	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Whether boron flow and/or MOVs are malfunctioning from plant conditions
BA05AG2.1.32	Emergency Diesel Actuation / 6	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to explain and apply system limits and precautions.
BA07AG2.4.41	Flooding / 8	2.9	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the emergency action level thresholds and classifications.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
005G2.1.25	Residual Heat Removal	3.9	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to interpret reference materials such as graphs, curves, tables, etc.
012A2.05	Reactor Protection	3.1	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Faulty or erratic operation of detectors and function generators
013A2.03	Engineered Safety Features Actuation	4.4	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rapid depressurization
039A2.02	Main and Reheat Steam	2.4	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decrease in turbine load as it relates to steam escaping from relief valves
062G2.2.36	AC Electrical Distribution	3.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
002G2.4.8	Reactor Coolant	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.
017A2.02	In-Core Temperature Monitor (ITM) System	3.6	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Core damage
035A2.01	Steam Generator	4.5	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Faulted or ruptured S/Gs

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.1.32	Conduct of operations	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to explain and apply system limits and precautions.
G2.1.36	Conduct of operations	3.0	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of procedures and limitations involved in core alterations
G2.2.13	Equipment Control	4.1	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of tagging and clearance procedures.
G2.2.17	Equipment Control	2.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for managing maintenance activities during power operations.
G2.3.15	Radiation Control	2.9	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation monitoring systems
G2.4.11	Emergency Procedures/Plans	4.0	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of abnormal condition procedures.
G2.4.25	Emergency Procedures/Plans	3.3	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of fire protection procedures.

Tier / Group	Randomly Selected K/A	Reason for Rejection
2 / 1	SYS064 A3.08	Q(51) ONS does not use D/Gs to supply emergency power buses. Replaced with SYS059 A3.07 per Chief Examiner on 12/01/17
2 / 2	SYS028 K2.01	Q(59) ONS does not have Hydrogen Recombiners, so there is not a power supply. KA replaced with SYS011 K2.01 per Chief Examiner on 12/01/17
3 / 0	GEN2.2 2.2.18	Q(70) At ONS, the process for managing maintenance activities is an SRO function, so an RO question could not be created. Replaced with GEN 2.2.38 per Chief Examiner on 12/01/17
3 / 0	GEN2.4 2.4.32	Q(75) ONS does not have any procedural guidance that is RO knowledge for a loss of annunciators. KA replaced with GEN 2.4.27 per Chief Examiner on 12/01/17
1 / 1	APE027 AA2.08	Q(77) Oconee does not have a relationship between Pressurizer pressure control malfunction and letdown flow indication that we could write a question on. Replacement K/A APE027 AA2.01 supplied by NRC Chief on 12-13-17.
1 / 1	EPE038 EA2.05	Q(78) Oconee once-thru Steam Generators do not experience shrink and swell during a SGTR. Replacement K/A EPE038 EA2.09 supplied by NRC Chief on 12-13-17.
1 / 1	APE057 2.4.49	Q(79) Since the original KA was related to immediate operator actions, an SRO knowledge level question could not be created. KA replaced with APE057 G2.4.20 on 12/01/17
1 / 2	BWA05 2.1.25	Q(84) Oconee utilizes Keowee Hydro units in place of emergency diesels. We do not have materials such as graphs, curves, tables, etc. to interpret on emergency actuation. Replacement K/A BWA05 2.1.32 supplied by NRC Chief on 12-13-17.
2 / 2	SYS027 A2.01	Q(92) ONS does not have an Iodine Removal System where high temperature in the filter system is an issue. KA replaced with SYS017 A2.02 per Chief Examiner on 12/01/17
2 / 2	SYS0235 A2.04	Q(93) ONS does not have a steam flow/feed mismatch controller or circuit. We believe this K/A is related to the Westinghouse design and not B&W. We are requesting a new K/A. KA replaced with A2.01
3 / 0	GEN2.1 2.1.21	Q(94) There is not an SRO function at ONS related to verifying controlled copy of procedures. KA replaced with GEN 2.1.32 per Chief Examiner on 12/01/17

Facility: Oconee Nuclear Station		Date of Exam: 06/04/2018		Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>		
Item Description				Initial		
				a	b*	c*#
1. Questions and answers are technically accurate and applicable to the facility.				2	ROD	ADK
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available. c. Correct answer explanation and distractor analysis provided (ES-401, D.2.g)				2	ROD	ADK
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401				2	ROD	ADK
4. The sampling process was random and systematic. (If more than four RO or two SRO questions were repeated from the last two NRC licensing exams, consult the NRR/NRO OL program office).				2	ROD	ADK
5. Question duplication from the licensee screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate. ___ The audit exam was systematically and randomly developed, or ___ the audit exam was completed before the license exam was started, or <input checked="" type="checkbox"/> the examinations were developed independently, or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication, or ___ other (explain).				2	ROD	ADK
6. Bank use meets limits (no more than 75% from the bank, at least 10% new, and the rest new or modified); enter the actual RO/SRO-only question distribution(s) at right.		Bank	Modified	New		
		37/13 49%/52%	24/7 32%/28%	14/5 19%/20%	2	ROD
7. Between 38 and 45 questions of the questions on the RO exam and at least 13 questions of the questions on the SRO-only portion of the exam are written at the comprehension/analysis level (see ES-401, D.2.c); enter the actual RO/SRO-only question distribution(s) at right.		Memory	C/A			
		33/5 44%/20%	42/20 56%/80%		2	ROD
8. References/handouts provided do not give away answers or aid in the elimination of distractors.				2	ROD	ADK
9. Question content conforms to specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.				2	ROD	ADK
10. Question psychometric quality and format meet the guidelines in Appendix B.				2	ROD	ADK
11. The exam contains the required number of one-point, multiple-choice items; the total is correct and agrees with the value on the cover sheet.				2	ROD	ADK
Printed Name/Signature				Date		
a. Author	Sam Lark / SLark			5/16/18		
b. Facility Reviewer (*)	RONALD DESS / Ronald Dess			5/16/18		
c. NRC Chief Examiner (#)	Phillip G. Capehart / P. Capehart			5/23/18		
d. NRC Regional Supervisor	Daniel M. Bacon / Daniel M. Bacon			7/1/18		
Note: * The facility reviewer's initials or signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initials items in Column "c"; chief examiner concurrence is required.						

Oconee 2018-301

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B, M, N	7. U, E, S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job- Link	Minutia	# / Units	Back ward	Q – K/A	SRO Only			
																For Bank Questions – change the location of the correct answer. The purpose is to prevent an applicant from simply recalling the location of the answer on a recently reviewed bank question and get the correct answer knowing little else.
																IAW, NUREG-1021, unsat Qs that appeared on previous NRC exams do not count toward the percentage for determining the quality of the submittal.
1	H													B	S*	APE008 2.1.30 - Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open) Ability to locate and operate components, including local controls. (preview question) NRC Feedback: 1/31/18 - OK as is. Is the operator expected to know from memory that this breaker is for RC-66? 4/18/18 The AP procedures do not contain noun names of the valves if in the MCR. Will leave as is.
2	F													M	S	EPE011 EK2.02 - Large Break LOCA. Knowledge of the interrelations between the Large Break LOCA and the following: Pumps NRC Feedback: 4/10/18 - OK as is.
3	H													M	S	APE015/017 AK2.10 - Reactor Coolant Pump (RCP) Malfunctions Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: RCP indicators and controls NRC Feedback: 4/10/18 - OK as is. 5/10/18 Added "MTR" to Upper Guide Bearing Temp to match the procedure.
4	H													B	S	APE022 AK1.04 - Loss of Reactor Coolant Makeup. Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup: Reason for changing from manual to automatic control of charging flow valve controller. NRC Feedback: 4/10/18 - OK as is.
5	F													N	S	APE025 AA1.12 - Loss of Residual Heat Removal System (RHRS) Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: RCS temperature indicators NRC Feedback: 4/10/18 - OK as is.
6	H													M	S	APE026 AA2.03 - Loss of Component Cooling Water (CCW). Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition. (preview question) NRC Feedback: 1/31/18 - OK as is.
7	H													B	E	APE027 AK3.04 - Pressurizer Pressure Control System (PZR PCS) Malfunction Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: Why, if PZR level is lost and then restored, that pressure recovers much more slowly Is attempting to raise RCS pressure to 2200 psig in the stem operationally plausible (which procedure would drive) since 2155 psig is the NOP? And if so then answer D appears non-plausible because with no malfunctions with heaters/spray the answer is saying plant design is inadequate. NRC Feedback: 4/10/18 – Needs Enhancement

																S	4/18/18 Discussed with licensee and agree to see validation results before making any changes.
8	F															B	S EPE029 EK1.03 - Anticipated Transient Without Scram (ATWS). Knowledge of the operational implications of the following concepts as they apply to the ATWS: Effects of boron on reactivity (preview question) NRC Feedback: 1/31/18 - OK as is.
9	H															M	S APE040 AA2.03 - Steam Line Rupture Ability to determine and interpret the following as they apply to the Steam Line Rupture: Difference between steam line rupture and LOCA NRC Feedback: 4/10/18 - OK as is.
10	H															B	E APE054 AA2.04 - Loss of Main Feedwater (MFW) Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): Proper operation of AFW pumps and regulating valves NRC Feedback: 4/10/18 - OK as is.
11	H															M	E EPE055 EK1.02 - Loss of Offsite and Onsite Power (Station Blackout) Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural circulation cooling NRC Feedback: 4/10/18 – Needs enhancement. Teaching in stem at question 1)...just ask if PSW power will or will NOT be aligned to HPI. 4/18/18 Changed question to remove unnecessary wording.
12	F															B	S APE056 AA1.25 - Loss of Offsite Power Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power: Main steam supply valve control switch NRC Feedback: 4/10/18 - OK as is.
13	H															M	S APE057 AK3.01 - Loss of Vital AC Electrical Instrument Bus. Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Inst. Bus: Actions contained in EOP for loss of vital ac electrical instrument bus NRC Feedback: 4/10/18 - OK as is.
14	H															M	S APE058 AA1.01 - Loss of DC Power Ability to operate and / or monitor the following as they apply to the Loss of DC Power: Cross-tie of the affected dc bus with the alternate supply NRC Feedback: 4/10/18 - OK as is.
15	F															N	S APE062 2.4.3 - Loss of Nuclear Service Water. Ability to identify post-accident instrumentation. NRC Feedback: 4/10/18 - OK as is.
16	F															B	S APE065 AK3.04 - Loss of Instrument Air Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Cross-over to backup air supplies (preview question) NRC Feedback: 1/31/18 - OK as is.
17	F															N	S APE077 AK2.01 - Generator Voltage and Electric Grid Disturbances Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Motors NRC Feedback: 4/10/18 - OK as is.
18	H															B	S * BWE10 2.4.4 - Post-Trip Stabilization. Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. NRC Feedback: 4/10/18 – Verify EOP tab entry RO knowledge; otherwise, sat. 4/18/18 License responded yes.
19	H															B	S APE001 AA1.02 - Continuous Rod Withdrawal Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal: Rod in-out-hold switch

31	F													B	S	SYS005 A1.02 - Residual Heat Removal System (RHRS). Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: RHR flow rate NRC Feedback: 4/11/18 - OK as is.
32	F													M	S	SYS005 K2.01 - Residual Heat Removal System (RHRS). Knowledge of bus power supplies to the following: RHR pumps NRC Feedback: 4/11/18 - OK as is.
33	F													B	S	SYS006 A3.07 - Emergency Core Cooling System (ECCS). Ability to monitor automatic operation of the ECCS, including: RHR pumps NRC Feedback: 4/11/18 - OK as is.
34	F													N	S	SYS006 K2.02 - Emergency Core Cooling System (ECCS). Knowledge of bus power supplies to the following: Valve operators for accumulators NRC Feedback: 4/11/18 - OK as is.
35	H													M	S	SYS007 A4.10 - Pressurizer Relief Tank/Quench Tank System (PRTS). Ability to manually operate and/or monitor in the control room: Recognition of leaking PORV/code safety. NRC Feedback: 4/11/18 - OK as is.
36	H													N	E	SYS008 A1.03 - Component Cooling Water System (CCWS). Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the CCWS controls including: CCW pressure NRC Feedback: 4/11/18 – Consider enhancement needed to support applicant diagnostics. The stem states “CC pump pressure and flow are cycling” which is straight out of the AP but is that sufficient or should additional detail be provided? Is it pump suction pressure, discharge pressure or both? 4/18/18 Changed to say pump “disc” press & flow cycling.
37	H													M	S	SYS010 A2.03 - Pressurizer Pressure Control System (PZR PCS). Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: PORV failures NRC Feedback: 4/11/18 - OK as is.
38	H													B	S	SYS010 K5.01 - Pressurizer Pressure Control System (PZR PCS). Knowledge of the operational implications of the following concepts as the apply to the PZR PCS: Determination of condition of fluid in PZR, using steam tables NRC Feedback: 4/11/18 - OK as is. 5/10/18 Changed from Unit 3 to Unit 2 since Unit 3 would probably not trip on a 230 KV switchyard isolation since Unit 3 generator output goes to the 525 KV switchyard.
39	H													B	E	SYS012 A3.06 - Reactor Protection System (RPS) Ability to monitor automatic operation of the RPS, including: Trip logic NRC Feedback: 4/11/18 - OK as is. 4/18/18 Changed to another BANK question to prevent overlap with Q45.
40	F													N	S	SYS012 K4.08 - Reactor Protection System (RPS). Knowledge of RPS design feature(s) and/or interlock(s) which provide for the following: Logic matrix testing NRC Feedback: 4/11/18 - OK as is.
41	H													M	E	SYS013 2.2.25 - Engineered Safety Features Actuation System (ESFAS). Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. NRC Feedback: 4/11/18 – Not hitting K/A (generic K/A bases or safety limit); really asking RBS related power supplies. Also second question is unrelated. 4/18/18 Will add “MCC” to first. Agreed to change 2 nd question so it’s not divorced from the 1 st question or the stem. Will need to verify changes once made.
															S	

42	H													N	E	<p>SYS013 K1.03 - Engineered Safety Features Actuation System (ESFAS). Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: CCS</p> <p>NRC Feedback: 4/11/18 – Concern with interplay and potential cueing for Q43. Would changing the choice to ES 5 and ES 6 help since both are 3 psig and RBCU related?</p> <p>4/18/18 Will need to look at after Q43 changed.</p> <p>5/10/18 Changed the switch position for 1B RBCU from LOW to OFF since this would be the normal lineup. The RBCUs are not operated in mixed speed combinations. This will make the question be operationally valid.</p>
43	H													B	E	<p>SYS022 K4.02 - Containment Cooling System (CCS). Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Correlation of fan speed and flowpath changes with containment pressure.</p> <p>NRC Feedback: 4/11/18 – 1. Question 42 second part choices are ES 3 or ES-5; Q43 stem has an inadvertent ES 5 and since the question is about RBCUs it may inadvertently cue the applicant. 2. Does an inadvertent ES 5 also fully open RBCU outlets valves LPSW-18, 21, and 24? If so could an applicant argue that the increased heat removal via increased LPSW flow balance out or exceed the decreased heat removed with lower RBCU air flow? Short of an engineering calculation, risk of two correct answers may exist.</p>
															S	<p>4/18/18 Changed to remove inadvertent ES channel 5 and changed to stay the same for A.1 and B.1. Will review to ensure this correct Q42/43 relationship concern.</p>
44	F													M	S	<p>SYS026 K2.01 - Containment Spray System (CSS). Knowledge of bus power supplies to the following: Containment spray pumps</p> <p>NRC Feedback: 4/11/18 - OK as is.</p>
45	H													B	E	<p>SYS039 K3.06 - Main and Reheat Steam System (MRSS). Knowledge of the effect that a loss or malfunction of the MRSS will have on the following: SDS</p> <p>NRC Feedback: 4/11/18 – Is there a potential for inadvertent cueing on Q39 which uses "Turbine Header Pressure" as a plausible distractor for answer D? Discuss how the stem or choices may be modified to support Q39 distractor.</p>
															S	<p>4/18/18 Corrected by replacing Q39 w/bank question.</p>
46	H													B	S	<p>SYS059 K1.02 - Main Feedwater (MFW) System. Knowledge of the physical connections and/or cause-effect relationships between the MFW and the following systems: AFW system</p> <p>NRC Feedback: 4/11/18 - OK as is.</p>
47	F													B	S	<p>SYS061 K6.01 - Auxiliary / Emergency Feedwater (AFW) System. Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners</p> <p>NRC Feedback: 4/11/18 - OK as is.</p>
48	H													M	S	<p>SYS062 A4.01 - AC Electrical Distribution System. Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard)</p> <p>NRC Feedback: 4/11/18 - OK as is.</p>
49	F													M	U	<p>SYS062 A4.04 - AC Electrical Distribution System. Ability to manually operate and/or monitor in the control room: Local operation of breakers</p> <p>NRC Feedback: 4/11/18 – Two non-plausible answers to second part of answers A and C (remotely only) for a couple reasons. First not being able to cycle the breaker locally when "testing" locally isn't logical. Second, the applicant could always argue the existence of the breaker manual mechanisms for local operation. Suggest changing A.2 and C.2 to "locally ONLY"</p>
															S	<p>4/18/18 Changed as noted above. Once verified can change to SAT.</p>

50	F													B	S	<p>SYS063 A2.01 - DC Electrical Distribution System. Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Grounds</p> <p>NRC Feedback: 4/11/18 - OK as is.</p>
51	H													B	S	<p>SYS059 A3.07 - Main Feedwater (MFW) System. Ability to monitor automatic operation of the MFW, including: ICS</p> <p>Replaced KA per Chief Examiner on 12/01/17</p> <p>NRC Feedback: 4/11/18 - OK as is.</p>
52	H													B	E	<p>SYS073 K5.03 - Process Radiation Monitoring (PRM) System. Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Relationship between radiation intensity and exposure limits.</p> <p>NRC Feedback: 4/12/18 - Consider locking the answers to the AP ("per AP...") to ensure the applicant doesn't consider the Shift Manager and possibly more than one correct answer.</p> <p>4/18/18 Licensee responded that nothing in the stem to possibly exceeds the ED limit and would confuse the applicant if the "per the AP" was added. OK as is.</p>
53	H													B	S	<p>SYS076 K4.03 - Service Water System (SWS). Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following: Automatic opening features associated with SWS isolation valves to CCW heat exchangers.</p> <p>NRC Feedback: 4/12/18 - Answers A.2 and B.2 not considered to be credible distractors because the need to manually adjust LPSW flow anytime letdown flow is changed doesn't seem reasonable. Also not sure a good K/A match. The K/A is for automatic LPSW "isolation" valves not a TCV. Do the CC coolers have any auto LPSW isolations?</p> <p>4/18/18 Based on OC design, this is as close as possible to get to the KA. Verify and change to SAT.</p>
54	F													B	S	<p>SYS078 2.1.32 - Instrument Air System (IAS). Generic: Ability to explain and apply system limits and precautions.</p> <p>NRC Feedback: 4/12/18 - OK as is.</p>
55	F													B	S	<p>SYS103 K3.03 - Containment System. Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under refueling operations.</p> <p>NRC Feedback: 4/21/18 - OK as is.</p>
56	H													N	E	<p>SYS001 A1.03 - Control Rod Drive System</p> <p>Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CRDS controls including: S/G level and pressure</p> <p>(preview question) NRC Feedback: 4/16/18 Not sure why RISE in SG pressure is plausible. Wouldn't "remain the same" be more plausible?</p> <p>4/18/18 Changed as noted above. Verify changes and change to SAT.</p>
57	H													N	S	<p>SYS002 K4 02 - Reactor Coolant System (RCS)</p> <p>Knowledge of RCS design feature(s) and/or interlock(s) which provide for the following: Monitoring reactor vessel level</p> <p>NRC Feedback: 4/16/18 - OK as is.</p>
58	H													N	S	<p>SYS015 K6.02 - Nuclear Instrumentation System (NIS)</p> <p>Knowledge of the effect of a loss or malfunction on the following will have on the NIS: Discriminator/compensation circuits</p> <p>NRC Feedback: 4/16/18 - OK as is.</p>
59	F													M	E	<p>SYS011 K2.01 - Pressurizer Level Control System (PZR LCS)</p> <p>Knowledge of bus power supplies to the following: Charging pumps</p> <p>NRC Feedback: 4/16/18 2nd question not related to KA. Change so asking power supply to two different charging pumps.</p>

																S	4/18/18 Licensee agreed to reword the question to eliminate 2 nd question not related to charging pump power supply.
60	H															M	E S NRC Feedback: 4/16/18 Change 2 nd question to ask what happens to SFP so that the question is modified also. 4/18/18 Can't change to above because it would not hit the KA. SFP is outside containment. Will verify question is SAT as is.
61	F															N	U E S SYS033 2.4.8 - Spent Fuel Pool Cooling System (SFPCS) Knowledge of how abnormal operating procedures are used in conjunction with EOPs NRC Feedback: 4/16/18 Doesn't meet the KA statement. 4/18/18 Licensee agreed to rewrite question to meet the KA. Awaiting rewrite. 4/25/18 2 nd question is not related to the KA or first question. 4/26/18 Rewrote new 2 nd question. Awaiting for review.
62	H															B	E S SYS056 A2.04 - Condensate System Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps NRC Feedback: 4/17/18 why does this cause a Reactor Trip? Per Q62 CD-FDW.doc: The loss of one FDWP at power will cause a unit runback to a load within the capabilities of the one remaining FDWP (≈65% load). The loss of both FDWPs at power will cause an automatic Reactor trip. 4/18/18 Can't avoid Rx trip at the final power level with 2 FDWPs lost. OK
63	F															M	E S SYS072 A3.01 - Area Radiation Monitoring (ARM) System Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment NRC Feedback: 4/17/18 Why not change to ask about function of RIA-46 after auto swapover. Right now the 2 nd question does not meet the modified criteria. 4/18/18 Will leave as is to prevent possible overlap w/Q73. 4/26/18 Licensee changed as noted.
64	H															B	 NRC Feedback: 4/17/18 OK as is.
65	H															B	 SYS079 K1.01 - Station Air System (SAS) Knowledge of the physical connections and/or cause-effect relationships between the SAS and the following systems: IAS NRC Feedback: 4/17/18 OK as is.
66	F															N	E S 2.1.4 - GENERIC - Conduct of Operations Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc. NRC Feedback: 4/17/18 The question should ask what amount of time is required for the tour to be credited. NSD-512 states no more than 8 hrs. can be used toward the 40 hrs. of activation time. Why not change the wording to say either 40 hrs. or five 12 hr. shifts? 4/18/18 Licensee agreed to rewrite question to incorporate the comments noted above. Awaiting rewrite to evaluate.
67	F															B	E 2.1.40 - GENERIC - Conduct of Operations Knowledge of refueling administrative requirements.

																S	NRC Feedback: 4/17/18 Do you need to add the word "plate" on choice D to match LCO3.9.3 NOTE wording? Since the criteria is -1 ft., why was -2.7 ft. chosen? RIA-45 is used on a previous question, knowledge overlap? 4/18/18 Made change noted above. No overlap issue verified.
68	H															B	U E S 2.1.43 - GENERIC - Conduct of Operations Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc. NRC Feedback: 4/21/18 Where do you use procedures to answer this question? The old BANK question that this was taken from met this criteria. 4/18/18 Changed to the BANK question.
69	F															M	S 2.2.11 - GENERIC - Equipment Control Knowledge of the process for controlling temporary design changes. NRC Feedback: 4/17/18 OK as is.
70	F															B	S 2.2.38 - GENERIC - Equipment Control Knowledge of conditions and limitations in the facility license. NRC Feedback: 4/17/18 OK as is.
71	F															M	S 2.2.4 - GENERIC - Equipment Control (multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility. NRC Feedback: 4/17/18 OK as is
72	F															B	E S 2.3.13 - GENERIC - Radiation Control 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. NRC Feedback: 4/21/18 Why do you have "ONLY" on choice C&D? Does it STOP or ISOLATE the Waste Gas Exhausters? The LP states STOP. 4/18/18 Change as noted above. Change to SAT once changes verified.
73	F															B	S 2.3.5 - GENERIC - Radiation Control Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. NRC Feedback: 4/17/18 Verify no overlap w/Q67. Otherwise OK.
74	H															B	S 2.4.14 - GENERIC - Emergency Procedures / Plan Knowledge of general guidelines for EOP usage. NRC Feedback: 4/17/18 OK as is.
75	F															M	S 2.4.27 - GENERIC - Emergency Procedures / Plan Knowledge of "fire in the plant" procedures. NRC Feedback: 4/17/18 Okay as is.

Q	+/-	1.	2.	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B, M, N	7. U, E, S	8. Explanation
		LOK (F/H)	LOD (1-5)	Stem Focus	Cues	T/ F	Cred. Dist	Partial	Job- Link	Minutia	# / Units	Back ward	Q – K/A	SRO Only			
76														X	N	U	<p>APE022 2.4.30 - Loss of Reactor Coolant Makeup 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.</p> <p>Two choices < or = to one hour. ROs required to know actions that are 1 hr. or less. 4/18/18 Licensee stated that RO's are required to know only TS related 1 hr. or less items. 4/23/18 There is no 15 minute limit but there is an "immediate" which would fit the 15 minute window from other procedures. If the NOTE is missed that states immediate is within 1 hr., the applicant could think that the default time is 15 min.</p>
77															B	E	<p>BWE04 EA2.2 - Inadequate Heat Transfer Ability to determine and interpret the following as they apply to the (Inadequate Heat Transfer) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments. OK 4/23/18 Why is A.2 not HPICD to fit with C.2 4/24/18 C.2 Changed to HPICD</p>
78															M	S	<p>EPE038 EA2.09 - Steam Generator Tube Rupture (SGTR) Ability to determine or interpret the following as they apply to a SGTR: Existence of natural circulation, using plant parameters OK</p>
79															B	E	<p>APE056 2.4.20 - Loss of Offsite Power Knowledge of the operational implications of EOP warnings, cautions, and notes.</p> <p>False flag by having title "ASW" in stem of question? 4/18/18 Reviewed w/licensee and is Okay.</p>
80															N	E	<p>APE065 2.4.35 - Loss of Instrument Air Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.</p> <p>SRO Only? Does the question need to specify which unit? If Unit 1 is specified, is there an associated Unit 1 alarm for a failure of the air compressors to start? 4/18/18 Verified SRO only and other questions answered SAT. 4/23/18 RO knowledge of manually closing EFW valves for blackout can be used to eliminate distractors B and D. 4/24/18 Licensee disagreed with this statement. Not correct, this does not occur in a blackout. Also the stem statement "on units without feedwater accumulator" make it system level knowledge that it is not EFW valves and to eliminate distractors B and D. 4/24/18 Removed "Feedwater Accumulator" from the 2nd part.</p>
81															M	U E	<p>APE077 AA2.08 - Generator Voltage and Electric Grid Disturbances Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Criteria to trip the turbine or reactor.</p> <p>Is page 2 & 3 of the reference needed? Is this SRO, appears that using RO knowledge alone? Is Rx trip required if >50% and cannot get back w/ capability curve RO knowledge? 4/18/18 Licensee stated that this is embedded knowledge and is not an IA. 4/23/18 There is not enough information in the stem to determine if the power factor is leading or lagging, could either be the case during a grid disturbance? ALSO to trip when >50% power is major mitigating strategy and not SRO only. 4/24/18 We discussed and based on validation results, the SROs had a high miss rate on this question related to using the AP vs. EOP entrance. Also discussed changing the 2nd MVAR reading to coincide with another lagging reading. 5/10/18 Changed generator output from 350 MWe to 450 MWe to better align with 55% power. This changed the correct answer for the first part from 725 MVARs to 700 MVARs and the distractor from 620 MVARs to 590 MVARs.</p>

Q	+/-	1. LOK (F/H)	2. LOD (1-5)	3. Psychomeric Flaws					4. Job Content Flaws				5. Other		6. B, M, N	7. U, E, S	8. Explanation
				Stem Focus	Cues	T/ F	Cred. Dist	Partial	Job- Link	Minutia	# / Units	Back ward	Q – K/A	SRO Only			
																	<p>Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Rapid depressurization</p> <p>4/23/18 Put LPSI flow conditions in the stem to eliminate "both trains" qualifier in the second question and to modify it from the BANK question.</p> <p>4/18/18 Made changes as noted above.</p> <p>4/23/18 Question 2 should say "Lowest total" rather than "lower".</p> <p>Could put LPI header flowrates in stem and ask IS vs IS NOT instead of exact numbers from EOP.</p> <p>4/24/18 Already corrected on previous comments.</p>
89															N	E	<p>SYS039 A2.02 - Main and Reheat Steam System (MRSS)</p> <p>Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:</p> <p>Decrease in turbine load as it relates to steam escaping from relief valves</p> <p>Not sure I understand why a unit shutdown is required for this condition? Where does a procedure state a unit shutdown is required? Did not see this in the OP referenced.</p> <p>4/18/18 TS 3.7.1 requires the shutdown. Requested to change to TS criteria.</p>
90															B	S	<p>SYS062 2.2.36 - AC Electrical Distribution System</p> <p>Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.</p> <p>OK</p>
91															M	S	<p>SYS002 2.4.8 - Reactor Coolant System (RCS)</p> <p>Knowledge of how abnormal operating procedures are used in conjunction with EOPs. OK</p> <p>(Preview question) 4/23/18 Why is BOP underlined in Q2? To ensure that it is not misunderstood since the previous information given is concerning the OATC.</p>
92															B	U	<p>SYS017 A2.02 - In-Core Temperature Monitor (ITM) System</p> <p>Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Core damage</p> <p>Given stem info in this question answers 1st part of Q88. Also, the question does not meet the KA for "core damage". Need to be >1200 degrees.</p> <p>4/18/18 Modified to make >1200 degrees. Removed ES channel actuations from stem to prevent overlap. Once changes verified change to SAT.</p>
93															B	E	<p>SYS035 A2.01 - Steam Generator System (S/GS)</p> <p>Ability to (a) predict the impacts of the following mal- functions or operations on the SG; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:</p> <p>Faulted or ruptured S/Gs</p> <p>Not sure about plausibility of choice C combination.</p> <p>4/18/18 Licensee disagreed.</p> <p>4/23/18 C doesn't seem plausible. Maybe change it to ask the EARLIEST listed time to perform encl 5.22, 0430 or 0500?</p> <p>4/24/18 Changed to ask earliest time as noted above.</p>
94															B	S	<p>2.1.32 - GENERIC - Conduct of Operations</p> <p>Ability to explain and apply system limits and precautions</p> <p>OK</p>
95															B	S	<p>2.1.36 - GENERIC - Conduct of Operations</p> <p>Knowledge of procedures and limitations involved in core alterations</p> <p>OK</p>
96															N	S	<p>2.2.13 - GENERIC - Equipment Control</p> <p>Knowledge of tagging and clearance procedures</p>

Q	+/-	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B, M, N	7. U, E, S	8. Explanation
				Stem Focus	Cues	T/ F	Cred. Dist	Partial	Job- Link	Minutia	# / Units	Back ward	Q – K/A	SRO Only			
97															M	S	OK 2.2.17 - GENERIC - Equipment Control Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator
98															B	E	2.3.15 - GENERIC - Radiation Control Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. Why does C have the "Main Fuel Bridge"? It was not affected by the failure. 4/18/18 Change distractor to say "continuous RP coverage is required at the Fuel Transfer Canal". 4/24/18 Change made as noted above.
99															B	S	2.4.11 - GENERIC - Emergency Procedures / Plan Knowledge of abnormal condition procedures OK
100															M	S	2.4.25 - GENERIC - Emergency Procedures / Plan Knowledge of fire protection procedures OK