

Facility: LGS							Date of Exam: July 19 2010					
Tier	K/A Category Points											Total
	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	
1. Emergency & Abnormal Plant Evolutions	2	2	1				2	2			1	10
2. Plant Systems	2	1	2	2	2	2	2	1	2	2	2	20
3. Generic Knowledge and Abilities Categories	1		2		3		4		GFE		10	
	2		2		2		2		2			

Note:

1. Ensure that at least one topic from every K/A category is sampled within each tier.
2. The point total for each tier in the proposed outline must match that specified in the table. The final point total for each tier may deviate by ±1 from that specified in the table based on NRC revisions. The final exam must total 40 points.
3. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system (except fuel handling equipment) or evolution (except refueling accident).
4. The shaded areas are not applicable to the category/tier.
- 5.* 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.
6. If the applicants have not previously taken the GFE, Tier 3 shall include basic reactor theory, component, and thermodynamic topics that apply to fuel handling operations.
7. Systems/evolutions within each tier are identified on the associated outline. Enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the SRO license level, and the point totals (#) for each system and category. Enter the tier totals for each category in the table above.
8. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, importance ratings, and point totals (#) on Form ES-701-3.
9. Refer to ES-401, Section D.1, for guidance regarding the elimination of inappropriate K/A statements. The facility licensee's JTA for fuel handlers should be used as the basis for eliminating or adding testable topics.

ES-701	LSRO BWR Examination Outline Plant Systems - Tier 2											Form ES-701-1		
	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
205000 Shutdown Cooling	X											K1.15, RHR service water	3.6	1
215004 Source Range Monitor		X										K2.01, SRM channels/detectors	2.8	1
233000 Fuel Pool Cooling/Cleanup											X	2.1.45, Ability to identify and interpret diverse indications to validate the response of another indication.	4.3	1
234000 Fuel Handling Equipment								X				A2.01, Interlock failure	3.7	1
262001 AC Electrical Dist.									X			A3.02, Automatic bus transfer	3.3	1
263000 DC Electrical Dist.														
290002 Reactor Vessel Internals				X								K4.05, Natural circulation	3.5	1
201002 RMCS										X		A4.01, Rod movement control switch	3.4	1
201003 Control Rod and Drive Mechanism				X								K4.01, Limiting control rod speed in the event of a rod drop	3.0	1
203000 RHR/LPCI: Injection Mode			X									K3.01, Reactor water level	4.4	1
204000 RWCU										X		A4.01, System pumps	3.0	1
211000 SLC							X					A1.08, RWCU system lineup	3.8	1
212000 RPS					X							K5.02, Specific logic arrangements	3.4	1
214000 RPIS														
215001 Traversing In-Core Probe														
215003 IRM									X			A3.03, RPS status	3.6	1
215005 APRM / LPRM														
223001 Primary CTMT and Aux.														
223002 PCIS/Nuclear Steam Supply Shutoff						X						K6.06, Various process instrumentation	2.9	1
261000 SGTS							X					A1.01, System flow	3.1	1
264000 EDGs			X									K3.01, Emergency core cooling systems	4.4	1
272000 Radiation Monitoring											X	2.4.11, Knowledge of abnormal condition procedures	4.2	1
286000 Fire Protection														
288000 Plant Ventilation					X							K5.01, Airborne contamination control	3.2	1
290001 Secondary CTMT	X											K1.04, SBGT	3.9	1
300000 Instrument Air														
400000 Component Cooling Water						X						K6.06, Heat exchangers and condensers	2.9	1
K/A Category Totals:	2	1	2	2	2	2	2	1	2	2	2	Tier Point Total:		20

Facility: PBAPS							Date of Exam: July 19 2010					
Tier	K/A Category Points											Total
	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	
1. Emergency & Abnormal Plant Evolutions	1	1	0				0	2			1	5
2. Plant Systems	1	0	1	0	0	1	0	1	0	0	1	5
3. Generic Knowledge and Abilities Categories	1		2		3		4		GFE		0	
	0		0		0		0		0			

- Note:
1. Ensure that at least one topic from every K/A category is sampled within each tier.
 2. The point total for each tier in the proposed outline must match that specified in the table. The final point total for each tier may deviate by ±1 from that specified in the table based on NRC revisions. The final exam must total 40 points.
 3. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system (except fuel handling equipment) or evolution (except refueling accident).
 4. The shaded areas are not applicable to the category/tier.
 - 5.* 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.
 6. If the applicants have not previously taken the GFE, Tier 3 shall include basic reactor theory, component, and thermodynamic topics that apply to fuel handling operations.
 7. Systems/evolutions within each tier are identified on the associated outline. Enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the SRO license level, and the point totals (#) for each system and category. Enter the tier totals for each category in the table above.
 8. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, importance ratings, and point totals (#) on Form ES-701-3.
 9. Refer to ES-401, Section D.1, for guidance regarding the elimination of inappropriate K/A statements. The facility licensee's JTA for fuel handlers should be used as the basis for eliminating or adding testable topics.

ES-701

LSRO BWR Examination Outline
Plant Systems - Tier 2

Form ES-701-1

	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
205000 Shutdown Cooling	X											K1.15, RHR service water	3.6	1
215004 Source Range Monitor														
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment								X				A2.01, Interlock failure	3.7	1
262001 AC Electrical Dist.														
263000 DC Electrical Dist.														
290002 Reactor Vessel Internals														
201002 RMCS														
201003 Control Rod and Drive Mechanism														
203000 RHR/LPCI: Injection Mode														
204000 RWCU														
211000 SLC														
212000 RPS														
214000 RPIS														
215001 Traversing In-Core Probe														
215003 IRM														
215005 APRM / LPRM														
223001 Primary CTMT and Aux.														
223002 PCIS/Nuclear Steam Supply Shutoff							X					K6.06, Various process instrumentation	2.9	1
261000 SGTS														
264000 EDGs			X									K3.01, Emergency core cooling systems	4.4	1
272000 Radiation Monitoring											X	2.4.11, Knowledge of abnormal condition procedures	4.2	1
286000 Fire Protection														
288000 Plant Ventilation														
290001 Secondary CTMT														
300000 Instrument Air														
400000 Component Cooling Water														
K/A Category Totals:	1	0	1	0	0	1	0	1	0	0	1	Tier Point Total:		5

ES-701 LSRO Generic Knowledge and Abilities Outline (Tier 3) Form ES-701-3				
Facility: LGS		Date of Exam:		July 19 2010
Category	K/A #	Topic	IR	#
1. Conduct of Operations	2.1.3	Knowledge of shift or short-term relief turnover practices.	3.9	1
	2.1.29	Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.	4.0	1
	2.1.			
	2.1.			
	Subtotal			
2. Equipment Control	2.2.39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	4.5	1
	2.2.3	(multi-unit license) Knowledge of the design, procedural, and operational differences between units.	3.9	1
	2.2.			
	2.2.			
	Subtotal			
3. Radiation Control	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	3.1	1
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.7	1
	2.3.			
	2.3.			
	Subtotal			
4. Emergency Procedures / Plan	2.4.40	Knowledge of SRO responsibilities in emergency plan implementation.	4.7	1
	2.4.28	Knowledge of procedures relating to a security event (non-safeguards information).	4.1	1
	2.4.			
	2.4.			
Subtotal				2
5. Generic Fundamentals	291003 K1.01	Function and operation of flow controller in manual and automatic modes	3.7	1
	292002 K1.14	Evaluate change in shutdown margin due to changes in plant parameters	2.9	1
	Subtotal			
Tier 3 Point Total				10

ES-701 LSRO Generic Knowledge and Abilities Outline (Tier 3) Form ES-701-3

Facility: **PBAPS** Date of Exam: **July 19 2010**

Category	K/A #	Topic	IR	#
1. Conduct of Operations	2.1.			
	2.1.			
	2.1.			
	2.1.			
	Subtotal			
2. Equipment Control	2.2.			
	2.2.			
	2.2.			
	2.2.			
	Subtotal			
3. Radiation Control	2.3.			
	2.3.			
	2.3.			
	2.3.			
	Subtotal			
4. Emergency Procedures / Plan	2.4.			
	2.4.			
	2.4.			
	2.4.			
	Subtotal			
5. Generic Fundamentals				
	Subtotal			
Tier 3 Point Total				0

Applicant Docket Number: 55-352 / 353
 Facility: LGS

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 Date of Examination: July 19 2010

Title / Description of Tasks (JPMs)	Type Codes*	Evaluation (S or U)	Comment Page Number
Administrative			
1. FHD turn over checklist	NT		
2. GP-13, CRD, CRB and Maintenance Coordination / Alternate Path – Two cell separation not ensured	N		
3. Calculate Stay Time (2701)	DL		
Systems			
1. Fuel Movement in the Spent Fuel Pool / Alternate Path – HOIST JAM Light Illuminates (2035)	DAI		
2. Fuel movement in the Spent Fuel Pool / Alternate Path – Hoist Tube Hang Up	NAI		
3. Refuel Floor ARM Return to Service	NI		
4. Install rod position test box (2029)	DIL		
Emergency/Abnormal Plant Evolutions			
1. New Fuel Movement in the Spent Fuel Pool from fuel prep machine / Alternate Path - New Fuel Drops	MAIR		
2. Spent Fuel Pool Makeup using Fire System standpipes per TSG-4.1	NIR		
3. Emergency Classification, Inability to Maintain Cold shutdown	NR		

Type Codes & Criteria:

- (A)lternative path (2 systems; 1 E/APE))
- (C)ontrol room
- (D)irect from bank (≤ 7)
- (I)n-plant
- (N)ew or (M)odified from bank including 1(A) (≥ 1 / section)
- (L)ast NRC exam (≤ 1 / section)
- (R)efueling accident (1)
- (T)echnical specification (≥ 2)

Applicant Docket Number: 50-277/278 Facility: PBAPS		Date of Examination:	Page 2 of July 19 2010
Title / Description of Tasks (JPMs)	Type Codes*	Evaluation (S or U)	Comment Page Number
Administrative			
1.			
2.			
3.			
Systems			
1. Skimmer Surge Tank Low Level / Alternate Path – Pump Trip (3054)	MAI		
2. Fuel Support Piece Removal using FSP Grapple / Alternate Path – Fault Lockout	NAI		
3. Transfer of Recently Irradiated Fuel / Alternate Path – Loss of SGBT	NTAI		
4. PBAPS Refuel Platform Air System Checkout	NI		
Emergency/Abnormal Plant Evolutions			
1. Dummy Fuel Movement in Spent Fuel Pool / Alternate Path – Fire (3064)	MAI		
2.			
3.			
Type Codes & Criteria: <ul style="list-style-type: none"> (A)lternative path (2 systems; 1 E/APE) (C)ontrol room (D)irect from bank (≤ 7) (I)n-plant (N)ew or (M)odified from bank including 1(A) (≥ 1 / section) (L)ast NRC exam (≤ 1 / section) (R)efueling accident (1) (T)echnical specification (≥ 2) 			

Tier / Group	Randomly Selected K/A	Reason for Rejection
TIER 1	295014 AK2.07	<p>PBAPS outline - Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: Reactor Power: Inadvertent Reactivity Addition.</p> <p>Although this K/A can be adequately tested within the LSRO job scope these is no difference between LGS and PBAPS.</p> <p>This K/A was rejected and was replaced with randomly selected K/A 295009 EK2.03 which was verified to be contained within the LSRO job scope and contain a testable difference.</p>
TIER 2	214000 A4.02	<p>LGS and Common Outline - Ability to manually operate and/or monitor in the control room: Control rod position</p> <p>Too closely related to previously selected Tier 1 295006 AA2.02: Ability to determine and/or interpret the following as they apply to SCRAM : Control rod position</p> <p>This K/A was rejected and was replaced with randomly selected K/A 204000 A4.01, which was verified to be contained within the LSRO job scope, and did not overlap with previously selected K/A</p>
TIER 2	215001	<p>LGS and Common Outline - 215001 Traversing In-Core Probe. Ability to monitor automatic operations of the TRAVERSING IN-CORE PROBE</p> <p>Traversing In-Core Probe operations are conducted at power, and would not be contained within the LSRO job scope.</p> <p>This K/A was rejected and was replaced with randomly selected K/A 215003 A3.03, which was verified to be contained within the LSRO job scope.</p>
TIER 2	233000 2.1.38	<p>LGS and Common Outline – 2.1.38 knowledge of the station's requirements for verbal communications when implementing procedures.</p> <p>There are no specific responsibilities for LSROs regarding FPCC procedure use that could be used to test communication when implementing procedures.</p> <p>This K/A was rejected and was replaced with randomly selected 233000 2.1.40 which was verified to be contained within the LSRO job scope</p>
TIER 1	295035 EA1.01	<p>LGS and Common Outline - Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment ventilation system</p> <p>There are no realistic failure mechanism related to plant conditions that are present during LSRO activities that could plausibly result in Secondary Containment high dP.</p> <p>This K/A was rejected and was replaced with randomly selected TIER 1 295018 AA 1.01 which was verified to be contained within the LSRO job scope reselected</p>

TIER 3	2.4.6	<p>LGS and Common Outline - Knowledge of EOP mitigation strategies</p> <p>There are no EOP entries, and consequently mitigation strategies related to plant conditions that are present during LSRO activities.</p> <p>This K/A was rejected and was replaced with randomly selected 2.4.40 which was verified to be contained within the LSRO job scope reselected</p>