

Draft Submittal

**MCGUIRE JUNE 2003 EXAM
50-369/2003-301 AND
50-370/2003-301**

JUNE 16 - 30, 2003

1. Written Exam Sample outlines

Facility: McGuire		Date of Exam: Weeks of June 16 and 23, 2003																
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 *	Point Total	K	A	A 2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	6	2	3				3	2				2	2418		7	0	7
	2	2	2	2				1	1				1	469		4	1	5
	3													3				
	Tier Totals	8	4	5				4	3				3	4327		1	1	12
2. Plant Systems	1	2	1	3	4	3	2	3	3	2	3	2	4928		1	3	4	
	2	1	2	1	1	1	1	0	0	2	0	1	4710		1	1	2	
	3												4					
	Tier Totals	3	3	4	5	4	3	3	3	4	3	3	4038		2	4	6	
3. Generic Knowledge and Abilities Categories					Cat 1	Cat 2	Cat 3	Cat 4					4710	1	2	3	4	7
					2	2	3	3						2	2	1	2	

- Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier of the F (not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling.
 2. The point total for each group and tier in the proposed outline must match that specified in the table. It may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must match the points.
 3. Select topics from many systems and evolutions; avoid selecting more than two or three K/A plant-specific priorities.
 4. Systems/evolutions within each group are identified on the associated outline.
 5. The shaded areas are not applicable to the category/tier.
 - 6.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, by system. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
 7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings, and the point totals for each system and category. K/As below 2.5 should be justified on the following pages. Summarize all the SRO-only knowledge and non-SRO knowledge on the following pages. Use duplicate pages for RO and SRO-only exams.
 - h. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/As.
 - i. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/As.

EAPE # / Name / Safety Function	K 1 K 2 K 3 A 1 A 2 G							K/A Topic(s)	Imp.	Points	Question	Level	Source Information				Memory	Comp	Analysis
	Lesson Plan	NRC	Bank	Mod	New														
000007 Reactor Trip - Stabilization - Recovery / I				1.04				Ability to operate and monitor the following as they apply to a reactor trip: RCP operation and flow rates	3.6	1	63.1	RO						X	
000008 Pressurizer Vapor Space Accident / III				2.06				Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident: PORV logic control under low-pressure conditions	3.3	1	1022	RO			X				
000009 Small Break LOCA / III			3.13					Knowledge of the reason for the following responses as they apply to the Small Break LOCA: Stopping the affected RCP	3.4	1	1025	RO			X			X	
000011 Large Break LOCA								Deselected											
000015 RCP Malfunctions / 4			2.01					Ability to determine and interpret the following as they apply to the RCP Malfunction: Cause of RCP failure	3.00	1	1023.00	RO			X				
000022 Loss of Reactor Coolant Makeup / II	1.01							Knowledge of the operational implication of the following concepts as they apply to the Loss of Reactor Coolant Pump Makeup: Consequences of thermal shock to RCP seals.	2.8	1	1026	RO			X				
000025 Loss of RHR System / IV		2.02						Knowledge of the interrelations between the Loss of RHR System and the following: LPI or Decay Heat Removal/RHR pumps.	3.2	1	1027	RO			X				
000026 Loss of Component Cooling Water / 8			2.06					Ability to determine and interpret the following as they apply to the Loss of RHR System: Implications of LPI flow and temperature rise of RCP seals.				SR0							
000027 Pressurizer Pressure Control System Malfunction / 3		3.03						Ability to diagnose and recognize trends in an accurate and timely manner, utilizing the appropriate control room reference material. 2.4.47 Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Actions contained in EOP for Pz PCS malfunctions.	3.4	1		RO							
000029 ATWS	1.01							Knowledge of the operational implications of the following concepts as they apply to the ATWS: Reactor nucleonics and thermo-hydraulics behavior.	3.7	1	1024	RO			X			X	
000030 ATWS			2.02					Ability to determine and interpret the following as they apply to ATWS: Reactor Trip Alarm.	2.8	1		RO							
000038 Steam Generator Tube Rupture / III	1.02							Knowledge of the operational implications of the following concepts as they apply to the SGTR: Leak rate vs. pressure drop.	4.2	1	1025	SR0							
000040 W/E12 Steam Line Rupture - Excessive Heat Transfer / 4			3.01					Knowledge of the reason for the following responses as they apply to the Steam Line Rupture: Operation of steam line isolation valves	3.2	1		RO							
000040 W/E12 Steam Line Rupture - Excessive Heat Transfer / 4			1.30					(W/E12) Ability to operate and monitor the following as they apply to the Uncontrolled Depressurization of all Steam Generators) Desired operating results during abnormal and emergency situations.	4.2	1	1028	RO			X				
000049 W/E13 Steam Line Rupture - Excessive Heat Transfer / 4			2.00					(Uncontrolled Depressurization of all Steam Generators) Desired operating results during abnormal and emergency situations.	3.4	1	593.1	RO			X		X		
000054 Loss of Main Feedwater / IV			2.04					Ability to determine and interpret the following as they apply to the Loss of Main Feedwater: Proper operation of RCP pumps and regulating valves.	3.2	1	1037	SR0							
000054 Loss of Main Feedwater / IV			2.04					Ability to determine and interpret the following as they apply to the Loss of Main Feedwater: Proper operation of RCP pumps and regulating valves.	4.2	1	955.1	SR0							
000055 Station Blackout / 6		1.02						Ability to operate and monitor the following as they apply to a Station Blackout: Manual ED/G start.	4.3	1	1036	RO			X			X	
000056 Loss of Offsite Power / 6	1.04							Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: Definition of saturation conditions, implications for the systems.	3.1	1		RO							

E/APE # / Name / Safety Function	PWRS Examination Outline Emergency and Abnormal Plant Excursions - Test 1 (Group 2)										Source Information													
	K	1	K	2	K	3	A	1	A	2	G	Imp.	Points	Level	Bank Question	Lesson Plan	NRC	Bank	Mod	New	Memory	Comp	Analysis	
000001 Continuous Rod Withdrawal / I																								
000003 Dropped Control Rod / I												3.1	1	RO	1029					X			X	
000005 Inoperable/Stuck Control Rod / I																								
000024 Emergency Boration / I																								
000028 Reactor Level Malfunction / 2											2.09	2.2		SRO	9024								X	
000032 Loss of Source Range NI / 7																								
000033 Loss of Intermediate Range NI / 7																								
000038 Fuel Handling Accident / 5											2.02	3.1		SRO										
000037 Steam Generator Tube Leak																								
000051 Loss of Condenser Vacuum / IV										3.01		2.8	1	RO	373.1			X					X	
000051 Loss of Condenser Vacuum / IV										1.04		2.5	1	RO	963.1			X					X	
000059 Accidental Liquid Rad/Waste Rel / 8																								
000058 Accidental Gaseous Rad/Waste Rel / 8											2.03	2.9		SRO										
000061 ARM System Alarms / 7																								
000067 Plant Fire On-site / 8										3.02		2.5	1	RO										
000068 Control Room Evac / 8											2.04	3.7	1	RO	1034				X				X	
000069 (W/E14) Loss of CTMT Integrity / V																								
000074 (W/E06&E07) Inert Core Cooling / IV											2.10	4.0		SRO	7761									
000076 High Reactor Coolant Activity / 9																								

System # / Name	PW2 Examination Outside Plant Systems - Year 2 Group 2										Form ES-201-3																										
	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)	Imp.	Points	Level	Question	NRC	Bank	Mod	New	Memory	Comp	Analysis				
001 Control Rod Drive																						3.1	1	RO	1040					X							
002 Reactor Coolant											5.06											2.5	1	RO	1043				X			X					
011 Pressurizer Level Control																																					
014 Rod Position Indication												4.02										3.4	1	RO	1044				X			X					
015 Nuclear Instrumentation																																					
016 Non-nuclear Instrumentation											5.01											2.7	1	RO													
017 In-core Temperature Monitor												3.01										3.6	1	RO	811.1			X				X					
027 Containment Iodine Removal																						3.4	1	RO													
028 Hydrogen Recombiner and Purge Control																						2.5	1	RO	1041				X			X					
029 Containment Purge																						2.9	1	RO	28.1			X					X				
033 Special Fuel Pool Cooling																						3.3		SRG	892.3									X			
034 Fuel Handling Equipment																																					
035 Steam Generator																																					
041 Steam Dump/Turbine Bypass Control																						3.3		SRG													
045 Main Turbine Generator																																					
055 Condenser Air Removal																						2.5	1	RO	547.2			X					X				
068 Liquid Radwaste																																					
071 Waste Gas Disposal																																					
072 Area Radiation Monitoring																						2.9	1	RO	976.1			X						X			

McGuire Sample Plan

PWR SRO Examination Outline

ES-401-4

Facility: McGuire		Date of Exam: 7/29/02					Exam Level: SRO							
		K/A Category Points										Point		
Tier	Group	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	Total	Target
1 Emergency & Abnormal Plant Evolutions	1	4	2	5				3	8			2	24	24
	2	1	1	3				5	6			0	16	16
	3	0	0	1				1	1			0	3	3
	Tier Totals	5	3	9				9	15			2	43	43
2 Plant Systems	1	3	2	2	5	1	0	0	0	1	3	2	19	19
	2	1	0	2	0	1	2	4	3	2	1	1	17	17
	3	0	0	1	1	0	0	0	2	0	0	0	4	4
	Tier Totals	4	2	5	6	2	2	4	5	3	4	3	40	40
3 Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4			
					4		4		5		4		17	17
<p>Notes: 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., the "Tier Totals" in each K/A category shall not be less than two).</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 exam must total 100 points.</p> <p>3 Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4 Systems/evolutions within each group are identified on the associated outline.</p> <p>5 The shaded areas are not applicable to the category/tier.</p> <p>6* The generic 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.</p> <p>7 On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the SRO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.</p>														Totals

Form ES-41-3																		
Emergency and Abnormal Plant Excursions - Tier 1 Group 1																		
EAPE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	V/A Topic(s)	Imp. Points	Question	Level	Lesson Plan	Source Information						
												NRC	Bank	Mod	New	Memory	Comp	Analysis
000007 Reactor Trip - Stabilization - Recovery / 1				1.04			Ability to operate and monitor the following as they apply to a reactor trip: RCP operation and flow rates	3.6	63.1	RO			X					X
000008 Pressurizer Vapor Space Accident / III					2.06		Ability to determine and interpret the following at they apply to the Pressurizer Vapor Space Accident: PORV logic control under low-pressure conditions	3.3	1022	RO				X				
000009 Small Break LOCA / III				3.13			Knowledge of the reason for the following responses as they apply to the small break LOCA: Stopping the affected RCP	3.4	1025	RO				X				X
000011 Large Break LOCA							Deselcted											
000015/17 RCP Malfunctions / 4					2.01		Ability to determine and interpret the following as they apply to the RCP Malfunction: Causes of RCP failure	3.00	1023.00	RO				X				X
000022 Loss of Reactor Coolant Makeup / II				1.01			Knowledge of the operational implication of the following concepts as they apply to the Loss of Reactor Coolant Pump Makeup: Consequences of thermal shock to RCP seals.	2.8	1026	RO				X				X
000025 Loss of RHR System / IV					2.02		Knowledge of the interrelations between the Loss of RHR System and the following: LP or Decay Heat Removal/RHR pumps.	3.2	1027	RO				X				X
000026 Loss of RHR System / IV					2.05		Ability to determine and interpret the following as they apply to the Loss of RHR System: Limitations of LTR flow and temperature value of change	3.1		SRO								
000026 Loss of Component Cooling Water / 8							Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material: 2.4.47	3.4		RO								
000027 Pressurizer Pressure Control System Malfunction / 3				3.03			Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Actions contained in EOP for PZ PCS malfunctions.	3.7	1024	RO				X				X
000029 ATWS				1.01			Knowledge of the operational implications of the following concepts as they apply to the ATWS: Reactor nucleonics and thermo-hydraulics behavior.	2.8		RO								
000029 ATWS					4.02		Ability to determine of temperature feedback to a delay: apply to a ATWS Reactor trip alarm.	4.2	1035	SRO				X				X
000038 Steam Generator Tube Rupture / III				1.02			Knowledge of the operational implications of the following concepts as they apply to the SGTTR: Leak rate vs. pressure drop	3.2		RO								
000040 W/IE2 Steam Line Rupture - Excessive Heat Transfer / 4				3.01			Knowledge of the reason for the following responses as they apply to the Steam Line Rupture: Operation of steam line isolation valves	4.2	1028	RO				X				X
000040 W/IE2 Steam Line Rupture - Excessive Heat Transfer / 4					1.30		(W/IE2) Ability to operate and or monitor the following as they apply to the (Uncontrolled) Depressurization of all Steam Generators: Desired operating results during abnormal and emergency situations.	3.4	593.1	RO				X			X	
000040 W/IE2 Steam Line Rupture - Excessive Heat Transfer / 4					2.10		The Effectiveness of Depressurization of a Steam Generator: Facility conditions and selection of appropriate procedures during emergency and emergency operations.	4.2	1027	SRO				X				X
000040 Loss of Main Feedwater / IV					2.05		Ability to determine and interpret the following as they apply to the Loss of Main Feedwater: Proper operation of APW pumps and recirculating valves.	4.2	966.1	SRO				X				X
000055 Station Blackout / 6				1.02			Ability to operate and monitor the following as they apply to a Station Blackout: Manual ED/G start	4.3	1066	RO				X				X
000065 Loss of Onsite Power / 6				1.04			Knowledge of the operational implications of the following concepts as they apply to Loss of Onsite Power: Definition of saturation conditions, implications for the systems.	3.1		RO								

ES-4971 Plant Examination Outline										Emergency and Abnormal Event Evolutions - Top 10, Group 2										Exam ES-4971-3									
E/APE # / Name / Safety Function	K			A			G	V/A Topic(s)	Imp.	Points	Level	Bank Question	Lesson Plan	Source Information			Memory	Comp	Analysis										
	1	2	3	1	2	Bank								Mod	New														
000001 Continuous Rod Withdrawal / I							Deselected																						
000003 Dropped Control Rod / I	1.07						Knowledge of the operational implications of the following concepts as they apply to Dropped Control Rod: Effect of dropped rod on insertion limits and SDM.	3.1	1	RO	1029									X									
000005 Inoperable/Stack Control Rod / I							Deselected																						
000024 Emergency Boration / I							Deselected																						
000028 Pressurizer Level Malfunction / 2							Ability to operate and/or monitor the following as they apply to the Pressurizer Level Control Malfunction: Credited and letdown flow capacities.	2.2	1	SRO	392.1									X									
000032 Loss of Source Range NI / 7							Deselected																						
000033 Loss of Intermediate Range NI / 7							Deselected																						
000036 Fuel Handling Accident / 8							Ability to describe and interpret the following as they apply to the Fuel Handling Accident: Magnitude of potential radioactive release.	2.1	1	SRO																			
000037 Steam Generator Tube Leak							Deselected																						
000051 Loss of Condenser Vacuum / IV							Knowledge for the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capacity upon loss of condenser vacuum.	2.8	1	RO	379.1			X						X									
000051 Loss of Condenser Vacuum / IV							Ability to operate and/or monitor the following as they apply to the Loss of Condenser Vacuum: Rod position.	2.5	1	RO	963.1			X						X									
000059 Accidental Liquid Rad/Waste Rod / 8							Deselected																						
000059 Accidental Gascore Backwash Rod / 8							Knowledge of SRO responsibilities for auxiliary systems that are located in the control room (e.g., waste disposal and draining systems).	2.9	1	SRO																			
000061 ARM System Alarms / 7							Deselected																						
000067 Plant Fire On-site / 8							Knowledge of the reason for the following responses as they apply to the Plant Fire on Site: Steps called out in the site fire protection plan, PPS manual, and the zone manual.	2.5	1	RO																			
000068 Control Room Evac / 8							Ability to determine and interpret the following as they apply to the Control Room Evacuation: SIG Pressure	3.7	1	RO	1034									X									
000069 (W/E1A) Loss of CTMT Integrity / V							Deselected																						
000074 (W/E6a)(S7) Feed Core Cooling / IV							(E7) Ability to determine and interpret the following as they apply to the (S)aturated (D)oor (S)afety (F)acility conditions and detection of appropriate procedures during abnormal and emergency conditions.	4.0	1	SRO	763.1			X					X										
000076 High Reactor Coolant Activity / 9							Deselected																						

ES-401 General Knowledge and Ability Outline (Rev. 3) Form ES-401-5

Category	K/A #	Topic	Skill Level		Level	Bank Question	Lesson Plan	Source Information				Comp	Analysis
			Imp.	Points				NRC	Bank	Mod	New		
Conduct of Operations	2.1.10	Knowledge of conditions and limitations in the facility license Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.	4	1	SFO	991.1		X			X		
	2.1.25		3.1	1	SFO	697.2		X				X	
	2.1.32	Ability to explain and apply all system limits and precursors	3.4	1	RO	390.1		X			X		
	2.1.3	Knowledge of shift turnover practices.	3	1	RO	984.1		X			X		
Total													
Equipment Control	2.2.3	Knowledge of the design, procedural, and operational differences between units.	3.3	1	SFO								
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1	SFO	1004.1		X			X		
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4	1	RO								
	2.2.27	Knowledge of the refueling process	2.6	1	RO	228.1		X			X		
Total													
Radiation Control	2.3.2	Knowledge of facility ALARA program.	2.9	1	SFO	124.1		X				X	
	2.3.9	Knowledge of the process for performing a containment purge	2.5	1	RO	492.2		X				X	
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1	RO	1012.1		X				X	
	2.3.11	Ability to control radiation releases.	2.7	1	RO								
Total													
Emergency Procedures and Plan	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	3.6	1	SFO	398.1		X			X		
	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	4	1	SFO								
	2.4.22	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	2.8	1	RO	51.1		X			X		
	2.4.34	Knowledge of RO issues performed outside the main control room during emergency operations including system geography and system implications.	3.8	1	RO	1045				X	X		
Total													
Tier 3 Point Total			17	4									

Randomly add 4 K/A's from within the SFO only.

17 SRO K/As to be sampled - 13 will be imported from the FO generic section

Genent

For O

only

4/02/2003