Outline Development for 10/2001 Fort Calhoun RO Written Exam

This exam outline was developed in accordance with NUREG-1021, Rev 8, supplement 1. In addition, the NRC Region IV "Good Practices" document, and the "Additional Guidance on K/A Suppression" were used as references.

Written Exam Outline

Fort Calhoun has developed a methodology to ensure that the selection of K/A items for the written exam is random and unbiased. The written exam outline was developed using a Microsoft Access database. All K/A items from NUREG-1022, Rev 2 are contained in a table within the database. Items which clearly are not applicable to Fort Calhoun are assigned a flag to prevent them from being sampled. Flagged items were chosen in concurrence with the "Additional Guidance on K/A Suppression" document and include only the Ice Condenser System K/A's, Non-Combustion Engineering vender specific EPE/APE K/A's, and K/A's associated with multi-unit plants.

The sample plan is developed as follows:

- A module is run that assigns a random number to each item in the K/A catalog. This module uses a "randomize" routine to ensure that the pattern of random numbers is unique.

- A query is run that presents K/A items belonging to the RO tier and group being sampled, with RO importance factors of 2.5 or greater, ordered by their associated random number. Items are entered in the sample plan as ordered, unless the item is not applicable to Fort Calhoun, not appropriate for a written exam or the system/event or category has been fully sampled. This process is repeated until the tier/group has the required number of items. This process is repeated for each tier/group combination. (The number of items it takes to fully sample a system/event or category is determined by dividing the number of questions needed in a group by the number of system/events or categories for the group, rounding the result to the nearest integer and then adding one.)

This draft written exam was prepared in accordance with the outline.

Questions for the Audit exam, that was given in May, were selected prior to beginning development of the Outline.

A total of 100 questions, along with supporting references, are contained in this submittal. When there is a Fort Calhoun learning objective that is closely related to the sampled K/A item for a question, it is included in the review form.

The Statistics for the RO exam are:

	Required	RO Exam
Bank Questions	75 or less	51
New Questions		40
Modified Questions		9
Higher Order Questions	50-60	57
New, Higher Order Questions	At least 10	23

Please withhold these materials from public disclosure until after the examination is complete.

PWR RO Written Examination Outline Summary

System/Mode	System Title	K1	K2	K3	A1	A2	G	Points
EPE/APE Tier 1 / Group 1								
000017	Reactor Coolant Pump Malfunctions (Loss of RC Flow)		1				1	2
000024	Emergency Boration				1		1	2
000027	Pressurizer Pressure Control System Malfunction					2		2
000040	Steam Line Rupture	2						2
000057	Loss of Vital AC Electrical Instrument Bus				1	1		2
000067	Plant Fire on Site					1	1	2
000068	Control Room Evacuation				1		1	2
000074	Inadequate Core Cooling				1			1
CE-A13	Natural Circulation Operations			1				1
		2	**1**	**1**	**4**	**4**	**4**	**16**
EPE/APE Tier 1 / Group 2								
000001	Continuous Rod Withdrawal	1	1					2
000009	Small Break LOCA				2			2
000022	Loss of Reactor Coolant Makeup			1				1
000025	Loss of Residual Heat Removal System		1				1	2
000029	Anticipated Transient Without Scram (ATWS)			2				2
000032	Loss of Source Range Nuclear Instrumentation	1						1
000033	Loss of Intermediate Range Nuclear Instrumentation						1	1
000038	Steam Generator Tube Rupture	1			1			2
000059	Accidental Liquid Radwaste Release						1	1
CE-E06	Loss of Feedwater		1					1
CE-E09	Functional Recovery	1					1	2
		4	**3**	**3**	**3**		**4**	**17**
EPE/APE Tier 1 / Group 3								
000028	Pressurizer Level Control Malfunction					1		1
000056	Loss of Off-Site Power					1		1
CE-A16	Excess RCS Leakage						1	1
						2	**1**	**3**
	Grand Total of EPE/APE K&A Selectio	**6**	**4**	**4**	**7**	**6**	**9**	**36**

PWR RO Written Examination Outline Summary

System/Mode	System Title	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Points
Plant System Tier 2 / Group 1													
001000	Control Rod Drive System				2	1							3
003000	Reactor Coolant Pump System			1			1			1			3
004000	Chemical and Volume Control System				1				1		1		3
013000	Engineered Safety Features Actuation System								1			1	2
015000	Nuclear Instrumentation System					1	1						2
022000	Containment Cooling System		1									1	2
059000	Main Feedwater System			2									2
061000	Auxiliary / Emergency Feedwater System	1						2					3
071000	Waste Gas Disposal System										1	1	2
072000	Area Radiation Monitoring System	1											1
		2	**1**	**3**	**3**	**2**	**2**	**2**	**2**	**1**	**2**	**3**	**23**
Plant System Tier 2 / Group 2													
002000	Reactor Coolant System				1				1				2
006000	Emergency Core Cooling System				1							1	2
010000	Pressurizer Pressure Control System	1										1	2
011000	Pressurizer Level Control System					1							1
026000	Containment Spray System								1		1		2
029000	Containment Purge System			1									1
035000	Steam Generator System					1			1				2
039000	Main and Reheat Steam System	1										1	2
062000	A.C. Electrical Distribution			1									1
064000	Emergency Diesel Generators									1	1		2
073000	Process Radiation Monitoring System	1											1
086000	Fire Protection System				1						1		2
		3		**2**	**3**	**2**			**3**	**1**	**3**	**3**	**20**
Plant System Tier 2 / Group 3													
005000	Residual Heat Removal System		1					1					2
008000	Component Cooling Water System										1		1
027000	Containment Iodine Removal System					1							1
028000	Hydrogen Recombiner and Purge Control System										1		1
045000	Main Turbine Generator System				1							1	2
103000	Containment System	1											1
		1	**1**		**1**	**1**		**1**			**2**	**1**	**8**
Grand Total of Plant System K&A Selecti		**6**	**2**	**5**	**7**	**5**	**2**	**3**	**5**	**2**	**7**	**7**	**51**

PWR RO Written Examination Outline Summary

System/Mode	System Title	Cat 1	Cat 2	Cat 3	Cat 4	Points
Generic Knowledge and Abilities Tier 3						
000000	Generic Knowledges and Abilities	4	3	2	4	13
		4	**3**	**2**	**4**	**13**
	Grand Total of Generic K&A Selectic	**4**	**3**	**2**	**4**	**13**

PWR RO Written Examination Outline

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 1		**Group** 1			
000017	Reactor Coolant Pump Malfunctions (Loss of RC Flow)	2.1.28	: Knowledge of the purpose and function of major system components and controls.	3.2	41.7
000017	Reactor Coolant Pump Malfunctions (Loss of RC Flow)	AK2.10	Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flo and the following:: RCP indicators and controls	2.8*	41.7 / 45.7
000024	Emergency Boration	2.2.25	: Knowledge of bases in technical specifications for limiting conditions for operations and safety l	2.5	43.2
000024	Emergency Boration	AA1.06	Ability to operate and / or monitor the following as they apply to the Emergency Boration:: BWST temperature	3.2	41.7 / 45.5 / 45.6
000027	Pressurizer Pressure Control System Malfunction	AA2.03	Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions:: Effects of RCS pressure changes on key components in plant	3.3	43.5 / 45.13
000027	Pressurizer Pressure Control System Malfunction	AA2.12	Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions:: PZR level	3.7	43.5 / 45.13
000040	Steam Line Rupture	AK1.02	Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture:: Leak rate versus pressure change	3.2	41.8 / 41.10 / 45.3
000040	Steam Line Rupture	AK1.03	Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture:: RCS shrink and consequent depressurization	3.8	41.8 / 41.10 / 45.3
000057	Loss of Vital AC Electrical Instrument Bu	AA1.05	Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument B Backup instrument indications	3.2	41.7 / 45.5 / 45.6
000057	Loss of Vital AC Electrical Instrument Bu	AA2.17	Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bu System and component status, using local or remote controls	3.1	43.5 / 45.13
000067	Plant Fire on Site	2.1.30	: Ability to locate and operate components, including local controls.	3.9	41.7 / 45.7

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
000067	Plant Fire on Site	AA2.07	Ability to determine and interpret the following as they apply to the Plant Fire on Site:: Whether malfunction is due to common-mode electrical failures	2.6	43.5 / 45.13
000068	Control Room Evacuation	2.1.30	: Ability to locate and operate components, including local controls.	3.9	41.7 / 45.7
000068	Control Room Evacuation	AA1.03	Ability to operate and / or monitor the following as they apply to the Control Room Evacuation:: S/C level	4.1	41.7 / 45.5 / 45.6
000074	Inadequate Core Cooling	EA1.13	Ability to operate and monitor the following as they apply to a Inadequate Core Cooling:: Subcoolin margin indicators	4.3	41.7 / 45.5 / 45.6
CE-A13	Natural Circulation Operations	AK3.01	Knowledge of the reasons for the following responses as they apply to the (Natural Circulation Operations): Facility operating characteristics during transient conditions, including coolant chemi and the effects of temperature, pressure, and reactivity changes and operating limitations and re for these operating characteristics.	3.4	41.5 / 41.10 / 45.6 / 45.13

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 1	Group 2				
000001	Continuous Rod Withdrawal	AK1.01	Knowledge of the operational implications of the following concepts as they apply to Continuous Withdrawal:: Prompt criticality	3.4*	41.8 / 41.10 / 45.3
000001	Continuous Rod Withdrawal	AK2.08	Knowledge of the interrelations between the Continuous Rod Withdrawal and the following:: Indiv rod display lights and indications	3.1	41.7 / 45.7
000009	Small Break LOCA	EA1.13	Ability to operate and monitor the following as they apply to a small break LOCA:: ESFAS	4.4	41.7 / 45.5 / 45.6
000009	Small Break LOCA	EA1.17	Ability to operate and monitor the following as they apply to a small break LOCA:: PRT	3.4	41.7 / 45.5 / 45.6
000022	Loss of Reactor Coolant Makeup	AK3.05	Knowledge of the reasons for the following responses as they apply to the Loss of Reactor Cool Pump Makeup:: Need to avoid plant transients	3.2	41.5 / 41.10 / 45.6 / 45.13
000025	Loss of Residual Heat Removal System	2.4.31	: Knowledge of annunciators alarms and indications, and use of the response instructions.	3.3	41.10 / 45.3
000025	Loss of Residual Heat Removal System	AK2.02	Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following:: LPI or Decay Heat Removal/RHR pumps	3.2*	41.7 / 45.7
000029	Anticipated Transient Without Scram (ATWS)	EK3.02	Knowledge of the reasons for the following responses as the apply to the ATWS:: Starting a spe charging pump	3.1	41.5 / 41.10 / 45.6 / 45.13
000029	Anticipated Transient Without Scram (ATWS)	EK3.08	Knowledge of the reasons for the following responses as the apply to the ATWS:: Closing the ma steam isolation valve	3.6*	41.5 / 41.10 / 45.6 / 45.13
000032	Loss of Source Range Nuclear Instrumentation	AK1.01	Knowledge of the operational implications of the following concepts as they apply to Loss of So Range Nuclear Instrumentation:: Effects of voltage changes on performance	2.5	41.8 / 41.10 / 45.3
000033	Loss of Intermediate Range Nuclear Instrumentation	2.4.50	: Ability to verify system alarm setpoints and operate controls identified in the alarm response mar	3.3	45.3

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
000038	Steam Generator Tube Rupture	EA1.01	Ability to operate and monitor the following as they apply to a SGTR:: S/G levels, for abnormal increase in any S/G	4.5	41.7 / 45.5 / 45.6
000038	Steam Generator Tube Rupture	EK1.04	Knowledge of the operational implications of the following concepts as they apply to the SGTR:: Reflux boiling	3.1*	41.8 / 41.10 / 45.3
000059	Accidental Liquid Radwaste Release	2.1.02	: Knowledge of operator responsibilities during all modes of plant operation.	3.0	
CE-E06	Loss of Feedwater	EK2.02	Knowledge of the interrelations between the (Loss of Feedwater) and the following:: Facility's he removal systems, including primary coolant, emergency coolant, the decay heat removal systems relations between the proper operation of these systems to the operation of the facility.	3.5	41.7 / 45.7
CE-E09	Functional Recovery	2.1.30	: Ability to locate and operate components, including local controls.	3.9	41.7 / 45.7
CE-E09	Functional Recovery	EK1.02	Knowledge of the operational implications of the following concepts as they apply to the (Functior Recovery): Normal, abnormal and emergency operating procedures associated with (Functional Recovery).	3.2	41.8 / 41.10 / 45.3

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 1	**Group** 3				
000028	Pressurizer Level Control Malfunction	AA2.02	Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions:: PZR level as a function of power level or T-ave. including interpretation of malfunct	3.4	43.5 / 45.13
000056	Loss of Off-Site Power	AA2.39	Ability to determine and interpret the following as they apply to the Loss of Offsite Power:: Safety injection pump ammeter and flowmeter	3.5*	43.5 / 45.13
CE-A16	Excess RCS Leakage	2.2.25	: Knowledge of bases in technical specifications for limiting conditions for operations and safety l	2.5	43.2

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 2		Group 1			
001000	Control Rod Drive System	K4.10	Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following:: Trip si that would prevent reset of reactor trip signals	3.6	41.7
001000	Control Rod Drive System	K4.15	Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following:: Opera of latching controls for groups and individual rods	2.7	41.7
001000	Control Rod Drive System	K5.26	Knowledge of the following operational implications as they apply to the CRDS:: Definition of moderator temperature coefficient; application to reactor control	3.3	41.5 / 45.7
003000	Reactor Coolant Pump System	A3.02	Ability to monitor automatic operation of the RCPS, including:: Motor current	2.6	41.7 / 45.5
003000	Reactor Coolant Pump System	K3.02	Knowledge of the effect that a loss or malfunction of the RCPS will have on the following:: S/G	3.5	41.7 / 45.6
003000	Reactor Coolant Pump System	K6.02	Knowledge of the effect of a loss or malfunction on the following will have on the RCPS:: RCP se and seal water supply	2.7	41.7 / 45.5
004000	Chemical and Volume Control System	A2.14	Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of malfunctions or operations:: Emergency boration	3.8*	41.5 / 43.5 / 45.3 / 45.5
004000	Chemical and Volume Control System	A4.09	Ability to manually operate and/or monitor in the control room:: PZR spray and heater controls	3.5	41.7 / 45.5 to 45.8
004000	Chemical and Volume Control System	K4.04	Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following:: Manual/automatic transfers of control	3.2	41.7
013000	Engineered Safety Features Actuation System	2.4.50	: Ability to verify system alarm setpoints and operate controls identified in the alarm response mar	3.3	45.3
013000	Engineered Safety Features Actuation System	A2.01	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 consequen those malfunctions or operations;: LOCA	4.6	41.5 / 43.5 / 45.3 / 45.13

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
015000	Nuclear Instrumentation System	K5.12	Knowledge of the operational implications of the following concepts as they apply to the NIS:: Quadrant power tilt, including long-range effects	3.2	41.5 / 45.7
015000	Nuclear Instrumentation System	K6.02	Knowledge of the effect of a loss or malfunction on the following will have on the NIS:: Discriminator/compensation circuits	2.6	41.7 / 45.7
022000	Containment Cooling System	2.1.28	: Knowledge of the purpose and function of major system components and controls.	3.2	41.7
022000	Containment Cooling System	K2.01	Knowledge of power supplies to the following:: Containment cooling fans	3.0*	41.7
059000	Main Feedwater System	K3.03	Knowledge of the effect that a loss or malfunction of the MFW will have on the following:: S/GS	3.5	41.7 / 45.6
059000	Main Feedwater System	K3.04	Knowledge of the effect that a loss or malfunction of the MFW will have on the following:: RCS	3.6	41.7 / 45.6
061000	Auxiliary / Emergency Feedwater Syster	A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) assoc with operating the AFW controls including:: S/G pressure	3.3*	41.5 / 45.5
061000	Auxiliary / Emergency Feedwater Syster	A1.04	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) assoc with operating the AFW controls including:: AFW source tank level	3.9	41.5 / 45.5
061000	Auxiliary / Emergency Feedwater Syster	K1.07	Knowledge of the physical connections and/or cause-effect relationships between the AFW and following systems:: Emergency water source	3.6	41.2 to 41.9 / 45.7 to 45.8
071000	Waste Gas Disposal System	2.1.28	: Knowledge of the purpose and function of major system components and controls.	3.2	41.7
071000	Waste Gas Disposal System	A4.27	Ability to manually operate and/or monitor in the control room:: Opening and closing of the decay ta discharge control valve	3.0*	41.7 / 45.5 to 45.8

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
072000	Area Radiation Monitoring System	K1.03	Knowledge of the physical connections and/or cause-effect relationships between the ARM syst and the following systems:: Fuel building isolation	3.6*	41.2 to 41.9 / 45.7 to 45.8

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 2	**Group** 2				
002000	Reactor Coolant System	A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) b on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:: Loss of heat sinks	4.3	41.5 / 43.5 / 45.3 / 45.5
002000	Reactor Coolant System	K4.02	Knowledge of RCS design feature(s) and/or interlock(s) which provide for the following:: Monitor reactor vessel level	3.5*	41.7
006000	Emergency Core Cooling System	2.4.49	: Ability to perform without reference to procedures those actions that require immediate operatio system components and controls.	4.0	41.10 / 43.2 / 45.6
006000	Emergency Core Cooling System	K4.20	Knowledge of ECCS design feature(s) and/or interlock(s) which provide for the following:: Autom closure of common drain line and fill valves to accumulator	3.2*	41.7
010000	Pressurizer Pressure Control System	2.2.25	: Knowledge of bases in technical specifications for limiting conditions for operations and safety l	2.5	43.2
010000	Pressurizer Pressure Control System	K1.01	Knowledge of the physical connections and/or cause-effect relationships between the PZR PCS the following systems:: RPS	3.9	41.2 to 41.9 / 45.7 to 45.8
011000	Pressurizer Level Control System	K5.05	Knowledge of the operational implications of the following concepts as they apply to the PZR LCS Interrelation of indicated charging flow rate with volume of water required to bring PZR level back programmed level hot/cold	2.8	41.5 / 45.7
026000	Containment Spray System	A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) b on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:: Failure of ESF	4.1	41.5 / 43.5 / 45.3 / 45.13
026000	Containment Spray System	A4.05	Ability to manually operate and/or monitor in the control room:: Containment spray reset switches	3.5	41.7 / 45.5 to 45.8
029000	Containment Purge System	K3.02	Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on following:: Containment entry	2.9*	41.7 / 45.6
035000	Steam Generator System	A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the GS; and (b) ba on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:: Pressure/level transmitter failure	3.4	41.5 / 43.5 / 45.3 / 45.5

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
035000	Steam Generator System	K5.01	Knowledge of operational implications of the following concepts as the apply to the S/GS:: Effect secondary parameters, pressure, and temperature on reactivity	3.4	41.5 / 45.7
039000	Main and Reheat Steam System	2.1.30	: Ability to locate and operate components, including local controls.	3.9	41.7 / 45.7
039000	Main and Reheat Steam System	K1.06	Knowledge of the physical connections and/or cause-effect relationships between the MRSS and following systems:: Condenser steam dump	3.1	41.2 to 41.9 / 45.7 to 45.8
062000	A.C. Electrical Distribution	K3.02	Knowledge of the effect that a loss or malfunction of the ac distribution system will have on the following:: ED/G	4.1	41.7 / 45.6
064000	Emergency Diesel Generators	A3.11	Ability to monitor automatic operation of the ED/G system, including:: Need for setting offsite powe breaker to automatic	3.1*	41.7 / 45.5
064000	Emergency Diesel Generators	A4.07	Ability to manually operate and/or monitor in the control room:: Transfer ED/G (with load) to grid	3.4	41.7 / 45.5 to 45.8
073000	Process Radiation Monitoring System	K1.01	Knowledge of the physical connections and/or cause-effect relationships between the PRM syste and the following systems:: Those systems served by PRMs	3.6	41.2 to 41.9 / 45.7 to 45.8
086000	Fire Protection System	A4.01	Ability to manually operate and/or monitor in the control room:: Fire water pumps	3.3	41.7 / 45.5 to 45.8
086000	Fire Protection System	K4.03	Knowledge of design feature(s) and/or interlock(s) which provide for the following:: Detection ar location of fires	3.1	41.7

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 2		**Group** 3			
005000	Residual Heat Removal System	A1.06	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) assoc with operating the RHRS controls including:: Relationship (dependence) of time available to perfor system isolation surveillance test to time for decay heat to reach high limit	2.7	41.5 / 45.5
005000	Residual Heat Removal System	K2.01	Knowledge of bus power supplies to the following:: RHR pumps	3.0	41.7
008000	Component Cooling Water System	A4.08	Ability to manually operate and/or monitor in the control room:: CCW pump control switch	3.1*	41.7 / 45.5
027000	Containment Iodine Removal System	K5.01	Knowledge of the operational implications of the following concepts as they apply to the CIRS:: Purpose of charcoal filters	3.1*	41.7 / 45.7
028000	Hydrogen Recombiner and Purge Contro System	A4.03	Ability to manually operate and/or monitor in the control room:: Location and operation of hydroge sampling and analysis of containment atmosphere, including alarms and indications	3.1	41.7 / 45.5 to 45.8
045000	Main Turbine Generator System	2.1.32	: Ability to explain and apply all system limits and precautions.	3.4	41.10 / 43.2 / 45.12
045000	Main Turbine Generator System	K4.44	Knowledge of MT/G system design feature(s) and/or interlock(s) which provide for the following: Impulse pressure mode control of steam dumps	2.5*	41.7
103000	Containment System	K1.02	Knowledge of the physical connections and/or cause-effect relationships between the containme system and the following systems:: Containment isolation/containment integrity	3.9	41.2 to 41.9 / 45.7 to 45.8

PWR RO Written Examination Outline (Continued)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
Tier 3		**Group** 4			
000000	Generic Knowledges and Abilities	2.1.07	: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	43.5 / 45.12 / 45.13
000000	Generic Knowledges and Abilities	2.1.12	: Ability to apply technical specifications for a system.	2.9	43.2 / 43.5 / 45.3
000000	Generic Knowledges and Abilities	2.1.23	: Ability to perform specific system and integrated plant procedures during all modes of plant oper	3.9	45.2 / 45.6
000000	Generic Knowledges and Abilities	2.1.30	: Ability to locate and operate components, including local controls.	3.9	41.7 / 45.7
000000	Generic Knowledges and Abilities	2.2.27	: Knowledge of the refueling process.	2.6	43.6 / 45.13
000000	Generic Knowledges and Abilities	2.2.28	: Knowledge of new and spent fuel movement procedures.	2.6	43.7 / 45.13
000000	Generic Knowledges and Abilities	2.2.34	: Knowledge of the process for determining the internal and external effects on core reactivity.	2.8	43.6
000000	Generic Knowledges and Abilities	2.3.02	: Knowledge of facility ALARA program.	2.5	41.12 / 43.4 / 45.9 / 45.10
000000	Generic Knowledges and Abilities	2.3.04	: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	43.4 / 45.10
000000	Generic Knowledges and Abilities	2.4.15	: Knowledge of communications procedures associated with EOP implementation.	3.0	41.10 / 45.13
000000	Generic Knowledges and Abilities	2.4.22	: Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations	3.0	43.5 / 45.12

PWR RO Written Examination Outline (Last Page)

System/Mode	System Title	KA Number	Title	RO Value	10 CFR 55
000000	Generic Knowledges and Abilities	2.4.35	: Knowledge of local auxiliary operator tasks during emergency operations including system geog and system implications.	3.3	43.5 / 45.13
000000	Generic Knowledges and Abilities	2.4.45	: Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3	43.5 / 45.3 / 45.12

ES-401 *Record of Rejected K/As*

Tier	*ROGroup*	*System/Mode*	*KA Number*	*Comment*
3	4	000000	2.2.11	Not a RO task
1	2	000001	AK3.01	Not an action in FCS procedures
1	1	000055	2.1.14	Notifications are SRO responsibility
1	1	000062	AK3.01	There are no auto open/close functions for these valves at FCS
2	1	001000	K6.10	FCS CRD does not use MG sets
2	1	003000	A3.01	No Seal injection at FCS
2	1	015000	K5.11	Replaced with a K6 item to allow 2 items in that category
2	1	022000	K1.04	No chilled water at FCS
2	1	059000	A1.07	Fort Calhoun single speed motor driven FW pumps
2	1	061000	K1.09	No interface between AFW and PRMS
2	1	071000	A4.17	liquids not transferred to gas decay tanks
2	1	072000	K4.02	Redundant to K/A 072000 K1.03 which has already been selec
2	3	078000	2.1.14	Notification is an SRO responsibility