

Facility: Fort Calhoun

Printed: 02/26/2004

Date Of Exam: 03/12/2004

Tier	Group	RO K/A Category Points											SRO-Only Points					
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	
1. Emergency & Abnormal Plant Evolutions	1	3	3	3				3	3			3	18	0	0	0	0	0
	2	0	2	2				2	1			2	9	0	0	0	0	0
	Tier Totals	3	5	5				5	4			5	27	0	0	0	0	0
2. Plant Systems	1	3	2	2	3	3	1	4	3	1	3	3	28	0	0	0	0	0
	2	1	0	1	1	1	1	1	1	1	1	1	10	0	0	0	0	0
	Tier Totals	4	2	3	4	4	2	5	4	2	4	4	38	0	0	0	0	0
3. Generic Knowledge And Abilities Categories				1		2		3		4		10	1	2	3	4	0	
				3		2		2		3			0	0	0	0		

Note:

1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding the SRO sampling.
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.
3. Select topics from many systems and evolutions; avoid selecting more than two K/A topics from a given system unless they relate to 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, but the topics must be relevant to the applicable evolution or 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 (IR) 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 columns labeled "K" and "A". Use duplicate pages for RO and SRO-only exams.
8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
9. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

PWR RO Examination Outline

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000007 Reactor Trip - Stabilization - Recovery / 1					X		EA2.03 - Reactor trip breaker position	4.2	1
000008 Pressurizer Vapor Space Accident / 3			X				AK3.04 - RCP tripping requirements	4.2	1
000009 Small Break LOCA / 3					X		EA2.06 - Whether PZR water inventory loss is imminent	3.8	1
000009 Small Break LOCA / 3			X				EK3.21 - Actions contained in EOP for small break LOCA/leak	4.2	1
000015 RCP Malfunctions / 4		X					AK2.07 - RCP seals	2.9	1
000026 Loss of Component Cooling Water / 8				X			AA1.07 - Flow rates to the components and systems that are serviced by the CCWS; interactions among the components	2.9	1
000027 Pressurizer Pressure Control System Malfunction / 3						X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
000029 ATWS / 1		X					EK2.06 - Breakers, relays, and disconnects	2.9*	1
000038 Steam Gen. Tube Rupture / 3			X				EK3.03 - Automatic actions associated with high radioactivity in S/G sample lines	3.6*	1
000040 Steam Line Rupture - Excessive Heat Transfer / 4		X					AK2.01 - Valves	2.6*	1
000040 Steam Line Rupture - Excessive Heat Transfer / 4				X			AA1.24 - Main steam header pressure gauges	3.8	1
000054 Loss of Main Feedwater / 4						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
000055 Station Blackout / 6	X						EK1.01 - Effect of battery discharge rates on capacity	3.3	1
000056 Loss of Off-site Power / 6					X		AA2.20 - AFW flow indicator	3.9	1
000057 Loss of Vital AC Inst. Bus / 6						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
000057 Loss of Vital AC Inst. Bus / 6				X			AA1.02 - Manual control of PZR level	3.8	1
CE/E02 Reactor Trip - Stabilization - Recovery / 1	X						EK1.1 - Components, capacity, and function of emergency systems	2.9	1
CE/E06 Loss of Main Feedwater / 4	X						EK1.3 - Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Feedwater)	3.2	1
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:	18	

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000024 Emergency Boration / 1		X					AK2.04 - Pumps	2.6	1
000032 Loss of Source Range NI / 7				X			AA1.01 - Manual restoration of power	3.1*	1
000036 Fuel Handling Accident / 8						X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
000060 Accidental Gaseous Radwaste Rel. / 9		X					AK2.01 - ARM system, including the normal radiation-level indications and the operability status	2.6	1
000061 ARM System Alarms / 7					X		AA2.01 - ARM panel displays	3.5	1
000068 Control Room Evac. / 8			X				AK3.17 - Injection of boric acid into the RCS	3.7	1
CE/A11 RCS Overcooling - PTS / 4						X	2.1.27 - Knowledge of system purpose and or function.	2.8	1
CE/A13 Natural Circ. / 4			X				EK3.3 - Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations	3.4	1
CE/A16 Excess RCS Leakage / 2				X			EA1.2 - Operating behavior characteristics of the facility	3.0	1
K/A Category Totals:	0	2	2	2	1	2	Group Point Total:	9	

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
003 Reactor Coolant Pump	X											K1.08 - Containment isolation	2.7*	1
003 Reactor Coolant Pump							X					A1.07 - RCS temperature and pressure	3.4*	1
004 Chemical and Volume Control								X				A2.09 - High primary and/or secondary activity	3.0	1
004 Chemical and Volume Control						X						K6.15 - Reason for venting VCT and pump casings while filling: vents must connect to LRS	2.8	1
005 Residual Heat Removal										X		A4.03 - RHR temperature, PZR heaters and flow, and nitrogen	2.8*	1
005 Residual Heat Removal				X								K4.12 - Lineup for piggyback mode with CSS	3.1*	1
006 Emergency Core Cooling											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
006 Emergency Core Cooling								X				A2.12 - Conditions requiring actuation of ECCS	4.5	1
007 Pressurizer Relief/Quench Tank								X				A2.02 - Abnormal pressure in the PRT	2.6	1
007 Pressurizer Relief/Quench Tank										X		A4.10 - Recognition of leaking PORV/code safety	3.6	1
008 Component Cooling Water									X			A3.01 - Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS	3.2*	1
010 Pressurizer Pressure Control	X											K1.05 - PRTS	3.4	1
010 Pressurizer Pressure Control					X							K5.01 - Determination of condition of fluid in PZR, using steam tables	3.5	1
012 Reactor Protection	X											K1.08 - MFW	2.9*	1
012 Reactor Protection					X							K5.02 - Power density	3.1*	1
013 Engineered Safety Features Actuation											X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.4	1
013 Engineered Safety Features Actuation							X					A1.02 - Containment pressure, temperature, and humidity	3.9	1
026 Containment Spray							X					A1.03 - Containment sump level	3.5	1
039 Main and Reheat Steam				X								K4.08 - Interlocks on MSIV	3.3	1

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic and bypass valves	Imp.	Points
039 Main and Reheat Steam					X							K5.08 - Effect of steam removal on reactivity	3.6	1
059 Main Feedwater										X		A4.11 - Recovery from automatic feedwater isolation	3.1	1
061 Auxiliary/Emergency Feedwater							X					A1.02 - S/G pressure	3.3*	1
064 Emergency Diesel Generator		X										K2.03 - Control power	3.2*	1
064 Emergency Diesel Generator				X								K4.03 - Governor valve operation	2.5	1
073 Process Radiation Monitoring											X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	1
076 Service Water		X										K2.01 - Service water	2.7*	1
076 Service Water			X									K3.07 - ESF loads	3.7	1
078 Instrument Air			X									K3.02 - Systems having pneumatic valves and controls	3.4	1
K/A Category Totals:	3	2	2	3	3	1	4	3	1	3	3		Group Point Total:	28

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ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001 Control Rod Drive				X								K4.23 - Rod motion inhibit	3.4	1
002 Reactor Coolant										X		A4.06 - Overflow level of the RWST	2.9	1
011 Pressurizer Level Control											X	2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.	3.0	1
015 Nuclear Instrumentation			X									K3.01 - RPS	3.9	1
028 Hydrogen Recombiner and Purge Control								X				A2.03 - The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment	3.4	1
029 Containment Purge									X			A3.01 - CPS isolation	3.8	1
033 Spent Fuel Pool Cooling	X											K1.02 - RHRS	2.5	1
035 Steam Generator							X					A1.02 - S/G pressure	3.5	1
041 Steam Dump/Turbine Bypass Control					X							K5.02 - Use of steam tables for saturation temperature and pressure	2.5	1
086 Fire Protection						X						K6.04 - Fire, smoke, and heat detectors	2.6	1
K/A Category Totals:	1	0	1	1	1	1	1	1	1	1	1	Group Point Total:	10	

Generic Knowledge and Abilities Outline (Tier 3)

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Form ES-401-3

<u>Generic Category</u>	<u>KA</u>	<u>KA Topic</u>	<u>Imp.</u>	<u>Points</u>
Conduct of Operations	2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or component status.	3.0	1
	2.1.20	Ability to execute procedure steps.	4.3	1
	2.1.28	Knowledge of the purpose and function of major system components and controls.	3.2	1
	Category Total:			3
Equipment Control	2.2.12	Knowledge of surveillance procedures.	3.0	1
	2.2.13	Knowledge of tagging and clearance procedures.	3.6	1
	Category Total:			2
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	2.6	1
	2.3.11	Ability to control radiation releases.	2.7	1
	Category Total:			2
Emergency Procedures/Plan	2.4.17	Knowledge of EOP terms and definitions.	3.1	1
	2.4.24	Knowledge of loss of cooling water procedures.	3.3	1
	2.4.31	Knowledge of annunciators alarms and indications, and use of the response instructions.	3.3	1
	Category Total:			3
Generic Total:			10	

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		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	K	A	A2	G*	
1. Emergency & Abnormal Plant Evolutions	1	0	0	0				0	0			0	0	0	0	4	3	7
	2	0	0	0				0	0			0	0	0	0	2	3	5
	Tier Totals	0	0	0				0	0			0	0	0	0	6	6	12
2. Plant Systems	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
	Tier Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	6
3. Generic Knowledge And Abilities Categories				1		2		3		4		0		1	2	3	4	7
				0		0		0		0				1	2	2	2	

Note:

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8. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
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PWR SRO Examination Outline

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000008 Pressurizer Vapor Space Accident / 3					X		AA2.22 - Consequences of loss of pressure in RCS; methods for evaluating pressure loss	4.2	1
000015 RCP Malfunctions / 4					X		AA2.10 - When to secure RCPs on loss of cooling or seal injection	3.7	1
000022 Loss of Rx Coolant Makeup / 2						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
000025 Loss of RHR System / 4						X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
000038 Steam Gen. Tube Rupture / 3					X		EA2.08 - Viable alternatives for placing plant in safe condition when condenser is not available	4.4	1
000055 Station Blackout / 6					X		EA2.02 - RCS core cooling through natural circulation cooling to S/G cooling	4.6	1
000056 Loss of Off-site Power / 6						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
K/A Category Totals:	0	0	0	0	4	3		Group Point Total:	7

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
000051 Loss of Condenser Vacuum / 4					X		AA2.01 - Cause for low vacuum condition	2.7*	1
000069 Loss of CTMT Integrity / 5					X		AA2.01 - Loss of containment integrity	4.3	1
000074 Inad. Core Cooling / 4						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
000076 High Reactor Coolant Activity / 9						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.8	1
CE/E09 Functional Recovery						X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
K/A Category Totals:	0	0	0	0	2	3	Group Point Total:	5	

PWR SRO Examination Outline

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
022 Containment Cooling											X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
059 Main Feedwater								X				A2.04 - Feeding a dry S/G	3.4*	1
062 AC Electrical Distribution								X				A2.08 - Consequences of exceeding voltage limitations	3.0*	1
063 DC Electrical Distribution											X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
K/A Category Totals:	0	0	0	0	0	0	0	2	0	0	2		Group Point Total:	4

PWR SRO Examination Outline

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ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Evol # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
016 Non-nuclear Instrumentation											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
071 Waste Gas Disposal								X				A2.05 - Power failure to the ARM and PRM Systems	2.6	1
K/A Category Totals:	0	0	0	0	0	0	0	1	0	0	1	Group Point Total:	2	

Generic Knowledge and Abilities Outline (Tier 3)

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Form ES-401-3

<u>Generic Category</u>	<u>KA</u>	<u>KA Topic</u>	<u>Imp.</u>	<u>Points</u>
Conduct of Operations	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	1
	Category Total:			1
Equipment Control	2.2.18	Knowledge of the process for managing maintenance activities during shutdown operations.	3.6	1
	2.2.28	Knowledge of new and spent fuel movement procedures.	3.5	1
	Category Total:			2
Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release.	3.2	1
	Category Total:			2
Emergency Procedures/Plan	2.4.8	Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.	3.7	1
	2.4.33	Knowledge of the process used track inoperable alarms.	2.8	1
	Category Total:			2

Generic Total: 7

Facility: Fort Calhoun		Scenario No: 1		Op-Test No. _____
Examiners: _____ _____			Operators: _____ _____	
Initial Conditions: IC# 1 100% Power BOC				
Turnover: Diesel Generator DG-1 and Charging Pump CH-1B are out of service. Maintain full power operation.				
Event No.	Malf No.	Event Type*	Event Description	
1 (0 min)	COP T:F908	I - sec	S/G steam flow transmitter output fails low	
2 (5 min)	COP T:122H2	I - pri	Hot leg RTD fails high (tech spec entry)	
3 (15 min)	ORP X10I227	C - sec	Heater Drain Pump, FW-5B, trips	
4 (20 min)	COP JLB218LL	I - pri	VCT level transmitter fails low	
5 (30 min)	MFP CRD06 1	C - pri	CEA drop (tech spec entry)	
6		R - pri N - sec	T. S. required power reduction	
7 (42 min)	ORP X01I392	C - pri	CCW pump, AC-3B, trips (tech spec entry)	
8 (47 min)	MFP CRD06 5	C - pri	Second CEA drops – Manual Reactor Trip Required	
9 (55 min)	MFP SGN01A	M - all	Steam Generator Tube Rupture	
10 (preset)	COP RSGH041A	C - sec	MSIV on ruptured S/G will not close	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: Fort Calhoun		Scenario No: 2		Op-Test No. _____
Examiners: _____ _____			Operators: _____ _____	
Initial Conditions: IC #1 100% Power BOC				
Turnover: Diesel driven AFW pump, FW-54 and charging pump CH-1B are Out of Service. Maintain power.				
Event No.	Malf No.	Event Type*	Event Description	
1 (+2 min)	COP T:P910	I - sec	PT-910 fails high causing turbine bypass valve to open	
2 (+5 min)	COP NCVPC1 C	C - pri	Charging Pump, CH-1C, Trips (tech spec entry)	
3 (+10 min)	MFP NIS02D		Wide Range NI channel D fails (tech spec entry)	
4 (+15 min)	COP T:P103Y	I - pri	Pressurizer Pressure channel, 103Y, fails low	
5 (+20 min)	MFP TUR05F	C - sec	High turbine vibration caused by inadequate oil cooling	
6 (+28 min)	MFP SWD02A SWD02B	M - all	Loss of Offsite Power	
7 (preset)	File ATWAS_P LUS1	M - all	ATWS – manual trip required	
8 (preset)	RFP AFW10A	C - sec	Emergency Feedwater Storage Tank line is blocked causing a total loss of Feedwater (once-through cooling required)	
9 (20% WR level on both steam generators)		M - all	Initiate Once-Through Cooling (Note: Examiner may direct simulator operator to run a file to lower steam generator levels to 20%, once through cooling initiation level, if required for time limitations)	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: Fort Calhoun		Scenario No: 3		Op-Test No. _____
Examiners: _____ _____			Operators: _____ _____	
Initial Conditions: IC# 7 BOC 50% Power, FW-54 Out of Service				
Turnover: Diesel driven FW pump, FW-54 is out of service. Maintain power				
Scenario objective: Evaluate ISRO candidates in the primary and secondary positions with a surrogate acting as SRO				
Event No.	Malf No.	Event Type*	Event Description	
1 (+2 min)	COP T:L101Y	I - pri	Controlling pressurizer level channel, 101Y, fails low	
2 (+7 min)	COP T:L906Y	I - sec	Steam generator RC-2B level channel, 906Y, fails high	
3 (+13 min)	MFP RCP09B	C - pri	Reactor Coolant Pump, RC-3B, lower seal failure	
4 (+18 min)	COP T:P210	I - pri	Letdown pressure transmitter PT-210 fails low	
5 (+24 min)	MFP RCP10B		Reactor Coolant Pump, RC-3B, middle seal failure	
6		R - pri N - sec	Emergency shutdown	
7 (+35 min)	RFP BCW10A	C - sec	Running Bearing water pump, AC-9A, trips	
8 (+40 min)	MFP RCS01C 0.2%	M - all	Loss of Coolant Accident	
9 (preset)	MFP EHC02	C - sec	Turbine trip failure	
10 (preset)	File HPSI- LOOP-INJ- PULL	C - pri	HPSI loop injection valves fail to open	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: Fort Calhoun		Scenario No: 4 (spare)		Op-Test No. _____
Examiners: _____ _____			Operators: _____ _____	
Initial Conditions: IC#1 100% Power BOC Ensure FW-5B and FW-5C are the running Heater Drain Pumps.				
Turnover: LPSI pump SI-1B is Out of Service for bearing replacement				
Event No.	Malf No.	Event Type*	Event Description	
1 (+3 min)	MFP NIS03F	I - pri	Power range nuclear instrumentation channel "C" fails (tech spec entry)	
2 (+10 min)	COP T:F1101	I - sec	FW flow channel on RC-2A fails low	
3 (+15 min)	MFP DSG06A	C - sec	Diesel Generator, D/G-1, radiator leak (tech spec entry)	
4 (+25 min)	COP T:T2897	I - pri	Letdown HX CCW outlet temperature transmitter fails low	
5 (+30 min)	MFP SWD02B	C -sec	Loss of 161 KV	
6 (+40 min)	MFP MSS01B 25% 300 sec ramp	M - all	Steam line break inside containment	
7 (preset)	RFP CWS10N	C -sec	CW-1C breaker fails to trip preventing D/G-2 breaker from closing	
8 (preset)	MFP ESF02A ESF 02B	C - pri	CPHS fails to actuate	

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: Fort Calhoun		Date of Examination: 3/15/04
Examination Level: RO / SRO		Operating Test Number: _____
Administrative Topic (See Note)	Describe activity to be performed	
Conduct of Operations	<p>Manually determine dilution volume needed to raise power level.</p> <p>(K/A 2.1.25 – Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data. RO Imp: 2.8; CFR: 41.10/43.5/45.12)</p>	
Conduct of Operations	<p>Determine maximum allowable Diesel/Generator load based on weather conditions.</p> <p>(K/A 2.1.32 – Ability to explain and apply all system limits and precautions. RO Imp: 3.4; CFR: 41.10/43.2/45.12)</p>	
Equipment Control	<p>Use P&ID's to determine equipment affected by closure of instrument air valve.</p> <p>(K/A 2.2.13 – Knowledge of tagging and clearance procedures. RO Imp: 3.6; CFR 41.10/45.13)</p>	
Radiation Control	<p>Radiation Area entry and exit with EAD alarm.</p> <p>(K/A 2.3.1 – Knowledge of 10 CFR:20 and related facility radiation control requirements. RO Imp: 2.6; CFR: 41.12/43.4/45.9/45.10)</p>	
Emergency Plan		
<p>NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.</p>		

Facility: Fort Calhoun		Date of Examination: 3/15/04
Examination Level: RO / SRO		Operating Test Number: _____
Administrative Topic (See Note)	Describe activity to be performed	
Conduct of Operations	SRO Review of shutdown margin calculation with inoperable CEA. (K/A: 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation; SRO Imp: 3.7; CFR: 43.5/45.12/45.13)	
Conduct of Operations	Determine Raw Water system operability based on technical specifications and TDB III.41. (K/A: 2.1.12 – Ability to apply technical specifications for a system; SRO Imp: 4.0; CFR: 43.2/43.5/45.3)	
Equipment Control	SRO Review of Surveillance Test results. (K/A: 2.2.12 – Knowledge of surveillance procedures; SRO Imp: 3.4; CFR: 41.10/45.13)	
Radiation Control	Determine primary to secondary leakage from plant parameters and actions required to control offsite releases (K/A: 2.3.11 – Ability to control radiation releases; SRO Imp: 3.2; CFR 45.9/45.10)	
Emergency Plan	Emergency event classification and Protective Action Recommendations (K/A 2.4.41 – Knowledge of the emergency action level thresholds and classifications. SRO Imp: 4.1; CFR 43.5/45.11) (K/A 2.4.44 – Knowledge of emergency plan protective action recommendations SRO Imp: 4.0; CFR 43.5/45.11)	
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		

Facility: Fort Calhoun

Date of Examination: 3/15/04

Exam Level: **RO** / SRO(I) / SRO(U)

Operating Test No. _____

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

System / JPM Title	Type Code*	Safety Function
a. Establish Simultaneous Hot and Cold leg injection – new (K/A 006000 A4.05 3.9/3.8)	N, E, A, S	2
b. Shutdown a Reactor Coolant Pump – 0613 (modified) (K/A 003000 A4.06 2.9/2.9)	M, A, S	4P
c. Operate Containment Hydrogen Analyzer – 0156 (K/A 028000 A1.01 3.4/3.8)	D, E	5
d. Restoration of offsite electrical power following loss of offsite power – 0026 (K/A 064000 A4.07 3.4/3.4)	D, E	6
e. Perform manual trip check - 0654 (K/A 012000 A4.01 4.5/4.5)	D, S	7
f. Raise RCS Pressure with PORV Open Failure – 0621 (K/A 010000 A2.03 4.1/4.2)	D, A	3
g. Recover misaligned Control Rod – new (K/A 001000 A2.03 3.5/4.2)	N, A	1
h. Startup Containment Purge – 0704 (modified) (K/A 029000 A2.03 2.7/3.1)	M, A, S	8

In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

a. Establish RW Backup to SI Pumps – 0010-RW (K/A 076000 A4.04 3.5/3.5)	D, R, E	4S
b. Emergency Start of Diesel Fire Pump – 0450 (K/A 086000 A4.01 3.3/3.3)	D, E, A	8
c. Minimize DC Loads – 0304 (time critical) (K/A 063000 A1.01 2.5/3.3)	D, E	6

* Type Codes: (D)irect from bank, (M)odified from Bank, (N)ew, (A)lternate path, (S)hutdown or low power, (R)CA, (E)mergency or abnormal condition

Facility: Fort Calhoun

Date of Examination: 3/15/04

Exam Level: RO / **SRO(I)** / SRO(U)

Operating Test No. _____

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

System / JPM Title	Type Code*	Safety Function
a. Establish Simultaneous Hot and Cold leg injection – new (K/A 006000 A4.05 3.9/3.8)	N, E, A, S	2
b. Shutdown a Reactor Coolant Pump – 0613 (modified) (K/A 003000 A4.06 2.9/2.9)	M, A, S	4P
c. Operate Containment Hydrogen Analyzer – 0156 (K/A 028000 A1.01 3.4/3.8)	D, E	5
d. Restoration of offsite electrical power following loss of offsite power – 0026 (K/A 064000 A4.07 3.4/3.4)	D, E	6
e.		
f. Raise RCS Pressure with PORV Open Failure – 0621 (K/A 010000 A2.03 4.1/4.2)	D, A	3
g. Recover misaligned Control Rod – new (K/A 001000 A2.03 3.5/4.2)	N, A	1
h. Startup Containment Purge – 0704 (modified) (K/A 029000 A2.03 2.7/3.1)	M, A, S	8

In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

a. Establish RW Backup to SI Pumps – 0010-RW (K/A 076000 A4.04 3.5/3.5)	D, R, E	4S
b. Emergency Start of Diesel Fire Pump – 0450 (K/A 086000 A4.01 3.3/3.3)	D, E, A	8
c. Minimize DC Loads – 0304 (time critical) (K/A 063000 A1.01 2.5/3.3)	D, E	6

* Type Codes: (D)irect from bank, (M)odified from Bank, (N)ew, (A)lternate path, (S)hutdown or low power, (R)CA, (E)mergency or abnormal condition

Facility: Fort Calhoun

Date of Examination: 3/15/04

Exam Level: RO / SRO(I) / **SRO(U)**

Operating Test No. _____

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

System / JPM Title	Type Code*	Safety Function
a. Establish Simultaneous Hot and Cold leg injection – new (K/A 006000 A4.05 3.9/3.8)	N, E, A, S	2
b.		
c. Operate Containment Hydrogen Analyzer – 0156 (K/A 028000 A1.01 3.4/3.8)	D, E	5
d.		
e.		
f.		
g.		
h.		

In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

a. Establish RW Backup to SI Pumps – 0010-RW (K/A 076000 A4.04 3.5/3.5)	D, R, E	4S
b. Emergency Start of Diesel Fire Pump – 0450 (K/A 086000 A4.01 3.3/3.3)	D, E, A	8
c. Minimize DC Loads – 0304 (time critical) (K/A 063000 A1.01 2.5/3.3)	D, E	6

* Type Codes: (D)irect from bank, (M)odified from Bank, (N)ew, (A)lternate path, (S)hutdown or low-Power, (R)CA, (E)mergency or abnormal condition