Facility: Salem 1 & 2 Printed: 05/22/2008

Date Of Exam: 08/25/2008

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

Note:

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 outline, the "Tier Totals" in each K/A category shall not be less than two).
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. 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/evolutions 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.
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.
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.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
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 K/As.
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.
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.

PWR RO Examination Outline

Printed: 05/22/2008

Facility: Salem 1 & 2

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	Record #
000007 Reactor Trip - Stabilization - Recovery / 1				X			EA1.09 - CVCS	3.2	1	2
000009 Small Break LOCA / 3	X						EK1.02 - Use of steam tables	3.5	1	3
000011 Large Break LOCA / 3				X			EA1.07 - Containment isolation system	4.4	1	4
000015/000017 RCP Malfunctions / 4					X		AA2.01 - Cause of RCP failure	3.0	1	5
000025 Loss of RHR System / 4					X		AA2.05 - Limitations on LPI flow and temperature rates of change	3.1*	1	6
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	7
000027 Pressurizer Pressure Control System Malfunction / 3		X					AK2.03 - Controllers and positioners	2.6	1	8
000038 Steam Gen. Tube Rupture / 3			X				EK3.06 - Actions contained in EOP for RCS water inventory balance, S/G tube rupture, and plant shutdown procedures	4.2	1	10
000054 Loss of Main Feedwater / 4	X						AK1.02 - Effects of feedwater introduction on dry S/G	3.6	1	12
000055 Station Blackout / 6						X	2.4.23 - Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	3.4	1	13
000056 Loss of Off-site Power / 6					X		AA2.82 - Temperatures displayed on plant computer CRT monitor	2.6	1	14
000058 Loss of DC Power / 6			X				AK3.02 - Actions contained in EOP for loss of dc power	4.0	1	15
000065 Loss of Instrument Air / 8						X	2.4.18 - Knowledge of the specific bases for EOPs.	3.3	1	17
000077 Generator Voltage and Electric Grid Disturbances / 6						X	2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2	1	75
W/E04 LOCA Outside Containment / 3	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with LOCA Outside Containment	3.5	1	22
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		X					EK2.2 - 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	3.9	1	23

PWR RO Examination Outline

Printed: 05/22/2008

Facility: Salem 1 & 2

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	Record #
W/E11 Loss of Emergency Coolant Recirc. / 4		X					EK2.2 - 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	3.9	1	25
W/E12 - Steam Line Rupture - Excessive Heat Transfer / 4			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with Uncontrolled Depressurizaiton of all Steam Generators	3.3	1	26
K/A Category Totals:	**3**	**3**	**3**	**3**	**3**	**3**	**Group Point Total:**		**18**	

PWR RO Examination Outline

Printed: 05/22/2008

Facility: Salem 1 & 2

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	Record #
000001 Continuous Rod Withdrawal / 1		X					AK2.01 - Rod bank step counters	2.9	1	1
000037 Steam Generator Tube Leak / 3					X		AA2.14 - Actions to be taken if S/G goes solid and water enters steam lines	4.0	1	9
000051 Loss of Condenser Vacuum / 4			X				AK3.01 - Loss of steam dump capability upon loss of condenser vacuum	2.8*	1	11
000059 Accidental Liquid RadWaste Rel. / 9			X				AK3.02 - Implementation of E-plan	3.2*	1	16
000067 Plant Fire On-site / 9	X						AK1.01 - Fire classifications, by type	2.9	1	18
000069 Loss of CTMT Integrity / 5	X						AK1.01 - Effect of pressure on leak rate	2.6	1	19
000074 Inad. Core Cooling / 4					X		EA2.03 - Availability of turbine bypass valves for cooldown	3.8	1	20
W/E03 LOCA Cooldown - Depress. / 4		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.6	1	21
W/E09 Natural Circ. / 4						X	2.1.14 - Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1	1	24
K/A Category Totals:	**2**	**2**	**2**	**0**	**2**	**1**	**Group Point Total:**		**9**	

PWR RO Examination Outline

Printed: 05/22/2008

Facility: Salem 1 & 2

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	RO #
003 Reactor Coolant Pump							X					A1.05 - RCS flow	3.4	1	27
003 Reactor Coolant Pump				X								K4.07 - Minimizing RCS leakage (mechanical seals)	3.2	1	28
004 Chemical and Volume Control										X		A4.05 - Letdown pressure and temperature control valves	3.6	1	30
004 Chemical and Volume Control								X				A2.19 - High secondary and primary concentrations of chloride, fluoride, sodium and solids	2.8	1	29
005 Residual Heat Removal					X							K5.09 - Dilution and boration considerations	3.2	1	31
006 Emergency Core Cooling						X						K6.05 - HPI/LPI cooling water	3.0	1	33
006 Emergency Core Cooling									X			A3.05 - Safety Injection Pumps	4.2	1	32
007 Pressurizer Relief/Quench Tank					X							K5.02 - Method of forming a steam bubble in the PZR	3.1	1	34
008 Component Cooling Water											X	2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	4.2	1	35
010 Pressurizer Pressure Control			X									K3.01 - RCS	3.8	1	36
012 Reactor Protection				X								K4.08 - Logic matrix testing	2.8*	1	38
012 Reactor Protection					X							K5.02 - Power density	3.1*	1	39
013 Engineered Safety Features Actuation							X					A1.09 - T-hot	3.4	1	40
022 Containment Cooling		X										K2.01 - Containment cooling fans	3.0*	1	41
026 Containment Spray								X				A2.02 - Failure of automatic recirculation transfer	4.2*	1	45
039 Main and Reheat Steam										X		A4.07 - Steam dump valves	2.8*	1	49
039 Main and Reheat Steam			X									K3.03 - AFW pumps	3.2*	1	50
059 Main Feedwater				X								K4.18 - Automatic feedwater reduction on plant trip	2.8*	1	51
061 Auxiliary/Emergency Feedwater						X						K6.02 - Pumps	2.6	1	52
062 AC Electrical Distribution	X											K1.02 - ED/G	4.1	1	53
062 AC Electrical Distribution	X											K1.03 - DC distribution	3.5	1	54
063 DC Electrical Distribution											X	2.1.15 - Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc.	2.7	1	56
063 DC Electrical Distribution								X				A2.01 - Grounds	2.5	1	55

Facility: Salem 1 & 2

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	Rand #
064 Emergency Diesel Generator		X										K2.02 - Fuel oil pumps	2.8*	1	57
073 Process Radiation Monitoring											X	2.1.39 - Knowledge of conservative decision making practices.	3.6	1	60
076 Service Water										X		A4.01 - SWS pumps	2.9	1	61
078 Instrument Air									X			A3.01 - Air pressure	3.1	1	62
103 Containment			X									K3.03 - Loss of containment integrity under refueling operations	3.7	1	64
K/A Category Totals:	**2**	**2**	**3**	**3**	**3**	**2**	**2**	**3**	**2**	**3**	**3**	**Group Point Total:**		**28**	

PWR RO Examination Outline

Printed: 05/22/2008

Facility: Salem 1 & 2

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	Recap #
011 Pressurizer Level Control											X	2.4.23 - Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	3.4	1	37
014 Rod Position Indication										X		A4.02 - Control rod mode-select switch	3.4	1	41
015 Nuclear Instrumentation							X					A1.08 - Changes in RCS temperature	3.3*	1	42
016 Non-nuclear Instrumentation				X								K4.01 - Reading of NNIS channel values outside control room	2.8*	1	43
027 Containment Iodine Removal	X											K1.01 - CSS	3.4*	1	46
028 Hydrogen Recombiner and Purge Control		X										K2.01 - Hydrogen recombiners	2.5*	1	47
034 Fuel Handling Equipment						X						K6.02 - Radiation monitoring systems	2.6	1	48
071 Waste Gas Disposal								X				A2.05 - Power failure to the ARM and PRM Systems	2.5*	1	58
072 Area Radiation Monitoring					X							K5.01 - Radiation theory, including sources, types, units, and effects	2.7	1	59
086 Fire Protection									X			A3.03 - Actuation of fire detectors	2.9	1	63
K/A Category Totals:	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**Group Point Total:**		**10**	

Generic Knowledge and Abilities Outline (Tier 3)

PWR RO Examination Outline

Printed: 05/22/2008

Facility: Salem 1 & 2

Form ES-401-3

Generic Category	KA	KA Topic	Imp.	Points	Record #
Conduct of Operations	2.1.17	Ability to make accurate, clear, and concise verbal reports.	3.9	1	65
	2.1.27	Knowledge of system purpose and/or function.	3.9	1	66
	2.1.40	Knowledge of refueling administrative requirements.	2.8	1	68
		Category Total:		**3**	
Equipment Control	2.2.23	Ability to track Technical Specification limiting conditions for operations.	3.1	1	67
	2.2.36	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	3.1	1	69
		Category Total:		**2**	
Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	1	70
	2.3.11	Ability to control radiation releases.	3.8	1	72
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4	1	71
		Category Total:		**3**	
Emergency Procedures/Plan	2.4.14	Knowledge of general guidelines for EOP usage.	3.8	1	73
	2.4.25	Knowledge of fire protection procedures.	3.3	1	74
		Category Total:		**2**	

Generic Total: **10**

Facility: Salem 1 & 2 Printed: 04/15/2008

Date Of Exam: 08/25/2008

Tier	Group	RO K/A Category Points												SRO-Only Points					
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2			G*	Total	
1. Emergency & Abnormal Plant Evolutions	1	0	0	0	N/A			0	0	N/A		0	0	3			3	6	
	2	0	0	0				0	0			0	0	2			2	4	
	Tier Totals	0	0	0				0	0			0	0	5			5	10	
2. Plant Systems	1	0	0	0	0	0	0	0	0	0	0	0	0	3			2	5	
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2		1	3	
	Tier Totals	0	0	0	0	0	0	0	0	0	0	0	0	5			3	8	
3. Generic Knowledge And Abilities Categories		1			2			3			4		0	1	2	3	4	7	
		0			0			0			0			2	1	2	2		

Note:

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 outline, the "Tier Totals" in each K/A category shall not be less than two).

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. 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/evolutions 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.

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.

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.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.

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 K/As.

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.

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.

This is what will be sent to NRC

2nd cut - after replacements

PWR SRO Examination Outline

Printed: 04/15/2008

Facility: Salem 1 & 2

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	Record #
000007 Reactor Trip - Stabilization - Recovery / 1						X	2.1.37 - Knowledge of procedures, guidelines, or limitations associated with reactivity management.	4.6	1	1
000022 Loss of Rx Coolant Makeup / 2					X		AA2.02 - Charging pump problems	3.7	1	2
000026 Loss of Component Cooling Water / 8					X		AA2.02 - The cause of possible CCW loss	3.6	1	3
000027 Pressurizer Pressure Control System Malfunction / 3					X		AA2.07 - Makeup flow indication	3.1	1	4
000040 Steam Line Rupture - Excessive Heat Transfer / 4						X	2.1.45 - Ability to identify and interpret diverse indications to validate the response of another indication.	4.3	1	6
000056 Loss of Off-site Power / 6						X	2.2.14 - Knowledge of the process for controlling equipment configuration or status.	4.3	1	7
K/A Category Totals:	**0**	**0**	**0**	**0**	**3**	**3**	**Group Point Total:**		**6**	

PWR SRO Examination Outline

Printed: 04/15/2008

Facility: Salem 1 & 2

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	
000033 Loss of Intermediate Range NI / 7					X		AA2.01 - Equivalency between source-range, intermediate-range, and power-range channel readings	3.5	1	5
000059 Accidental Liquid RadWaste Rel. / 9						X	2.4.21 - Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	4.6	1	8
000069 Loss of CTMT Integrity / 5					X		AA2.02 - Verification of automatic and manual means of restoring integrity	4.4	1	9
W/E02 SI Termination / 3						X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.7	1	10
K/A Category Totals:	**0**	**0**	**0**	**0**	**2**	**2**	**Group Point Total:**		**4**	

PWR SRO Examination Outline

Printed: 04/15/2008

Facility: Salem 1 & 2

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	Rev #
026 Containment Spray											X	2.4.22 - Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	4.4	1	12
059 Main Feedwater								X				A2.12 - Failure of feedwater regulating valves	3.4*	1	14
064 Emergency Diesel Generator								X				A2.10 - Unloading (reduction of generated power) in steps over a period of time	2.9	1	15
073 Process Radiation Monitoring											X	2.4.22 - Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	4.4	1	17
078 Instrument Air								X				A2.01 - Air dryer and filter malfunctions	2.9	1	18
K/A Category Totals:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**Group Point Total:**		**5**	

PWR SRO Examination Outline

Printed: 04/15/2008

Facility: Salem 1 & 2

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
011 Pressurizer Level Control								X				A2.05 - Loss of PZR heaters	3.7	1
029 Containment Purge											X	2.3.14 - Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.8	1
068 Liquid Radwaste								X				A2.02 - Lack of tank recirculation prior to release	2.8*	1
K/A Category Totals:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**Group Point Total:**		**3**

Generic Knowledge and Abilities Outline (Tier 3)

PWR SRO Examination Outline

Printed: 04/15/2008

Facility: Salem 1 & 2

Form ES-401-3

Generic Category	KA	KA Topic	Imp.	Points	Record #
Conduct of Operations	2.1.34	Knowledge of primary and secondary plant chemistry limits.	3.5	1	19
	2.1.39	Knowledge of conservative decision making practices.	4.3	1	20
		Category Total:		**2**	
Equipment Control	2.2.18	Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.	3.9	1	21
		Category Total:		**1**	
Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.7	1	22
	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	23
		Category Total:		**2**	
Emergency Procedures/Plan	2.4.26	Knowledge of facility protection requirements, including fire brigade and portable fire fighting equipment usage.	3.6	1	24
	2.4.28	Knowledge of procedures relating to a security event (non-safeguards information).	4.1	1	25
		Category Total:		**2**	
		Generic Total:		**7**	

Tier/Group	Randomly Selected K/A	Reason for Rejection
RO 1/1	022 AK1.01	Sampled on CERT Exam
RO 1/2	WE01 2.1.15	NA to WE01 (Rediagnosis)
RO 1/2	024 AA1.08	Pump speed control is for recirc (slow) and boration (high) and is not related to seal protection.
RO 1/2	068 K3.16	Salem does not have fail open control room access doors.
RO 2/1	007 K3.01	Sampled on CERT Exam
RO 2/1	008 A1.01	Too similar to RO Tier 1 Group 1 K/A for 006 A1.07
RO 2/1	010 K5.02	Too similar to RO Tier 1 Group 1 K/A FOR 008 AK1.01 on CERT Exam(constant enthalpy throttling characteristics
RO 2/1	025 K1.01	Salem does not have Ice Condenser
RO 2/1	059 2.4.27	Not specific to Main Feedwater (knowledge of fire in the plant procedure)
RO 2/1	062 2.2.23	Oversampling of Generic 2.2.23 (Ability to track TSAS) (also in Tier 3)
RO 2/1	073 A1.01	Sampled on CERT Exam
RO 2/1	076 K1.15	No physical connection or cause/effect relationship between service water and Fire Protection systems
RO 2/2	055 K3.01	Sampled on CERT Exam
SRO 1/2	032 2.1.34	Chemistry limits NA to Loss of SR NIs
SRO 2/1	103 2.3.5	Not SRO level
SRO 2/1	006 A2.11	Over sampling of ECCS system (3 on entire exam)
SRO 2/2	014 2.4.28	Security event NA to RPI system.
RO 1/2	001 AK2.01	Manually replaced with same system, AK1.03 to match question developed per NRC direction.
RO 2/2	059 AK3.02	Manually replaced with same system, AK1.01, to allow a question to be written that is not Level of difficulty 5 as originally submitted.
RO 1/2	E09 2.1.14	Manually replaced with same system EA1.3 to allow a question to be written.
SRO 2/2	064 A2.10	Manually replaced with same system, A2.21 to allow for SRO question to be written.
SRO 3	2.3.15	Manually replaced with 2.3.13 to allow SRO level question to be selected.

NOTE: All rejected K/As were deleted from Outline. Replacement K/As were then selected by generating a random exam with the remaining K/As still inserted. All deleted K/As were replaced with randomly selected K/As by the Exam Generation software. K/A's removed or changed from exam per NRC direction were manually replaced with K/A's approved by the NRC. Manually replaced K/A's are identified as such on this form, all others were randomly replaced.

Facility: **SALEM** Date of Examination: **08/25/2008**

Examination Level: • RO SRO Operating Test Number: **07-01 NRC**

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R,M	Calculate Shutdown Margin 2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data. RO 2.8
Conduct of Operations	R,N	Verify qualifications prior to assuming Licensed Operator Duties. 2.1.3 Knowledge of Shift turnover practices. RO 3.0
Equipment Control	N,S	Respond to loss of Source Range Nuclear Instrumentation during refueling operations. 2.2.30 Knowledge of RO duties in the Control Room during Fuel Handling operations such as alarms from the fuel handling area, ... RO 3.5
Radiation Control	NA	NA
Emergency Plan	N,S	Perform the duties of the Secondary Communicator during an Alert 2.4.39 Knowledge of the ROs responsibilities in Emergency Plan implementation. RO 3.3

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.

*Type Codes and Criteria (C)ontrol Room, (S)imulator, or Class(R)oom
(D)irect from bank, (3 for ROs; 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (1)
(P)revious 2 exams (1; randomly selected)

Facility: **SALEM** Date of Examination: **08/25/2008**

Examination Level: RO • SRO Operating Test Number: **07-01 NRC**

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R,N	Verify shift operators are qualified to perform specified duties (From list of operators assigned to shift, which of them can take vibration data.) 2.1.5 Ability to locate and use procedures and directives related to shift staffing and activities. SRO 3.4
Conduct of Operations	R, M	Review calculated head vent time in FRCI-3 2.1.20 Ability to perform procedure steps SRO 4.2
Equipment Control	R,N	Initiate an OTSC to an Implementing Procedure 2.2.6 Knowledge of the process for making changes in procedures as described in the safety analysis report. SRO 3.3
Radiation Control	R, M	Review a radioactive gaseous waste release form. 2.3.6 Knowledge of the requirements for reviewing and approving release permits. SRO 3.1
Emergency Plan	S,M,P	Classify Emergency / Non-Emergency Events, and complete the ICMF. 2.4.29 Knowledge of the Emergency Plan SRO 4.0

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.

*Type Codes and Criteria
(C)ontrol Room, (S)imulator, or Class(R)oom
(D)irect from bank, (3 for ROs; 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (1)
(P)revious 2 exams (1; randomly selected)

Facility: **SALEM**	Date of Examination: **08/25/08**
Exam Level : **RO X** SRO-I SRO-U	Operating Test No.: **07-01 ILT NRC Exam**

Control Room Systems (**8 for RO**; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Respond to Main Turbine Runback with malfunctioning Auto Rod Control	S,N,A	1
b. Perform a manual makeup to the VCT	S,D	2
c. Respond to PZR spray valve failure	S,L,D,A	3
d. Swap operating RHR loops with one loop aligned for ECCS injection in MODE 4	S,L,N	4 (pri)
e. Perform a CFCU Operability and Service Water Flow Verification	S,N	5
f. Failure of 2C 4KV Vital Bus to Transfer to the Alternate Source	S,D,A	6
g. Perform Subcooling Margin Monitor System operations (determine if displayed Subcooling is correct)	S,N	7
h. Start 21 CCW pump IAW APPX-1	S,L,D,A	8
In-Plant Systems (**3 for RO**; 3 for SRO-I; 3 or 2 for SRO-U)		
i. Locally manually isolate seal injection during LOPA	D,P	2
j. Locally start 23 AFP and feed SGs during CR evacuation	R,D,E	4 (sec)
k. Commence a liquid waste release, and respond to high activity during the release	R,M,A	9

@ All RO and SRO-I control room (and in plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions ; in-plant systems and functions may overlap those tested in the control room.

*Type Codes:	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥1 / ≥1 / ≥1
(N)ew or (M)odified from bank including 1 (A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1/ ≥ 1
(S)imulator	

Facility: **SALEM**	Date of Examination: **08/25/08**
Exam Level : RO **SRO-I X** SRO-U	Operating Test No.: **07-01 ILT NRC Exam**

Control Room Systems@ (8 for RO; **7 for SRO-I**; 2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Respond to Main Turbine Runback with malfunctioning Auto Rod Control	S,N,A	1
b. Perform a manual makeup to the VCT	S,D	2
c. Respond to PZR spray valve failure	S,L,D,A	3
d. Swap operating RHR loops with one loop aligned for ECCS injection in MODE 4	S,L,N	4 (pri)
e. Perform a CFCU Operability and Service Water Flow Verification	S,N, A	5
f. Failure of 2C 4KV Vital Bus to Transfer to the Alternate Source	S,D,A	6
g. Start 21 CCW pump IAW APPX-1	S,L,D,A	8
h. NA for SRO-I		

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

i. Locally manually isolate seal injection during LOPA	D,P	2
j. Locally start 23 AFP and feed SGs during CR evacuation	R,D,E	4 (sec)
k. Commence a liquid waste release, and respond to high activity during the release	R,M,A	9

@ All RO and SRO-I control room (and in plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions ; in-plant systems and functions may overlap those tested in the control room.

*Type Codes:	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥1 / ≥1 / ≥1
(N)ew or (M)odified from bank including 1 (A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1/ ≥ 1
(S)imulator	

Facility: SALEM 1 & 2 Scenario No.: NRC ESG-1 Op-Test No.: 07-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 100% Rated Thermal Power

Turnover: Unit at 100% power. 22 AFW pp is C/T. Lower power to 85% at 20% per hour in preparation for removing a Condensate Pump from service.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N,R CRS/RO/PO	Power reduction for Condensate Pump emergent maint.
	1		EDG oil leak (TS)
2	2	I CRS/RO/PO	PZR level channel failure, letdown isolation, letdown re-establish (TS) Note: The RO will provide the PZR level channel failure initial response, the PO will restore letdown)
3	3	C CRS/RO/PO	Steam Generator Tube Leak
		M CRS/RO/PO	Steam Generator Tube Rupture
	4	C CRS/PO	SEC activated equipment fails to start
4	5	C CRS/PO	SG Atmospheric relief fails partially open

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

Facility: SALEM 1 & 2 Scenario No.: NRC ESG-2 Op-Test No.: 07-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: $1X10^{-8}$ Amps for critical data.

Turnover: Raise power to 3-4%.

Event No.	Malf. No.	Event Type*	Event Description
		R,N CRS/RO	Raise Rx power to 3-4%
1	1		IR NI fails low (TS)
2	2	C CRS/RO	D VIB deenergizes causing no Auto or Manual rod control just as Rx is entering POAH (TS)
	3	C PO	1 of 2 operating MDAFW pps trip on Rx trip.
3	4	M CRS/RO	RCS leak progressing to LBLOCA w Auto SI failure.
		C CRS/RO/PO	Various SEC initiated components malfunction (RHR pp fail to start, no auto CS)
4	5	C CRS/RO/PO	Loss of Emergency Recirc

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

Facility: SALEM 1 & 2 Scenario No.: NRC ESG-3 Op-Test No.: 07-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 80% power for last 24 hours

Turnover: Raise power to 90% @ 3% per hour. (Power ascension ramp limit is 3%/hr)

Event No.	Malf. No.	Event Type*	Event Description
		N,R CRS/RO/PO	Raise Rx power
1	1	I CRS/RO/PO	MT Steamline Inlet Pressure Transmitter fails high (TS)
2	2	C/R CRS/RO/PO	SGFP oil leak, trip with no auto MT runback
3	3	M CRS/RO/PO	Feedwater rupture on common SGFP discharge header, MSLI failure
4	4	C CRS/PO	SG Code Safety fails open post trip
	5	C CRS/RO/PO	Single 4KV Group bus fails to transfer

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

Facility: SALEM 1 & 2 Scenario No.: NRC ESG-4 Op-Test No.: 07-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 100% power

Turnover: Maintain 100% power

Event No.	Malf. No.	Event Type*	Event Description
1	1	I CRS/RO	Power range NI fails high (TS)
2	**2**	C,R CRS/RO/PO	B 4KV vital loads in Blackout, power reduction to < 100% required
			ESO predicted voltage level <493 KV (TS)
3	3	R CRS/RO/PO	ESO directed rapid load reduction.
4	4	C CRS/PO	Loss of 23A CW bus (3 circulators)
	5	C, M CRS/RO/PO	Loss of 4th circulator requiring Rx trip
6	6	C CRS/RO	LOCA outside containment (200 gpm in RHR pp room)

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

Facility: SALEM 1 & 2 Scenario No.: NRC ESG-5 (Spare) Op-Test No.: 07-01 NRC

Examiners: _____ Operators:

_____

_____

Initial Conditions: 40% power

Turnover: 23 charging pump C/T for scheduled maint.

Event No.	Malf. No.	Event Type*	Event Description
1	1	I CRS/RO	VCT level transmitter fails
	2		2C SEC loss of power (TS)
2	3	C CRS/RO/PO	Centrifugal charging pump trip (TS)
3	4	C,R CRS/RO/PO	Loss of Main Turbine Lube Oil (Rx trip not required)
4	4	M	Steam Rupture (unisolable) outside containment.
5	5	C CRS/RO/PO	FRHS with no centrifugal charging pps available (Bleed and Feed required, one PZR PORV won't open, RC head vents required.) LOOP. AFP recovery.

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