

NTD-03-3003

January 10, 2003



Mr. Todd Fish  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406-1415

Dear Mr. Fish,

Enclosed please find the following 2 documents:

1. Permanent K/A suppression list for Salem Generating Station.
2. Salem Initial License Written Exam Outline for Jeffrey Scanish (SROU retake).

The K/A suppression list will become permanent upon your review and approval. The suppression list was derived from guidance provided on the NRC web site titled "K/A Suppression".

The outline for Jeff Scanish's SROU written exam retake was requested to be sent to you by Alan Blamey, during a post exam review conversation of the Salem "G" Initial License Operator NRC exam conducted November 4-15, 2002. This outline excludes those K/A's noted on the Permanent Suppression List included in this package.

Mr. Scanish's docket # is 55-61969.

I will be the point of contact for this exam. I can be reached at 856-339-1554. Please contact me with any questions or concerns.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gerald S. Gauding".

Gerald S. Gauding

GG:blm  
Attachments

C NBS Records (N64)

Facility: Salem

Form ES-401-3

Exam Date: 05/21/2003

Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	4	4				4	4			4	24
	2	3	3	3				3	2			2	16
	3	1	0	0				0	1			1	3
	Tier Totals	8	7	7				7	7			7	43
2. Plant Systems	1	1	2	2	2	2	1	2	2	2	1	2	19
	2	1	1	2	1	2	2	1	2	1	2	2	17
	3	0	0	1	0	1	0	0	1	0	0	1	4
	Tier Totals	2	3	5	3	5	3	3	5	3	3	5	40
3. Generic Knowledge And Abilities					Cat 1		Cat 2		Cat 3		Cat 4		
					4		4		4		5		17

Note: 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).

2. Actual point totals must match those specified in the table.

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.

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 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.

7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO 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.

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

## Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1			X				AK3.01 - Manually driving rods into position that existed before start of casualty	3.6	1
005	Inoperable/Stuck Control Rod / 1						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
011	Large Break LOCA / 3						X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
015	Reactor Coolant Pump (RCP) Malfunctions / 4			X				AK3.02 - CCW lineup and flow paths to RCP oil coolers	3.1	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4		X					AK2.07 - RCP seals	2.9	1
024	Emergency Boration / 1					X		AA2.04 - Availability of BWST	4.2	1
026	Loss of Component Cooling Water (CCW) / 8						X	2.4.31 - Knowledge of annunciators alarms and indications, and use of the response instructions.	3.4	1
029	Anticipated Transient Without Scram (ATWS) / 1				X			EA1.03 - Charging pump suction valves from VCT operating switch	3.2	1
040	Steam Line Rupture / 4	X						AK1.05 - Reactivity effects of cooldown	4.4	1

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

## Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
051	Loss of Condenser Vacuum / 4			X				AK3.01 - Loss of steam dump capability upon loss of condenser vacuum	3.1*	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6			X				EK3.02 - Actions contained in EOP for loss of offsite and onsite power	4.6	1
057	Loss of Vital AC Electrical Instrument Bus / 6						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.8	1
059	Accidental Liquid Radwaste Release / 9		X					AK2.01 - Radioactive-liquid monitors	2.8	1
062	Loss of Nuclear Service Water / 4				X			AA1.07 - Flow rates to the components and systems that are serviced by the SWS; interactions among the components	3.0	1
067	Plant Fire on Site / 9					X		AA2.09 - That a failed fire alarm detector exists -	2.7	1
068	Control Room Evacuation / 8				X			AA1.08 - Local boric acid flow	4.2*	1
074	Inadequate Core Cooling / 4		X					EK2.09 - Controllers and positioners	2.6*	1
076	High Reactor Coolant Activity / 9	X						AK1.06 - Chemical shock and crud burst	2.6	1

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
E02	SI Termination / 3	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with SI Termination	3.9	1
E04	LOCA Outside Containment / 3					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.3	1
E06	Degraded Core Cooling / 4					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.2	1
E07	Saturated Core Cooling / 4				X			EA1.3 - Desired operating results during abnormal and emergency situations	3.9	1
E09	Natural Circulation Operations / 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
E14	High Containment Pressure / 5	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with High Containment Pressure	3.7	1

K/A Category Totals:    4    4    4    4    4    4

Group Point Total:    24

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

## Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
008	Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open) / 3		X					AK2.02 - Sensors and detectors	2.7	1
009	Small Break LOCA / 3		X					EK2.03 - S/Gs	3.3*	1
022	Loss of Reactor Coolant Makeup / 2						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
025	Loss of Residual Heat Removal System (RHRS) / 4					X		AA2.04 - Location and isolability of leaks	3.6	1
037	Steam Generator (S/G) Tube Leak / 3						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.8	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.10 - Automatic actions associated with high radioactivity in S/G sample lines	3.7*	1
038	Steam Generator Tube Rupture (SGTR) / 3			X				EK3.01 - Equalizing pressure on primary and secondary sides of ruptured S/G	4.3	1
054	Loss of Main Feedwater (MFW) / 4			X				AK3.03 - Manual control of AFW flow control valves	4.1	1
058	Loss of DC Power / 6					X		AA2.03 - DC loads lost; impact on to operate and monitor plant systems	3.9	1

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

## Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
060	Accidental Gaseous Radwaste Release / 9	X						AK1.02 - Biological effects on humans of the various types of radiation, exposure levels that are acceptable for personnel in a nuclear reactor power plant; the units used for radiation intensity measurements and for radiation exposure levels	3.1*	1
061	Area Radiation Monitoring (ARM) System Alarms / 7	X						AK1.01 - Detector limitations	2.9?	1
065	Loss of Instrument Air / 8				X			AA1.02 - Components served by instrument air to minimize drain on system	2.8	1
E03	LOCA Cooldown and Depressurization / 4				X			EA1.3 - Desired operating results during abnormal and emergency situations	4.1	1
E05	Loss of Secondary Heat Sink / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	4.0	1
E11	Loss of Emergency Coolant Recirculation / 4		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.9	1
E16	High Containment Radiation / 9	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with High Containment Radiation	3.2	1

K/A Category Totals: 3 3 3 3 2 2

Group Point Total: 16

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401      Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3      Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
028	Pressurizer (PZR) Level Control Malfunction / 2	X						AK1.01 - PZR reference leak abnormalities	3.1*	1
036	Fuel Handling Incidents / 8					X		AA2.03 - Magnitude of potential radioactive release	4.2*	1
056	Loss of Offsite Power / 6						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1

K/A Category Totals:    1    0    0    0    1    1

Group Point Total:        3



# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401		Plant Systems - Tier 2 / Group 1											Form ES-401-3		
Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1		X										K2.05 - M/G sets	3.5	1
003	Reactor Coolant Pump System (RCPS) / 4									X			A3.01 - Seal injection flow	3.2	1
004	Chemical and Volume Control System (CVCS) / 1									X			A3.10 - PZR level and pressure	3.9	1
004	Chemical and Volume Control System (CVCS) / 1										X		A4.15 - Boron concentration	3.7	1
013	Engineered Safety Features Actuation System (ESFAS) / 2							X					A1.08 - Containment sump level	3.8	1
014	Rod Position Indication System (RPIS) / 1					X							K5.02 - RPIS independent of demand position	3.3	1
015	Nuclear Instrumentation System / 7											X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
015	Nuclear Instrumentation System / 7						X						K6.04 - Bistables and logic circuits	3.2	1
026	Containment Spray System (CSS) / 5			X									K3.01 - CCS	4.1	1
056	Condensate System / 4								X				A2.04 - Loss of condensate pumps	2.8*	1

# PWR SRO Examination Outline

Printed: 01/10/2003

Facility: Salem

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
059	Main Feedwater (MFW) System / 4											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4		X										K2.02 - AFW electric driven pumps	3.7	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4					X							K5.02 - Decay heat sources and magnitude	3.6	1
063	D.C. Electrical Distribution System / 6				X								K4.01 - Manual/automatic transfers of control	3.0*	1
068	Liquid Radwaste System (LRS) / 9	X											K1.07 - Sources of liquid wastes for LRS	2.9	1
068	Liquid Radwaste System (LRS) / 9								X				A2.02 - Lack of tank recirculation prior to release	2.8*	1
071	Waste Gas Disposal System (WGDS) / 9				X								K4.05 - Point of release	3.0	1
071	Waste Gas Disposal System (WGDS) / 9							X					A1.06 - Ventilation system	2.8	1
072	Area Radiation Monitoring (ARM) System / 7			X									K3.02 - Fuel handling operations	3.5	1

K/A Category Totals: 1 2 2 2 2 1 2 2 2 1 2

Group Point Total: 19

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002	Reactor Coolant System (RCS) / 2			X									K3.03 - Containment	4.6	1
002	Reactor Coolant System (RCS) / 2					X							K5.13 - Causes of circulation	3.9	1
006	Emergency Core Cooling System (ECCS) / 2					X							K5.02 - Relationship between accumulator volume and pressure	2.9	1
010	Pressurizer Pressure Control System (PZR PCS) / 3											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.03 - Relationship between PZR level and PZR heater control circuit	3.3	1
011	Pressurizer Level Control System (PZR LCS) / 2								X				A2.08 - Loss of level compensation	2.8	1
012	Reactor Protection System / 7		X										K2.01 - RPS channels, components, and interconnections	3.7	1
016	Non-Nuclear Instrumentation System (NNIS) / 7	X											K1.07 - ECCS	3.7*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5										X		A4.03 - Location and operation of hydrogen sampling and analysis of containment atmosphere, including alarms and indications	3.3	1
029	Containment Purge System (CPS) / 8										X		A4.04 - Containment evacuation signal	3.6	1

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
033	Spent Fuel Pool Cooling System (SFPCS) / 8							X					A1.01 - Spent fuel pool water level	3.3	1
034	Fuel Handling Equipment System (FHES) / 8								X				A2.01 - Dropped fuel element	4.4	1
035	Steam Generator System (S/GS) / 4			X									K3.02 - ECCS	4.3	1
064	Emergency Diesel Generator (ED/G) System / 6											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
064	Emergency Diesel Generator (ED/G) System / 6									X			A3.04 - Number of starts available with an air compressor	3.5	1
086	Fire Protection System (FPS) / 8						X						K6.04 - Fire, smoke, and heat detectors	2.9	1
103	Containment System / 5				X								K4.04 - Personnel access hatch and emergency access hatch	3.2	1

K/A Category Totals: 1 1 2 1 2 2 1 2 1 2 2

Group Point Total: 17

# PWR SRO Examination Outline

Printed: 01/09/2003

Facility: Salem

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
005	Residual Heat Removal System (RHRS) / 4			X									K3.06 - CSS	3.2*	1
008	Component Cooling Water System (CCWS) / 8											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
041	Steam Dump System (SDS) and Turbine Bypass Control / 4					X							K5.07 - Reactivity feedback effects	3.6	1
045	Main Turbine Generator (MT/G) System / 4								X				A2.17 - Malfunction of electrohydraulic control	2.9*	1

**K/A Category Totals:**    0    0    1    0    1    0    0    1    0    0    1

**Group Point Total:**    4

# Generic Knowledge and Abilities Outline (Tier 3)

Printed: 01/09/2003

## PWR SRO Examination Outline

Form ES-401-5

Facility: Salem

Generic Category	KA	KA Topic	Imp.	Points
<b>Conduct of Operations</b>	2.1.10	Knowledge of conditions and limitations in the facility license.	3.9	1
	2.1.18	Ability to make accurate, clear and concise logs, records, status boards, and reports.	3.0	1
	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.	4.2	1
<b>Category Total:</b>				<b>4</b>
<b>Equipment Control</b>	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.6	1
	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	1
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	3.5	1
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
<b>Category Total:</b>				<b>4</b>
<b>Radiation Control</b>	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	3.0	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).	2.9	1
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release.	3.2	1
<b>Category Total:</b>				<b>4</b>

# Generic Knowledge and Abilities Outline (Tier 3)

Printed: 01/09/2003

## PWR SRO Examination Outline

Form ES-401-5

Facility: Salem

Generic Category	KA	KA Topic	Imp.	Points
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
	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	3.9	1
	2.4.25	Knowledge of fire protection procedures.	3.4	1
	2.4.27	Knowledge of fire in the plant procedure.	3.5	1
	2.4.28	Knowledge of procedures relating to emergency response to sabotage.	3.3	1

**Category Total: 5**

**Generic Total: 17**

Tier/Group	Randomly Selected K/A	Reason for Rejection
1/1	003 AK 1.20	Several K/A's related to control rods and rod control. Increase breadth of examination coverage by manually selecting 040 AK 1.05 (unselected topic, same K/A category).
1/1	015 G2.4.49	Several K/A's related to RCP's and Loss of RC Flow. Also, no immediate actions for this topic. Increase breadth of examination coverage by manually selecting 026 G 2.4.31 (unselected topic, same K/A category).
1/1	017 AK 1.04	Several K/A's related to RCP's and Loss of RC Flow. Increase breadth of examination coverage by manually selecting 076 AK 1.06 (unselected topic, same K/A category).
1/1	024 AK 3.01	Several K/A's related to Emergency Boration. Also this K/A relates to control rods and rod control. Increase breadth of examination coverage by manually selecting 026 G 2.4.31 (unselected topic, same K/A category).
1/2	008 AA 1.01	Several K/A's related to PZR vapor space accident. Increase breadth of examination coverage by manually selecting E03 EA 1.3 (unselected topic, same K/A category).
1/2	038 EA 1.33	Several K/A's related to SGTR and Tube leak. Also this K/A relates to Natural Circulation. Increase breadth of examination coverage by manually selecting E05 EA 1.1 (unselected topic, same K/A category).
1/3	056 AK1.04	Several K/A's related to Loss of Offsite Power. Increase breadth of examination coverage by manually selecting 028 AK 1.01 (unselected topic, same K/A category).
2/1	001 K 3.02	Several K/A's related to control rods and rod control. Increase breadth of examination coverage by manually selecting 072 K 3.02 (unselected topic, same K/A category).
2/1	014 K 3.02	Several K/A's related to RPIS. Increase breadth of examination coverage by manually selecting 026 K 3.01 (unselected topic, same K/A category).
2/1	059 G 2.4.30	K/A selected has no relevance to system. Manually selected G 2.4.4 (same K/A category for system)
2/3	005 K 5.03	Several K/A's related to RHR. Increase breadth of examination coverage by manually selecting 041 K 5.07 (unselected topic, same K/A category).