

Facility: Arkansas Nuclear One – Unit 1														Date of Exam: 3/5/2010					
Tier	Group	RO K/A Category Points												SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total			
1. Emergency & Abnormal Plant Evolution	1	3	3	3	N/A			3	3	N/A			3	18			6		
	2	2	2	1				1	2				1	9			4		
	Tier Totals	5	5	4				4	5				4	27			10		
2. Plant Systems	1	3	3	2	3	3	2	2	2	2	3	3	28			5			
	2	0	1	1	1	1	1	1	1	1	1	10			3				
	Tier Totals	3	4	3	4	4	3	3	3	3	4	4	38			8			
3. Generic Knowledge and Abilities Categories					1		2		3		4		10		1	2	3	4	7
					3		2		2		3								

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.

ES-401 PWR Examination Outline Form ES-401-2											
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)											
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	QID	Type
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1			X				EK3.01 – Actions contained in EOP for reactor trip	4.0	1	770	M
000008 Pressurizer Vapor Space Accident / 3						X	2.2.37 – Ability to determine operability and/or availability of safety related equipment	3.6	2	771	N
000009 Small Break LOCA / 3				X			EA1.02 – RB Sump level	3.8	3	772	N
000011 Large Break LOCA / 3		X					EK2.02 – Pumps	2.6*	4	198	D
000015/17 RCP Malfunctions / 4		X					AK2.10 – RCP indicators and controls.	2.8*	5	609	D
000022 Loss of Rx Coolant Makeup / 2							Not selected	N/A			
000025 Loss of RHR System / 4	X						AK1.01 - Loss of RHRS during all modes of operation.	3.9	6	773	N
000026 Loss of Component Cooling Water / 8							Not selected	N/A			
000027 Pressurizer Pressure Control System Malfunction / 3		X					AK2.03 – Controllers and positioners.	2.6	7	395	D
000029 ATWS / 1					X		EA2.02 – Reactor trip alarm.	4.2	8	582	N
000038 Steam Gen. Tube Rupture / 3						X	2.4.6 – Knowledge of EOP mitigation strategies.	3.7	9	364	D
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4	X						AK1.01 – Consequence of PTS.	4.1	10	551	D
000054 (CE/E06) Loss of Main Feedwater / 4					X		AA2.06 – AFW adjustments needed to maintain proper T-ave, and S/G level.	4.0	11	774	M
000055 Station Blackout / 6				X			EA1.05 – Battery, when approaching fully discharged.	3.3	12	496	D
000056 Loss of Off-site Power / 6			X				AK3.01 – Order and time to initiation of power for the load sequencer.	3.5	13	366	D
000057 Loss of Vital AC Inst. Bus / 6					X		AA2.05 – S/G pressure and level meters.	3.5	14	624	D
000058 Loss of DC Power / 6	X						AK1.01 – Battery charger equipment and instrumentation.	2.8	15	187	D
000062 Loss of Nuclear Svc Water / 4			X				AK3.02 – The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS.	3.6	16	281	D
000065 Loss of Instrument Air / 8							Not selected	N/A			
W/E04 LOCA Outside Containment / 3							Not selected	N/A			

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E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	QID	Type
W/E11 Loss of Emergency Coolant Recirc. / 4							Not selected	N/A			
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4				X			EA1.3 – Desired operating results during abnormal and emergency situations.	3.6	17	335	D
000077 Generator Voltage and Electric Grid Disturbances / 6						X	2.1.25 – Ability to interpret reference material, such as graphs, curves, tables, etc.	3.9	18	775	N
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18		

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)							Form ES-401-2			
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	QID	Type	
000001 Continuous Rod Withdrawal / 1							Not selected	N/A				
000003 Dropped Control Rod / 1							Not selected	N/A				
000005 Inoperable/Stuck Control Rod / 1							Not selected	N/A				
000024 Emergency Boration / 1							Not selected	N/A				
000028 Pressurizer Level Malfunction / 2	X						AK1.01 – PZR reference leak abnormalities.	2.8*	19	776	N	
000032 Loss of Source Range NI / 7					X		AA2.04 – Satisfactory source-range / intermediate-range overlap	3.1	20	777	N	
000033 Loss of Intermediate Range NI / 7							Not selected	N/A				
000036 (BW/A08) Fuel Handling Accident / 8							AK2.1 – Changed to randomly selected System 068 AK2.07	N/A				
000037 Steam Generator Tube Leak / 3				X			AA1.10 – CVCS makeup tank level indicator	2.9	21	778	N	
000051 Loss of Condenser Vacuum / 4							Not selected	N/A				
000059 Accidental Liquid RadWaste Rel. / 9							Not selected	N/A				
000060 Accidental Gaseous Radwaste Rel. / 9							AK1.04 – Changed to randomly selected System 028 AK1.01	N/A				
000061 ARM System Alarms / 7			X				AK3.02 – Guidance contained in alarm response for ARM system.	3.4	22	634	D	
000067 Plant Fire On-site / 8	X						AK1.02 – Fire Fighting	3.1	23	695	DR	
000068 (BW/A06) Control Room Evac. / 8		X					AK2.07 – ED/G	3.3	24	779	D	
000069 (W/E14) Loss of CTMT Integrity / 5							Not selected	N/A				
000074 (W/E06&E07) Inad. Core Cooling / 4							Not selected	N/A				
000076 High Reactor Coolant Activity / 9							Not selected	N/A				
W/EO1 & E02 Rediagnosis & SI Termination / 3							Not selected	N/A				
W/E13 Steam Generator Over-pressure / 4							Not selected	N/A				
W/E15 Containment Flooding / 5							Not selected	N/A				
W/E16 High Containment Radiation / 9							Not selected	N/A				
BW/A01 Plant Runback / 1							Not selected	N/A				
BW/A02&A03 Loss of NNI-X/Y / 7							Not selected	N/A				
BW/A04 Turbine Trip / 4							Not selected	N/A				
BW/A05 Emergency Diesel Actuation / 6		X					AK2.1 – Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	4.0	25	349	D	
BW/A07 Flooding / 8					X		AA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.3	26	780	N	
BW/E03 Inadequate Subcooling Margin / 4							Not selected	N/A				

BW/E08; W/E03 LOCA Cooldown - Depress. / 4								Not selected	N/A			
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4								Not selected	N/A			
BW/E13&E14 EOP Rules and Enclosures							X	2.2.22- Knowledge of limiting conditions for operations and safety limits.	4.0	27	595	N
CE/A11; W/E08 RCS Overcooling - PTS / 4								Not selected	N/A			
CE/A16 Excess RCS Leakage / 2								Not selected	N/A			
CE/E09 Functional Recovery								Not selected	N/A			
K/A Category Point Totals:	2	2	1	1	2	1		Group Point Total:		9		

PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)													Form ES-401-2			
	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	QID	Typ e
003 Reactor Coolant Pump					X					X		K5.05 – The dependency of RCS flow rates upon the number of operating RCP's	2.8*	28	781	N
												A4.08 – RCP cooling water supplies	3.2	29	782	M
004 Chemical and Volume Control											X	2.1.34 changed to 2.2.38 – Knowledge of conditions and limitations in the facility license	3.6	30	796	N
				X								K4.03 – Protection of ion exchangers (high letdown temperatures will isolate ion exchangers)	2.8*	31	259	D
005 Residual Heat Removal		X										K2.01 – RHR Pumps	3.0*	32	786	M
006 Emergency Core Cooling						X						K6.10 - Valves	2.6	33	783	M
007 Pressurizer Relief/Quench Tank					X							K5.02 – Method of forming a steam bubble in the PZR	3.1	34	561	D
008 Component Cooling Water								X				A2.08 changed to A2.01 - Loss of CCW Pump	3.3	35	787	N
010 Pressurizer Pressure Control			X									K3.02 - RPS	4.0	36	788	N
012 Reactor Protection						X						K6.10 – Permissive circuits	3.3	37	784	N
											X	2.1.32 – Ability to explain and apply system limits and precautions	3.8	38	785	N
013 Engineered Safety Features Actuation				X								K4.10 – Safeguards equipment control reset	3.3	39	144	D
022 Containment Cooling									X			A3.01 – Initiation of safeguards mode of operation	4.1	40	135	D
025 Ice Condenser												Not Selected	N/A			
026 Containment Spray	X											K1.01 - ECCS	4.2	41	78	D
039 Main and Reheat Steam								X				A2.04 – Malfunctioning steam dump	3.4	42	202	D
059 Main Feedwater									X			A3.03 – Feed water pump suction flow pressure	2.5	43	195	D
				X								K4.16 – Automatic trips for MFW pumps	3.1	44	789	N
061 Auxiliary/Emergency Feedwater							X					A1.04 changed to A1.01 – S/G level	3.9	45	270	D

PWR Examination Outline													Form ES-401-2			
Plant Systems - Tier 2/Group 1 (RO)																
	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	QID	Type
062 AC Electrical Distribution		X									X	2.4.35 – Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	3.8	46	790	N
												K2.01 – Major system loads	3.3	47	316	D
063 DC Electrical Distribution			X									K3.02 – Components using DC control power	3.5	48	86	D
064 Emergency Diesel Generator	X	X										K2.01 – Air compressor	2.7	49	791	N
											K1.05 – Starting air system	3.4	50	792	N	
073 Process Radiation Monitoring					X							K5.01 – Radiation theory, including sources, types, units, and effects	2.5	51	672	R
076 Service Water											X	A4.02 – SWS valves	2.6	52	793	D
							X					A1.02 – Reactor and turbine building closed cooling water temperatures	2.6	53	794	N
078 Instrument Air	X											K1.03 changed to K1.02 – Service air	2.7	54	535	D
103 Containment											X	A4.06 – Operation of the containment personnel airlock	2.7	55	795	D
K/A Category Point Totals:	3	3	2	3	3	2	2	2	2	3	3	Group Point Total:			28	

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO)											Form ES-401-2			
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	QID	Type
001 Control Rod Drive		X										K2.05 changed to K2.02 – One-line diagram of power supply to trip breakers	3.6	56	429	D
002 Reactor Coolant								X				A2.01- Loss of coolant inventory	4.3	57	604	D
011 Pressurizer Level Control									X			A3.03- Charging and letdown	3.2	58	797	N
014 Rod Position Indication				X								K4.05 – Rod hold interlocks	3.1	59	308	D
015 Nuclear Instrumentation			X									K3.04 - ICS	3.4	60	299	D
016 Non-nuclear Instrumentation					X							K5.01- Separation of control and protection circuits	2.7	61	77	D
017 In-core Temperature Monitor						X						K6.01- Sensors and detectors.	2.7	62	240	D
027 Containment Iodine Removal												Not selected	N/A			
028 Hydrogen Recombiner and Purge Control												Not selected	N/A			
029 Containment Purge												Not selected	N/A			
033 Spent Fuel Pool Cooling												Not selected	N/A			
034 Fuel Handling Equipment												Not selected	N/A			
035 Steam Generator												Not selected	N/A			
041 Steam Dump/Turbine Bypass Control												Not selected	N/A			
045 Main Turbine Generator										X		A4.06- Turbine stop valves	2.8	63	138	D
055 Condenser Air Removal												Not selected	N/A			
056 Condensate												Not selected	N/A			
068 Liquid Radwaste												K4.01- Safety and environmental precautions for handling hot, acidic, and radioactive liquids Rejected system to 014 Rod Position Indication	N/A			
071 Waste Gas Disposal												K3.05 – ARM and PRM systems Rejected system to 015 Nuclear Instrumentation	N/A			
072 Area Radiation Monitoring												Not selected	N/A			
075 Circulating Water											X	2.4.11- Knowledge of abnormal condition procedures-	4.0	64	798	N
079 Station Air												Not selected	N/A			
086 Fire Protection							X					A1.01- Fire header pressure	2.9	65	542	D
K/A Category Point Totals:	0	1	1	1	1	1	1	1	1	1	1	Group Point Total:	10			

Facility: Arkansas Nuclear One – Unit 1						
Date of Exam: 3/5/2010						
Category	K/A #	Topic	RO			
			IR	#	QID	Type#
1. Conduct of Operations	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	66	482	D
	2.1.31	Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.	4.6	67	800	N
	2.1.32	Ability to explain and apply system limits and precautions.	3.8	68	799	N
	Subtotal			3		
2. Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could effect reactivity.	4.5	69	160	D
	2.2.37	Ability to determine operability and / or availability of safety related equipment	3.6	70	801	N
	Subtotal			2		
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	71	802	N
	2.3.11	Ability to control radiation releases.	3.8	72	436	R
	Subtotal			2		
4. Emergency Procedures / Plan	2.4.6	Knowledge of EOP mitigation strategies.	3.7	73	803	N
	2.4.11	Knowledge of abnormal condition procedures.	4.0	74	161	D
	2.4.50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2	75	804	M
	Subtotal			3		
Tier 3 Point Total				10		

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/2	036 Fuel Handling Accident – AK2.01 Fuel Handling Equipment.	Could not write a credible question since only RO action is to suspend fuel movement and exit. Randomly selected new system 068 Control Room Evacuation – AK2.07 ED/G.
1/2	060 Accidental Gaseous Radwaste Release – AK1.04 Calculation of Offsite Doses due to release from the power plant.	The RO would not perform this function. Randomly selected new system 028 Pressurizer Level Malfunction – AK1.01 Pressurizer reference leak abnormalities.
2/1	004 Chemical and Volume Control – 2.1.34 Knowledge of primary and secondary chemistry limits.	Could not write a credible question to match the K/A and tie to that system. Randomly selected – 2.2.38 Knowledge of conditions and limitations in the facility license.
2/1	008 Component Cooling Water – A2.08 Effects of shutting (automatically or otherwise) the isolation valves of the letdown cooler.	No credible tie for this K/A exists for the System. Randomly selected A2.01 – Loss of CCW Pump.
2/1	061 Emergency/Auxiliary Feedwater – A1.04 AFW source tank level	Not possible to prepare a psychometrically sound question related to the subject K/A. Randomly selected - A1.01 S/G level.
2/1	078 Instrument Air System (IAS) – K1.03 Containment Air.	Not possible to prepare a psychometrically sound question related to the subject K/A. Randomly selected – K1.02 Service Air.
2/2	001 Control Rod Drive – K2.05 M/G Sets	No credible tie for this K/A exists for the System. Randomly selected – K2.02 One-line diagram of power supply to trip breakers.

Tier / Group	Randomly Selected K/A	Reason for Rejection
2/2	068 Liquid Radwaste – K4.01 Safety and environmental precautions for handling hot, acid, and radioactive liquids.	The RO would not perform this function. Randomly selected new system 014 Rod position indication – K4.05 Rod hold interlocks.
2/2	071 Waste Gas Disposal – K3.05 ARM and PRM systems.	Not possible to prepare a psychometrically sound question related to the subject K/A. Randomly selected new system 015 Nuclear Instrumentation – K3.04 ICS.

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1. Emergency & Abnormal Plant Evolutions	1														3	3	6		
	2														3	1	4		
	Tier Totals					N/A				N/A					6	4	10		
2. Plant Systems	1														3	2	5		
	2														0	1	3		
	Tier Totals														4	4	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4				1	2	3	4	7
															2	2	1	2	

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000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1					X		EA2.1- Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.0	76	588	D	
000008 Pressurizer Vapor Space Accident / 3							Not selected	N/A				
000009 Small Break LOCA / 3							Not selected	N/A				
000011 Large Break LOCA / 3							Not selected	N/A				
000015/17 RCP Malfunctions / 4							Not selected	N/A				
000022 Loss of Rx Coolant Makeup / 2					X		AA2.04- How long PZR level can be maintained within limits	3.8	77	805	N	
000025 Loss of RHR System / 4						X	2.4.31 Knowledge of annunciator alarms, indications, or response procedures.	4.1	78	806	N	
000026 Loss of Component Cooling Water / 8					X		AA2.01- Location of a leak in the CCWS	3.5	79	807	N	
000027 Pressurizer Pressure Control System Malfunction / 3							Not selected	N/A				
000029 ATWS / 1							Not selected	N/A				
000038 Steam Gen. Tube Rupture / 3						X	2.4.18 – Knowledge of the specific bases for EOPs.	4.0	80	585	N	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4						X	2.4.6- Knowledge of symptom based EOP mitigation strategies	4.7	81	584	D	
000054 (CE/E06) Loss of Main Feedwater / 4							Not selected	N/A				
000055 Station Blackout / 6							Not selected	N/A				
000056 Loss of Off-site Power / 6							Not selected	N/A				
000057 Loss of Vital AC Inst. Bus / 6							Not selected	N/A				
000058 Loss of DC Power / 6							Not selected	N/A				
000062 Loss of Nuclear Svc Water / 4							Not selected	N/A				
000065 Loss of Instrument Air / 8							2.4.18 – Knowledge of the specific bases for EOPs Rejected system to 038 Steam Gen Tube Rupture	N/A				
W/E04 LOCA Outside Containment / 3							Not selected	N/A				

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W/E11 Loss of Emergency Coolant Recirc. / 4							Not selected	N/A			
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4							Not selected	N/A			
000077 Generator Voltage and Electric Grid Disturbances / 6							Not selected	N/A			
K/A Category Totals:					3	3	Group Point Total:		6		

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)							Form ES-401-2			
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#	QID	Typ e	
000001 Continuous Rod Withdrawal / 1							AA2.05- Uncontrolled rod withdrawal from available indications Rejected system to 005 Inoperable/Stuck Control Rod	N/A				
000003 Dropped Control Rod / 1							Not selected	N/A				
000005 Inoperable/Stuck Control Rod / 1					X		AA2.03 – Required actions if more than one rod is stuck or inoperable	4.4	82	589	D	
000024 Emergency Boration / 1					X		AA2.05 – Amount of boron to add to achieve the required SDM	3.9	83	808	M	
000028 Pressurizer Level Malfunction / 2							Not selected	N/A				
000032 Loss of Source Range NI / 7							Not selected	N/A				
000033 Loss of Intermediate Range NI / 7							Not selected	N/A				
000036 (BW/A08) Fuel Handling Accident / 8							Not selected	N/A				
000037 Steam Generator Tube Leak / 3							Not selected	N/A				
000051 Loss of Condenser Vacuum / 4							Not selected	N/A				
000059 Accidental Liquid RadWaste Rel. / 9							Not selected	N/A				
000060 Accidental Gaseous Radwaste Rel. / 9							Not selected	N/A				
000061 ARM System Alarms / 7							Not selected	N/A				
000067 Plant Fire On-site / 8							Not selected	N/A				
000068 (BW/A06) Control Room Evac. / 8							Not selected	N/A				
000069 (W/E14) Loss of CTMT Integrity / 5							Not selected	N/A				
000074 (W/E06&E07) Inad. Core Cooling / 4							Not selected	N/A				
000076 High Reactor Coolant Activity / 9							Not selected	N/A				
W/E01 & E02 Rediagnosis & SI Termination / 3							Not selected	N/A				
W/E13 Steam Generator Over-pressure / 4							Not selected	N/A				
W/E15 Containment Flooding / 5							Not selected	N/A				
W/E16 High Containment Radiation / 9							Not selected	N/A				
BW/A01 Plant Runback / 1							Not selected	N/A				
BW/A02&A03 Loss of NNI-X/Y / 7					X		AA2.1 – Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.0	84	591	D	
BW/A04 Turbine Trip / 4							Not selected	N/A				
BW/A05 Emergency Diesel Actuation / 6							Not selected	N/A				
BW/A07 Flooding / 8							Not selected	N/A				
BW/E03 Inadequate Subcooling Margin / 4							Not selected	N/A				

BW/E08; W/E03 LOCA Cooldown - Depress. / 4						X	2.4.47- Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe management guidelines	4.0	85	592	D
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4							Not selected	N/A			
BW/E13&E14 EOP Rules and Enclosures							Not selected	N/A			
CE/A11; W/E08 RCS Overcooling - PTS / 4							Not selected	N/A			
CE/A16 Excess RCS Leakage / 2							Not selected	N/A			
CE/E09 Functional Recovery							Not selected	N/A			
K/A Category Point Totals:					3	1	Group Point Total:		4		

PWR Examination Outline Plant Systems - Tier 2/Group 1 (SRO)														Form ES-401-2			
	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	QID	T y p e	
003 Reactor Coolant Pump								X				A2.02 – Conditions which exist for an abnormal shutdown of a RCP in comparison to a normal shutdown of RCP	3.9	86	809	N	
004 Chemical and Volume Control												Not Selected	N/A				
005 Residual Heat Removal												Not Selected	N/A				
006 Emergency Core Cooling												Not Selected	N/A				
007 Pressurizer Relief/Quench Tank												Not Selected	N/A				
008 Component Cooling Water												Not Selected	N/A				
010 Pressurizer Pressure Control								X				A2.02 – Spray failures	3.9	87	762	R	
012 Reactor Protection												Not Selected	N/A				
013 Engineered Safety Features Actuation								X				A2.06 – Inadvertent ESFAS actuation	4.0	88	812	N	
022 Containment Cooling												Not Selected	N/A				
025 Ice Condenser												Not Selected	N/A				
026 Containment Spray												Not Selected	N/A				
039 Main and Reheat Steam												Not Selected	N/A				
059 Main Feedwater												Not Selected	N/A				
061 Auxiliary/Emergency Feedwater											X	2.2.22 – Knowledge of limiting conditions for operations and safety limits	4.7	89	811	N	
062 AC Electrical Distribution												Not Selected	N/A				
063 DC Electrical Distribution											X	2.2.42 – Ability to recognize system parameters that are entry-level conditions for Technical Specifications	4.6	90	810	N	
064 Emergency Diesel Generator												Not Selected	N/A				
073 Process Radiation Monitoring												Not Selected	N/A				
076 Service Water												Not Selected	N/A				
078 Instrument Air												Not Selected	N/A				
103 Containment												Not Selected	N/A				
K/A Category Point Totals:									3	2		Group Point Total:	5				

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (SRO)												Form ES-401-2			
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	QID	Type	
001 Control Rod Drive												Not selected	N/A				
002 Reactor Coolant												Not selected	N/A				
011 Pressurizer Level Control												Not selected	N/A				
014 Rod Position Indication												Not selected	N/A				
015 Nuclear Instrumentation												Not selected	N/A				
016 Non-nuclear Instrumentation											X	2.2.40 – Ability to apply technical specifications for a system	4.7	91	599	D	
017 In-core Temperature Monitor												Not selected	N/A				
027 Containment Iodine Removal												Not selected	N/A				
028 Hydrogen Recombiner and Purge Control												2.4.23 – Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations. Rejected system replaced with 016 Non-Nuclear Instrumentation	N/A				
029 Containment Purge												Not selected	N/A				
033 Spent Fuel Pool Cooling												Not selected	N/A				
034 Fuel Handling Equipment											X	2.1.40 – Knowledge of refueling administrative requirements.	3.9	92	600	D	
035 Steam Generator								X				A2.01 – Faulted or ruptured S/Gs.	4.6	93	813	N	
041 Steam Dump/Turbine Bypass Control												Not selected	N/A				
045 Main Turbine Generator												Not selected	N/A				
055 Condenser Air Removal												Not selected	N/A				
056 Condensate												Not selected	N/A				
068 Liquid Radwaste												Not selected	N/A				
071 Waste Gas Disposal												Not selected	N/A				
072 Area Radiation Monitoring												Not selected	N/A				
075 Circulating Water												Not selected	N/A				
079 Station Air												Not selected	N/A				
086 Fire Protection												Not selected	N/A				
K/A Category Point Totals:								1			2	Group Point Total:		3			

Facility: Arkansas Nuclear One – Unit 1						
Date of Exam: 3/5/2010						
Category	K/A #	Topic	SRO			
			IR	#	QID	Type#
1. Conduct of Operations	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	94	492	D
	2.1.35	Knowledge of the fuel-handling responsibilities of SROs	3.9	95	814	N
	Subtotal		2			
2. Equipment Control	2.2.25	Knowledge of bases and technical specifications for limiting conditions of operations and safety limits.	4.2	96	646	D
	2.2.19	Knowledge of maintenance work order requirements.	3.4	97	815	N
	Subtotal		2			
3. Radiation Control	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.8	98	816	N
	Subtotal		1			
4. Emergency Procedures / Plan	2.4.30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the state, the NRC, or the transmission system operator.	4.1	99	411	D
	2.4.35	Knowledge of local auxiliary operator tasks during an emergency and the operational resultant effects.	4.0	100	750	D
	Subtotal		2			
Tier 3 Point Total			7			

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	065 Loss of Instrument Air – 2.4.18 Knowledge of the specific bases for EOPs	Could not write a credible SRO level question. Randomly selected new system 038 Steam Generator Tube Rupture 2.4.18
1/2	001 Continuous Rod Withdrawal – AA2.05 Uncontrolled Rod withdrawal from available indications	Could not write a credible SRO level question. Randomly selected new system 005 Inoperable stuck control rod – AA2.03 Required actions if more than one rod is stuck or inoperable.
2/2	028 Hydrogen Recombiner and Purge Control – 2.4.23 Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	Could not write a credible SRO level question. Randomly selected new system 016 Non-Nuclear Instrumentation – 2.2.40 Ability to apply Technical Specifications for a system.