

Facility: Arkansas Nuclear One Unit 2

Date of Exam: 08/07/2009

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	1	2	1	N/A			1	2	N/A			2	9	0	0	0	
	Tier Totals	4	5	4	N/A			4	5	N/A			5	27	0	0	0	
2. Plant Systems	1	2	2	3	3	3	2	2	3	2	3	3	28	0	0	0		
	2	0	1	1	1	1	1	1	1	1	1	1	10	0	0	0		
	Tier Totals	2	3	4	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
				2		3		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 Examination Outline										
Emergency and Abnormal Evolutions - Tier 1/Group 1 (RO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	QID	IR	#
000008 Pressurizer Vapor Space Accident / 3			X				AK3.01 - Knowledge of the reasons for the following responses as they apply to the Pressurizer Vapor Space Accident: - Why PZR level may come back on scale if RCS is saturated	1	3.7	1
000009 Small Break LOCA / 3					X		EA2.09 - Ability to determine and interpret the following as they apply to a small break LOCA: - Low-pressure SWS activity monitor	2	2.8	1
000011 Large Break LOCA / 3	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to the Large Break LOCA: - Natural circulation and cooling, including reflux boiling	3	4.1	1
000015/000017 RCP Malfunctions / 4		X					AK2.10 - Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions and the following: - RCP indicators and controls	4	2.8	1
000022 Loss of Rx Coolant Makeup / 2			X				AK3.05 - Knowledge of the reasons for the following responses as they apply to the Loss of Reactor Coolant Makeup: - Need to avoid plant transients	5	3.2	1
000026 Loss of Component Cooling Water / 8						X	2.2.44 - Equipment Control - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	6	4.2	1
000027 Pressurizer Pressure Control System Malfunction / 3	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions: - Latent heat of vaporization/condensation	7	2.6	1
000029 ATWS / 1						X	2.2.36 - Equipment Control - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	8	3.1	1
000038 Steam Gen. Tube Rupture / 3			X				EK3.02 - Knowledge of the reasons for the following responses as they apply to the SGTR: - Prevention of secondary PORV cycling	9	4.4	1
000054 Loss of Main Feedwater / 4						X	2.4.6 - Emergency Procedures/Plan - Knowledge of EOP mitigation strategies.	10	3.7	1

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Emergency and Abnormal Evolutions - Tier 1/Group 1 (RO)										
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000055 Station Blackout / 6				X			EA1.05 - Ability to operate and/or monitor the following as they apply to a Station Blackout: - Battery, when approaching fully discharged	11	3.3	1
000056 Loss of Off-site Power / 6	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power: - Definition of subcooling: use of steam tables to determine it	12	3.1	1
000057 Loss of Vital AC Inst. Bus / 6				X			AA1.05 - Ability to operate and/or monitor the following as they apply to the Loss of Vital AC Instrument Bus: - Backup instrument indications	13	3.2	1
000058 Loss of DC Power / 6					X		AA2.02 - Ability to determine and interpret the following as they apply to the Loss of DC Power: - 125V dc bus voltage, low/critical low, alarm	14	3.3	1
000062 Loss of Nuclear Svc Water / 4				X			AA1.03 - Ability to operate and/or monitor the following as they apply to the Loss of Nuclear Service Water (SWS): - SWS as a backup to the CCWS	15	3.6	1
000077 Generator Voltage and Electric Grid Disturbances / 6		X					AK2.06 - Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: - Reactor power	16	3.9	1
CE/E02 Reactor Trip - Stabilization - Recovery / 1		X					EK2.1 - Knowledge of the interrelations between the (Reactor Trip Recovery) and the following: - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	17	3.3	1
CE/E05 Steam Line Rupture - Excessive Heat Transfer / 4					X		EA2.2 - Ability to determine and interpret the following as they apply to the (Excess Steam Demand): - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	18	3.4	1
K/A Category Totals:	3	3	3	3	3	3	Group Point Totals:			18

PWR Examination Outline										
Emergency and Abnormal Evolutions - Tier 1/Group 2 (RO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	QID	IR	#
000001 Continuous Rod Withdrawal / 1					X		AA2.05 - Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: - Uncontrolled rod withdrawal, from available indications	19	4.4	1
000003 Dropped Control Rod / 1		X					AK2.05 - Knowledge of the interrelations between the Dropped Control Rod and the following: - Control rod drive power supplies and logic circuits	20	2.5	1
000032 Loss of Source Range NI / 7						X	2.1.28 - Conduct of Operations - Knowledge of the purpose and function of major system components and controls.	21	4.1	1
000036 Fuel Handling Accident / 8				X			AA1.03 - Ability to operate and/or monitor the following as they apply to the Fuel Handling Incidents: - Reactor building containment evacuation alarm enable switch	22	3.5	1
000051 Loss of Condenser Vacuum / 4					X		AA2.02 - Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: - Conditions requiring reactor and/or turbine trip	23	3.9	1
000060 Accidental Gaseous Radwaste Rel. / 9						X	2.1.27 - Conduct of Operations - Knowledge of system purpose and/or function.	24	3.9	1
000074 Inad. Core Cooling / 4			X				EK3.05 - Knowledge of the reasons for the following responses as they apply to the Inadequate Core Cooling: - Activating the HPI system	25	4.2	1
CE/A11 RCS Overcooling - PTS / 4		X					EK2.1 - Knowledge of the interrelations between the (RCS Overcooling) and the following: - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	26	3.2	1
CE/E09 Functional Recovery	X						EK1.1 - Knowledge of the operational implications of the following concepts as they apply to the (Functional Recover): - Components, capacity, and function of emergency systems	27	3.4	1
K/A Category Totals:	1	2	1	1	2	2	Group Point Totals:			9

PWR Examination Outline															
Plant Systems - Tier 2/Group 1 (RO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	QID	IR	#
003 Reactor Coolant Pump					X							K5.03 - Knowledge of the operational implications of the following concepts as they apply to the RCPS: - Effects of RCP shutdown on T-ave., including the reason for the unreliability of T-ave. in the shutdown loop	28	3.1	1
004 Chemical and Volume Control	X											K1.17 - Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: - PZR	29	3.4	1
005 Residual Heat Removal						X						K6.03 - Knowledge of the effect of a loss or malfunction of the following will have on the RHRs: - RHR heat exchanger	30	2.5	1
006 Emergency Core Cooling	X											K1.03 - Knowledge of the physical connections and/or cause-effect relationships between the ECCS and the following systems: - RCS	31	4.2	1
007 Pressurizer Relief/Quench Tank				X								K4.01 - Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following: - Quench tank cooling	32	2.6	1
008 Component Cooling Water							X					A1.01 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including: - CCW flow rate	33	2.8	1
010 Pressurizer Pressure Control				X								K4.02 - Knowledge of PZR PCS design feature(s) and/or interlock(s) which provide for the following: - Prevention of uncovering PZR heaters	34	3.0	1
010 Pressurizer Pressure Control										X		A4.01 - Ability to manually operate and/or monitor in the control room: - PZR spray valve	35	3.7	1

PWR Examination Outline															
Plant Systems - Tier 2/Group 1 (RO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	QID	IR	#
012 Reactor Protection		X										K2.01 - Knowledge of bus power supplies to the following: - RPS channels, components, and interconnections	36	3.3	1
013 Engineered Safety Features Actuation											X	2.2.44 - Equipment Control - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	37	4.2	1
013 Engineered Safety Features Actuation					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to the ESFAS: - Safety system logic and reliability	38	2.9	1
022 Containment Cooling											X	A4.02 - Ability to manually operate and/or monitor in the control room: - CCS pumps	39	3.2	1
022 Containment Cooling								X				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the CCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Fan motor over-current	40	2.5	1
026 Containment Spray			X									K3.02 - Knowledge of the effect that a loss or malfunction of the CSS will have on the following: - Recirculation spray system	41	4.2	1
039 Main and Reheat Steam			X									K3.04 - Knowledge of the effect that a loss or malfunction of the MRSS will have on the following: - MFW pumps	42	2.5	1

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Plant Systems - Tier 2/Group 1 (RO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	QID	IR	#
059 Main Feedwater				X								K4.19 - Knowledge of MFW System design feature(s) and/or interlock(s) which provide for the following: - Automatic feedwater isolation of MFW	43	3.2	1
059 Main Feedwater									X			A3.03 - Ability to monitor automatic operation of the MFW System, including: - Feedwater pump suction flow pressure	44	2.5	1
061 Auxiliary/Emergency Feedwater					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to the AFW System: - Decay heat sources and magnitude	45	3.2	1
062 AC Electrical Distribution							X					A1.03 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the A.C. Distribution System controls including: - Effect on instrumentation and controls of switching power supplies	46	2.5	1
063 DC Electrical Distribution											X	2.1.27 - Conduct of Operations - Knowledge of system purpose and/or function.	47	3.9	1
063 DC Electrical Distribution									X			A3.01 - Ability to monitor automatic operation of the D.C. Electrical System, including: - Meters, annunciators, dials, recorders, and indicating lights	48	2.7	1
064 Emergency Diesel Generator										X		A4.01 - Ability to manually operate and/or monitor in the control room: - Local and remote operation of the ED/G	49	4.0	1
064 Emergency Diesel Generator						X						K6.08 - Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: - Fuel oil storage tanks	50	3.2	1

PWR Examination Outline															
Plant Systems - Tier 2/Group 1 (RO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	QID	IR	#
073 Process Radiation Monitoring			X									K3.01 - Knowledge of the effect that a loss or malfunction of the PRM System will have on the following: - Radioactive effluent releases	51	3.6	1
076 Service Water								X				A2.02 - Ability to (a) predict the impacts of the following malfunctions or operations on the SWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Service water header pressure	52	2.7	1
078 Instrument Air		X										K2.01 - Knowledge of bus power supplies to the following: - Instrument air compressor	53	2.7	1
103 Containment								X				A2.05 - Ability to (a) predict the impacts of the following malfunctions or operations on the Containment System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Emergency containment entry	54	2.9	1
103 Containment											X	2.1.23 - Conduct of Operations - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	55	4.3	1
K/A Category Totals:	2	2	3	3	3	2	2	3	2	3	3	Group Point Totals:	28		

PWR Examination Outline															
Plant Systems - Tier 2/Group 2 (RO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	QID	IR	#
001 Control Rod Drive		X										K2.05 - Knowledge of bus power supplies to the following: - M/G sets	56	3.1	1
014 Rod Position Indication				X								K4.06 - Knowledge of RPIS design feature(s) and/or interlock(s) which provide for the following: - Individual and group misalignment	57	3.4	1
016 Non-nuclear Instrumentation										X		A4.02 - Ability to manually operate and/or monitor in the control room: - Recorders	58	2.7	1
017 In-core Temperature Monitor						X						K6.01 - Knowledge of the effect of a loss or malfunction of the following will have on the ITM System components: - Sensors and detectors	59	2.7	1
028 Hydrogen Recombiner and Purge Control							X					A1.02 - Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the HRPS controls including: - Containment pressure	60	3.4	1
034 Fuel Handling Equipment									X			A3.03 - Ability to monitor automatic operation of the Fuel Handling System, including: - High flux at shutdown	61	2.9	1
045 Main Turbine Generator			X									K3.01 - Knowledge of the effect that a loss or malfunction of the MT/G System will have on the following: - Remainder of the plant	62	2.9	1
068 Liquid Radwaste								X				A2.02 - Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Lack of tank recirculation prior to release	63	2.7	1

PWR Examination Outline															
Plant Systems - Tier 2/Group 2 (RO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	Q	IR	#
075 Circulating Water											X	2.1.28 - Conduct of Operations - Knowledge of the purpose and function of major system components and controls.	64	4.1	1
086 Fire Protection					X							K5.04 - Knowledge of the operational implications of the following concepts as they apply to the Fire Protection System: - Hazards to personnel as a result of fire type and methods of protection	65	2.9	1
K/A Category Totals:	0	1	1	1	1	1	1	1	1	1	1	Group Point Totals:			10

Facility:		Date of Exam:					
Category	K/A #	Topic	QID	RO		SRO Only	
				IR	#	IR	#
1 - Conduct of Operations	2.1.15	Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc.	66	2.7	1		
	2.1.18	Ability to make accurate, clear, and concise logs, records, status boards, and reports.	67	3.6	1		
	Subtotal				2		
2 - Equipment Control	2.2.7	Knowledge of the process for conducting special or infrequent tests.	68	2.9	1		
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	69	2.9	1		
	2.2.23	Ability to track Technical Specification limiting conditions for operations.	70	3.1	1		
	Subtotal				3		
3 - Radiological Controls	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	71	3.2	1		
	2.3.11	Ability to control radiation releases.	72	3.8	1		
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	73	3.2	1		
	Subtotal				3		
4 - Emergency Procedures/Plan	2.4.6	Knowledge of EOP mitigation strategies.	74	3.7	1		
	2.4.26	Knowledge of facility protection requirements, including fire brigade and portable fire fighting equipment usage.	75	3.1	1		
	Subtotal				2		
Tier 3 Point Total				10			

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		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	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	2	2	1	

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000007 Reactor Trip - Stabilization - Recovery / 1						X	2.4.45 - Emergency Procedures/Plan - Ability to prioritize and interpret the significance of each annunciator or alarm.	76	4.3	1
000025 Loss of RHR System / 4					X		AA2.04 - Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: - Location and isolability of leaks	77	3.6	1
000040 Steam Line Rupture - Excessive Heat Transfer / 4					X		AA2.01 - Ability to determine and interpret the following as they apply to the Steam Line Rupture: - Occurrence and location of a steam line rupture from pressure and flow indications	78	4.7	1
000058 Loss of DC Power / 6						X	2.4.20 - Emergency Procedures/Plan - Knowledge of operational implications of EOP warnings, cautions, and notes.	79	4.3	1
000065 Loss of Instrument Air / 8					X		AA2.01 - Ability to determine and interpret the following as they apply to the Loss of Instrument Air: - Cause and effect of low pressure instrument air alarm	80	3.2	1
CE/E06 Loss of Main Feedwater / 4						X	2.1.23 - Conduct of Operations - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	81	4.4	1
K/A Category Totals:	0	0	0	0	3	3	Group Point Totals:			6

PWR Examination Outline										
Emergency and Abnormal Evolutions - Tier 1/Group 2 (SRO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Q	IR	#
000037 Steam Generator Tube Leak / 3					X		AA2.06 - Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: - S/G tube failure	82	4.5	1
000059 Accidental Liquid RadWaste Rel. / 9						X	2.4.41 - Emergency Procedures/Plan - Knowledge of the emergency action level thresholds and classifications.	83	4.6	1
000068 Control Room Evac. / 8					X		AA2.05 - Ability to determine and interpret the following as they apply to the Control Room Evacuation: - Availability of heat sink	84	4.3	1
000069 Loss of CTMT Integrity / 5						X	2.4.46 - Emergency Procedures/Plan - Ability to verify that the alarms are consistent with the plant conditions.	85	4.2	1
K/A Category Totals:	0	0	0	0	2	2	Group Point Totals:			4

PWR Examination Outline															
Plant Systems - Tier 2/Group 1 (SRO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	Q	IR	#
006 Emergency Core Cooling								X				A2.07 - Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Loss of heat tracing	86	3.1	1
012 Reactor Protection								X				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the RPS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Faulty bistable operation	87	3.6	1
039 Main and Reheat Steam											X	2.4.11 - Emergency Procedures/Plan - Knowledge of abnormal condition procedures.	88	4.2	1
061 Auxiliary/Emergency Feedwater								X				A2.03 - Ability to (a) predict the impacts of the following malfunctions or operations on the AFW System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Loss of dc power	89	3.4	1
078 Instrument Air											X	2.2.36 - Equipment Control - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	90	4.2	1
K/A Category Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Totals:			5

PWR Examination Outline															
Plant Systems - Tier 2/Group 2 (SRO)															
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A3	G	K/A Topic(s)	Q	IR	#
071 Waste Gas Disposal								X				A2.09 - Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Stuck-open relief valve	91	3.5	1
072 Area Radiation Monitoring											X	2.2.40 - Equipment Control - Ability to apply Technical Specifications for a system.	92	4.7	1
029 Containment Purge								X				A2.01 - Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Maintenance or other activity taking place inside containment	93	3.6	1
K/A Category Totals:	0	0	0	0	0	0	0	2	0	0	1	Group Point Totals:			3

Facility:		Date of Exam:					
Category	K/A #	Topic	Q	RO		SRO Only	
				IR	#	IR	#
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.	94			4.7	1
	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	95			4.4	1
	Subtotal						2
2 - Equipment Control	2.2.11	Knowledge of the process for controlling temporary design changes.	96			3.3	1
	2.2.43	Knowledge of the process used to track inoperable alarms.	97			3.3	1
	Subtotal						2
3 - Radiological Controls	2.3.6	Ability to approve release permits.	98			3.8	1
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	99			3.1	1
	Subtotal						2
4 - Emergency Procedures/Plan	2.4.6	Knowledge of EOP mitigation strategies.	100			4.7	1
	Subtotal						1
Tier 3 Point Total							7

Tier / Group	Randomly Selected K/A	Reason for Rejection
RO Exam Tier 1 Group 1	<p><i>QID #6</i></p> <p><i>026 Loss of CCW</i></p> <p><i>Generic 2.2.17 – Knowledge of the maintenance activities during power operations, such as risk assessments, work prioritation.</i></p>	<p>This K&A is more directed to the SRO applicant and is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-410 section D.1.b. therefore, it was rejected and another generic 2.2 K&A was randomly selected form the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.2.44 – Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
	<p><i>QID #9</i></p> <p><i>038 Steam Generator Tube Rupture</i></p> <p><i>EK3.07 - Knowledge of the reasons for the following responses as they apply to the SGTR: - RCS loop isolation values</i></p>	<p>This K&A is not applicable to ANO since the RCS at ANO does not have RCS loop isolation valves therefore, a credible and operationally valid question can not be developed on this K&A.</p> <p><i>EK3.02 – Knowledge of the reasons for the following responses as they apply to the SGTR: - Prevention of secondary PORV cycling</i> was randomly selected as a replacement from the other EK3 K&A statements under this category with a RO importance rating of > 2.5.</p>
	<p><i>QID #10</i></p> <p><i>054 Loss of Main Feedwater</i></p> <p><i>2.3.7 - Ability to comply with radiation work permit requirements during normal or abnormal conditions.</i></p>	<p>This K&A does not directly tie to the MFW system and is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected form the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>2.4.6 Emergency Procedures/Plan - Knowledge of EOP mitigation strategies</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>

Tier / Group	Randomly Selected K/A	Reason for Rejection
RO Exam Tier 2 Group 1	<p><i>QID #37</i></p> <p><i>013 ESF Actuation</i></p> <p><i>2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected from the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>2.2.44 Equipment Control - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
	<p><i>QID #49</i></p> <p><i>064 Emergency Diesel Generator.</i></p> <p><i>A4.04 – Ability to manually operate and/or monitor in the control room: - Remote operation of the air compressor switch (different modes)</i></p>	<p>ANO Unit 2 does not have the capability to operate the Emergency Diesel Generator air compressors remotely; therefore, a credible and operationally valid question can not be developed on this K&A; therefore, it was rejected and another generic K&A was randomly selected from the A4 section of K&As for EDGs</p> <p><i>A4.01 – Ability to manually operate and/or monitor in the control room: - Local and remote operation of the ED/G</i> was randomly selected as a replacement from the other A4 K&A statements under this category with a RO importance rating of > 2.5.</p>
	<p><i>QID #50</i></p> <p><i>064 Emergency Diesel Generator.</i></p> <p><i>K6.07 Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: - Air receivers</i></p>	<p>This K&A statement was randomly selected on the last 2 NRC exams given to Unit 2 and 2 different questions on EDG air receivers was used. This K&A was rejected due to over sampling of this K&A statement on the 2 previous NRC Exams and no additional operationally valid questions could be generated.</p> <p><i>K6.08 - Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: - Fuel oil storage tanks</i> was selected as a replacement from the other K6 K&A statements under this category with a RO importance rating of > 2.5.</p>
	<p><i>QID #53</i></p> <p><i>078 Instrument Air System</i></p> <p><i>K2.02 Knowledge of bus power supplies to emergency air compressors.</i></p>	<p>ANO Unit 2 does not have an emergency air compressor for an IA backup. Unit 2 and Unit 1 IA systems are normally cross tied to allow for backup air in case of a problem on the opposite unit.; therefore, a credible and operationally valid question can not be developed on this K&A.</p> <p><i>K2.01 – Knowledge of bus power supplies to the following: - Instrument air compressor</i> was selected as a replacement from the other K2 K&A statements under this category with a RO importance rating of > 2.5.</p>

<p>RO Exam Tier 2 Group 1</p>	<p><i>QID #54</i> <i>103 Containment System</i> <i>A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the Containment System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Containment evacuation (including recognition of the alarm)</i></p>	<p>This K&A was rejected due to the similarities between question #22 K&A 036 AA1.03 and over sampling of the containment evacuation alarm.</p> <p><i>A2. 05- Ability to (a) predict the impacts of the following malfunctions or operations on the Containment System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Emergency Containment Entry</i> was randomly selected as a replacement from the other A2 K&A statements under this category with a RO importance rating of > 2.5.</p>
	<p><i>QID #55</i> <i>103 Containment System</i> <i>2.1.34 Conduct of Operations - Knowledge of primary and secondary plant chemistry limits.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected from the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>2.1.23 Conduct of Operations - Ability to perform specific system and integrated plant procedures during all modes of plant operation</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
<p>RO Exam Tier 2 Group 2</p>	<p><i>QID #64</i> <i>075 Circulating Water</i> <i>Generic 2.2.3 – Equipment Control - (multi-unit license) Knowledge of the design, procedural, and operational differences between units.</i></p>	<p>Although there are 2 units here at ANO, they are not of the same vender design and a Unit 2 operator cannot operate the Unit 1 plant; therefore, this K&A statement does not apply and is being rejected as directed by NUREG 1021 ES-401 section D.1.b. This K&A was rejected and another generic K&A was randomly selected from the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.1.28 – Conduct of Operations - Knowledge of the purpose and function of major system components and control</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>

Tier / Group	Randomly Selected K/A	Reason for Rejection
SRO Exam Tier 1 Group 1	<p><i>QID #76</i></p> <p><i>007 Reactor Trip – Stabilization - Recovery</i></p> <p>Generic 2.2.19 – Knowledge of maintenance work order requirements</p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected from the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.4.45 – Emergency Procedures/Plan - Ability to prioritize and interpret the significance of each annunciator or alarm</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
	<p><i>QID #79</i></p> <p><i>058 Loss of DC Power</i></p> <p><i>Generic 2.4.16 – Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected from the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.4.20 – Emergency Procedures/Plan - Knowledge of operational implications of EOP warnings, cautions, and notes</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
	<p><i>QID #80</i></p> <p><i>CE/E06 Loss of Instrument Air</i></p> <p><i>AA2.05 Ability to interpret the following as they apply to the Loss of Instrument Air: - When to commence plant shutdown if instrument air pressure is decreasing</i></p>	<p>This K&A statement was randomly selected on the last 2 NRC exams given to Unit 2 and 2 different questions on when to shutdown on loss of IA was used. This K&A was rejected due to over sampling of this K&A statement on the 2 previous NRC Exams and no additional operationally valid questions could be generated.</p> <p><i>AA2.01 Ability to determine and interpret the following as they apply to the Loss of Instrument Air: - Cause and effect of low-pressure instrument air alarm</i> was randomly selected as a replacement from the other AA2 K&A statements under this category with a SRO importance rating of > 2.5.</p>
	<p><i>QID #81</i></p> <p><i>CE/E06 Loss of Main Feedwater</i></p> <p><i>Generic 2.2.23 – Equipment Control - Ability to track Technical Specification limiting conditions for operations.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected from the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.1.23 – Conduct of Operations - Ability to perform specific system and integrated plant procedures during all modes of plant operation</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>

<p>SRO Exam Tier 1 Group 2</p>	<p><i>QID #83</i> <i>059 Accidental Liquid Rad waste Release.</i> <i>Generic 2.4.5 – Emergency Procedures/Plan - Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected form the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.4.41 – Emergency Procedures/Plan - Knowledge of the emergency action level thresholds and classifications</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
<p>SRO Exam Tier 2 Group 1</p>	<p><i>QID #88</i> <i>039 Main and Reheat Steam</i> <i>Generic 2.2.6 – Equipment Control - Knowledge of the process for making changes to procedures.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected form the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.4.11 – Emergency Procedures/Plan - Knowledge of abnormal condition procedures</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
<p>SRO Exam Tier 2 Group 2</p>	<p><i>QID #92</i> <i>072 Area Radiation Monitoring</i> <i>Generic 2.2.35</i> <i>Equipment Control - Ability to determine Technical Specification Mode of Operation.</i></p>	<p>This K&A is not one of the required Generic K&As to be used in Tier 1 and 2 as directed by NUREG 1021 ES-401 section D.1.b. therefore, it was rejected and another generic K&A was randomly selected form the list in NUREG 1021 ES-401 Section D1.b.</p> <p><i>Generic 2.2.40 – Equipment Control - Ability to apply Technical Specifications for a system</i> was randomly selected from the Generic K&A list in NUREG 1021 ES-401 Section D1.b. for this category.</p>
	<p><i>QID #93</i> <i>079 Station Air System</i> <i>A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the SAS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Cross-connection with IAS.</i></p>	<p>Unit 2 does not have a cross connection with the IAS and the Station Air System, therefore, a credible and operationally valid question can not be developed on this K&A statement or any others Station Air K&A statements. (most have an importance rating of less than 2.5)</p> <p>Therefore, the <i>Containment Purge System</i> was randomly selected from the Tier 2 Group 2 systems and the originally selected A2.01 K&A statement was retained: <i>Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: - Maintenance or other activity taking place inside Containment.</i></p>

SRO Exam Tier 3	<i>QID #100</i> <i>Generic 2.4.35</i> Emergency Procedures/Plan - Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	This K&A is not SRO only knowledge and does not allow an SRO only question to be developed thus this K&A was rejected. Generic K&A 2.4.6, <i>Emergency Procedures/Plan - Knowledge of EOP mitigation strategies</i> was randomly selected as a replacement from the required section 2.4 generic K&A statements.
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Facility: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>2009-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations 2.1.23 RO (4.3)	P/R	Determine volume of Boric acid and DI water to makeup to RWT. ANO-2-JPM-NRC-ADMIN RWT
Conduct of Operations 2.1.25 RO (3.9)	N/R	Determine any applicable technical specifications for CEA positions using the COLR PDIL ANO-2-JPM-NRC-ADMIN-PDIL
Equipment Control 2.2.12 RO (3.7)	D/R	Surveillance review ANO-2-JPM-NRC-2P-35A REVIEW
Radiation Control 2.3.14 RO (3.4)	D/R	Review RWP and determine requirements for tagging 'B' LPSI pump. ANO-2-JPM-NRC-RWP
Emergency Procedures/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 all 5 are required.</p>		
<p>* Type Codes & Criteria:</p> <ul style="list-style-type: none"> (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: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u>2009-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations 2.1.25 SRO (4.2)	N/R	Determine if COLR DNBR limit is being met during a loss of COLSS and what action is required. ANO-2-JPM-NRC-ADMIN-DNBRL
Conduct of Operations 2.1.23 SRO (4.4)	D/R	Review and approve calculation of volume needed to raise SFP level. ANO-2-JPM-NRC-ADMIN-SFPMU
Equipment Control 2.2.40 SRO (4.7)	P/R	Determine RPS trip set point due to inoperable MSSV is correct using Technical Specifications. Ability to apply technical specification for a system ANO-2-JPM-NRC-ADMIN-MSSVINOP
Radiation Control 2.3.14 SRO (3.8)	D/R	Review RWP and determine requirements for tagging 'B' LPSI pump. ANO-2-JPM-NRC-RWP
Emergency Procedures/Plan 2.4.44 SRO (4.4)	D/R	Issue Protective Action Recommendation to Offsite Authorities (Time Critical) ANO-2-JPM-NRC-PAR3
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & 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: <u>Arkansas Nuclear One</u>	Date of Examination: <u>8-10-09</u>	
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test No.: <u>2009-1</u>	
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. ANO-2-JPM-NRC-EOP01 026 A2.03 RO 4.1 SRO 4.4 Secure Containment Spray System (inadvertent)	EN/L/P/S	5 Containment Integrity
b. ANO-2-JPM-NRC-RCP04 003 A2.02 RO-3.7/SRO-3.9 RCP Shutdown	A/L/M/S	4 Heat Removal
c. ANO-2-JPM-NRC-SIT01 006 A2.03 RO-3.3 SRO-3.7 High pressure fill of Safety Injection Tank	A/P/S	2 RCS Inventory
d. ANO-2-JPM-NRC-PZR01 010 A4.01 RO-3.7/SRO-3.5 Equalize Pressurizer boron	D/S	3 Pressure Control
e. ANO-2-JPM-NRC- VCTMU 004 A4.15 RO-3.6 SRO-3.7 Perform Manual Makeup to the VCT	D/S	1 Reactivity control
f. ANO-2-JPM-NRC-ELECXT 062 A4.01 RO-3.3/SRO-3.1 Cross connect 2B-1 and 2B-2.	A/M/S	6 Electrical
g. ANO-2-JPM-NRC-CCW02 008 A4.01 RO 3.3/SRO 3.1 Shift running CCW pumps	M/S	8 Plant service systems
h. ANO-2-JPM-NRC-CPC02 015 A3.03 RO-3.9/SRO-3.9 DNBR/LPD limits with COLSS out of service	D/S	7 Instrumentation
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. ANO-2-JPM-NRC-AACLS 064 A4.01 RO-4.0/SRO-4.3 Start up AAC diesel generator manually locally during a LOOP	A/P/E/L	6 Electrical
j. ANO-2-JPM-NRC-XFCEA 001 A2.14 RO-3.7/SRO-3.9 Transfer a CEA to the hold bus	D/E	1 Reactivity control
k. ANO-2-JPM-NRC-69REL 068 A4.02 RO-3.2/SRO-3.1 Perform a release of 2T-69A Boric Acid Condensate Tank	N/R	9 Radioactivity Release
@ 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: <u>Arkansas Nuclear One</u>		Date of Examination: <u>8-10-09</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>2009-1</u>
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. ANO-2-JPM-NRC-EOP01 026 A2.03 RO 4.1 SRO 4.4 Secure Containment Spray System (inadvertent)	EN/L/P/S	5 Containment Integrity
b ANO-2-JPM-NRC-RCP04 003 A2.02 RO-3.7/SRO-3.9 RCP Shutdown	A/M/S	4 Heat Removal
c. ANO-2-JPM-NRC-SIT01 006 A2.03 RO-3.3 SRO-3.7 High pressure fill of Safety Injection Tank	A/D/P/S	2 RCS Inventory
d. ANO-2-JPM-NRC-PZR01 010 A4.01 RO-3.7/SRO-3.5 Equalize Pressurizer boron	D/S	3 Pressure Control
e. ANO-2-JPM-NRC- VCTMU 004 A4.15 RO-3.6 SRO-3.7 Perform Manual Makeup to the VCT	D/S	1 Reactivity control
f. ANO-2-JPM-NRC-ELECXT 062 A4.01 RO-3.3/SRO-3.1 Cross connect 2B-1 and 2B-2.	A/M/S	6 Electrical
g. ANO-2-JPM-NRC-CCW02 008 A4.01 RO 3.3/SRO 3.1 Shift running CCW pumps	M/S	8 Plant service systems
h.		
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. ANO-2-JPM-NRC-AACLS 062 A4.01 RO-4.0/SRO-4.3 Start up AAC diesel generator manually locally during a LOOP	A/P/E/L	6 Electrical
j. ANO-2-JPM-NRC-XFCEA 001 A2.14 RO-3.7/SRO-3.9 Transfer a CEA to the hold bus	D/E	1 Reactivity control
k. ANO-2-JPM-NRC-69REL 068 A4.02 RO-3.2/SRO-3.1 Perform a release of 2T-69A Boric Acid Condensate Tank	N/R	9 Radioactivity Release
<p>[@] 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.</p>		
* 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: <u>Arkansas Nuclear One</u>	Date of Examination: <u>8-10-09</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>	Operating Test No.: <u>2009-1</u>

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. ANO-2-JPM-NRC-EOP01 026 A2.03 RO 4.1 SRO 4.4 Secure Containment Spray System (inadvertent)	EN/L/P/S	5 Containment Integrity
b. ANO-2-JPM-NRC-RCP04 003 A2.02 RO-3.7/SRO-3.9 RCP Shutdown	A/L/M/S	4 Heat Removal
c.		
d.		
e.		
f.		
g.		
h.		

In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. ANO-2-JPM-NRC-AACLS 062 A4.01 RO-4.0/SRO-4.3 Start up AAC diesel generator manually locally during a LOOP	A/P/E/L	6 Electrical
j. ANO-2-JPM-NRC-XFCEA 001 A2.14 RO-3.7/SRO-3.9 Transfer a CEA to the hold bus	D/E	1 Reactivity control
k. ANO-2-JPM-NRC-69REL 068 A4.02 RO-3.2/SRO-3.1 Perform a release of 2T-69A Boric Acid Condensate Tank	N/R	9 Radioactivity Release

[@] 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: Arkansas Nuclear One			Date of Exam: 8-10-09			Operating Test No.: 2009-1											
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M(*)		
		1			2			3			4						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
												R	I	U			
RO X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX		5														1
	NOR		1			4			2					2	1	1	1
	I/C		3,4			1,2,8			3,7,8					5	4	4	2
	MAJ		6,8			5,6			5					3	2	2	1
	TS													0	0	2	2
RO X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX				4			1						1	1	1	0
	NOR			1,5										2	1	1	1
	I/C			2,7,9		3,7			4,6					5	4	4	2
	MAJ			6,8		5,6			5					3	2	2	1
	TS													0	0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U X	RX													0	1	1	0
	NOR	1,5			4									2	1	1	1
	I/C	2,3,4, 7,9			1,2,3, 7,8									5	4	4	2
	MAJ	6,8			5,6									2	2	2	1
	TS	2,5			1,3									2	0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U X	RX													0	1	1	0
	NOR							1,2						2	1	1	1
	I/C							3,4,6, 7,8						5	4	4	2
	MAJ							5						1	2	2	1
	TS							3,5						2	0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: Arkansas Nuclear One			Date of Exam: 8-10-09			Operating Test No.: 2009-1												
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M(*)			
		1			2			3			4							
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U	
RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	RX								1						1	1	1	0
	NOR	1,5			4										2	1	1	1
	I/C	2,3,4,7,9			1,2,3,7,8				4,6						7	4	4	2
	MAJ	6,8			5,6				5						3	2	2	1
	TS	2,5			1,3										2	0	2	2
RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	RX		5			4									1	1	1	0
	NOR		1						1,2						3	1	1	1
	I/C		3,4			3,7			3,4,6,7,8						7	4	4	2
	MAJ		6,8			5,6			5						3	2	2	1
	TS								3,5						2	0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX															1	1	0
	NOR															1	1	1
	I/C															4	4	2
	MAJ															2	2	1
	TS															0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX															1	1	0
	NOR															1	1	1
	I/C															4	4	2
	MAJ															2	2	1
	TS															0	2	2
Instructions:																		
1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO <i>additionally</i> serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.																		
2. Reactivity manipulations may be conducted under normal or <i>controlled</i> abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.																		
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.																		

Facility: ANO-2		Scenario No.: 1 (New)		Op-Test No.: 2009-1	
Examiners:			Operators:		
_____			_____		
_____			_____		
Initial Conditions: 100% MOL, All Engineered Safety Features systems are in standby. 2PCV-0231 jacked closed. Green Train Maintenance Week. The 'B' Charging pump seal water pump is in hand and has been running for 30 min.					
Turnover: 100%. 260 EFPD. EOOS indicates 'Minimal Risk'. 2PCV-0231 jacked closed, manually control seal steam pressure. Green Train Maintenance Week. 'C' Charging pump will be removed from service for repack. Place 'B' Charging pump is service and secure 'C' Charging pump. Steps 8.1.1 and 8.1.2 are complete.					
Event No.	Malf. No.	Event Type*	Event Description		
1		N (ATC) N (BOP) N (SRO)	Place 'B' Charging pump in service and secure 'C' Charging pump.		
2	XSG2PT10411	I (BOP) I (SRO)	'A' Steam generator safety channel pressure transmitter fails low. Tech Spec for CRS.		
3	XCVLDNHXOU	I (ATC) I (SRO)	Letdown Temperature control valve input fails low.		
4	CVC2P36BFAL	C (ATC) C (SRO)	'B' Charging pump supply breaker trips due to a motor fault		
5	RCSLOCATCB	N (BOP) R (ATC) N (SRO)	15 gpm Reactor Coolant system leak on 'B' cold leg. Tech Spec for CRS		
6	LOSE500 LOSE161	M (ALL)	Loss of Off-Site Power.		
7	CV15042	C (BOP) C (SRO)	#2 Emergency Diesel Generator service water outlet valve fails to open. This will result in de-energizing red train vital 4160VAC(2A-4) and vital 480VAC (2B-6)		
8	RCSLOCATCB	M (ALL)	Reactor Coolant system 'B' cold leg leakage ramps up to 225 gpm over 10 minutes.		
9	HPI2P89AFAL	C (BOP) C(SRO)	2P89A, 'A' High Pressure Safety Injection pump fails to start automatically.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Facility: ANO-2		Scenario No.: 2 (New)		Op-Test No.: 2009-1	
Examiners:			Operators:		
Initial Conditions: 100% MOL, All Engineered Safety Features systems are in standby. 2PCV-0231 jacked closed. RED Train Maintenance Week. 2T-6A Boric Acid Make up tank is aligned for acid reducing shut down chemistry for Unit 1					
Turnover: 100%. 260 EFPD. EOOS indicates 'Minimal Risk'. 2PCV-0231 jacked closed, manually control seal steam pressure. RED Train Maintenance Week. 2T-6A Boric Acid Make up tank is aligned for acid reducing shut down chemistry for Unit 1 refueling outage that starts next week. Containment Sump needs to be drained due to high level. Steps 20.1.1 and 20.1.2 of OP-2104.014 have been completed.					
Event No.	Malf. No.	Event Type*	Event Description		
1	CV20601 DO_HS_2060_G DO_HS_2060_R	C (BOP) C (SRO)	Containment sump drain valve breaker trips during normal drain evolution. Tech Spec for SRO		
2	SW2P-4A	C (BOP) C (SRO)	2P-4A Service water pump breaker trips		
3	XRCCHAPLVL	I (ATC) I (SRO)	'A' Pressurizer level channel fails High. Tech Spec for SRO		
4		R (ATC) N (BOP) N (SRO)	System Dispatcher call with a TLR to reduce power to ~ 850MWe within 30 min.		
5	CV10101	M (ALL)	'A' Steam Generator MSIV 2CV-1010-1 fails closed.		
6	MS1002Z SGAMSIVBEF	M (ALL)	'A' Steam Generator Safety valve 2PSV-1002 sticks open.		
7	CEA38STUCK CV48731 CVC2P39B	C (ATC) C (SRO)	Control Element Assembly #38 remains fully withdrawn when the reactor trips. The VCT outlet will not close and 2P-39B will trip when the reactor trips.		
8	ESFCCAS2	C (BOP) C (SRO)	Green train Containment coolers fail to automatically or manually actuate.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Facility: ANO-2		Scenario No.: 3 (Modified)		Op-Test No.: 2009-1	
Examiners:			Operators:		
_____			_____		
_____			_____		
Initial Conditions: ~60% MOL, Condenser outer waterboxes placed in service after tube plugging. All Engineered Safety Features systems are in standby. 2PCV-0231 jacked closed. RED Train Maintenance Week.					
Turnover: ~60% power Condenser outer waterboxes placed in service after tube plugging. 260 EFPD. EOOS indicates 'Minimal Risk'. 2PCV-0231 jacked closed, manually control seal steam pressure. RED Train Maintenance Week. The previous shift has completed steps 10.1.1 through 10.1.6 and section 10.2 of starting the second heater drain pump and 'B' Heater drain pump needs to be placed in service. 2 Condensate pumps are running with Condensate recirculation valves in manual.					
Event No.	Malf. No.	Event Type*	Event Description		
1	(New)	N (SRO) R (ATC)	Power escalation following a forced outage.		
2	(New)	N (BOP) N (SRO)	Place the 'B' Heater Drain pump in service.		
3	NIBLINEPWR (Modified)	I (BOP) I (SRO)	'B' channel nuclear instrument fails high. Tech Spec for SRO.		
4	XRCCHBPCNT (New)	I (ATC) I (SRO)	Pressurizer control channel pressure fails high.		
5	SGBTUBE (Modified)	M (ALL)	'B' Steam Generator tube leakage ramps up to 275 gpm over 25 minutes. Manual reactor trip criteria when greater than 44 gpm. Tech Spec for SRO		
6	RPSRXMAN RPSRXAUTO (New)	C (ATC) C (SRO)	Failure of the reactor protection system to automatically or manually trip the reactor.		
7	OP5130 OP5134 (New)	C (BOP) C (SRO)	Generator output breakers fail to open automatically		
8	CNDVACPPA CND2C5B	C (BOP) C (SRO)	2C-5A Vacuum pump trip 2C-5B Vacuum pump fails to auto start.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					