

Facility: Prairie Island		Date of Exam: 8/4/2014																
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 Evolutions	1	3	2	4	N/A			3	3	N/A			3	18	3	3	6	
	2	2	2	1				1	1				2	9	2	2	4	
	Tier Totals	5	4	5				4	4				5	27	5	5	10	
2. Plant Systems	1	4	2	3	2	3	2	1	3	2	3	3	28	3	2	5		
	2	1	1	1	1	1	0	1	1	1	1	1	10	2	0	3		
	Tier Totals	5	3	4	3	4	2	2	4	3	4	4	38	5	3	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7
					3		2		3		2			1	2	2	2	

Note:

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- 7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (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	#
000007 Reactor Trip - Stabilization - Recovery / 1 P8184L-004 100 (R01)					X		007 Reactor Trip EA2.03: Ability to determine or interpret the following as they apply to a reactor trip: Reactor trip breaker position	4.2	1
000008 Pressurizer Vapor Space Accident / 3 P8197L-012 222 (R02)						X	008 Pressurizer Vapor Space Accident 2.4.47: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	1
000009 Small Break LOCA / 3 P8197L-012 013 (R03)	X						009 Small Break LOCA EK1.01: Knowledge of the operational implications of the following concepts as they apply to the small break LOCA: Natural circulation and cooling, including reflux boiling	4.2	1
000011 Large Break LOCA / 3 P8180L-002 034 (R04)		X					011 Large Break LOCA EK2.02: Knowledge of the interrelations between the and the following Large Break LOCA: Pumps	2.6*	1
000015/17 RCP Malfunctions / 4 P8170L-002 064 (R05)			X				015/017 Reactor Coolant Pump (RCP) Malfunctions AK3.02: Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): CCW lineup and flow paths to RCP oil coolers	3.0	1
000022 Loss of Rx Coolant Makeup / 2 P8170L-002 092 (R06)				X			022 Loss of Reactor Coolant Makeup AA1.09: Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Makeup: RCP seal flows, temperatures, pressures, and vibrations	3.2	1
000025 Loss of RHR System / 4 P8197L-012 226 (R07)					X		025 Loss of Residual Heat Removal System (RHR) AA2.01: Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Proper amperage of running LPI/decay heat removal/RHR pump(s)	2.7	1
000026 Loss of Component Cooling Water / 8 P8172L-002 088 (R08)						X	026 Loss of Component Cooling Water 2.2.38: Knowledge of conditions and limitations in the facility license.	3.6	1
000027 Pressurizer Pressure Control System Malfunction / 3									
000029 ATWS / 1 P8197L-014 183 (R09)	X						029 Anticipated Transient Without Scram (ATWS) EK1.03: Knowledge of the operational implications of the following concepts as they apply to the ATWS: Effects of boron on reactivity	3.6	1
000038 Steam Gen. Tube Rupture / 3 P8197L-013 115 (R10)		X					038 Steam Generator Tube Rupture (SGTR) EK2.01: Knowledge of the interrelations between the and the following a SGTR: Valves Justification for K/A less than 2.5: The question used to meet this K/A requires RO knowledge of when to perform a RCS depressurization using pressurizer spray valves during a SGTR event. Based on past experience at Prairie Island, this knowledge is important to ROs.	2.2*	1

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W/E12 Steam Line Rupture - Excessive Heat Transfer / 4									
000054 Loss of Main Feedwater / 4 P8180L-007 110 (R11)			X				054 Loss of Main Feedwater (MFW) AK3.03: Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): Manual control of AFW flow control valves	3.8	1
000055 Station Blackout / 6 P8186L-005 036 (R12)				X			055 Loss of Offsite and Onsite Power (Station Blackout) EA1.04: Ability to operate and monitor the following as they apply to a Station Blackout: Reduction of loads on the battery	3.5	1
000056 Loss of Off-site Power / 6 P8186L-008 047 (R13)					X		056 Loss of Offsite Power AA2.54: Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Breaker position (remote and local)	2.9	1
000057 Loss of Vital AC Inst. Bus / 6 P8186L-015 026 (R14)						X	057 Loss of Vital AC Electrical Instrument Bus 2.1.30: Ability to locate and operate components, including local controls.	4.4	1
000058 Loss of DC Power / 6 P8186L-005 035 (R15)	X						058 Loss of DC Power AK1.01: Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: Battery charger equipment and instrumentation	2.8	1
000062 Loss of Nuclear Svc Water / 4									
000065 Loss of Instrument Air / 8 P8178L-005 012 (R16)			X				065 Loss of Instrument Air AK3.03: Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Knowing effects on plant operation of isolating certain equipment from instrument air.	2.9	1
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc. / 4									
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4 P8197L-014 190 (R17)			X				E05 Loss of Secondary Heat Sink EK3.2: Knowledge of the reasons for the following responses as they apply to the (Loss of Secondary Heat Sink): Normal, abnormal and emergency operating procedures associated with (Loss of Secondary Heat Sink).	3.7	1
000077 Generator Voltage and Electric Grid Disturbances / 6 P8186L-001 019 (R18)				X			077 Generator Voltage and Electric Grid Disturbances AA1.01: Ability to operate and/or monitor the following as they apply to Generator Voltage and Electric Grid Disturbances: Grid frequency and voltage	3.6	1
K/A Category Totals:	3	2	4	3	3	3	Group Point Total:		18

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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	#	
W/E15 Containment Flooding / 5 P8178L-002 027 (R24)			X				E15 Containment Flooding EK3.3: Knowledge of the reasons for the following responses as they apply to the (Containment Flooding): Manipulation of controls required to obtain desired operating results during abnormal and emergency situations.	2.9	1	
W/E16 High Containment Radiation / 9 P8180L-009 020 (R25)				X			E16 High Containment Radiation EA1.2: Ability to operate and / or monitor the following as they apply to the (High Containment Radiation): Operating behavior characteristics of the facility.	2.9	1	
W/E03 LOCA Cooldown - Depress. / 4 P8197L-012 135 (R26)					X		E03 LOCA Cooldown and Depressurization EA2.2: Ability to determine and interpret the following as they apply to the (LOCA Cooldown and Depressurization): Adherence to appropriate procedures and operation within the limitations in the Facility's license and amendments.	3.5	1	
W/E09 & E10 Natural Circ. / 4										
CE/A11; W/E08 RCS Overcooling - PTS / 4 P8197L-014 184 (R27)						X	E08 Pressurized Thermal Shock 2.4.9: Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies	3.8	1	
K/A Category Point Totals:	2	2	1	1	1	2	Group Point Total:		9	

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (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	#
003 Reactor Coolant Pump P8170L-002 091 (R28)										X		003 Reactor Coolant Pump System (RCPS) A4.02: Ability to manually operate and/or monitor in the control room: RCP motor parameters	2.9	1
004 Chemical and Volume Control P8172L-001A 045 (R29)						X						004 Chemical and Volume Control System (CVCS) K6.20: Knowledge of the effect of a loss or malfunction on the following CVCS components: Function of demineralizer, including boron loading and temperature limits	2.5	1
P8197L-010 052 (R30)											X	004 Chemical and Volume Control System (CVCS) 2.4.6: Knowledge of EOP mitigation strategies	3.7	1
005 Residual Heat Removal P8180L-003 059 (R31)	X											005 Residual Heat Removal System (RHRS) K1.08: Knowledge of the physical connections and/or cause effect relationships between the RHRS and the following systems: SWS	2.7	1
P8197L-006 014 (R32)					X							005 Residual Heat Removal System (RHRS) K5.05: Knowledge of the operational implications of the following concepts as they apply the RHRS: Plant response during "solid plant" pressure change due to the relative incompressibility of water	2.7*	1
006 Emergency Core Cooling P8180L-004 049 (R33)		X										006 Emergency Core Cooling System (ECCS) K2.01: Knowledge of bus power supplies to the following: ECCS pumps	3.6	1
007 Pressurizer Relief/Quench Tank P8170L-003 100 (R34)			X									007 Pressurizer Relief Tank/Quench Tank System (PRTS) K3.01: Knowledge of the effect that a loss or malfunction of the PRTS will have on the following: Containment	3.3	1
P8170L-003 115 (R35)								X				007 Pressurizer Relief Tank/Quench Tank System (PRTS) A2.02: Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Abnormal pressure in the PRT	2.6	1

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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	#	
008 Component Cooling Water P8172L-002 090 (R36)				X								008 Component Cooling Water System (CCWS) K4.01: Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: Automatic start of standby pump	3.1	1	
010 Pressurizer Pressure Control P8170L-005 063 (R37)			X									010 Pressurizer Pressure Control System (PZR PCS) K3.03: Knowledge of the effect that a loss or malfunction of the PZR PCS will have on the following: ESFAS	4.0	1	
P8197L-012 073 (R38)					X							010 Pressurizer Pressure Control System (PZR PCS) K5.02: Knowledge of the operational implications of the following concepts as they apply to the PZR PCS: Constant enthalpy expansion through a valve	2.6	1	
012 Reactor Protection P8184L-004 002 (R39)						X						012 Reactor Protection System K6.02: Knowledge of the effect of a loss or malfunction of the following will have on the RPS: Redundant channels	2.9	1	
013 Engineered Safety Features Actuation P8180L-006 079 (R40)							X					013 Engineered Safety Features Actuation System (ESFAS) A1.07: Ability to predict and/or monitor changes in parameters (to Prevent exceeding design limits) associated with operating the ESFAS controls including: Containment radiation	3.6	1	
022 Containment Cooling P8180L-009H 052 (R41)								X				022 Containment Cooling System (CCS) A2.05: 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: Major leak in CCS	3.1	1	
026 Containment Spray P8172L-002 040 (R42)	X											026 Containment Spray System (CSS) K1.02: Knowledge of the physical connections and/or cause effect relationships between the CSS and the following systems: Cooling water	4.1	1	
P8180L-002 006 (R43)									X			026 Containment Spray System (CSS) A3.01: Ability to monitor automatic operation of the CSS, including: Pump starts and correct MOV positioning	4.3	1	
039 Main and Reheat Steam P8174L-001 032 (R44)										X		039 Main and Reheat Steam System (MRSS) A4.01: Ability to manually operate and/or monitor in the control room: Main steam supply valves	2.9*	1	

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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	#
059 Main Feedwater P8174L-006 035 (R45)											X	059 Main Feedwater 2.4.35: Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	3.8	1
061 Auxiliary/Emergency Feedwater P8180L-007 037 (R46)	X											061 Auxiliary / Emergency Feedwater (AFW) System K1.03: Knowledge of the physical connections and/or cause effect relationships between the AFW and the following systems: Main steam system	3.5	1
062 AC Electrical Distribution P8186L-002 032 (R47)		X										062 A.C. Electrical Distribution K2.01: Knowledge of bus power supplies to the following: Major system loads	3.3	1
063 DC Electrical Distribution P8186L-005 012 (R48)			X									063 D.C. Electrical Distribution K3.02: Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: Components using DC control power	3.5	1
064 Emergency Diesel Generator P8186L-008 048 (R49)				X								064 Emergency Diesel Generators (ED/G) K4.11: Knowledge of ED/G system design feature(s) and/or interlock(s) which provide for the following: Automatic load sequencer: safeguards	3.5	1
073 Process Radiation Monitoring P8182L-002 053 (R50) P8182L-002 091 (R51)					X						X	073 Process Radiation Monitoring (PRM) System K5.01: Knowledge of the operational implications as they apply to concepts as they apply to the PRM system: Radiation theory, including sources, types, units, and effects 073 Process Radiation Monitoring (PRM) System A4.03: Ability to manually operate and/or monitor in the control room: Check source for operability demonstration	2.5 3.1	1 1
076 Service Water P8176L-003 071 (R52)								X				076 Service Water System (SWS) 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	2.7	1

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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	#
078 Instrument Air P8178L-005 045 (R53)	X											078 Instrument Air System (IAS) K1.03: Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: Containment Air	3.3*	1
P8178L-005 049 (R54)											X	078 Instrument Air System (IAS) 2.4.47: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	1
103 Containment P8180L-009F 006 (R55)									X			103 Containment System A3.01: Ability to monitor automatic operation of the containment system, including: Containment isolation	3.9	1
K/A Category Point Totals:	4	2	3	2	3	2	1	3	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	#
001 Control Rod Drive P8184L-005 035 (R56)								X				001 Control Rod Drive System A2.17: Ability to (a) predict the impacts of the following malfunction or operations on the CRDS- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Rod-misalignment alarm	3.3	1
002 Reactor Coolant														
011 Pressurizer Level Control														
014 Rod Position Indication														
015 Nuclear Instrumentation P8184L-002 104 (R57)									X			015 Nuclear Instrumentation System A3.04: Ability to monitor automatic operation of the NIS, including: Maximum disagreement allowed between channels	3.3	1
016 Non-nuclear Instrumentation P8184L-003 042 (R58)										X		016 Non-Nuclear Instrumentation System (NNIS) A4.02: Ability to manually operate and/or monitor in the control room: Recorders	2.7	1
017 In-core Temperature Monitor														
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control P8180L-001 032 (R59)	X											028 Hydrogen Recombiner and Purge Control System (HRPS) K1.01: Knowledge of the physical connections and/or cause effect relationships between the HRPS and the following systems: Containment annulus ventilation system (including pressure limits)	2.5*	1
029 Containment Purge														
033 Spent Fuel Pool Cooling P8182L-004 021 (R60)											X	033 Spent Fuel Pool Cooling System (SFPCS) 2.1.28 Knowledge of the purpose and function of major system components and controls.	4.1	1
034 Fuel Handling Equipment														
035 Steam Generator P8180L-006 084 (R61)			X									035 Steam Generator System (S/GS) K3.02: Knowledge of the effect that a loss or malfunction of the S/GS will have on the following: ECCS	4.0	1
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator P8176L-001 069 (R62)				X								045 Main Turbine Generator (MT/G) System K4.13: Knowledge of MT/G system design feature(s) and/or interlock(s) which provide for the following: Overspeed protection	2.6	1

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	#
055 Condenser Air Removal														
056 Condensate														
068 Liquid Radwaste														
071 Waste Gas Disposal														
072 Area Radiation Monitoring PI-OPS-GFE-044L 002 (R63)					X							072 Area Radiation Monitoring (ARM) System K5.02: Knowledge of the operational implications of the following concepts as they apply to the ARM system: Radiation intensity changes with source distance	2.5	1
075 Circulating Water P8176L-003 054 (R64)		X										075 Circulating Water System K2.03 Knowledge of bus power supplies to the following: Emergency/essential SWS pumps	2.6*	1
079 Station Air														
086 Fire Protection P8178L-002 024 (R65)							X					086 Fire Protection System (FPS) A1.01: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fire Protection System operating the controls including: Fire header pressure	2.9	1
K/A Category Point Totals:	1	1	1	1	1	0	1	1	1	1	1	Group Point Total:		10

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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	#
000007 Reactor Trip - Stabilization - Recovery / 1									
000008 Pressurizer Vapor Space Accident / 3									
000009 Small Break LOCA / 3									
000011 Large Break LOCA / 3									
000015/17 RCP Malfunctions / 4 P8170L-002 136 (S76)					X		015/017 Reactor Coolant Pump (RCP) Malfunctions AA2.10: Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): When to secure RCPs on loss of cooling or seal injection	3.7	1
000022 Loss of Rx Coolant Makeup / 2 P8172L-001A 133 (S77)						X	022 Loss of Reactor Coolant Makeup 2.4.8: Knowledge of how abnormal operating procedures are used in conjunction with EOPs	4.5	1
000025 Loss of RHR System / 4 P8180L-003 058 (S78)					X		025 Loss of Residual Heat Removal System (RHRS) AA2.07: Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Pump cavitation	3.7	1
000026 Loss of Component Cooling Water / 8									
000027 Pressurizer Pressure Control System Malfunction / 3									
000029 ATWS / 1									
000038 Steam Gen. Tube Rupture / 3									
W/E12 Steam Line Rupture - Excessive Heat Transfer / 4 P8197L-012 219 (S79)						X	E12 Uncontrolled Depressurization of all Steam Generators 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.	4.4	1
000054 Loss of Main Feedwater / 4									
000055 Station Blackout / 6 P8197L-011 105 (S80)					X		055 Loss of Offsite and Onsite Power (Station Blackout) EA2.03: Ability to determine or interpret the following as they apply to a Station Blackout: Actions necessary to restore power	4.7	1
000056 Loss of Off-site Power / 6									
000057 Loss of Vital AC Inst. Bus / 6									
000058 Loss of DC Power / 6									
000062 Loss of Nuclear Svc Water / 4									
000065 Loss of Instrument Air / 8									
W/E04 LOCA Outside Containment / 3 P8197L-011 017 (S81)						X	E04 LOCA Outside Containment 2.4.18: Knowledge of the specific bases for EOPs	4.0	1

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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	#
W/E11 Loss of Emergency Coolant Recirc. / 4									
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4									
000077 Generator Voltage and Electric Grid Disturbances / 6									
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	#	
000001 Continuous Rod Withdrawal / 1										
000003 Dropped Control Rod / 1										
000005 Inoperable/Stuck Control Rod / 1										
000024 Emergency Boration / 1										
000028 Pressurizer Level Malfunction / 2										
000032 Loss of Source Range NI / 7										
000033 Loss of Intermediate Range NI / 7										
000036 Fuel Handling Accident / 8 P8182L-003 030 (S82)						X	036 Fuel Handling Accident 2.4.4: Ability to recognize abnormal indications for system operating parameters that are entry level conditions for emergency and abnormal operating procedures.	4.7	1	
000037 Steam Generator Tube Leak / 3 P8171L-007 071 (S83)						X	037 Steam Generator (S/G) Tube Leak AA2.10: Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: Tech-Spec limits for RCS leakage	4.1	1	
000051 Loss of Condenser Vacuum / 4										
000059 Accidental Liquid RadWaste Rel. / 9 P8182L-002 001 (S84)						X	059 Accidental Liquid Radwaste Release 2.2.38: Knowledge of conditions and limitations in the facility license	4.5	1	
000060 Accidental Gaseous Radwaste Rel. / 9										
000061 ARM System Alarms / 7										
000067 Plant Fire On-site / 8										
000068 Control Room Evac. / 8										
W/E14 Loss of CTMT Integrity / 5										
W/E06 & E07 Inad. Core Cooling / 4										
000076 High Reactor Coolant Activity / 9										
W/E01 & E02 Rediagnosis & SI Termination / 3										
W/E13 Steam Generator Over-pressure / 4										
W/E15 Containment Flooding / 5										
W/E16 High Containment Radiation / 9										
W/E03 LOCA Cooldown - Depress. / 4 P8197L-012 225 (S85)						X	E03 LOCA Cooldown and Depressurization EA2.1: Ability to determine and interpret the following as they apply to the (LOCA Cooldown and Depressurization) Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.2	1	
W/E09 & E10 Natural Circ. / 4										
W/E08 RCS Overcooling - PTS / 4										
K/A Category Point Totals:					2	2	Group Point Total:		4	

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (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	#	
003 Reactor Coolant Pump P8197L-014 116 (S86)											X	003 Reactor Coolant Pump System (RCPS) 2.1.7: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation	4.7	1	
004 Chemical and Volume Control															
005 Residual Heat Removal															
006 Emergency Core Cooling P8180L-004 024 (S87)								X				006 Emergency Core Cooling System (ECCS) A2.13: 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: Inadvertent SIS actuation	4.2	1	
007 Pressurizer Relief/Quench Tank															
008 Component Cooling Water															
010 Pressurizer Pressure Control															
012 Reactor Protection															
013 Engineered Safety Features Actuation															
022 Containment Cooling P8180L-009H 048 (S88)											X	022 Containment Cooling System (CCS) 2.2.22: Knowledge of limiting conditions for operations and safety limits.	4.7	1	
026 Containment Spray															
039 Main and Reheat Steam P8182L-002 136 (S89)								X				039 Main and Reheat Steam System (MRSS) A2.03: Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Indications and alarms for main steam and area radiation monitors (during SGTR)	3.7	1	
059 Main Feedwater															
061 Auxiliary/Emergency Feedwater															
062 AC Electrical Distribution															
063 DC Electrical Distribution															
064 Emergency Diesel Generator															

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (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	#
073 Process Radiation Monitoring P8182L-002 137 (S90)								X				073 Process Radiation Monitoring (PRM) System A2.02: Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure	3.2	1
076 Service Water														
078 Instrument Air														
103 Containment														
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	#
001 Control Rod Drive														
002 Reactor Coolant														
011 Pressurizer Level Control P8170L-006 058 (S91)								X				011 Pressurizer Level Control System (PZR LCS) A2.03: Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of PZR level	3.9	1
014 Rod Position Indication														
015 Nuclear Instrumentation P8184L-002 081 (S92)											X	015 Nuclear Instrumentation 2.2.12 Knowledge of surveillance procedures.	4.1	1
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor														
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge														
033 Spent Fuel Pool Cooling														
034 Fuel Handling Equipment														
035 Steam Generator														
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator														
055 Condenser Air Removal														
056 Condensate														
068 Liquid Radwaste														
071 Waste Gas Disposal														
072 Area Radiation Monitoring P8182L-002 089 (S93)								X				072 Area Radiation Monitoring (ARM) System A2.01: Ability to (a) predict the impacts of the following malfunctions or operations on the ARM system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Erratic or failed power supply	2.9	1
075 Circulating Water														

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	#
079 Station Air														
086 Fire Protection														
K/A Category Point Totals:								2			1	Group Point Total:		3

Facility: Prairie Island		Date of Exam: 8/4/2014				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.3	Knowledge of shift or short-term relief turnover practices. P8140L-201 007 (R66)	3.7	1		
	2.1.18	Ability to make accurate, clear, and concise logs, records, status boards, and reports. PI-OPS-GFE-038L 020 (R67)	3.6	1		
	2.1.40	Knowledge of refueling administrative requirements. P8184L-002 070 (R68)	2.8	1		
	Subtotal			3		
2. Equipment Control	2.2.14	Knowledge of the process for controlling equipment configuration or status. P9150L-024 039 (R69)	3.9	1		
	2.2.40	Ability to apply Technical Specifications for a system. P8170L-001 020 (R70)	3.4	1		
	Subtotal			2		
3. Radiation Control						
	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. P9130L-003 017 (R71)	3.2	1		
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. P9130L-003 075 (R72)	3.4	1		
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. P8182L-002 088 (R73)	2.9	1		
	Subtotal			3		
4. Emergency Procedures / Plan	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions. P8197L-010 027 (R74)	3.7	1		
	2.4.23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations. P8197L-011 117 (R75)	3.4	1		
	Subtotal			2		
Tier 3 Point Total			Tier 3 Point Total	10		

Facility: Prairie Island		Date of Exam: 8/4/2014				
Category	K/A #	Topic	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. P8184L-002 103 (S94)			4.7	1
	Subtotal					1
2. Equipment Control	2.2.5	Knowledge of the process for making design or operating changes to the facility. P9150L-024 038 (S95)			3.2	1
	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. P7410L-002 048 (S96)			4.4	1
	Subtotal					2
3. Radiation Control	2.3.6	Ability to approve release permits. P8182L-001C 137 (S97)			3.8	1
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. P8197L-013 114 (S98)			3.8	1
	Subtotal					2
4. Emergency Procedures / Plan	2.4.19	Knowledge of EOP layout, symbols, and icons. P8197L-011 116 (S99)			4.1	1
	2.4.40	Knowledge of SRO responsibilities in emergency plan implementation. P9150L-011 003 (S100)			4.5	1
	Subtotal					2
Tier 3 Point Total			Tier 3 Point Total			7