

Facility Name: Point Beach Nuclear Plant														Date of Exam: December 3, 2012			
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	A 2	G *	Total	
1. Emergency & Abnormal Plant Evolutions	1	3	2	3	N/A			4	3	N/A			3	18	3	3	6
	2	2	2	2	N/A			1	1	N/A			1	9	2	2	4
	Tier Totals	5	4	5	N/A			5	4	N/A			4	27	5	5	10
2. Plant Systems	1	3	3	3	3	2	2	3	3	2	2	2	28	2	3	5	
	2	1	1	1	1	1	0	1	1	1	1	1	10	0	1	2	3
	Tier Totals	4	4	4	4	3	2	4	4	3	3	3	38	3	5	8	
3. Generic Knowledge and Abilities Categories								1	2	3	4	10	1	2	3	4	7
								2	3	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 that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- 7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	PWR Examination Outline							Form ES-401-2		
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)										
Q#	E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
1	000007 Reactor Trip - Stabilization - Recovery / 1		0 2					Breakers, relays and disconnects	2.6	1
2	000008 Pressurizer Vapor Space Accident / 3				0 6			Control of PZR level	3.6	1
	000009 Small Break LOCA / 3									0
	000011 Large Break LOCA / 3									0
	000015 RCP Malfunctions / 4									0
	000017 RCP Malfunctions (Loss of RC Flow) / 4									0
	000022 Loss of Rx Coolant Makeup / 2									0
	000025 Loss of RHR System / 4									0
3	000026 Loss of Component Cooling Water / 8			0 3				Guidance actions contained in EOP for Loss of CCW	4	1
4	000027 Pressurizer Pressure Control System Malfunction / 3				0 4			Pressure recovery, using emergency-only heaters	3.9	1
5	000029 ATWS / 1					0 1		Reactor nuclear instrumentation	4.4	1
6	000038 Steam Gen. Tube Rupture / 3						02. 38	Knowledge of conditions and limitations in the facility license.	3.6	1
	000040 Steam Line Rupture - Excessive Heat Transfer / 4									1
7	WE12 Uncontrolled Depressurization of all Steam Generators / 4	0 1						Components, capacity, and function of emergency systems	3.4	1
8	000054 (CE/E06) Loss of Main Feedwater / 4			0 2				Matching of feedwater and steam flows	3.4	1
9	000055 Station Blackout / 6				0 7			Restoration of power from offsite	4.3	1
10	000056 Loss of Off-site Power / 6					0 5		Operational status of HVAC chill water pump	2.6	1
11	000057 Loss of Vital AC Inst. Bus / 6						04. 04	Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures	4.5	1
12	000058 Loss of DC Power / 6	0 1						Battery charger equipment and instrumentation	2.8	1
13	000062 Loss of Nuclear Svc Water / 4			0 2				The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS	3.6	1
14	000065 Loss of Instrument Air / 8				0 3			Restoration of systems served by instrument air when pressure is regained	2.9	1
15	W/E04 LOCA Outside Containment / 3					0 1		Facility conditions and selection of appropriate procedures during abnormal and emergency operations	3.4	1
16	W/E11 Loss of Emergency Coolant Recirc. / 4						02. 37	Ability to determine operability and/or availability of safety related equipment.	3.6	1
17	BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	0 1						Components, capacity, and function of emergency systems	3.8	1
18	000077 Generator Voltage and Electric Grid Disturbances / 6		0 3					Sensors, detectors, indicators	3.0	1
K/A Category Totals:		3	2	3	4	3	3	Group Point Total:	18	

ES-401		PWR Examination Outline						Form ES-401-2		
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)										
Q#	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									0
19	000003 Dropped Control Rod / 1			07				Tech-Spec limits for T-ave	3.8	1
	000005 Inoperable/Stuck Control Rod / 1									0
	000024 Emergency Boration / 1									0
20	000028 Pressurizer Level Malfunction / 2				03			RCP and seal water system	2.9	1
21	000032 Loss of Source Range NI / 7					05		Nature of abnormality, from rapid survey of control room data	2.9	1
22	000033 Loss of Intermediate Range NI / 7						04. 45	Ability to prioritize and interpret the significance of each annunciator or alarm.	4.1	1
	000036 Fuel Handling Accident / 8									0
23	000037 Steam Generator Tube Leak / 3	01						Use of steam tables	2.9	1
	000051 Loss of Condenser Vacuum / 4									0
	000059 Accidental Liquid RadWaste Rel. / 9									0
	000060 Accidental Gaseous Radwaste Rel. / 9									0
24	000061 ARM System Alarms / 7		01					Detectors at each ARM system location	2.5	1
	000067 Plant Fire On-site / 8									0
	000068 Control Room Evac. / 8									0
	000069 Loss of CTMT Integrity / 5									1
25	W/E14 High Containment Pressure / 5			04				RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated	3.3	1
	000074 Inad. Core Cooling / 4									0
	W/E06 Degraded Core Cooling / 4									0
	W/E07 Saturated Core Cooling / 4									0
	000076 High Reactor Coolant Activity / 9									0
	W/E01 Rediagnosis / 3									0
	W/E02 SI Termination / 3									0
	W/E13 Steam Generator Over-pressure / 4									0
26	W/E15 Containment Flooding / 5	01						Components, capacity, and function of emergency systems	2.8	1
27	W/E16 High Containment Radiation / 9		02					Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	2.6	1
	W/E03 LOCA Cooldown - Depress. / 4									0
	W/E09 Natural Circulation Operations / 4									0
	W/E10 Natural Circulation with Steam Voide in Vessel with/without RVLIS. / 4									0
	W/E08 RCS Overcooling - PTS / 4									0
K/A Category Totals:		2	2	2	1	1	1	Group Point Total:		9

ES-401		PWR Examination Outline											Form ES-401-2		
Plant Systems - Tier 2/Group 1 (RO)															
Q#	System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
28	003 Reactor Coolant Pump					04							Effects of RCP shutdown on secondary parameters, such as steam pressure, steam flow, and feed flow	3.2	1
29	004 Chemical and Volume Control						20						Function of demineralizer, including boron loading and temperature limits	2.5	1
30	005 Residual Heat Removal							02					RHR flow rate	3.3	1
31	006 Emergency Core Cooling								08				Effect of electric power loss on valve position	3	1
32	007 Pressurizer Relief/Quench Tank									01			Components which discharge to the PRT	2.7	1
33	008 Component Cooling Water										02		Filling and draining operations of the CCWS including the proper venting of the components	2.5	1
34	010 Pressurizer Pressure Control											01.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	1
35	012 Reactor Protection	08											MFW	2.9	1
36	013 Engineered Safety Features Actuation		01										ESFAS/safeguards equipment control	3.6	1
37	022 Containment Cooling			02									Containment instrumentation readings	3	1
	025 Ice Condenser														0
38	026 Containment Spray				01								Source of water for CSS, including recirculation phase after LOCA	4.2	1
39,40	039 Main and Reheat Steam	01				05							S/G; Bases for RCS cooldown limits	3.1; 2.7	2
41,42	059 Main Feedwater			04				03					RCS; Power level restrictions for operation of MFW pumps and valves	3.6; 2.7	2
43,44	061 Auxiliary/Emergency Feedwater				09				07				Cross-ties between multi-unit station; Air or MOV failure	3.7; 3.4	2
45,46	062 AC Electrical Distribution							01		05			Significance of D/G load limits; Safety-related indicators and controls	3.4; 3.5	2
47,48	063 DC Electrical Distribution		01									03	Major DC loads; Battery discharge rate	2.9; 3	2
49,50	064 Emergency Diesel Generator						08					04.30	Fuel oil storage tanks; Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	3.2; 2.7	2
51,52	073 Process Radiation Monitoring	01							02				Those systems served by PRMs; Detector failure	3.6; 2.7	2
53	076 Service Water		04										Reactor building closed cooling water	2.5	1
54	078 Instrument Air			02									Systems having pneumatic valves and controls	3.4	1
55	103 Containment				06								Containment isolation system	3.1	1
															0
K/A Category Totals:		3	3	3	3	2	2	3	3	2	2	2	Group Point Total:	28	

ES-401		PWR Examination Outline											Form ES-401-2		
Plant Systems - Tier 2/Group 2 (RO)															
Q#	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	#
56	001 Control Rod Drive		0 1										One-line diagram of power supply to M/G sets	3.5	1
	002 Reactor Coolant														0
	011 Pressurizer Level Control														0
57	014 Rod Position Indication	0 2											NIS	3	1
	015 Nuclear Instrumentation														0
58	016 Non-nuclear Instrumentation				0 3								Input to control systems	2.8	1
	017 In-core Temperature Monitor														0
	027 Containment Iodine Removal														0
	028 Hydrogen Recombiner and Purge Control														0
59	029 Containment Purge						0 3						Containment pressure, temperature, and humidity	3	1
	033 Spent Fuel Pool Cooling														0
	034 Fuel Handling Equipment														0
60	035 Steam Generator				0 3								Shrink and swell concept	2.8	1
	041 Steam Dump/Turbine Bypass Control														0
	045 Main Turbine Generator														0
61	055 Condenser Air Removal		0 1										Main condenser	2.5	1
	056 Condensate														0
62	068 Liquid Radwaste							0 2					Lack of tank recirculation prior to release	2.7	1
	071 Waste Gas Disposal														0
63	072 Area Radiation Monitoring								0 1				Changes in ventilation alignment	2.9	1
	075 Circulating Water														0
64	079 Station Air										0 1		Cross-tie valves with IAS	2.7	1
65	086 Fire Protection										04. 35		Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	3.8	1
K/A Category Totals:		1	1	1	1	1	0	1	1	1	1	1	Group Point Total:	10	

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Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)										
Q#	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									0
	000008 Pressurizer Vapor Space Accident / 3									0
	000009 Small Break LOCA / 3									0
	000011 Large Break LOCA / 3									0
	000015 RCP Malfunctions / 4									0
	000017 RCP Malfunctions (Loss of RC Flow) / 4									0
	000022 Loss of Rx Coolant Makeup / 2									0
	000025 Loss of RHR System / 4									0
76	000026 Loss of Component Cooling Water / 8					0 2		The cause of possible CCW loss	3.6	1
	000027 Pressurizer Pressure Control System Malfunction / 3									0
77	000029 ATWS / 1						04. 09	Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies	4.2	1
78	000038 Steam Gen. Tube Rupture / 3					0 7		Plant conditions, from survey of control room indications	4.8	1
	000040 Steam Line Rupture - Excessive Heat Transfer / 4									0
	WE12 Uncontrolled Depressurization of all Steam Generators / 4									0
79	000054 (CE/E06) Loss of Main Feedwater / 4						02. 40	Ability to apply Technical Specifications for a system.	4.7	1
	000055 Station Blackout / 6									0
80	000056 Loss of Off-site Power / 6					2 1		ED/G frequency and voltage indicators	3.8	1
	000057 Loss of Vital AC Inst. Bus / 6									0
81	000058 Loss of DC Power / 6						01. 32	Ability to explain and apply system limits and precautions.	4	1
	000062 Loss of Nuclear Svc Water / 4									0
	000065 Loss of Instrument Air / 8									0
	W/E04 LOCA Outside Containment / 3									0
	W/E11 Loss of Emergency Coolant Recirc. / 4									0
	BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4									0
	000077 Generator Voltage and Electric Grid Disturbances / 6									0
K/A Category Totals:		0	0	0	0	3	3	Group Point Total:		6

ES-401		PWR Examination Outline						Form ES-401-2		
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)										
Q#	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									0
	000003 Dropped Control Rod / 1									0
82	000005 Inoperable/Stuck Control Rod / 1					03		Required actions if more than one rod is stuck or inoperable	4.4	1
	000024 Emergency Boration / 1									0
	000028 Pressurizer Level Malfunction / 2									0
	000032 Loss of Source Range NI / 7									0
	000033 Loss of Intermediate Range NI / 7									0
	000036 Fuel Handling Accident / 8									0
	000037 Steam Generator Tube Leak / 3									0
	000051 Loss of Condenser Vacuum / 4									0
	000059 Accidental Liquid RadWaste Rel. / 9									0
83	000060 Accidental Gaseous Radwaste Rel. / 9						04. 18	Knowledge of the specific bases for EOPs.	4	1
	000061 ARM System Alarms / 7									0
84	000067 Plant Fire On-site / 8					13		Need for emergency plant shutdown	4.4	1
	000068 Control Room Evac. / 8									0
	000069 Loss of CTMT Integrity / 5									0
	W/E14 High Containment Pressure / 5									0
	000074 Inad. Core Cooling / 4									0
	W/E06 Degraded Core Cooling / 4									0
	W/E07 Saturated Core Cooling / 4									0
	000076 High Reactor Coolant Activity / 9									0
	W/E01 Rediagnosis / 3									0
	W/E02 SI Termination / 3									0
85	W/E13 Steam Generator Over-pressure / 4						04. 47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	1
	W/E15 Containment Flooding / 5									0
	W/E16 High Containment Radiation / 9									0
	W/E03 LOCA Cooldown - Depress. / 4									0
	W/E09 Natural Circulation Operations / 4									0
	W/E10 Natural Circulation with Steam Voide in Vessel with/without RVLIS. / 4									0
	W/E08 RCS Overcooling - PTS / 4									0
K/A Category Totals:		0	0	0	0	2	2	Group Point Total:		4

ES-401		PWR Examination Outline											Form ES-401-2		
Plant Systems - Tier 2/Group 1 (SRO)															
Q#	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														0
	004 Chemical and Volume Control														0
	005 Residual Heat Removal														0
	006 Emergency Core Cooling														0
88	007 Pressurizer Relief/Quench Tank								0 3				Overpressurization of the PZR	3.9	1
	008 Component Cooling Water														0
	010 Pressurizer Pressure Control														0
	012 Reactor Protection														0
86	013 Engineered Safety Features Actuation								0 1				LOCA	4.8	1
	022 Containment Cooling														0
	025 Ice Condenser														0
	026 Containment Spray														0
87	039 Main and Reheat Steam											02. 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	4.4	1
	059 Main Feedwater														0
	061 Auxiliary/Emergency Feedwater														0
	062 AC Electrical Distribution														0
	063 DC Electrical Distribution														0
	064 Emergency Diesel Generator														0
	073 Process Radiation Monitoring														0
89	076 Service Water											04. 46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	1
	078 Instrument Air														0
90	103 Containment											04. 06	Knowledge of EOP mitigation strategies.	4.7	1
															0
K/A Category Totals:		0	0	0	0	0	0	0	2	0	0	3	Group Point Total:		5

ES-401		PWR Examination Outline											Form ES-401-2		
Plant Systems - Tier 2/Group 2 (SRO)															
Q#	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	#
91	001 Control Rod Drive								1				Urgent failure alarm, including rod-out-of-sequence and motion-inhibit alarms	3.9	1
	002 Reactor Coolant														0
	011 Pressurizer Level Control														0
	014 Rod Position Indication														0
	015 Nuclear Instrumentation														0
	016 Non-nuclear Instrumentation														0
	017 In-core Temperature Monitor														0
92	027 Containment Iodine Removal											02.25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	1
	028 Hydrogen Recombiner and Purge Control														0
	029 Containment Purge														0
	033 Spent Fuel Pool Cooling														0
	034 Fuel Handling Equipment														0
	035 Steam Generator														0
	041 Steam Dump/Turbine Bypass Control														0
	045 Main Turbine Generator														0
	055 Condenser Air Removal														0
93	056 Condensate											01.07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	1
	068 Liquid Radwaste														0
	071 Waste Gas Disposal														0
	072 Area Radiation Monitoring														0
	075 Circulating Water														0
	079 Station Air														0
	086 Fire Protection														0
K/A Category Totals:		0	0	0	0	0	0	0	1	0	0	2	Group Point Total:	3	

Facility Name: Point Beach Nuclear Plant Date of Exam: December 3, 2012							
Q#	Category	K/A #	Topic	RO		SRO-Only	
				IR	#	IR	#
66	1. Conduct of Operations	2.1. 06	Ability to manage the control room crew during plant transients.	3.8	1		
67		2.1. 26	Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen).	3.4	1		
94		2.1. 35	Knowledge of the fuel-handling responsibilities of SROs.			3.9	1
		2.1.					
		2.1.					
		2.1.					
	Subtotal				2		1
68	2. Equipment Control	2.2. 17	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.	2.6	1		
69		2.2. 21	Knowledge of pre- and post-maintenance operability requirements.	2.9	1		
70		2.2. 41	Ability to obtain and interpret station electrical and mechanical drawings.	3.5	1		
95		2.2. 07	Knowledge of the process for conducting special or infrequent tests.			3.6	1
96		2.2. 35	Ability to determine Technical Specification Mode of Operation.			4.5	1
		2.2.					
	Subtotal				3		2
71	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.	3.2	1		
72		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.	3.4	1		
73		2.3. 14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4	1		
97		2.3. 04	Knowledge of radiation exposure limits under normal or emergency conditions.			3.7	1
98		2.3. 11	Ability to control radiation releases.			4.3	1
		2.3.					
	Subtotal				3		2
74	4. Emergency Procedures / Plan	2.4. 34	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	4.2	1		
75		2.4. 41	Knowledge of the emergency action level thresholds and classifications.	2.9	1		
99		2.4. 08	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.			4.5	1
100		2.4. 22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.			4.4	1
		2.4.					
		2.4.					
	Subtotal				2		2
Tier 3 Point Total					10		7