RO Exam

ES-401 **PWR Examination Outline** **Form ES-401-2**

Facility: Turkey Point Date of Exam: December 2011

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	3	3	N/A			3	3	N/A		3	18			6
	2	1	1	2				2	1			2	9			4
	Tier Totals	4	4	5				5	4			5	27			10
2. Plant Systems	1	3	2	3	3	2	3	3	2	3	2	2	28			5
	2	0	0	1	1	1	1	1	1	1	2	1	10			3
	Tier Totals	3	2	4	4	3	4	4	3	4	4	3	38			8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7
		3			2			2			3							

Note:

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

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / 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	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1	X						EK1.06	3.7	
000008 Pressurizer Vapor Space Accident / 3				X			AA1.03	2.8	
000009 Small Break LOCA / 3			X				EK3.20	3.5	
000011 Large Break LOCA / 3					X		EA2.10	4.5	
000015/17 RCP Malfunctions / 4			X				AK3.05 (rejected)	2.8	
000022 Loss of Rx Coolant Makeup / 2	X						AK1.01	2.8	
000025 Loss of RHR System / 4				X			AA1.02	3.8	
000026 Loss of Component Cooling Water / 8									
000027 Pressurizer Pressure Control System Malfunction / 3		X					AK2.03	2.6	
000029 ATWS / 1		X					EK2.06	2.9	
000038 Steam Gen. Tube Rupture / 3	X						EK1.02	3.2	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4						X	AG2.1.30	4.4	
000054 (CE/E06) Loss of Main Feedwater / 4			X				AK3.02	3.4	
000055 Station Blackout / 6					X		EA2.03	3.9	
000056 Loss of Off-site Power / 6					X		AA2.54	2.9	
000057 Loss of Vital AC Inst. Bus / 6						X	AG2.4.50	4.2	
000058 Loss of DC Power / 6									
000062 Loss of Nuclear Svc Water / 4				X			AA1.03	3.6	
000065 Loss of Instrument Air / 8						X	AG2.4.21	4.0	
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc. / 4									
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		X					EK2.1	3.7	
000077 Generator Voltage and Electric Grid Disturbances / 6									
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18/6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO) 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	X						AK1.02	3.1	
000005 Inoperable/Stuck Control Rod / 1					X		AA2.03	3.5	
000024 Emergency Boration / 1						X	AG 2.2.42	3.9	
000028 Pressurizer Level Malfunction / 2									
000032 Loss of Source Range NI / 7			X				AK3.01	3.2	
000033 Loss of Intermediate Range NI / 7				X			AA1.01	2.9	
000036 (BW/A08) Fuel Handling Accident / 8									
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4									
000059 Accidental Liquid RadWaste Rel. / 9									
000060 Accidental Gaseous Radwaste Rel. / 9									
000061 ARM System Alarms / 7		X					AK2.01	2.5	
000067 Plant Fire On-site / 8						X	AG2.1.30	4.4	
000068 (BW/A06) Control Room Evac. / 8									
000069 (W/E14) Loss of CTMT Integrity / 5									
000074 (W/E06&E07) Inad. Core Cooling / 4									
000076 High Reactor Coolant Activity / 9									
W/EO1 & E02 Rediagnosis & SI Termination / 3									
W/E13 Steam Generator Over-pressure / 4				X			EA1, 2	3.0	
W/E15 Containment Flooding / 5									
W/E16 High Containment Radiation / 9			X				EK3.2	2.9	
BW/A01 Plant Runback / 1									
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4									
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4									
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4									
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:	1	1	2	2	1	2	Group Point Total:	(9)/4	

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO) 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									X			A3.01	3.3	
004 Chemical and Volume Control							X	X				A1.07, A2.23	2.7 2.6	
005 Residual Heat Removal						X						K6.03	2.5	
006 Emergency Core Cooling			X									K3.02	4.3	
007 Pressurizer Relief/Quench Tank			X									K3.01	3.3	
008 Component Cooling Water				X								K4.02	2.9	
010 Pressurizer Pressure Control						X						K6.01, K6.03	2.7 3.2	
012 Reactor Protection				X	X							K4.02, K5.01	3.9 3.3	
013 Engineered Safety Features Actuation		X							X			A3.01, K2.01	3.7 3.6	
022 Containment Cooling	X											K1.01	3.5	
025 Ice Condenser — N/A —												— N/A —	—	—
026 Containment Spray							X		X			A1.02, A3.02	3.6 3.9	
039 Main and Reheat Steam				X								K4.05	3.7	
059 Main Feedwater										X		A4.11	3.1	
061 Auxiliary/Emergency Feedwater					X							K5.01	3.6	
062 AC Electrical Distribution		X									X	K2.01, G2.2.37	3.3 3.6	
063 DC Electrical Distribution	X		X									K1.03, K3.02	2.9 3.5	
064 Emergency Diesel Generator								X				A2.07	2.5	
073 Process Radiation Monitoring							X					A1.01	3.2	
076 Service Water											X	G2.2.12	3.7	
078 Instrument Air										X		A4.01	3.1	
103 Containment	X											K1.02	3.9	
K/A Category Point Totals:	3	2	3	3	2	3	3	2	3	2	2	Group Point Total:	28/5	

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / 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					X							K5.11	4.0	
011 Pressurizer Level Control														
014 Rod Position Indication										X		A4.01	3.3	
015 Nuclear Instrumentation														
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor				X								K4.01	3.4	
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge			X									K3.02	2.9	
033 Spent Fuel Pool Cooling									X			A3.01 (rejected)	2.5	
034 Fuel Handling Equipment														
035 Steam Generator						X						K6.01	3.2	
041 Steam Dump/Turbine Bypass Control										X		A4.04	2.7	
045 Main Turbine Generator							X					A1.05	3.8	
055 Condenser Air Removal											X	G 2.2.3 (rejected)	3.8	
056 Condensate														
068 Liquid Radwaste								X				A2.02	2.7	
071 Waste Gas Disposal														
072 Area Radiation Monitoring														
075 Circulating Water														
079 Station Air														
086 Fire Protection														
K/A Category Point Totals:	0	0	1	1	1	1	1	1	1	2	1	Group Point Total:		10/3

RO

ES-401 **Generic Knowledge and Abilities Outline (Tier 3)** **Form ES-401-3**

Facility: Date of Exam:

Category	K/A #	Topic	RO IR	RO #	SRO-Only IR	SRO-Only #
1. Conduct of Operations	2.1.15	Temporary mgmt directives	2.7			
	2.1.27	System purpose / function	3.9			
	2.1.28	purpose/function major sys comp/ctls	4.1			
	2.1.					
	2.1.					
	2.1.					
	Subtotal		3			
2. Equipment Control	2.2.22	LCOs and safety limits	4.0			
	2.2.43	Track inoperable alarms	3.0			
	2.2.					
	2.2.					
	2.2.					
	2.2.					
	Subtotal		2			
3. Radiation Control	2.3.11	Control rad releases	3.8			
	2.3.12	Rad safety principles: licensed operator	3.2			
	2.3.					
	2.3.					
	2.3.					
	2.3.					
	Subtotal		2			
4. Emergency Procedures / Plan	2.4.22	Bases for prioritization	3.6			
	2.4.3	Ability to identify PAM Instr.	3.7			
	2.4.9	Low Power/Shutdown implications	3.8			
	2.4.					
	2.4.					
	2.4.					
	Subtotal		3			
Tier 3 Point Total			10	10		7

SRO Exam

ES-401 **PWR Examination Outline** **Form ES-401-2**

Facility: Turkey Point Date of Exam: December 2011

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				N/A					N/A			18	3	3	6
	2												9	2	2	4
	Tier Totals												27	5	5	10
2. Plant Systems	1												28	3	2	5
	2												10	0 2	1	3
	Tier Totals												38	5	3	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7
														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 / 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	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1									
000008 Pressurizer Vapor Space Accident / 3					X		AA2.30	4.7	
000009 Small Break LOCA / 3									
000011 Large Break LOCA / 3						X	EG2.4.9	~~3.8~~ 4.2	
000015/17 RCP Malfunctions / 4									
000022 Loss of Rx Coolant Makeup / 2									
000025 Loss of RHR System / 4						X	AG2.4.21	4.6	
000026 Loss of Component Cooling Water / 8									
000027 Pressurizer Pressure Control System Malfunction / 3									
000029 ATWS / 1									
000038 Steam Gen. Tube Rupture / 3									
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4									
000054 (CE/E06) Loss of Main Feedwater / 4									
000055 Station Blackout / 6									
000056 Loss of Off-site Power / 6					X		AA2.53	3.2	
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						X	AG2.2.4 (rejected)	3.6	
W/E04 LOCA Outside Containment / 3					X		EA2.1	4.3	
W/E11 Loss of Emergency Coolant Recirc. / 4									
BW/E04; 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:		~~4~~ 6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / 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					X		AA2.05	4.6	
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 (BW/A08) Fuel Handling Accident / 8									
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4									
000059 Accidental Liquid RadWaste Rel. / 9									
000060 Accidental Gaseous Radwaste Rel. / 9									
000061 ARM System Alarms / 7									
000067 Plant Fire On-site / 8									
000068 (BW/A06) Control Room Evac. / 8									
000069 (W/E14) Loss of CTMT Integrity / 5						X	AG2.4.41	4.6	
000074 (W/E06&E07) Inad. Core Cooling / 4									
000076 High Reactor Coolant Activity / 9						X	AG2.4.31	4.1	
W/EO1 & E02 Rediagnosis & SI Termination / 3									
W/E13 Steam Generator Over-pressure / 4									
W/E15 Containment Flooding / 5									
W/E16 High Containment Radiation / 9									
BW/A01 Plant Runback / 1									
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4					X		EA2.2	4.1	
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4									
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4									
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:					2	2	Group Point Total:		9/4

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / 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								X				A2.03	3.1	
004 Chemical and Volume Control														
005 Residual Heat Removal											X	G2.2.4 (rejected)	3.6	
006 Emergency Core Cooling														
007 Pressurizer Relief/Quench Tank														
008 Component Cooling Water														
010 Pressurizer Pressure Control														
012 Reactor Protection														
013 Engineered Safety Features Actuation														
022 Containment Cooling														
025 Ice Condenser														
026 Containment Spray														
039 Main and Reheat Steam														
059 Main Feedwater														
061 Auxiliary/Emergency Feedwater														
062 AC Electrical Distribution											X	G2.2.22	4.7	
063 DC Electrical Distribution														
064 Emergency Diesel Generator														
073 Process Radiation Monitoring								X				A2.02	3.2	
076 Service Water								X				A2.01	3.7	
078 Instrument Air														
103 Containment														
K/A Category Point Totals:								3			2	Group Point Total:		28/5

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / 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														
014 Rod Position Indication														
015 Nuclear Instrumentation														
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor														
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control								X				A2.02 (rejected)	3.9	
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								X				A2.03 (rejected)	2.6	
071 Waste Gas Disposal											X	G2.4.3 (rejected)	3.9	
072 Area Radiation Monitoring														
075 Circulating Water														
079 Station Air														
086 Fire Protection														
K/A Category Point Totals:								2			1	Group Point Total:		~~10~~ 6

SRO

ES-401 **Generic Knowledge and Abilities Outline (Tier 3)** **Form ES-401-3**

Facility: Date of Exam:

Category	K/A #	Topic	RO IR	RO #	SRO-Only IR	SRO-Only #
1. Conduct of Operations	2.1.36	Procedures/Limitations in Core Alts			4.1	
	2.1.					
	2.1.					
	2.1.					
	2.1.					
	2.1.					
	Subtotal				(1)	
2. Equipment Control	2.2.35	Tech Spec Mode of Operation			4.5	
	2.2.7	Special or Infrequent Tests			3.6	
	2.2.					
	2.2.					
	2.2.					
	2.2.					
	Subtotal				(2)	
3. Radiation Control	2.3.5	Rad Mon'g Systems			2.9	
	2.3.4	Rad Exposure Limits			3.7	
	2.3.					
	2.3.					
	2.3.					
	2.3.					
	Subtotal				(2)	
4. Emergency Procedures / Plan	2.4.29	E-plan Knowledge			4.4	
	2.4.40	SRO responsibilities in E-plan			4.5	
	2.4.					
	2.4.					
	2.4.					
	2.4.					
	Subtotal				(2)	
Tier 3 Point Total				10	(7)	7

Facility: **Turkey Point Units 3 & 4** Date of Examination: **12/05/2011**

Examination Level: **RO** ☑ **SRO** ☐ Operating Test Number: **2011-302**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A.1.a Conduct of Operations	M, R	Perform a Dilution Calculation for a Unit Power Change from 80-100% 2.1.25 RO 3.9 SRO 4.2
A.1.b Conduct of Operations	D, R	Perform a 1/M Plot During a Reactor Startup 2.1.23 RO 4.3 SRO 4.4
A.2 Equipment Control	N, R	Prepare an ECO for the 3A Component Cooling Water Pump 2.2.13 RO 4.1 SRO 4.3
A.3 Radiation Control	N/A	N/A
A.4 Emergency Procedures/Plan	M, R	Complete a Florida Nuclear Plant Emergency Notification Form F-439 2.4.39 RO 3.9 SRO 3.8

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)

Rec'd 8/29/11

HISTORY

A.1.a: Selected, then modified, from the GRP-25 NRC exam on 2/23/2009.

A.1.b: Selected from the GRP-22 NRC exam.

A.2: NEW JPM. GRP-22, 23, and 26 NRC exams had an ECO for the same Charging Pump.

A.4: Selected from the GRP-24 NRC Exam. This is a "partially common" JPM, but by modifying to make this a different EAL than was used on the GRP-26 NRC exam. RO only completes the SNF. The SRO classifies and completes SNF.

2011 TURKEY POINT ADMIN JPM SUMMARY

A.1.a - Calculate the Dilution Required for Unit 4 Power Change from 80-100%: Given a set of Unit 4 plant conditions, the applicant use the Unit 4 Curve Book and 0-OP-046, CVCS – Boron Concentration Control, to calculate the dilution required for Unit 4 power change from 80-100%. MODIFIED BANK JPM - 01028022100 (used on the 2009 PTN NRC Exam). The initial conditions (core burnup, initial boron concentration, initial rod height, and initial power level) were modified. [2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.]

A.1.b - Perform 1/M Plot During Reactor Startup: The applicant uses 3-GOP-301, Hot Standby to Power Operation, Attachment 1, Inverse Count Rate Data and Plot Sheet, to predict critical rod position for a Reactor Startup. BANK JPM - 01028022100 [2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.]

A.2 - Prepare an ECO for the 3A Component Cooling Water Pump: The applicant use 0-ADM-212, In-Plant Equipment Clearance Orders and 0-ADM-212.1, Operations In-Plant Equipment Clearance Orders, plant drawings, and other procedures to prepare the clearance. NEW JPM. [2.2.13 - Knowledge of tagging and clearance procedures.]

A.3 - NOT SELECTED

A.4 - Complete a Florida Nuclear Plant Emergency Notification Form F-439: The applicant use 0-EPIP-20134, Offsite Notifications and Protective Action Recommendations, to complete a Florida Nuclear Plant Emergency Notification Form F-439. MODIFIED BANK JPM – 1001013400 [2.4.39 - Knowledge of RO responsibilities in emergency plan implementation.]

Facility: **Turkey Point Units 3 & 4** Date of Examination: **12/05/2011**

Examination Level: **RO** ☐ **SRO** ☑ Operating Test Number: **2011-302**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A.1.a Conduct of Operations	M, R	Review a Calculation for the Number of Gallons of Primary Water Required to Raise Power from 80% to 100% 2.1.25 RO 3.9 SRO 4.2
A.1.b Conduct of Operations	M, R	Evaluate Overtime Requirements 2.1.5 RO 2.9 SRO 3.9
A.2 Equipment Control	N, R	Review an ECO for the 3A Component Cooling Water Pump 2.2.13 RO 4.1 SRO 4.3
A.3 Radiation Control	M, R	Determine Dose Rates and Radiological Requirements From a Survey Map 2.3.7 RO 3.5 SRO 3.6
A.4 Emergency Procedures/Plan	M, R	Given a set of conditions, determine the EAL and complete the Florida Nuclear Plant Emergency Notification Form F-439 within the required time 2.4.41 RO 2.9 SRO 4.6

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)

Rec'd 8/29/11

HISTORY

A.1.a: Selected and modified from the GRP-25 NRC exam on 2/23/2009.

A.1.b: Selected from the GRP-23 NRC exam and GRP-24 Audit exam.

A.2: NEW JPM. GRP-22, 23, and 26 NRC exams had an ECO for the same Charging Pump.

A.3: Selected from the GRP-23 NRC exam and GRP-24 Audit exam.

A.4: Selected from the GRP-24 NRC Exam.

JPM SUMMARY STATEMENTS

A.1.a - Review a Dilution Calculation for a Unit 4 Power Change from 80-100%: Given a set of Unit 4 plant conditions, the applicant uses the Unit 4 Curve Book and 0-OP-046, CVCS – Boron Concentration Control to ensure the accuracy of a dilution calculation for a Unit 4 power change from 80-100%. MODIFIED BANK JPM - 01028022100 (used on the 2009 PTN NRC Exam). The initial conditions (core burnup, initial boron concentration, initial power level, and induced errors) were modified. [2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.]

A.1.b - Evaluate Overtime Requirements: The applicant uses 0-ADM-200, Conduct of Operations, and AD-AA-101-1004, Work Hour Controls, to determine the overtime requirements for two proposed work schedules. MODIFIED BANK JPM [2.1.5 - Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.]

A.2 - Review an ECO for the 3A Component Cooling Water Pump: The Applicant reviews an ECO (with induced errors) for the 3A Component Cooling Water Pump using 0-ADM-212, In-Plant Equipment Clearance Orders, and 0-ADM-212.1, Operations In-Plant Equipment Clearance Orders, plant drawings, and other procedures. NEW JPM [2.2.13 - Knowledge of tagging and clearance procedures.]

A.3 - Determine Dose Rates and Radiological Requirements From a Survey Map: The applicant uses various Unit 3 and Unit 4 survey maps, Radiation Work Permits to determine stay times, and apply ALARA principles. MODIFIED BANK JPM - 02203001100 by changing the work location (thereby changing the existing dose rates) and by changing the worker's YTD exposure. [2.3.7 - Ability to comply with radiation work permit requirements during normal or abnormal conditions.]

A.4 - Classify an Event and Complete a Florida Nuclear Plant Emergency Notification Form F-439: The applicant first classifies an event using 0-EPIP-20101, Duties of Emergency Coordinator, then uses 0-EPIP- 20134, Offsite Notifications and Protective Action Recommendations, to complete a Florida Nuclear Plant Emergency Notification Form F-439. However, one Step reflects that there are 8 critical (required) items on the F-439. MODIFIED BANK JPM -1001013400 [2.4.41 - Knowledge of the emergency action level thresholds and classifications.]

Rev'd 8/29/11

Facility: **Turkey Point Units 3 & 4** Date of Examination: **12/05/11**
Exam Level: **RO** ☑ **SRO-I** ☐ **SRO-U** ☐ Operating Test No.: **2011-302**

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. Recover Misaligned Control Rod 001 A2.03 RO 3.5 SRO 4.2	D, S	1
b. Energizing 3C 4KV Bus from 4C Transformer 062 A4.01 RO 3.3 SRO 3.1	D, L, S	6
c. Fill 3A Accumulator (With High Pressure Alarm) 006 A1.13 RO 3.5 SRO 3.7	P, A, M, S	3
d. Start 3A RCP in MODE 3 003 A2.02 RO 3.7 SRO 3.9	A, N, L, S	4P
e. Manually Initiate Containment Spray and Control Room Ventilation Isolation 013 A4.01 RO 4.5 SRO 4.8	A, EN, M, S	2
f. Synchronize the Main Generator 045 A4.02 RO 2.7 SRO 2.6	D, S	4S
g. Test Source Range Nis 015 A4.02 RO 3.9 SRO 3.9	M, L, S	7
h. Respond to Component Cooling Water System Malfunctions 008 A2.01 RO 3.3 SRO 3.6	A, D, S	8
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Respond to ATWS Locally 001 A2.13 RO 4.4 SRO 4.6	D, E	1
j. Preparations for Initiating Containment Vent Alternate Air Pressurization 103 A1.01 RO 3.7 SRO 4.1	N, R	5
k. Shutdown of the Diesel Driven Fire Pump. 086 A4.01 RO 3.3 SRO 3.3	N	8

@ 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.

Rec'd 8/29/11

* 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	

TURKEY POINT 2011 NRC EXAM JPM SUMMARY

a. **Recover Misaligned Control Rod** - The applicant uses 3-ONOP-028.1, RCC Misalignment, to restore the control rods to a normal configuration. BANK JPM - 01028016301.

b. **Energizing 3C 4KV Bus from 4C Transformer** – The applicant uses 3-NOP-005.01, 4160 Volt Bus 1C, to energize the 3C Bus from a Unit 4 transformer. BANK JPM - 01005021300

c. **Fill 3A Accumulator** - The applicant uses 3-NOP-064, Safety Injection Accumulators, to raise accumulator level to the operating band. While raising level, the high/low pressure alarm actuates, requiring the applicant to vent the 3A Accumulator. Venting is the alternate path portion of this JPM. MODIFIED BANK JPM. Randomly selected from the 2/23/2009 Turkey Point NRC exam.

d. **Start 3A RCP in MODE 3 –** The applicant uses 3-NOP-041.01A, 3A Reactor Coolant Pump Operations, to start 3a RCP in MODE 3. The alternate path portion of this JPM occurs after the RCP Start with high starting current. The applicant is required to secure 3A RCP. MODIFIED BANK JPM.

e. **Manually Initiate Containment Spray and Control Room Ventilation Isolation** – The applicant uses 3-EOP-E-0, Reactor Trip or Safety Injection, Attachment 3, to manually initiate Containment Spray, isolate all Phase B penetrations, and manually isolate Control Room Ventilation. The alternate path portion of this JPM occurs during the failure of automatic actuation of Containment Spray, Phase B isolation, and Control Room Ventilation. Manual actuation and alignment is required. MODIFIED BANK JPM.

f. **Manually Synchronize Main Generator** – The applicant use 3-GOP-301, Hot Standby to Power Operation, to manually parallel the Main Generator to the grid. BANK JPM - 01002002100.

g. **Test the Source Range Nuclear Instrumentation** - The applicant uses 3-OSP-059.1, Source Range Nuclear Instrumentation Analog Channel Operational Test, to test SR Channel N-32. MODIFIED BANK JPM - 01059017200 SEQ050A.

h. **Respond to Component Cooling Water System Malfunctions -** The applicant uses 3-ONOP-30, Component Cooling Water Malfunction, to respond to a bearing failure of a running CCW pump. The alternate path portion of this JPM occurs when CCW pumps cannot be started. The Reactor must be tripped. Letdown and Excess Letdown must be isolated. BANK JPM.

i. **Respond to ATWS Locally** – The applicant takes actions to locally trip the Reactor IAW 4-EOP-FR-S.1, Response to Nuclear Power Generation/ATWS. BANK JPM.

j. **Preparations for Initiating Containment Vent Alternate Air Pressurization** – The applicant uses 3-NOP-094, Containment Post Accident Monitoring Systems, to lineup air for subsequent pressurization of Containment. NEW JPM.

k. **Shutdown of the Diesel Driven Fire Pump** - The applicant uses 3-OP-016.1, Fire Protection Water System, to locally shutdown the Diesel Driven Fire Pump. NEW JPM

Rec'd 8/29/11

Facility: **Turkey Point Units 3 & 4** Date of Examination: **12/05/11**
Exam Level: **RO** ☐ **SRO-I** ☐ **SRO-U** ☑ Operating Test No.: **2011-302**

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. N/A	N/A	N/A
b. N/A	N/A	N/A
c. N/A	N/A	N/A
d. Start 3A RCP in MODE 3 003 A2.02 RO 3.7 SRO 3.9	A, N, L, S	4P
e. Manually Initiate Containment Spray and Control Room Ventilation Isolation 013 A4.01 RO 4.5 SRO 4.8	A, EN, M, S	2
f. N/A	N/A	N/A
g. Test Source Range Nis 015 A4.02 RO 3.9 SRO 3.9	M, L, S	7
h. N/A	N/A	N/A
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Respond to ATWS Locally 001 A2.13 RO 4.4 SRO 4.6	D, E	1
j. Preparations for Initiating Containment Vent Alternate Air Pressurization 103 A1.01 RO 3.7 SRO 4.1	N, R	5
k. N/A	N/A	N/A

@ 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.

Rec'd 8/29/11

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(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	

TURKEY POINT 2011 NRC EXAM JPM SUMMARY

d. **Start 3A RCP in MODE 3 –** The applicant uses 3-NOP-041.01A, 3A Reactor Coolant Pump Operations, to start 3a RCP in MODE 3. The alternate path portion of this JPM occurs after the RCP Start with high starting current. The applicant is required to secure 3A RCP. MODIFIED BANK JPM.

e. **Manually Initiate Containment Spray and Control Room Ventilation Isolation –** The applicant uses 3-EOP-E-0, Reactor Trip or Safety Injection, Attachment 3, to manually initiate Containment Spray, isolate all Phase B penetrations, and manually isolate Control Room Ventilation. The alternate path portion of this JPM occurs during the failure of automatic actuation of Containment Spray, Phase B isolation, and Control Room Ventilation. Manual actuation and alignment is required. MODIFIED BANK JPM.

g. **Test the Source Range Nuclear Instrumentation** - The applicant uses 3-OSP-059.1, Source Range Nuclear Instrumentation Analog Channel Operational Test, to test SR Channel N-32. MODIFIED BANK JPM - 01059017200 SEQ050A.

i. **Respond to ATWS Locally –** The applicant takes actions to locally trip the Reactor IAW 4-EOP-FR-S.1, Response to Nuclear Power Generation/ATWS. BANK JPM.

j. **Preparations for Initiating Containment Vent Alternate Air Pressurization –** The applicant uses 3-NOP-094, Containment Post Accident Monitoring Systems, to lineup air for subsequent pressurization of Containment. NEW JPM.