

Facility: <u>Indian Point 3</u>		Date of Examination: <u>December 2003</u>
Examination Level (circle one): RO / SRO (i)		Operating Test Number: <u>1</u>
Administrative Topic /Subject Description-- (see Note)	Describe activity to be performed method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A-1 Conduct of Operations	JPM- Conduct an RCS Leakrate Surveillance (REPEAT from last exam) 2.1.7 Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation (4.4)	
Conduct of Operations	JPM- Conduct a Valve Lineup Verification (New JPM) 2.1.29 Knowledge of how to conduct and verify a valve line up (3.3)	
A-2 Equipment Control	JPM- Actions for lowering Spent Fuel Pool level during refueling operations- transfer tube gate valve open (New JPM) 2.2.27 Knowledge of the refueling process (3.5)	
A-3 Radiation Control	JPM- Perform Calculations For A Gaseous Radioactive Release Permit 2.3.8 Knowledge of the Process For Performing A Planned Gaseous Radioactivity Release (3.2)	
A-4 Emergency Plan	JPM- General Emergency Classification Scenario with a PAR call (New JPM) 2.4.41 Knowledge of the Emergency Action Levels thresholds and classifications (4.1)	
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		

Facility: <u>Indian Point 3</u>		Date of Examination: <u>December 2003</u>
Exam Level (circle one): RO / SRO(I) / SRO(U)		Operating Test No.: <u>1</u>
B.4—Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
<p>a.Sys- 004 Emergency Borate the RCS per ONOP-CVCS-003</p> <p>K/A 004A4.18- Ability To Manually Operate and/or Monitor In The Control Room The Emergency Borate Valves (4.1) 29A</p>	D,S, A	1
<p>b. Sys- 006 Initiate Feed and Bleed of the RCS</p> <p>K/A 006A4.06 Ability To Manually Operate and/or Monitor In The Control Room: ESF Control Panel (4.4) 104A</p>	D,S, A,E OP	2
<p>c. Sys- 010 Use the Pressurizer PORVs to Depressurize the RCS (REPEAT from last exam)</p> <p>K/A EPE038EA2.15 Ability To Determine or Interpret The Following As They Apply To A SGTR- Pressure At Which To Maintain The RCS During S/G Cooldown (4.4) 99A</p>	D,S, A	3
<p>d. Sys- 003 Start an RCP per SOP-RCS-01 (REPEAT from last exam)</p> <p>K/A 003A4.06 Ability To Manually Operate and/or Monitor in the Control Room- RCP Parameters (2.9) 035</p>	D,S, L	4
<p>e. Sys- 026 Initiate Containment Spray (New)</p> <p>K/A 026A4.01 Ability To Manually Operate and/or Monitor In The Control Room- CSS Controls (4.3)</p>	N,S, A,E OP	5

<p>f. Sys- 062 Transfer 6.9KV Buses 1 through 4 to the Auxiliary Transformer K/A 062A4.01 Ability To Manually Operate and/or Monitor In The Control Room All Breakers (Including Available Switch yard) (3.1) 091</p>	<p>D,S</p>	<p>6</p>
<p>g. Sys- 015 Remove an Intermediate Range Nuclear Instrument Channel Form Service K/A 015A4.02 Ability To Manually Operate and/or Monitor In The Control Room - NIS Indicators (3.9) 076</p>	<p>D,S</p>	<p>7</p>
<p>h.</p>		
<p>B-2 Facility Walk-Through In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)</p>		
<p>a-i. Sys- 041 Local Operation of the Atmospheric Steam Dump Valves (REPEAT from last exam) K/A APE 068AA1.01 Ability To Manually Operate The Following As They Apply To Control Room Evacuation- S/G Atmospheric Relief Valves (4.5) 5A Note- Using An APE K/A Linked Directly To Manual Local Operation of S/G Atmospheric Steam Dump Valves- System 035, Safety Function 4</p>	<p>D,A, EOP</p>	<p>4</p>
<p>b-j. Sys- 008 Align City Water to 31 RHR Pump K/A APE026AA1.03 Ability To Operate and/or Monitor The Following As They Apply to the Loss of CCW- Backup to the CCW System (3.6) 04</p>	<p>D,R</p>	<p>8</p>
<p>e-k. Sys- 068 Terminate a Waste Gas Decay Tank Release (New) K/A 071A4.27 Ability To Manually Operate and/or Monitor In The Control Room- Opening and Closing Decay Tank Discharge Control Valves (2.7)</p>	<p>N,R</p>	<p>9</p>
<p>* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA</p>		

Facility: <u>Indian Point 3</u>		Date of Examination: <u>December 2003</u>
Examination Level (circle one): RO / SRO-u		Operating Test Number: <u>1</u>
Administrative Topic / Subject Description — (see Note)	Describe activity to be performed method of evaluation:	
	1. ONE Administrative JPM, OR	
	2. TWO Administrative Questions	
A.1 Conduct of Operations	JPM- Conduct an RCS Leakrate Surveillance (REPEAT from last exam) 2.1.7 Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation (4.4)	
Conduct of Operations	JPM- Conduct a Valve Lineup Verification (New JPM) 2.1.29 Knowledge of how to conduct and verify a valve line up (3.3)	
A.2 Equipment Control	JPM- Actions for lowering Spent Fuel Pool level during refueling operations- transfer tube gate valve open (New JPM) 2.2.27 Knowledge of the refueling process (3.5)	
A.3 Radiation Control	JPM- Perform Calculations For A Gaseous Radioactive Release Permit 2.3.8 Knowledge of the Process For Performing A Planned Gaseous Radioactivity Release (3.2)	
A.4 Emergency Plan	JPM- General Emergency Classification Scenario with a PAR call (New JPM) 2.4.41 Knowledge of the Emergency Action Levels thresholds and classifications (4.1)	
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		

Facility: <u>Indian Point 3</u> Exam Level (circle one): RO / SRO(I) / SRO(U)		Date of Examination: <u>December 2003</u> Operating Test No.: <u>1</u>	
B.1—Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)			
System / JPM Title	Type Cod e*	Safety Func tion	
a.Sys- 004 Emergency Borate the RCS per ONOP-CVCS-003 K/A 004A4.18- Ability To Manually Operate and/or Monitor In The Control Room The Emergency Borate Valves (4.1) 29A	D,S, A	1	
b. Sys- 006 Initiate Feed and Bleed of the RCS K/A 006A4.06 Ability To Manually Operate and/or Monitor In The Control Room: ESF Control Panel (4.4) 104A	D,S, A,E OP	2	
e. Sys- 026 Initiate Containment Spray (New) K/A 026A4.01 Ability To Manually Operate and/or Monitor In The Control Room- CSS Controls (4.3)	N,S, A,E OP	5	
B.2—Facility Walk-Through In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
b-j.Sys- 008 Align City Water to 31 RHR Pump K/A APE026AA1.03 Ability To Operate and/or Monitor The Following As They Apply to the Loss of CCW- Backup to the CCW System (3.6) 04	D,R	8	
e-k. Sys- 068 Terminate a Waste Gas Decay Tank Release (New) K/A 071A4.27 Ability To Manually Operate and/or Monitor In The Control Room- Opening and Closing Decay Tank Discharge Control Valves (2.7)	N,R	9	
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA			



Facility: Indian Point 3 Scenario No.: 1 Op-Test No.: 1

Examiners: Alan Blamey(Don Jackson) Operators: _____
Joe D'Antonio _____

Initial Conditions: Plant is at 95% Power, MOL, 31 ABFP is Stop Tagged For Troubleshooting a Ground.

Turnover: Plant is at 95% Power, MOL, 31 ABFP is stop tagged and is 3 hours into its LCO

Event No.	Malf. No.	Event Type*	Event Description
1		I (RO, CRS)	Controlling Pressurizer Level Channel Fails High (AOP)
2		R, C (CRS, RO, BPO)	Condensate Pump Trip (AOP)
3		C (CRS, RO, BPO)	Loss of Condenser Vacuum (AOP)
4		M, C (CRS, RO)	Turbine Trip/ Failure of Auto Reactor Trip (ATWS)
5		M (CRS, RO, BPO)	Steam Generator Tube Rupture On 32 S/G
6		C (CRS, RO)	32 MSIV Fails To Close

Facility: Indian Point 3 Scenario No.: 2 Op-Test No.: 1

Examiners: Alan Blamey (Don Jackson) Operators: _____
Joe D'Antonio _____

Initial Conditions: Plant is at 2% Power, MOL

Turnover: Plant is at 2% Power, MOL, Raise Power To 7% To Enter Mode 1 In Preparation For Main Turbine Roll

Event No.	Malf. No.	Event Type*	Event Description
1		R _(CRS,RO,BPO)	Continue Startup- Raise Power To 7%
2		I _(CRS,RO)	Controlling Pressurizer Pressure Channel Fails High (AOP)
3		C _(CRS,RO,BPO)	Loss of 5A- 480 Volt Bus (AOP)
4		C _(CRS,RO)	34 RCP High Vibration (AOP)
5		C _(CRS,RO)	34 RCP Seal Leak and Failure (AOP)
6		M _(CRS,RO,BPO)	Small Break LOCA
7		C _(CRS,RO)	32 HHSI Pp Fails To Start

Facility: Indian Point 3 Scenario No.: 3Op-Test No.: 1Examiners: Alan Blamey (Don Jackson)
Joe D'Antonio

Operators: _____

Initial Conditions: Unit 3 is at 32% Power with a Shut Down in progress to meet the requirements of the AFW System LCO. 32 ABFP is Stopped Tagged due to a damaged trip throttle valve.

Turnover: Unit 3 is at 32% Power with with a Shut Down in progress to meet the requirements of the AFW System LCO. 32 ABFP is Stopped Tagged due to a damaged trip throttle valve. Orders for the shift are to hold briefly at 32% Power while 32 ABFP is being re-assessed. However, ensure plant is in mode 3 in 4 Hours if 32 ABFP is not made operable.

Event No.	Malf. No.	Event Type*	Event Description
1		I _(CRS,RO,BOP)	T avg Channel Summer Fails High (AOP)
2		C _(CRS,RO)	Loss of the Operating Charging Pump (AOP)
3		C _(CRS,RO,BOP)	Turbine Trip < P-8 (No Reactor Trip Expected) (AOP)
4		C _(CRS,RO)	Loss of Both MBFPs (Failed Instrument), Manual Reactor Trip
5		C _(CRS,BPO)	Failure of 31 ABFP
6		M _(CRS,RO,BOP)	Loss of All Feed, FR-H.1

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: Indian Point 3		Date of Exam: Week of December 8, 2003																	
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 *	Point Total	K	A	A 2	G *	Total	
1. Emergency & Abnormal Plant Evolutions	1	2	4	3				5	2				2	2418			5	2	7
	2	3	1	2				2	1				0	469			3	2	5
	3													3					
	Tier Totals	5	5	5				7	3				2	4327			8	4	12
2. Plant Systems	1	4	4	3	3	1	0	3	2	5	1	2	4928			1	3	4	
	2	0	0	0	2	2	2	1	2	0	1	0	4710			1	1	2	
	3												4						
	Tier Totals	4	4	3	5	3	2	4	4	5	2	2	4038			2	4	6	
3. Generic Knowledge and Abilities Categories					Gat 1	Gat 2	Gat 3	Gat 4	4710					1	2	3	4	7	
					2	2	3	3						2	2	2	1		

- Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO outline (i.e., the "Tier Totals" in each K/A category shall not be less than two). Refer to Section D.1.c for additional guidance regarding SRO sampling.
 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 100-75 points and the SRO-only exam must total 25 points.
 3. Select topics from many systems and evolutions; avoid selecting more than two or three K/A topics from a given system or evolution unless they relate to plant-specific priorities.
 4. Systems/evolutions within each group are identified on the associated outline.
 5. The shaded areas are not applicable to the category/tier.
 - 6.* 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. The SRO K/As must also be linked to 10 CFR 55.43 or an SRO-level learning objective.
 7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) for the SRO-applicable license level, and the point totals for each system and category. ~~K/As below 2.5 should be justified on the basis of plant-specific priorities.~~ Enter the group and tier totals for each category in the table above; summarize all the SRO-only knowledge and non-A2 ability categories in the columns labeled "K" and "A." Use duplicate pages for RO and SRO-only exams.
 - h. For Tier 3, enter the K/A numbers, descriptions, importance ratings, and point totals on Form ES-401-3.
 - i. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.

ES-401		PWR SRO-Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-2-3	
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 Knowledge of the operational implications of the following concepts as they apply to the reactor trip: (CFR 41.8 / 41.10 / 45.3) EK1.06 Relationship of emergency feedwater flow to S/G and decay heat removal following reactor trip	4.1	1
000008 Pressurizer Vapor Space Accident / 3		X	X				AK2- Knowledge of the interrelations between Pzr Vapor Space Accident (CFR 41.7,45.7) K2.02 Sensors and Detectors AK3- Knowledge of reasons for the following as they apply to Pzr Vapor Space Accidents (CFR 41.5,41.1,45.6,45.13) K3.04 RCP Tripping Requirements	2.7/ 4.6	2
000009 Small Break LOCA / 3					S		EA2 Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13) EA2.01 Actions to be taken, based on RCS temperature and pressure, saturated and superheated	4.8	1

000011 Large Break LOCA / 3				X		EA1 Ability to operate and monitor the following as they apply to a Large Break LOCA: (CFR 41.7 / 45.5 / 45.6) EA1.07 Containment isolation system	4.4	1
000015/17 RCP Malfunctions / 4				X		APE : 015/017 Ability to operate and/or monitor the following as they apply to Reactor Coolant Pump (RCP) Malfunctions (CFR 41.7 45.5,45.6) AA1.05 RCS flow	3.8	1
000022 Loss of Rx Coolant Makeup / 2				X		AA1. Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: (CFR 41.7 / 45.5 / 45.6) AA1.09 RCP seal flows, temperatures, pressures, and vibrations	3.3	1
000025 Loss of RHR System / 4				X		AK3 Knowledge of the reasons for the following responses as they apply to a loss of RHR: (CFR 41.5,41.145.6,45.13) AK3.03 Immediate Actions contained in the EOPs for Loss of RHR	4.1	1
000026 Loss of Component Cooling Water / 8				X		AA2. Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: (CFR: 43.5 / 45.13) AA2.02 The cause of possible CCW loss	3.6	1
000027 Pressurizer Pressure Control System Malfunction / 3					S	2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR: 43.5 / 45.11)	4.1	1
000029 ATWS / 1	X			X		EA1 Ability to operate and monitor the following as they apply to a reactor trip: (CFR 41.7 / 45.5 / 45.6) EA1.08 Rx Trip Switch Pushbuttons. EK1 Knowledge of the operational implications of the following concepts as they apply to the ATWS: (CFR 41.8 / 41.10 / 45.3) EK1.03 Effects of boron on reactivity	4.5/ 3.8	2
000038 Steam Gen. Tube Rupture / 3					S	EA2 Ability to determine or interpret the following as they apply to a SGTR: (CFR 43.5 / 45.13) EA2.12 Status of MSIV activating system	4.2	1
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4				X		AK2. Knowledge of the interrelations between the Steam Line Rupture and the following: (CFR 41.7 / 45.7) AK2.02 Sensors and detectors	2.6	1

000054 (CE/E06) Loss of Main Feedwater / 4					S	AA2. Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): (CFR: 43.5 / 45.13) AA2.03 Conditions and Reasons for AFW Pp Startup	4.1	1
000055 Station Blackout / 6					X	EA2 Ability to determine or interpret the following as they apply to a Station Blackout: (CFR 43.5 / 45.13) EA2.03 Action Necessary To Restore Power	3.9	1
000056 Loss of Off-site Power / 6					S	2.4.8 Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs. (CFR: 41.10 / 43.5 / 45.13)	3.7	1
000057 Loss of Vital AC Inst. Bus / 6					X	2.2.2 Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 45.2)	3.5	1
000058 Loss of DC Power / 6					X	AA1. Ability to operate and / or monitor the following as they apply to the Loss of DC Power: (CFR 41.7 / 45.5 / 45.6) AA1.03 Vital and battery bus components	3.3	1
000062 Loss of Nuclear Svc Water / 4					S	AA2. Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: (CFR: 43.5 / 45.13) AA2.02 The cause of possible SWS loss	3.6	1
000065 Loss of Instrument Air / 8					X	2.1.22 Ability to determine Mode of Operation. (CFR: 43.5 / 45.13)	3.3	1
W/E04 LOCA Outside Containment / 3			X		S	EK3. Knowledge of the reasons for the following responses as they apply to the (LOCA Outside Containment) (CFR: 41.5 / 41.10, 45.6, 45.13) EK3.4 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. EA2. Ability to determine and interpret the following as they apply to the (LOCA Outside Containment) (CFR: 43.5 / 45.13) EA2.2 Adherence to appropriate procedures and operation within the limitations in the facility*s license and amendments.	3.8/ 4.2	2

W/E11 Loss of Emergency Coolant Recirc. / 4		X						EK2. Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: (CFR: 41.7 / 45.7) EK2.2 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.	4.3	1
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		X						EK2. Knowledge of the interrelations between the (Inadequate Heat Transfer) and the following: (CFR: 41.7 / 45.7) EK2.2 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.	4.2	1
K/A Category Totals:	2	4	3	5	7	4	Group Point Total: 25	18/7	18/7	

000069 (W/E14) Loss of CTMT Integrity / 5	X	X				<p>AK1. Knowledge of the operational implications of the following concepts as they apply to Loss of Containment Integrity: (CFR 41.8 / 41.10 / 45.3) AK1.01 Effect of pressure on leak rate EK2. Knowledge of the interrelations between the (High Containment Pressure) and the following: (CFR: 41.7 / 45.7) EK2.2 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.</p>	3.1/ 3.8	2
000074 (W/E06&E07) Inad. Core Cooling / 4	X				S	<p>EK1 Knowledge of Operational Implications of the following concepts as they apply to Saturated Core Cooling (CFR 41.8,41.1,45.3) EK1.3 Annunciators and conditions indicating signals and remedial actions EA2 Ability to determine and interpret the following as they apply to degraded core cooling (CFR 43.5, 45.13) EA 2.2 Adherence to appropriate procedures and operation within limitations in the facilities license and amendments</p>	3.6/ 4.1	2
000076 High Reactor Coolant Activity / 9			X			<p>AK3. Knowledge of the reasons for the following responses as they apply to the High Reactor Coolant Activity : (CFR 41.5,41.10 / 45.6 / 45.13) AK3.05 Corrective actions as a result of high fission product radioactivity level in the RCS</p>	3.6	1
W/E01 & E02 Rediagnosis & SI Termination / 3				X	S	<p>EA1. Ability to operate and / or monitor the following as they apply to the (Reactor Trip or Safety Injection/Rediagnosis) (CFR: 41.7 / 45.5, 45.6) EA1.3 Desired operating results during abnormal and emergency situations. 2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (CFR: 43.4 / 45.10)</p>	3.8/ 3.3	2
W/E13 Steam Generator Over-pressure / 4								

W/E15 Containment Flooding / 5											S	2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions including: 1. Reactivity control 2. Core cooling and heat removal 3. Reactor coolant system integrity 4. Containment conditions 5. Radioactivity release control. (CFR: 43.5 / 45.12)	4.3	1
W/E16 High Containment Radiation / 9	X											EK1. Knowledge of the operational implications of the following concepts as they apply to the (High Containment Radiation) (CFR: 41.8 / 41.10, 45.3) EK1.2 Normal, abnormal and emergency operating procedures associated with (High containment Radiation).	3.2	1
BW/A01 Plant Run back / 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										X		EA1. Ability to operate and / or monitor the following as they apply to the (Natural Circulation Cooldown) (CFR: 41.7 / 45.5 / 45.6) EA1.2 Operating behavior characteristics of the facility.	3.9	1
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:	3	1	2	2	4	2	Group Point Total: 14					9/5	9/5	

ES-401		PWR SRO Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)										Form ES-401-2-3		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump									X			A3 Ability to monitor automatic operation of the RCPS, including: (CFR: 41.7 / 45.5) A3.03 Seal D/P	3.1	1

004 Chemical and Volume Control		X	X																	K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.02 Makeup pumps K3 Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: (CFR: 41.7/45/6) K3.04 RCPS	3.1/ 3.9	2
005 Residual Heat Removal										X	S									A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.01 Controls and Indication for RHR Pumps 2.2.5 Knowledge of the process for making changes in the facility as described in the safety analysis report. (CFR: 43.3 / 45.13)	3.4/ 2.7	2
006 Emergency Core Cooling										X										A3 Ability to monitor automatic operation of the ECCS, including: (CFR: 41.7 / 45.5) A3.01 Accumulators	3.9	1
007 Pressurizer Relief/Quench Tank		X																		K1 Knowledge of the physical connections and/or cause effect relationships between the PRTS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.03 RCS	3.2	1
008 Component Cooling Water				X																K4 Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.01 Automatic Start of Standby Pump	3.3	1
010 Pressurizer Pressure Control		X								X										K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.02 Controller for PZR spray valve A3 Ability to monitor automatic operation of the PZR PCS, including: (CFR: 41.7 / 45.5) A3.02 Pzr Pressure	2.7/ 3.5	2
012 Reactor Protection		X		X																K1 Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.01 120V vital/instrument power system K4 Knowledge of RPS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7) K4.07 First-out indication	3.7/ 3.2	2

013 Engineered Safety Features Actuation					X										K5 Knowledge of the operational implications of the following concepts as they apply to the ESFAS: (CFR: 41.5 / 45.7) K5.01 Definitions of safety train and ESF channel	3.2	1
022 Containment Cooling		X													K2 Knowledge of power supplies to the following: (CFR: 41.7) K2.01 Containment cooling fans	3.1	1
025 Ice Condenser																	
026 Containment Spray				X					X						K4 Knowledge of CSS Design Features and/or Interlocks which provide for the following: (CFR: 41.7) K4.06 Iodine Scavenging via the CS System A2 Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13) A2.08 Safe securing of containment spray when it can be done .	3.2/ 3.7	2
039 Main and Reheat Steam													X		2.2.2 Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 45.2)	3.5	1
056 Condensate														S	2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. (CFR: 41.10,43.5 / 45.12)	3.7	1
059 Main Feedwater												X			A3 Ability to monitor automatic operation of the MFW, including: (CFR: 41.7 / 45.5) A3.04 Turbine driven feed pump	2.6	1
061 Auxiliary/Emergency Feedwater			X						X						K3 Knowledge of the effect that a loss or malfunction of the AFW will have on the following: (CFR: 41.7 / 45.6) K3.01 RCS A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: (CFR: 41.5 / 45.5) A1.01 S/G level	4.6/ 4.2	2

062 AC Electrical Distribution	X							S				<p>K1 Knowledge of the physical connections and/or cause effect relationships between the ac distribution system and the following systems: (CFR: 41.2 to 41.9) K1.02 ED/G</p> <p>A2 Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13) A2.05 Methods for energizing a dead bus</p>	4.4/ 3.3	2
063 DC Electrical Distribution	X					X						<p>K2 Knowledge of bus power supplies to the following: (CFR: 41.7) K2.01 Major DC loads</p> <p>A1 Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: (CFR: 41.5 / 45.5) A1.01 Battery capacity as it is affected by discharge rate</p>	3.1/ 3.3	2
064 Emergency Diesel Generator	X							X				<p>K1 Knowledge of the physical connections and/or cause-effect relationships between the EDG system and the following systems: K1.01 AC Distribution System</p> <p>A2 Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13) A2.02 Load, VARS, pressure on air compressor, speed droop, frequency, voltage, fuel oil level, temperatures</p>	4.4/ 2.9	2
073 Process Radiation Monitoring		X										<p>K3 Knowledge of the effect that a loss or malfunction of the PRM system will have on the following: (CFR: 41.7 / 45.6) K3.01 Radioactive effluent releases</p>	4.2	1

ES-401		PWR SRO Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)										Form ES-401-2-3		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
001 Control Rod Drive					X							K5 Knowledge of the following OPS Implications as applied to CRDs K5.88 Effects of boron on temperature coefficient	3.4	1
002 Reactor Coolant											X	A4 Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) A4.01 RCS leakage calculation program using the computer	3.8	1
011 Pressurizer Level Control														
014 Rod Position Indication									S			A2 Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13) A2.02 Loss of power to the RPIS	3.6	1
015 Nuclear Instrumentation						X						K6 Knowledge of the effect of a loss or malfunction on the following will have on the NIS (CFR41.7,45.7) K6.01 Sensors, Detectors, and Indicators	3.2	1
016 Non-nuclear Instrumentation														
017 In-core Temperature Monitor									X			A2 Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.5) A2.01 Thermocouple open and short circuits	3.5	1
027 Containment Iodine Removal					X							K5 Knowledge of the operational implications of the following concepts as they apply to the CIRS: (CFR: 41.7 / 45.7) K5.01 Purpose of charcoal filters	3.4	1
028 Hydrogen Recombiner and Purge Control														

ES-401		Generic Knowledge and Abilities Outline (Tier 3)			Form ES-401-53	
Facility:		Date of Exam:			Exam Level:	
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.11	2.1.11 Knowledge of less than one hour technical specification action statements for systems. (CFR: 43.2 / 45.13)			3.8	1
	2.1.14	2.1.14 Knowledge of system status criteria which require the notification of plant personnel. (CFR: 43.5 / 45.12)			3.3	1
	2.1.29	2.1.29 Knowledge of how to conduct and verify valve lineups (CFR: 41.10/45.1/45.12)	3.3	1		
	2.1.24	2.1.24 Ability to obtain and interpret station electrical and mechanical drawings. (CFR: 45.12 / 45.13)	3.1	1		
	2.1.					
	2.1.					
	Subtotal					
2. Equipment Control	2.2.29	2.2.29 Knowledge of SRO fuel handling responsibilities			3.8	1
	2.2.21	2.2.21 Knowledge of pre- and post-maintenance operability requirements. (CFR: 43.2)			3.5	1
	2.2.6	2.2.6 Knowledge of the process for making changes in procedures as described in the SAR	3.3	1		
	2.2.25	2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (CFR: 43.2)	3.7	1		
	2.2.					
	2.2.					
	Subtotal					
3. Radiation Control	2.3.6	2.3.6 Knowledge of the requirements for reviewing and approving release permits. (CFR: 43.4 / 45.10)			3.1	1
	2.3.4	2.3.4 Knowledge of Radiation Exposure Limits and Contamination Control, including permissible levels in excess of those authorized			3.1	1
	2.3.11	2.3.11 Ability to control radiation releases. (CFR: 45.9 / 45.10)	3.2	1		

	2.3.1	2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements. (CFR: 41.12 / 43.4. 45.9 / 45.10)	3.0	1		
	2.3.10	2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (CFR: 43.4 / 45.10)	3.3	1		
	2.3.					
	Subtotal					
4. Emergency Procedures / Plan	2.4.38	2.4.38 Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator. (CFR: 43.5 / 45.11)			4.0	1
	2.4.13	2.4.13 Knowledge of crew roles and responsibilities during EOP flowchart use. (CFR: 41.10 / 45.12)	3.9	1		
	2.4.11	2.4.11 Knowledge of abnormal condition procedures. (CFR: 41.10 / 43.5 / 45.13)	3.6	1		
	2.4.16	2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures. (CFR: 41.10 / 43.5 / 45.13)	4.0	1		
	2.4.					
	2.4.					
	Subtotal				10	
Tier 3 Point Total (RO/SRO)				1310		177

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	26 AK3.01	IP3 Does not Have CCW Auto Actions
1/1	38 EK1.04	Reflux Boiling not Applicable During SGTR
1/1	40 2.2.27	Steam Line Rupture K/A Does Not Match Generic Stmt.
1/1	65 AA1.01	Remote Manual Unloader Not Applicable to IP3
1/1	40 2.1.4	Steamline Rupture K/A Does Not Match Generic Stmt.
2/2	11 K1.05	IP3 Does Not Have a Reactor Regulating System
2/1	13 K1.1	IP3 Does Not Have CPS
2/1	25 A4.02	IP3 Does Not Have an Ice Condenser
2/2	72 2.4.26	Fire Protection Generic Stmt Not Applicable to ARM System
1/1	000054AA2.07	Unable To develop an appropriate question for K/A
1/1	000055EA2.05	No Indication of DC Bus Voltage in IP3 Control Room

1/2	000003AK3.03	IP3 No Longer Has An Auto Run back On A Dropped Rod
1/2	000076AK3.06	There are no EOP driven actions for High Reactor Coolant Activity
2/1	007K1.04	Importance Value is Less Than 2.5
2/1	008K5.06	Importance Value is Less Than 2.5
2/1	062K4.10	AC Electrical Distribution Sampled More Than Twice
2/1	003A3.05	No Automatic Actions For Lube Oil or Lift Pump on RCPs
2/1	005A4.02	No Heat Exchanger Bypass Valve Exists On IP3
2/1	006A3.08	IP3 has no Auto ECCS Transfers, such as Recirc Swap
2/1	026K2.02	Testing Too Many Power Supplies- Shifted To K5
2/1	026A2.05	Duplicate concept to K5.01- Loss of Spray Add Capability
3	2.2.31	No Procedures For Initial Core Loading
3	2.3.9	Oversampling of Containment Purge
2/1	010A3.01	No PORV Testing Affects PRT Pressure and Temp
2/2	2.2.18	No significance for shutdown maintenance of the CAR system.

Methodology Used to Generate IP3 NRC Examination Sample Plant
NUREG 1021 Rev 9 - June 11, 2003

1. Utilized IP3 Random Sample Generator (NUREG 1021 Rev 8 Compliant) To Generate Baseline Sample Plan.
2. Rejected K/A's Based on Feedback from IP3 (See Record of Rejected K/As)
3. Determined Which Selected K/As Left Were SRO Only per 10CFR55.43.
4. Randomly Added K/As and Randomly Deselected K/As to Get Point Totals Required by NUREG 1021 Rev 9 Form ES 401-2.
5. Random Selection/Deselection Achieved Using Poker Chips Numbered 1-50. For K/A Groups With Greater Than 50 Statement Possibilities Excel Spreadsheet Random Number Generator Was Used.
6. Once Final K/A Safety Function/System and Categories Were Randomly Determined, K/As Left Without Specific Topical Statements Were Selected Using The Poker Chip/Excel Method.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Back-ward	Q=K/A		
1	F	2										E	B-STEM WORDING- Changed to fix stem wording
2	F	2										S	B
3	H	2										S	N-NOT QUITE KA MATCH
4	H	2									X	S	B
5	H	2										S	N
6	H	2										S	B
7	H	2										S	N
8	H	2										S	B
9	H	2										S	B
10	H	2									X	S	N
11	H	2										S	N
12	F	2										S	B-NOT QUITE KA MATCH
13	H	2									X	S	N-NOT A MATCH, BUT PROBABLY OK
14	H	2										S	B
15	H	2									X	S	N
16	F	2										S	B
17	H	2									X	S	B
18	H	2										S	N
19	F	2										S	N- EXPECTED FROM MEMORY? EXPECTED TO NUKE IT OUT?
20	H	2									X	S	M

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A		
21	H	2											S	B-BAD KA FROM CATALOG. FORCE FITS INAPPLICABLE KA
22	F	2											S	B
23	H	2									X		S	B
24	F	2											S	B
25	H	2											S	B
26	F	2											S	B
27	H	2									X		S	M
28	H	2									X		S	M-FAIR FROM MEMORY- Yes
29	F	2											S	B
30	H	2											U	N-Q IS BACKWARDS FROM KA-OK
31	H	2											S	B
32	H	2											S	N
33	H	2									X		S	B
34	H	2											S	N
35	H	2											S	B
36	F	2									X		S	B
37	H	2									X		S	N
38	F	2											S	B
39	F	2											S	B
40	H	2											S	N
41	F	1											S	N-LOD 1-OK

Q#	1. LOK (F/H)		2. LOD (1-5)		3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. U/E/S	7. Explanation	
	Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only					
42	H	2												S	N	
43	H	2												E	M-DISTRACTORS C, D- Fixed Changed Distractor	
44	F	2										X		S	N	
45	H	2		X										E	B-B IMPLAUSIBLE- Fixed Changed Distractor	
46	H	2												S	B	
47	F	1												S	N-LOD 1-OK	
48	H	2												S	N	
49	H	2												S	B	
50	H	2												S	B	
51	H	2												S	N	
52	H	2												S	B	
53	H	2												S	N	
54	H	2												E	M-DISTRACTOR WORDING-Fixed	
55	H	2												S	M	
56	H	1												U	N-LOD-1- OK	
57	H	2										X		S	N	
58	F	2												S	B	
59	F	2												E	B-REWORD C, BE MORE EXPLICIT-Fixed	
60	H	2												S	N	
61	H	2												S	N	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A			SRO Only
62	H	2										X	S	B	
63	H	2												E	N-SPELLING- Fixed
64	F	2												S	N
65	H	2											S	B	
66	H	2											S	N	
67	F	2											S	N	
68	H	2											S	N	
69	H	2											E	N-STEM WORDING-Fixed	
70	F	1											S	NLOD 1-OK	
71	H	2										X	S	N	
72	H	2											E	N-REARRANGE STEM BULLETS-Fixed	
73	H	2											S	N	
74	H	2										X	S	N	
75	H	2											S	B	
76	H	2											S	B	
77	F	1											S	NLOD1-OK	
78	H	2											S	N-REWORD STEM, GIVES HINT FOR ANOTHER Q- Reworded	
79	H	2											S	B	
80	H	2										X	S	N	
81	F	2											S	N	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A	SRO Only			
82	F	2													S	N
83	F	2													S	N
84	F	2											X		S	B
85	F	2											X		S	N
86	F	2													S	N
87	F	1													S	N-LOD1-OK
88	F	2											X		S	N
89	F	2											X		S	N
90	F	2													S	N
91	F	2													S	B
92	F	2											X		S	N-SHOULD NOT BE ON SAME EXAM AS #66, TOO SIMILAR- OK
93	F	2											X		S	N-ORIGINAL Q TOO SIMILAR TO ANOTHER Q, REPLACEMENT OK
94	F	2													S	N
95	F	2													S	B
96	F	2													S	N
97	F	2											X		S	N
98	F	2													S	N
99	H	2													S	N
100	F	2													S	N