Entergy

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December 20, 2002
IP-TNG-02-196

Operational Safety Branch
Division of Reactor Safety
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia
Pennsylvania, 19406-1415
Att: Mr. R J Conte

SENIOR REACTOR AND REACTOR OPERATOR INITIAL EXAMINATION – INDIAN POINT STATION, UNITS 2 AND 3

Dear Mr. Conte,

In accordance with your letter of November 21, 2002, please find attached the examination outlines for the Indian Point Energy Center Reactor Operator and Senior Reactor Operator initial examinations.

If you have any questions, please contact Mr. Bill Altic at (914) 788-2629 for Unit 2, Mr. Steve Joubert at (914) 788-2973 for Unit 3, or me at (914) 788-2904.

Sincerely,

Frank Wilson
Superintendent – Operations Training
Indian Point Energy Center

Facility: Indian Point Unit 3		Date of Exam: 3/8/2003						Exam Level: SRO					
Tier	Group	K/A Category Point											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	4	1	4				6	8			1	24
	2	1	1	1				4	4			5	16
	3	0	0	1				0	1			1	3
	Tier Totals	5	2	6				10	13			7	43
2. Plant Systems	1	1	0	1	2	2	2	2	2	2	4	1	19
	2	3	2	2	1	1	1	0	1	1	1	4	17
	3	0	0	0	0	0	0	0	2	1	0	1	4
	Tier Totals	4	2	3	3	3	3	2	5	4	5	6	40
3. Generic Knowledge and Abilities		Cat 1			Cat 2			Cat 3			Cat 4		17
		3			6			3			5		

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., 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 exam must total 100 points.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system 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 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.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the SRO license level, and the point totals for each system and category. K/A's below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000001 / Continuous Rod Withdrawal / 1				X			AA1.05	Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal: Reactor trip switches.	4.2	57
000003 / Dropped Control Rod / 1		X					AK2.05	Knowledge of the interrelations between the Dropped Control Rod and the following: Control rod drive power supplies and logic circuits.	2.8	58
000005 / Inoperable/Stuck Control Rod / 1	X						AK1.03	Knowledge of the operational implications of the following concepts as they apply to the stuck rod: Xenon transient.	3.6	41
000011 / Large Break LOCA / 3				X			EA1.01	Ability to operate and monitor the following as they apply to a Large Break LOCA: Control of RCS pressure and temperature to avoid violating PTS limits.	3.8	61
W/E04 / LOCA Outside Containment / 3										
W/E01 & E02 / Rediagnosis & SI Termination / 3			X				EK3.2	Knowledge of the reasons for the following responses as they apply to the (Reactor Trip or Safety Injection/Rediagnosis): Normal, abnormal and emergency operating procedures associated with (Reactor Trip or Safety Injection/Rediagnosis).	3.9	62
000015 / 17 RCP Malfunctions / 4				X			AA1.22	Ability to operate and/or monitor the following as they apply to the RCP malfunctions: RCP seal failure/malfunction	4.2	52
BW/E09; CE/A13; W/E09 & E10 / Natural Circ. / 4			X				EK3.1	Knowledge of the reasons for the following responses as they apply to the (Natural Circulation Operations): Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.	3.6	42
BW/E09; CE/A13; W/E09 & E10 / Natural Circ. / 4						X	2.4.50	Emergency Procedures/Plan: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	90
000024 / Emergency Boration / 1					X		AA2.04	Ability to determine and interpret the following as they apply to the Emergency Boration: Availability of BWST.	4.2	43
000026 / Loss of Component Cooling Water / 8			X				AK3.03	Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: Guidance and actions contained in EOP for Loss of CCW/nuclear service water.	4.2	44
000029 / Anticipated Transient w/o Scram / 1					X		EA2.02	Ability to determine or interpret the following as they apply to ATWS: Reactor trip alarm.	4.4	91
000040 (BW/E05; CE/E05; W/E12) / Steam Line Rupture – Excessive Heat Transfer / 4	X						AK1.06	Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: High-energy steam line break considerations.	3.8	46
000040 (BW/E05; CE/E05; W/E12) / Steam Line Rupture – Excessive Heat Transfer / 4				X			EA1.2	Ability to operate and/or monitor the following as they apply to the (Uncontrolled Depressurization of all Steam Generators): Operating behavior characteristics of the facility.	3.7	47

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
CE/A11; W/E08 / RCS Overcooling – PTS / 4					X		EA2.1	Ability to determine and interpret the following as they apply to the (Pressurized Thermal Shock): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	4.2	92
000051 / Loss of Condenser Vacuum / 4				X			AA1.04	Ability to operate and / or monitor the following as they apply to the Loss of Condenser Vacuum: Rod position.	2.5	48
000055 / Station Blackout / 6					X		EA2.01	Ability to determine or interpret the following as they apply to a Station Blackout: Existing valve positioning on a loss of instrument air system.	3.7	49
000057 / Loss of Vital AC Elec. Inst. Bus / 6			X				AK3.01	Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital AC electrical instrument bus.	4.4	50
000059 / Accidental Liquid Radwaste Rel. / 9					X		AA2.02	Ability to determine and interpret the following as they apply to the Accidental Liquid Radwaste Release: The permit for liquid radioactive-waste release.	3.9	93
000062 / Loss of Nuclear Service Water / 4					X		AA2.01	Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: Location of a leak in the CCWS.	3.5	51
000067 / Plant Fire On-site / 9										
000068 (BW/A06) / Control Room Evac. / 8										
000069 (W/E14) / Loss of CTMT Integrity / 5					X		AA2.02	Ability to determine and interpret the following as they apply to the Loss of Containment Integrity: Verification of automatic and manual means of restoring integrity.	4.4	94
000074 (W/E06 & E07) / Inad. Core Cooling / 4	X						EK1.05	Knowledge of the operational implications of the following concepts as they apply to the Inadequate Core Cooling: Definition of saturated liquid.	3.2	53
000074 (W/E06 & E07) / Inad. Core Cooling / 4	X						EK1.3	Knowledge of the operational implications of the following concepts as they apply to the (Degraded Core Cooling): Annunciators and conditions indicating signals, and remedial actions associated with the (Degraded Core Cooling).	3.9	54
000074 (W/E06 & E07) / Inad. Core Cooling / 4				X			EA1.2	Ability to operate and/or monitor the following as they apply to the (Saturated Core Cooling): Operating behavior characteristics of the facility.	3.7	55
BW/E03 / Inadequate Subcooling Margin / 4										
000076 / High Reactor Coolant Activity / 9					X		AA2.02	Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: Corrective actions required for high fission product activity in RCS.	3.4	56
BW/A02 & A03 / Loss of NNI-X/Y / 7										
K/A Category Point Totals:	4	1	4	6	8	1		Group Point Total:		24

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000007 (BW/E02 & E10; CE/E02) / Reactor Trip – Stabilization – Recovery / 1						X	2.1.14	Conduct of Operations: Knowledge of system status criteria, which require the notification of plant personnel.	3.3	95
BW/A01 / Plant Runback / 1										
BW/A04 / Turbine Trip / 4										
000008 / Pressurizer Vapor Space Accident / 3		X					AK2.02	Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Sensors and detectors.	2.7	59
000009 / Small Break LOCA / 3				X			EA1.18	Ability to operate and monitor the following as they apply to a small break LOCA: Balancing of HPI loop flows.	3.2	60
BW/E08; W/E03 / LOCA Cooldown – Depress. / 4				X			EA1.02	Ability to operate and/or monitor the following as they apply to the (LOCA Cooldown and Depressurization): Operating behavior characteristics of the facility.	3.9	96
W/E11 / Loss of Emergency Coolant Recirc. / 4	X						EK1.2	Knowledge of the operational implications of the following concepts as they apply to the (Loss of Emergency Coolant Recirculation): Normal, abnormal and emergency operating procedures associated with (Loss of Emergency Coolant Recirculation).	4.1	99
000022 / Loss of Reactor Coolant Makeup / 2				X			AA1.08	Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: VCT level.	3.3	63
000025 / Loss of RHR System / 4					X		AA2.07	Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Pump cavitation.	3.7	64
000027 / Pressurizer Pressure Control System Malfunction / 3					X		AA2.15	Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Actions to be taken if PZR pressure instrument fails high.	4.0	45
000032 / Loss of Source Range NI / 7										
000033 / Loss of Intermediate Range NI / 7					X		AA2.10	Ability to determine and interpret the following as they apply to the Loss of Intermediate Range NI: Tech Spec limits if both IR channels have failed	3.8	97
000037 / Seam Generator Tube Leak / 3						X	2.2.22	Equipment Control: Knowledge of limiting conditions for operations and safety limits.	4.1	98
000038 / Steam Generator Tube Rupture / 3			X				EK3.01	Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Rupture: Equalizing pressure on primary and secondary sides of ruptured SG	4.3	69
000054 (CE/E06) / Loss of Main Feedwater / 4						X	2.4.2	Emergency Procedures/Plan: Knowledge of system setpoints, interlocks, and automatic actions associated with EOP entry conditions	4.1	65
000054 (CE/E06) / Loss of Main Feedwater / 4						X	2.2.25	Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	72
BW/E04; W/E05 / Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4										

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000058 / Loss of DC Power / 8					X		AA2.03	Ability to determine and interpret the following as they apply to the Loss of DC Power: DC loads lost, impact on ability to operate and monitor plant systems	3.9	67
000060 / Accidental Gaseous Radwaste Rel. / 9										
000061 / ARM System Alarms / 7				X			AA1.01	Ability to operate and/or monitor the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Automatic actuation.	3.6	68
W/E16 / High Containment Radiation / 9										
000065 / Loss of Instrument Air / 8						X	2.1.2	Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.	4.0	66
CE / E09 / Functional Recovery										
K/A Category Point Totals:	1	1	1	4	4	5		Group Point Total:		16

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000028 / Pressurizer Level Malfunction / 2			X				AK3.02	Knowledge of the reasons for the following responses as they apply to the Pressurizer Level Control Malfunctions: Relationships between PZR pressure increase and reactor makeup/letdown imbalance.	3.2	70
000036 (BW/A08) / Fuel Handling Accident / 8						X	2.2.28	Equipment Control: Knowledge of new and spent fuel movement procedures	3.5	100
000056 / Loss of Off-site Power / 6					X		AA2.51	Ability to determine and interpret the following as they apply to the Loss of Offsite Power: ΔT, (core, heat exchanger, etc.)	3.4	71
BW/E13 & E14 / EOP Rules and Enclosures										
BW/A05 / Emergency Diesel Actuation / 6										
CE/A16 / Excess RCS Leakage / 2										
W/E13 / Steam Generator Over-pressure / 4										
W/E15 / Containment Flooding / 5										
K/A Category Point Totals:	0	0	1	0	1	1		Group Point Total:		3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
001 Control Rod Drive								X				A2.03	Ability to (a) predict the impacts of the following malfunction or operations on the CRDS- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effect of stuck rod or Misaligned rod.	4.2	73
003 Reactor Coolant Pump									X			A3.04	Ability to monitor automatic operation of the RCPs, including: RCS flow.	3.6	1
003 Reactor Coolant Pump				X								K4.04	Knowledge of RCPs design feature(s) and/or interlock(s) which provide for the following: Adequate cooling of RCP motor and seals.	3.1	2
004 Chemical and Volume Control						X						K6.17	Knowledge of the effect of a loss or malfunction of the following will have on the CVCS: Flow paths for emergency boration	4.6	3
013 Engineered Safety Features Actuation							X					A1.01	Ability to predict and/or monitor changes in parameters (to Prevent exceeding design limits) associated with operating the ESFAS controls including: RCS pressure and temperature.	4.2	4
014 Rod Position Indication										X		A4.01	Ability to manually operate and/or monitor in the control room: Rod selection control.	3.1	17
015 Nuclear Instrumentation					X							K5.02	Knowledge of the operational implications of the following concepts as they apply to the NIS: Discriminator/compensation operation.	2.9	5
017 In-Core Temperature Monitor										X		A4.01	Ability to manually operate and/or monitor in the control room: Actual in-core temperatures.	4.1	6
022 Containment Cooling										X		A4.04	Ability to manually operate and/or monitor in the control room: Valves in the CCS.	3.2	7
025 Ice Condenser													SUPPRESSED		
026 Containment Spray							X					A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment pressure.	4.2	18
056 Condensate								X				A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps.	2.8	74

ES-401	INDIAN POINT UNITS 2 & 3 PWR SRO Examination Outline Plant Systems – Tier 2/Group 1	Form ES-401-3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
059 Main Feedwater				X								K4.19	Knowledge of MFW design feature(s) and/or interlock(s), which provide for the following: Automatic feedwater isolation of MFW.	3.4	8
059 Main Feedwater										X		A4.03	Ability to manually operate and monitor in the control room: Feedwater control during power increase and decrease.	2.9	9
061 Auxiliary / Emergency Feedwater						X						K6.02	Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Pumps.	2.7	10
063 DC Electrical Distribution			X									K3.02	Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: Components using DC control power.	3.7	24
063 DC Electrical Distribution	X											K1.03	Knowledge of the physical connections and/or cause-effect relationships between the DC distribution system and the following systems: Battery Charger and battery	3.5	23
068 Liquid Radwaste											X	2.4.31	Emergency Procedures / Plan: Knowledge of annunciators alarms and indications, and use of the response instructions.	3.4	75
071 Waste Gas Disposal					X							K5.04	Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System: Relationship of hydrogen/oxygen concentrations to flammability.	3.1	11
072 Area Radiation Monitoring									X			A3.01	Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment.	3.1	12
K/A Category Point Totals:	1	0	1	2	2	2	2	2	2	4	1	Group Point Total:			19

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
002 Reactor Coolant															
006 Emergency Core Cooling		X										K2.02	Knowledge of bus power supplies to the following: Valve operators for accumulators.	2.9	13
010 Pressurizer Pressure Control									X			A3.02	Ability to monitor automatic operation of the PZR PCS, including: PZR pressure.	3.5	14
011 Pressurizer Level Control		X										K2.02	Knowledge of bus power supplies to the following: PZR heaters.	3.2	15
012 Reactor Protection					X							K5.01	Knowledge of the operational implications of the following concepts as they apply to the RPS: DNB.	3.8	16
012 Reactor Protection											X	2.4.12	Emergency Procedures/Plan: Knowledge of general operating crew responsibilities during emergency operations	3.9	27
016 Non-nuclear Instrumentation											X	2.1.28	Conduct of Operations: Knowledge of the purpose and function of major system components and controls.	3.3	76
027 Containment Iodine Removal										X		A4.01	Ability to manually operate and/or monitor in the Control Room: CIRS controls.	3.3	32
028 Hydrogen Recombiner and Purge Control						X						K6.01	Knowledge of the effect of a loss or malfunction of the following will have on the HRPS: Hydrogen recombiners.	3.1	31
029 Containment Purge															
033 Spent Fuel Pool Cooling								X				A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System; and (b) based those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SFPCS.	3.0	19
034 Fuel Handling Equipment															
035 Steam Generator											X	2.4.4	Emergency Procedures/Plan: Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	20
039 Main and Reheat Steam	X											K1.06	Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: Condenser steam dump.	3.0	21

ES-401	INDIAN POINT UNITS 2 & 3 PWR SRO Examination Outline Plant Systems – Tier 2/Group 2	Form ES-401-3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
055 Condenser Air Removal			X									K3.01	Knowledge of the effect that a loss or malfunction of the CARS will have on the following: Main condenser.	2.7	22
062 AC Electrical Distribution											X	2.1.33	Conduct or Operations: Ability to recognize indications for system operating parameters which are entry level conditions for Technical Specifications	4.0	77
062 AC Electrical Distribution	X											K1.03	Knowledge of the physical connections and/or cause-effect relationships between the AC distribution system and the following systems: DC Distribution	4.0	26
064 Emergency Diesel Generator			X									K3.03	Knowledge of the effect that a loss or malfunction of the ED/G system will have on the following: ED/G (Manual loads).	3.9	25
073 Process Radiation Monitoring															
075 Circulating Water															
079 Station Air	X											K1.01	Knowledge of the physical connections and/or cause-effect relationships between the SAS and the following systems: IAS.	3.1	28
086 Fire Protection				X								K4.07	Knowledge of design feature(s) and/or interlock(s) which provide for the following: MT/G and T/G protection.	2.8	29
103 Containment															
K/A Category Point Totals:	3	2	2	1	1	1	0	1	1	1	4	Group Point Total:			17

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
005 Residual Heat Removal								X				A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Pressure transient protection during cold shutdown.	3.7	30
007 Pressurizer Relief / Quench Tank															
008 Component Cooling Water								X				A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of High/Low Surge Tank Level	3.5	78
041 Steam Dump/Turbine Bypass Control									X			A3.03	Ability to monitor automatic operation of the SDS, including: Steam flow.	2.8	33
045 Main Turbine Generator															
076 Service Water															
078 Instrument Air											X	2.1.23	Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.0	79
K/A Category Point Totals:	0	0	0	0	0	0	0	2	1	0	1	Group Point Total:			4

Plant-Specific Priorities			
System / Topic	Recommended Replacement for....	Reason	Points
APE 054 G2.4.2 (Question 65)	EPE 038EK1.04	High PRA importance; Event as well as mitigating system	1
APE 058 AA2.03 (Question 67)	APE 060AK2.01	High PRA importance; Loss of high importance system	1
SYS 004 K6.17 (Question 3)	SYS 004K2.04	High PRA importance; Risk significant post-accident human error	1
APE 015/017 AA1.22 (Question 52)	APE 068 AA1.20	High PRA importance; Risk significant post-accident human error	1
EPE 038 EK3.01 (Question 69)	EPE E16 EK3.4	High PRA importance; Event as well as risk significant post-accident human error	1
SYS 012 Generic 2.4.12 (Question 27)	SYS 075 Generic 2.4.30	High PRA importance; Event as well as mitigating systems	1
Plant-Specific Priority Total: (limit 10)			6

Facility: Indian Point Units 2 & 3	Date of Exam: 3/8/2003	Exam Level: SRO		
Category	K/A #	Topic	Imp.	Q#
Conduct of Operations	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	80
	2.1.20	Ability to execute procedure steps.	4.2	81
	2.1.8	Ability to coordinate personnel activities outside the control room.	3.6	34
	Total			3
Equipment Control	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	82
	2.2.22	Knowledge of LCOs and Safety Limits	4.1	83
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity.	3.2	84
	2.2.33	Knowledge of control rod programming.	2.9	36
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	3.5	37
	2.2.13	Knowledge of tagging and clearance procedures.	3.8	35
	Total			6
Radiation Control	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	3.3	85
	2.3.2	Knowledge of facility ALARA program.	2.9	86
	2.3.9	Knowledge of the process for performing a containment purge.	3.4	38
	Total			3
Emergency Procedures / Plan	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.6	87
	2.4.24	Knowledge of loss of cooling water procedures.	3.7	88
	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	3.9	89
	2.4.29	Knowledge of the emergency plan.	4.0	40
	2.4.19	Knowledge of EOP layout, symbols, and icons.	3.7	39
	Total			5
Tier 3 Point Total SRO				17

Tier / Group	Randomly Selected K/A	Reason for Rejection
2/1 (Question 23)	063 A4.03	No indication available for applicable topic in control room at facility. Replaced with randomly selected 063 K1.03.
1/2 (Question 97)	033 AA2.11	Redundant Topic (Double Jeopardy) with SYS 015K5.02 (Question 5). Replaced with manually selected 033 AA2.10.
1/3 (Question 100)	036 AA1.04	Would not yield 10CFR55.43(b) question for SRO. Replaced with manually selected Generic topic 2.2.28 to ensure coverage of 10CFR55.43(b) item 6 and/or 7 for SRO. (Was not randomly selected as part of generic tier 3).
2/2 (Question 26)	073 A1.01	Controls of PRM system are not operated in a manner that will cause change in the plant condition required by the topic. Replaced with randomly generated 062 K1.03
3 (Question 82)	2.1.18	Topic switched for RO 2.2.6 (RO 93) for SRO Only application
2/1 (Question 4)	013 A1.09	No suitable test item. Manually selected closest suitable KA to the selected topic (013A1.01)
1/1 (Question 41)	005 AK2.01	No suitable test item. Randomly selected topic in 005 area (005 AK1.03)
2/2 (Question 77)	062 A2.12	No suitable test item. Manually selected Generic topic 2.1.33 to ensure 10CFR55.43(b) coverage for SRO
2/3 (Question 78)	008 A2.07	No suitable test item. Manually selected 008 A2.02 in same topic area
1/2 (Question 98)	037 G2.1.30	Not suitable for SRO. Manually selected Generic topic 2.2.22 to ensure 10CFR55.43 (b) coverage for SRO
1/2 (Question 99)	E05 G2.1.27	Too many similar topics. Randomly selected E11 EK1.2 to replace
2/2 (Question 32)	034 K6.02	Too many similar topics. Randomly selected 027 A4.01 to replace
2/2 (Question 31)	028 A4.01	No suitable test item. Randomly selected 028 K6.01 to replace

Facility: Indian Point 2 & 3		Date of Exam: 3/8/2003											Exam Level: RO
Tier	Group	K/A Category Point											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	1	4	0	3				4	5			0	16
	2	1	2	3				5	4			2	17
	3	0	0	1				0	1			1	3
	Tier Totals	5	2	7				9	10			3	36
2. Plant Systems	1	3	0	0	5	3	2	1	1	4	3	1	23
	2	4	2	4	1	2	1	1	1	1	1	2	20
	3	0	1	2	0	0	1	1	1	1	1	0	8
	Tier Totals	7	3	6	6	5	5	3	3	6	5	3	51
3. Generic Knowledge and Abilities		Cat 1			Cat 2			Cat 3			Cat 4		13
		3			4			2			4		

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., 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 exam must total 100 points.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system 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 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.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the SRO license level, and the point totals for each system and category. K/A's below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
00005 Inoperable/Stuck Control Rod / 1	X						AK1.03	Knowledge of the operational implications of the following concepts as they apply to the stuck rod: Xenon transient.	3.2	41
000015/17 RCP Malfunctions / 4				X			AA1.22	Ability to operate and/or monitor the following as they apply to the RCP malfunctions: RCP seal failure/malfunction	4.0	52
BW/E09; CE/A13; W/E09 & 10 Natural Circ./ 4			X				EK3.1	Knowledge of the reasons for the following responses as they apply to the (Natural Circulation Operations): Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.	3.3	42
000024 Emergency Boration / 1					X		AA2.04	Ability to determine and interpret the following as they apply to the Emergency Boration: Availability of BWST.	3.4	43
000026 / Loss of Component Cooling Water / 8			X				AK3.03	Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: Guidance and actions contained in EOP for Loss of CCW/Nuclear Service Water.	4.0	44
000027 / Pressurizer Pressure Control System Malfunction / 3					X		AA2.15	Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Actions to be taken if PZR pressure instrument fails high.	3.7	45
000040 (BW/E05; CE/E05; W/E12) / Steam Line Rupture – Excessive Heat Transfer / 4	X						AK1.06	Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: High-energy steam line break considerations.	3.7	46
000040 (BW/E05; CE/E05; W/E12) / Steam Line Rupture – Excessive Heat Transfer / 4				X			EA1.2	Ability to operate and/or monitor the following as they apply to the (Uncontrolled Depressurization of all Steam Generators): Operating behavior characteristics of the facility.	3.6	47
CE/A11; W/E08 / RCS Overcooling – PTS / 4										
000051 / Loss of Condenser Vacuum / 4				X			AA1.04	Ability to operate and / or monitor the following as they apply to the Loss of Condenser Vacuum: Rod position.	2.5	48
000055 / Station Blackout / 6					X		EA2.01	Ability to determine or interpret the following as they apply to a Station Blackout: Existing valve positioning on a loss of instrument air system.	3.4	49
000057 / Loss of Vital AC Elec. Inst. Bus / 6			X				AK3.01	Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital AC electrical instrument bus.	4.1	50
000062 / Loss of Nuclear Service Water / 4					X		AA2.01	Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: Location of a leak in the CCWS.	2.9	51
000067 / Plant Fire On-site / 9										
000068 (BW/A06) / Control Room Evac. / 8										
000069 (W/E14) / Loss of CTMT Integrity / 5										

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000074 (W/E06 & E07) / Inad. Core Cooling / 4	X						EK1.05	Knowledge of the operational implications of the following concepts as they apply to the Inadequate Core Cooling: Definition of saturated liquid.	2.8	53
000074 (W/E06 & E07) / Inad. Core Cooling / 4	X						EK1.3	Knowledge of the operational implications of the following concepts as they apply to the (Degraded Core Cooling): Annunciators and conditions indicating signals, and remedial actions associated with the (Degraded Core Cooling).	3.7	54
000074 (W/E06 & E07) / Inad. Core Cooling / 4				X			EA1.2	Ability to operate and/or monitor the following as they apply to the (Saturated Core Cooling): Operating behavior characteristics of the facility.	3.2	55
BW/E03 / Inadequate Subcooling Margin / 4										
000076 / High Reactor Coolant Activity / 9					X		AA2.02	Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: Corrective actions required for high fission product activity in RCS.	2.8	56
BW/A02 & A03 / Loss of NNI-X/Y / 7										
K/A Category Point Totals:	4	0	3	4	5	0		Group Point Total:		16

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000001 / Continuous Rod Withdrawal / 1				X			AA1.05	Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal: Reactor trip switches.	4.3	57
000003 / Dropped Control Rod / 1		X					AK2.05	Knowledge of the interrelations between the Dropped Control Rod and the following: Control rod drive power supplies and logic circuits.	2.5	58
000007 (BW/E02 & E10; CE/E02) / Reactor Trip – Stabilization – Recovery / 1										
BW/A01 / Plant Runback / 1										
BW/A04 / Turbine Trip / 4										
000008 / Pressurizer Vapor Space Accident / 3		X					AK2.02	Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Sensors and detectors.	2.7	59
000009 / Small Break LOCA / 3				X			EA1.18	Ability to operate and monitor the following as they apply to a small break LOCA: Balancing of HPI loop flows.	3.4	60
000011 / Large Break LOCA / 3				X			EA1.01	Ability to operate and monitor the following as they apply to a Large Break LOCA: Control of RCS pressure and temperature to avoid violating PTS limits.	3.7	61
W/E04 / LOCA Outside Containment / 3	X						EK1.3	Knowledge of the operational implications of the following concepts as they apply to the (LOCA Outside Containment): Annunciators and conditions indicting signals, and remedial actions associated with the (LOCA Outside Containment).	3.5	97
BW/E08; W/E03 / LOCA Cooldown / Depress. / 4										
W/E11 / Loss of Emergency Coolant Recirc. / 4										
WE/01 & 02 / Rediagnosis & SI Termination / 3			X				EK3.2	Knowledge of the reasons for the following responses as they apply to the Reactor Trip or Safety Injection/Rediagnosis: Normal, abnormal and emergency operating procedures associated with (Reactor Trip or Safety Injection/Rediagnosis).	3.0	62
WE/01 & 02 / Rediagnosis & SI Termination / 3					X		EA2.2	Ability to determine and interpret the following as they apply to the (SI Termination): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.3	98
000022 / Loss of Reactor Coolant Makeup / 2				X			AA1.08	Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: VCT level.	3.4	63
000025 / Loss of RHR System / 4					X		AA2.07	Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Pump cavitation.	3.4	64
000029 / Anticipated Transient w/o Scram / 1										
000032 / Loss of Source Range NI / 7					X		AA2.04	Ability to determine and interpret the following as they apply to the Loss of Source Range instrumentation: Satisfactory Source Range/Intermediate Range overlap	3.1	72
000033 / Loss of Intermediate Range NI / 7										
000037 / Steam Generator Tube Leak / 3										

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000038 / Steam Generator Tube Rupture / 3			X				EK3.01	Knowledge of the reasons for the following responses as they apply to the Steam Generator Tube Rupture: Equalizing pressure on primary and secondary sides of ruptured SG	4.1	69
000054 (CE/E06) / Loss of Main Feedwater / 4						X	2.4.2	Emergency Procedures/Plan: Knowledge of system setpoints, interlocks, and automatic actions associated with EOP entry conditions	3.9	65
BW/E04; W/E05 / Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4						X	2.4.6	Emergency Procedures/Plan: Knowledge of symptom based EOP mitigation strategies	3.1	100
000058 / Loss of DC Power / 8					X		AA2.03	Ability to determine and interpret the following as they apply to the Loss of DC Power: DC loads lost. Impact on ability to operate and monitor plant systems	3.5	67
000058 / Loss of DC Power / 8			X				AK3.02	Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Actions contained in EOP for loss of DC power.	4.0	99
000059 / Accidental Liquid Radwaste Rel. / 9										
000060 / Accidental Gaseous Radwaste Rel. / 9										
000061 / ARM System Alarms / 7				X			AA1.01	Ability to operate and/or monitor the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Automatic actuation.	3.6	68
W/E16 / High Containment Radiation / 9										
CE/E09 / Functional Recovery										
K/A Category Point Totals:	1	2	3	5	4	2		Group Point Total:		17

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E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000028 / Pressurizer Level Malfunction / 2			X				AK3.02	Knowledge of the reasons for the following responses as they apply to the Pressurizer Level Control Malfunctions: Relationships between PZR pressure increase and reactor makeup/letdown imbalance.	2.9	70
000036 (BW/A08) / Fuel Handling Accident / 8										
000056 / Loss of Off-site Power / 6					X		AA2.51	Ability to determine and interpret the following as they apply to the Loss of Offsite Power: ΔT, (core, heat exchanger, etc.)	3.3	71
000065 / Loss of Instrument Air / 8						X	2.1.2	Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.	3.9	66
BW/E13 & E14 / EOP Rules and Enclosures										
BW/A07 / Flooding / 8										
CE/A16 / Excess RCS Leakage / 2										
W/E13 / Steam Generator Over-pressure / 4										
W/E15 / Containment Flooding / 5										
K/A Category Point Totals:	0	0	1	0	1	1		Group Point Total:		3

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
001 Control Rod Drive				X								K4.02	Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: Control rod mode select control (movement control).	3.8	73
001 Control Rod Drive									X			A3.05	Ability to monitor automatic operation of the CRDS, including: Individual versus group position	3.5	78
003 Reactor Coolant Pump									X			A3.04	Ability to monitor automatic operation of the RCPS, including: RCS flow.	3.6	1
003 Reactor Coolant Pump				X								K4.04	Knowledge of RCPS design feature(s) and/or interlock(s) which provide for the following: Adequate cooling of RCP motor and seals.	2.8	2
004 Chemical and Volume Control					X							K5.19	Knowledge of the operational implications of the following concepts as they apply to the CVCS: Concept of SDM.	3.5	74
004 Chemical and Volume Control						X						K6.17	Knowledge of the effect of a loss or malfunction of the following will have on the CVCS: Flow paths for emergency boration	4.4	3
013 Engineered Safety Features Actuation								X				A2.01	Ability to (a) predict the impacts of the following malfunctions or operations on the ESF Actuation System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: LOCA	4.6	75
013 Engineered Safety Features Actuation							X					A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ESFAS controls including: RCS pressure and temperature.	4.0	4
015 Nuclear Instrumentation					X							K5.02	Knowledge of the operational implications of the following concepts as they apply to the NIS: Discriminator/compensation operation.	2.7	5
015 Nuclear Instrumentation				X								K4.03	Knowledge of NIS design feature(s) and/or interlock(s) provide for the following: Reading of source range/intermediate range/power range outside Control Room.	3.9	76
017 In-Core Temperature Monitor	X											K1.01	Knowledge of the physical connections and/or cause/effect relationship between the ITM system and the following: Plant computer	3.2	77
017 In-Core Temperature Monitor										X		A4.01	Ability to manually operate and/or monitor in the Control Room: Actual in-core temperatures.	3.8	6

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
022 Containment Cooling										X		A4.04	Ability to manually operate and/or monitor in the Control Room: Valves in the CCS.	3.1	7
025 Ice Condenser													SUPPRESSED		
056 Condensate	X											K1.03	Knowledge of the physical connections and/or cause-effect relationships between the Condensate system and the following systems: MFW	2.6	83
056 Condensate											X	2.1.2	Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.	3.3	79
059 Main Feedwater				X								K4.19	Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: Automatic feedwater isolation of MFW.	3.2	8
059 Main Feedwater										X		A4.03	Ability to manually operate and monitor in the Control Room: Feedwater control during power increase and decrease.	2.9	9
061 Auxiliary / Emergency Feedwater						X						K6.02	Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Pumps.	2.6	10
061 Auxiliary / Emergency Feedwater				X								K4.04	Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: Prevention of AFW runout by limiting AFW flow.	3.1	80
068 Liquid Radwaste									X			A3.02	Ability to monitor automatic operation of the Liquid Radwaste System including: Automatic isolation.	3.6	81
068 Liquid Radwaste	X											K1.07	Knowledge of the interrelations and/or cause-effect relationships between the Liquid Radwaste System and the following: Sources of liquid waste for LRS.	2.7	82
071 Waste Gas Disposal					X							K5.04	Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System: Relationship of hydrogen/oxygen concentrations to flammability.	2.5	11
072 Area Radiation Monitoring									X			A3.01	Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment.	2.9	12
K/A Category Point Totals:	3	0	0	5	3	2	1	1	4	3	1	Group Point Total:			23

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
002 Reactor Coolant					X							K5.19	Knowledge of the operational implications of the following concepts as they apply to the RCS: Neutron embrittlement.	2.6	84
002 Reactor Coolant						X						K6.02	Knowledge of the effect of a loss or malfunction on the following will have on the Reactor Coolant System (RCS): RCP	3.6	86
006 Emergency Core Cooling		X										K2.02	Knowledge of bus power supplies to the following: Valve operators for accumulators.	2.5	13
010 Pressurizer Pressure Control									X			A3.02	Ability to monitor automatic operation of PZR PCS, including: PZR pressure.	3.6	14
011 Pressurizer Level Control		X										K2.02	Knowledge of bus power supplies to the following: PZR heaters.	3.1	15
012 Reactor Protection					X							K5.01	Knowledge of the operational implications of the following concepts as they apply to the RPS: DNB.	3.3	16
012 Reactor Protection											X	2.4.12	Emergency Procedures/Plan: Knowledge of general operating crew responsibilities during emergency operations	3.4	27
014 Rod Position Indication										X		A4.01	Ability to manually operate and/or monitor in the Control Room: Rod selection control.	3.3	17
016 Non-nuclear Instrumentation			X									K3.04	Knowledge of the effect that a loss or malfunction of the NNIS will have on the following: MFW system.	2.6	85
026 Containment Spray							X					A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment pressure.	3.9	18
029 Containment Purge															
033 Spent Fuel Pool Cooling								X				A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System; and (b) based those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SFPCS.	2.7	19
035 Steam Generator											X	2.4.4	Emergency Procedures/Plan: Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	2.5	20

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
039 Main and Reheat Steam	X											K1.06	Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: Condenser steam dump.	3.1	21
055 Condenser Air Removal			X									K3.01	Knowledge of the effect that a loss or malfunction of the CARS will have on the following: Main condenser.	2.5	22
062 AC Electrical Distribution	X											K1.03	Knowledge of the physical connections and/or cause-effect relationships between the AC distribution system and the following systems: DC Distribution	3.5	26
063 DC Electrical Distribution	X											K1.03	Knowledge of the physical connections and/or cause-effect relationships between the DC distribution system and the following systems: Battery Charger and battery	2.9	23
063 DC Electrical Distribution			X									K3.02	Knowledge of the effect that a loss or malfunction of the DC Electrical System will have on the following: Components using dc control power.	3.5	24
064 Emergency Diesel Generator			X									K3.03	Knowledge of the effect that a loss or malfunction of the ED/G system will have on the following: ED/G (manual loads).	3.6	25
073 Process Radiation Monitoring															
075 Circulating Water															
079 Station Air	X											K1.01	Knowledge of the physical connections and/or cause-effect relationships between the SAS and the following systems: IAS.	3.0	28
086 Fire Protection				X								K4.07	Knowledge of design feature(s) and/or interlock(s) which provide for the following: MT/G and T/G protection.	2.5	29
K/A Category Point Totals:	4	2	4	1	2	1	1	1	1	1	2	Group Point Total:			20

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
005 Residual Heat Removal								X				A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Pressure transient protection during cold shutdown.	3.5	30
007 Pressurizer Relief/Quench Tank															
008 Component Cooling Water			X									K3.01	Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following: Loads cooled by CCWS	3.4	90
027 Containment Iodine Removal										X		A4.01	Ability to manually operate and/or monitor in the Control Room: CIRS controls.	3.3	32
028 Hydrogen Recombiner and Purge Control						X						K6.01	Knowledge of the effect of a loss or malfunction of the following will have on the HRPS: Hydrogen recombiners.	2.6	31
034 Fuel Handling Equipment															
041 Steam Dump/Turbine Bypass Control									X			A3.03	Ability to monitor automatic operation of the SDS, including: Steam flow.	2.7	33
045 Main Turbine Generator							X					A1.06	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including: Expected response of secondary plant parameters following T/G trip.	3.3	88
076 Service Water		X										K2.01	Knowledge of bus power supplies to the following: Service water.	2.7	89
076 Service Water			X									K3.07	Knowledge of the effect that a loss or malfunction of Service Water will have on the following: ESF loads	3.7	87
078 Instrument Air															
103 Containment															
K/A Category Point Totals:	0	1	2	0	0	1	1	1	1	1	0	Group Point Total:			8

Plant-Specific Priorities			
System / Topic	Recommended Replacement for....	Reason	Points
APE 054 G2.4.2 (Question 65)	EPE 038EK1.04	High PRA importance; Event as well as mitigating system	1
APE 058 AA2.03 (Question 67)	APE 060AK2.01	High PRA importance; Loss of high importance system	1
EPE E05 G2.4.6 (Question 100)	APE 059AA2.02	High PRA importance; Event as well as mitigating systems	1
SYS 004 K6.17 (Question 3)	SYS 004K2.04	High PRA importance; Risk significant post-accident human error	1
APE 015/017 AA1.22 (Question 52)	APE 068 AA1.20	High PRA importance; Risk significant post-accident human error	1
EPE 038 EK3.01 (Question 69)	EPE E16 EK3.4	High PRA importance; Event as well as risk significant post-accident human error	1
SYS 008 K3.01 (Question 90)	SYS 103 A4.01	High PRA importance; Risk significant post-accident human error	1
SYS 012 Generic 2.4.12 (Question 27)	SYS 075 Generic 2.4.30	High PRA importance; Event as well as mitigating systems	1
Plant-Specific Priority Total: (limit 10)			8

Facility: Indian Point Units 2 & 3	Date of Exam: 3/8/2003	Exam Level: RO		
Category	K/A #	Topic	Imp.	Q#
Conduct of Operations	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	3.0	91
	2.1.18	Ability to make accurate, clear and concise logs, records, status boards, and reports.	2.9	93
	2.1.8	Ability to coordinate personnel activities outside the Control Room.	3.8	34
	Total			3
Equipment Control	2.2.12	Knowledge of surveillance procedures.	3.0	92
	2.2.13	Knowledge of tagging and clearance procedures.	3.6	35
	2.2.33	Knowledge of control rod programming.	2.5	36
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.0	37
	Total			4
Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	94
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	38
	Total			2
Emergency Procedures / Plan	2.4.14	Knowledge of general guidelines for EOP flowchart use.	3.0	95
	2.4.34	Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.	3.8	96
	2.4.19	Knowledge of EOP layout, symbols, and icons.	2.7	39
	2.4.29	Knowledge of the emergency plan.	2.6	40
	Total			4
Tier 3 Point Total RO				13

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/2 (Question 72)	054 G2.2.25	No connection to 10CFR55.41 for RO. Replaced with randomly generated 032 AA2.04
2/2 (Question 23)	063 A4.03	No indication available for applicable topic in control room at facility. Replaced with randomly generated 063 K1.03.
2/1 (Question 78)	056 G2.2.22	No connection to 10CFR55.41 for RO and no TS connection to system. Replaced with randomly generated 001 A3.05
2/1 (Question 83)	071 A4.27	No indication or control available in control room. Replaced with randomly generated 056 K1.03
2/1 (Question 75)	013 K4.17	Operation not performed at facility. Replaced with randomly generated 013 A2.01
2/1 (Question 74)	004 K5.02	Potential Double Jeopardy with 071K5.04. Replaced with manually selected 004 K5.19. (Manually selected the next topic with same KA importance value)
2/2 (Question 26)	073 A1.01	Controls of PRM system are not operated in a manner that will cause change in the plant condition required by the topic. Replaced with randomly generated 062 K1.03
3 (Question 93)	2.2.6	Not RO level topic. Replaced by trading topic with SRO 2.1.18 (SRO 82)
2/1 (Question 4)	013A1.09	No suitable test item. Manually selected closest suitable KA to the selected topic (013A1.01)
1/1 (Question 41)	005 AK2.01	No suitable test item. Randomly selected topic in 005 area (005 AK1.03)
2/1 (Question 77)	017 K4.02	No suitable test item. Randomly selected topic in area (017 K1.01)
2/3 (Question 87)	007A2.06	No suitable test item. Randomly selected topic in area (076 K3.07)
2/2 (Question 86)	029 A1.02	No suitable test item. Randomly selected topic in area (002 K6.02)
2/3 (Question 32)	034 K6.02	Related item on exam. Randomly selected topic in area (027 A4.01)
2/1 (Question 82)	068 A2.04	Related item on exam. Randomly selected topic in area (068 K1.07)
2/3 (Question 31)	028 A4.01	No suitable test item. Randomly selected topic in area (028 K6.01)

Facility: Indian Point 3		**Date of Examination:** 3/10/2003	
Examination Level: RO		**Operating Test Number:** 1	
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A.1a	Conduct of Operations	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (3.7/4.4)
		JPM:	Perform QPTR Calculation
A.1b	Conduct of Operations	2.1.18	Ability to make accurate, clear, and concise logs, records, status boards, and reports. (2.9/3.0)
		JPM:	Perform a set of Control Room logs
A.2	Equipment Control	2.2.12	Knowledge of surveillance procedures. (3.0/3.4)
		JPM:	Perform the RCS Leak Rate surveillance
A.3	Radiation Exposure Control	2.3.2	Knowledge of facility ALARA program. (2.5/2.9)
		JPM:	Determine appropriate RWP and take action for High Area Radiation alarm
A.4	Emergency Plan	2.4.43	Knowledge of RO responsibilities in E-Plan implementation. (3.3/3.1)
		Question:	Duties of operations department personnel when site accountability is required
		2.4.29	Knowledge of the Emergency Plan. (2.6/4.0)
		Question:	Emergency Response Facilities activated in a Site Area Emergency

Facility: Indian Point 3		**Date of Examination:** 3/10/2003	
Examination Level: SRO		**Operating Test Number:** 1	
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A.1a	Conduct of Operations	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (3.7/4.4) JPM: Review a QPTR calculation and direct appropriate actions	
A.1b	Conduct of Operations	2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. (2.9/3.0) JPM: Review Control Room Log Entries	
A.2	Equipment Control	2.2.17 Knowledge of the process for managing maintenance activities during power operations. (2.3/3.5) JPM: Review (for approval) a completed surveillance for Tech Spec required equipment	
A.3	Non-Emergency dose limits question	2.3.4 (3.1) Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. QUESTION: Given the plant in a SAE and a personnel exposure history, determine the exposure limit for a Non-Emergency operation.	
	Emergency Exposure Limits Question	2.3.2 (2.9) Knowledge of facility ALARA program. QUESTION: Given a situation requiring valve alignment verification in a radiation area, determine the waiver requirements for independent or concurrent verification of a locked valve and identify an alternate process for verification.	
A.4	Emergency Plan	2.4.44 Knowledge of Emergency Plan Protective Action Recommendations. (2.1/4.0) JPM: Perform Protective Action Recommendation	

Facility:	Indian Point 3	**Date of Examination:**	3/10/2003
Exam Level:	RO/SROI	**Operating Test No.:**	1

B.1: Control Room Systems

	System	JPM Description	Type Code*	Safety Function
S1	001 Rod Control	Stabilize reactor power at 10^{-8} amps following criticality	N,S,A,L	1
S2	006 ECCS	Fill a Safety Injection Accumulator *(Repeat from last NRC exam)*	D,S	2
S3	010 Pressurizer Pressure Control	Depressurize the RCS following a SGTR	M,S,A,E	3
S4	003 Reactor Coolant Pump	Start an RCP *(Repeat from last NRC exam)*	M,S,A,L	4P
S5	007 Pressurizer Relief Tank	Respond to PRT High Pressure	N,S,E	5
S6	062 AC Distribution	Restore 6.9KV Busses from off-site power.	D,S	6
S7	015 Nuclear Instrumentation	Return a Power Range Channel to service *(Repeat from last NRC exam)*	D,S	7

B.2 Facility Walk-Through

P1	004 CVCS	Align City Water Cooling to Charging pumps	R,D,E	2
P2	041 Steam Dump	Local Operation of Atmospheric Steam Dumps	D,E,A	4S
P3	063 DC Distribution	Startup a Battery Charger	D	6

* **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, (E)OP/AB**

NOTES

S1 New JPM. Candidate will establish a startup rate, block source range channels above P-6, and raise power to 10-8 amps. When candidate inserts control rods to stabilize power, Bank D Group 2 rods will drop, requiring a reactor trip.

S3 Modified JPM. Normal spray and PORVs will be unavailable. Candidate will be required to use Aux Spray IAW ECA-3.3

S4 Modified JPM. Although indicated as repeat, the RCP parameter that will require a trip is not high starting current, but stator winding high temperature.

Facility:	Indian Point 3	**Date of Examination:**	3/17/2003
Exam Level:	SROU	**Operating Test No.:**	1

B.1: Control Room Systems

	System	JPM Description	Type Code*	Safety Function
S1	001 Rod Control	Stabilize reactor power at 10^{-8} amps following criticality	N,S,A,L	1
S2				
S3	010 Pressurizer Pressure Control	Depressurize the RCS following a SGTR	M,S,A,E	3
S4				
S5	007 Pressurizer Relief Tank	Respond to PRT High Pressure	N,S,E	5
S6				
S7				

B.2 Facility Walk-Through

P1	004 CVCS	Align City Water Cooling to Charging pumps	R,D,E	2
P2	041 Steam Dump	Local Operation of Atmospheric Steam Dumps	D,E	4S
P3				

* **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, (E)OP/AB**

NOTES

S1 New JPM. Candidate will establish a startup rate, block source range channels above P-6, and raise power to 10-8 amps. When candidate inserts control rods to stabilize power, Bank D Group 2 rods will drop, requiring a reactor trip.

S3 Modified JPM. Normal spray and PORVs will be unavailable. Candidate will be required to use Aux Spray IAW ECA-3.3

Facility: IP3 Scenario No.: 1 Op Test No.: 1

Examiners: _____ Candidates: _____ CRS

_____ _____ RO

_____ _____ PO

Initial Conditions: 100% power EOL

31 Charging Pump OOS

32 CCW Pump OOS

Small SG Tube Leak < 25 GPD

Turnover: Reduce load to 800 MWe to remove 23(33) Condensate Pump from service within 60 minutes

Critical Tasks: Manual reactor trip

Initiate Condensate flow

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO) N (BOP) N (CRS)	Reduce power
2	CFW13E	C (RO)	MFRV fails closed slowly
3	PRS6B	I (RO) I (BOP)	Pressurizer level channel fails high
4	ATS4B	C (ALL)	Feedwater Pump trip requiring rapid load decrease to 700 MWe
5	ATS4A	M (ALL)	Feedwater pump trip. Reactor trip required.
6	RPS2A	C (RO)	Auto reactor trip failure. Manual trip required
7	ATS2	C (BOP)	TDAFW trips
8	CFW1A	C (BOP)	MDAFW fails to start
9	CFW1C CFW1A	C (BOP)	MDAFW trips

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

Facility: IP3 Scenario No.: 2 Op Test No.: 1

Examiners: _____ Candidates: _____ CRS

_____ _____ RO

_____ _____ PO

Initial Conditions: 45% power BOL

31 Charging Pump OOS

32 CCW Pump OOS

Small SG Tube Leak < 25 GPD

Turnover: I&C repair is complete on 32 MBFP Speed Controller. Place 32 MBFP in service and raise power to 100% at 100 MWe per hour

Critical Tasks: Manual SI initiation

Isolate AFW flow to faulted SG

Event No.	Malf. No.	Event Type*	Event Description
1		N (RO)	Place 32 MBFP in service
2		R (RO) N (BOP) N (CRS)	Raise power
3	PRS2A	C (RO)	Spray valve fails open slowly
4	CVC17	C (BOP)	Letdown Pressure controller failure
5	EPS2B	C (ALL)	Loss of Vital Instrument Bus
6	SWS6D SWS6E SWS6F	M (ALL)	Loss of Service Water
7	MSS2A	C (ALL)	Faulted SG
8	SIS1A SIS1B	C (BOP)	SI fails to actuate

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

Facility: IP3 Scenario No.: 3 Op Test No.: 1

Examiners: _____ Candidates: _____ CRS

_____ _____ RO

_____ _____ PO

Initial Conditions: 45% power EOL
31 Charging Pump OOS
32 CCW Pump OOS
Small SG Tube Leak < 25 GPD

Turnover: Reduce Power and remove Main Turbine and Generator from service

Critical Tasks: Restore AC Power
Stop ECCS pumps

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO) N (BOP) N (CRS)	Reduce power. Remove Turbine Generator from service
2	NIS7D	I (ALL)	PR NI failure high
3	MSS4D	C (RO)	Steam Flow transmitter fails low
4	EPS4F	C (BOP)	Loss of 6.9 KV bus 6 DG output breaker fail to auto close
5	EPS6 EPS4C	M (ALL)	Loss of Off Site power. Loss of 6.9 KV bus 3. Reactor trip.
6	DSG1B DSG1C OVR EPS29	C (BOP)	Two Running DGs trip. 480 volt bus 3A tie breaker trips open.
7	SIS7A	C (ALL)	Inadvertent SI

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

Facility: IP3 Scenario No.: 4 Op Test No.: 1

Examiners: _____ Candidates: _____ CRS

_____ _____ RO

_____ _____ PO

Initial Conditions: 100% power EOL

32 Charging Pump OOS

31 AFW Pump OOS

Small SG Tube Leak < 25 GPD

Turnover: Main Condenser rupture disc is leaking. Reduce Power to 50 MWe at 200 MWe per hour and remove Main Turbine and Generator from service

Critical Tasks: Manual Turbine Trip

Initiate Emergency Boration

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO) N (BOP) N (CRS)	Reduce load
2	TUR10B	C (BOP) C (CRS)	First Stage Shell Pressure PT-412B fails low
3	MSS3	I (RO) I (CRS)	Steam Pressure transmitter 404 fails high
4	CCW1A CCW1B	C (ALL)	CCW Pump Trip. Standby does not auto start and trips upon manual starting.
5	RCS10C RCS7C		RCP TBHX leak. RCP vibration
6	XMT26 XMT27 XMT28	M (ALL)	RCP sheared shaft; ATWS
7	TUR2A TUR2B	C (RO)	Turbine Trip failure
8	CVC16	C (BOP)	Boration failure

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

Facility:	IP3	Scenario No.: 5	Op Test No.: 1
Examiners:		Candidates:	CRS
			RO
			PO

Initial Conditions: 9% power BOL

Plant startup in progress

Turnover: Raise power and synchronize the Main Generator

Critical Tasks: Place ECCS equipment in PTL

Isolate ruptured SG

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO) N (BOP) N (CRS)	Raise reactor power. Synchronize Main Generator
2	RCS20B	I (ALL)	Tcold instrument fails high
3	SGN5C	C (ALL)	Steam Generator Tube Leak
4	SGN5C	M (ALL)	SGTR
5	XMT SGN10	C (RO)	Atmospheric Dump valve on ruptured SG fails open
6	RPS6B	C (BOP)	Train 'B' RTB fails closed. Manual action to stop ECCS pumps

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