Indian Point 3 Written Exam Question Replacement

As a result of questions raised by the licensee pertaining to the development of the examination, the NRC initiated an investigation to determine the existence of an exam compromise. No evidence was found to support an exam compromise. However, due to the lack of licensee documentation of training that was conducted just prior to the exam, compromise could not be completely ruled out. Therefore, in order to ensure the discriminatory value of the exam, twenty five questions were removed from the exam to be replaced with questions based upon new K/A's that were selected by the NRC.

The following 25 questions (20 RO and 5 SRO) were removed from the licensee's original submittal:

7, 10, 13, 14, 20, 23, 30, 31, 33, 41, 46, 47, 49, 52, 55, 60, 67, 71, 73, 74, 78, 82, 83, 96, 100

These questions were replaced with questions based upon the following K/A's:

RO (Common) Questions

Tier 1 / Group 1	Tier 2 / Group 1	Tier 2 / Group 2
000025 AA 2.06	006 A 3.07	068 K 5.04
000057 G 2.1.30	007 G 2.4.31	071 A 3.03
000058 AK 3.02	010 A 4.02	086 K 4.04
000062 AA 2.06	061 K 3.01	
	073 K 3.01	Generics
Tier 1 / Group 2	076 A 4.02	G 2.2.23
000061 AA 2.06	103 A 2.04	G 2.3.4
W/E 16 EA 1.1		G 2.4.16
		G 2.4.48

SRO Only Questions

Tier 1 / Group 1	Tier 1 / Group 2	Generics
000062 G 2.4.6	000028 EA 2.03	G 2.2.28
	W/E 10 EA 2.01	G 2.4.26

Facility: Indian Point 3		Date of Exam: 11/17/2006						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	3	2	1				3	6			3	18
	2	1	1	1				2	2			2	9
	Tier Totals	4	3	2				5	8			5	27
2. Plant Systems	1	2	3	5	2	2	2	2	1	3	4	2	28
	2	1	0	1	1	2	1	1	1	2	0	0	10
	Tier Totals	3	3	6	3	4	3	3	2	5	4	2	38
3. Generic Knowledge and Abilities		G2.1			G2.2			G2.3			G2.4		10
		2			3			2			3		

Note:
1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO and SRO outlines (i.e. except for one category in Tier 3 of the SRO-only outline, the "Tier totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site –specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7.* The generic (G) K/As in tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.

8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the applicable license level, and the point totals for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals on form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	INDIAN POINT UNIT 3 PWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO)	Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp. RO	Q#
000007 (BW/E02 & E10; CE/E02) / Reactor Trip – Stabilization – Recovery / 1				R			EA1.04	Ability to operate and monitor RCP operation and flow rates as they apply to a reactor trip	3.6	1
000008 / Pressurizer Vapor Space Accident / 3					R		AA2.20	Ability to determine and interpret the effect of an open PORV on code safety, based on observation of plant parameters as they apply to the Pressurizer Vapor Space Accident	3.4	2
000009 / Small Break LOCA / 3		R					EK2.03	Knowledge of the interrelations between the small break LOCA and the SGs	3.0	3
000011 / Large Break LOCA / 3					R		EA2.14	Ability to determine or interpret the actions to be taken if limits for PTS are violated as they apply to the Large Break LOCA	3.6	8
000015/17 RCP Malfunctions / 4						R	G2.1.28	Knowledge of the purpose and function of major system components and controls	3.2	4
000022 / Loss of Reactor Coolant Makeup / 2								Not Selected		
000025 / Loss of RHR System / 4					R		AA2.06	Ability to determine and interpret the existence of proper RHR overpressure protection as it applies to the Loss of RHR System	3.2	7
000026 / Loss of Component Cooling Water / 8					R		**AA2.01**	**The ability to determine and interpret the location of a leak in the CCWS as they apply to the Loss of Component Cooling Water**	**2.9**	11
000027 / Pressurizer Pressure Control System Malfunction / 3		R					AK2.03	Knowledge of the interrelations between the Pressurizer Pressure Control Malfunction and controllers and positioners	2.6	5
000029 / Anticipated Transient w/o Scram / 1	R						EK1.01	Knowledge of the operational implications of reactor nucleonics and thermo-hydraulics behavior as they apply to the ATWS	2.8	6
000038 / Steam Generator Tube Rupture / 3				R			EA1.16	Ability to operate and monitor SG atmospheric relief valve and secondary PORV controllers and indicators as they apply to a SGTR	4.4	75
000040 (BW/E05; CE/E05; W/E12) / Steam Line Rupture – Excessive Heat Transfer / 4								Not Selected		
000054 (CE/E06) / Loss of Main Feedwater / 4	R						AK1.01	Knowledge of the operational implications of the MFW line break depressurizes the SG (similar to a steam line break) as they apply to the Loss of Main Feedwater	4.1	9
000055 / Station Blackout / 6								Not Selected		
000056 / Loss of Off-site Power / 6	R						AK1.01	Knowledge of the operational implications of the principles of cooling by natural convection as they apply to Loss of Offsite Power	3.7	12
000057 / Loss of Vital AC Elec. Inst. Bus / 6						R	G2.1.30	Ability to locate and operate components, including local control	3.9	10
000058 / Loss of DC Power / 6			R				AK3.02	Knowledge of the reasons for actions contained in EOP for loss of dc power as it applies to the Loss of DC power	3.4	13

ES-401	INDIAN POINT UNIT 3 PWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO)	Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp. RO	Q#
000062 / Loss of Nuclear Service Water / 4					R		AA2.06	Ability to determine and interpret the length of time after the loss of SWS flow to a component before that component may be damaged as it applies to the Loss of Nuclear Service Water	2.8	14
000065 / Loss of Instrument Air / 8								Not Selected		
W/E04 / LOCA Outside Containment / 3				R			EA1.2	Ability to operate and / or monitor operating behavior characteristics of the facility as they apply to a LOCA Outside Containment	3.6	15
W/E11 / Loss of Emergency Coolant Recirc. / 4					R		EA2.1	Ability to determine and interpret the facility conditions and selection of appropriate procedures during abnormal and emergency operations as it applies to the Loss of emergency Coolant Recirs	3.4	16
BW/E04; W/E05 / Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4						R	G2.4.20	Knowledge of operational implications of EOP warnings, cautions and notes	3.3	17
K/A Category Point Totals:	3	2	1	3	6	3		Group Point Total:		18

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000001 / Continuous Rod Withdrawal / 1	R						AK1.06	Knowledge of the operational implications of the relationship of reactivity and reactor power to rod movement as it applies to the continuous rod withdrawal	4.0	18
000003 / Dropped Control Rod / 1								Not Selected		
00005 Inoperable/Stuck Control Rod / 1								Not Selected		
000024 Emergency Boration / 1								Not Selected		
000028 / Pressurizer Level Malfunction / 2		R					AK2.02	Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and sensors and detectors	2.6	19
000032 / Loss of Source Range NI / 7								Not Selected		
000033 / Loss of Intermediate Range NI / 7								Not Selected		
000036 (BW/A08) / Fuel Handling Accident / 8								Not Selected		
000037 / Steam Generator Tube Leak / 3					R		AA2.12	Ability to determine and interpret the flow rate of leak as it applies to the Steam Generator Tube Leak	3.3	21
000051 / Loss of Condenser Vacuum / 4						R	G2.2.12	Knowledge of the surveillance procedures	3.0	22
000059 / Accidental Liquid Radwaste Rel. / 9								Not Selected		
000060 / Accidental Gaseous Radwaste Rel. / 9								Not Selected		
000061 / ARM System Alarms / 7					R		AA2.06	Ability to determine and interpret the required actions if alarm channel is out of service as it applies to the Area Radiation Monitoring (ARM) Systems alarms	3.2	20
000067 / Plant Fire On-site / 9								Not Selected		
000068 (BW/A06) / Control Room Evac. / 8								Not Selected		
000069 (W/E14) / Loss of CTMT Integrity / 5			R				AK3.01	Knowledge of the reasons for guidance contained in EOP for loss of containment integrity	3.8	24
000074 (W/E06 & E07) / Inad. Core Cooling / 4								Not Selected		
000076 / High Reactor Coolant Activity / 9				R			AA1.04	Ability to operate and / or monitor the failed fuel-monitoring equipment as they apply to the High Reactor Coolant Activity	3.2	25
WE/01 & 02 / Rediagnosis & SI Termination / 3								Not Selected		
W/E13 / Steam Generator Over-pressure / 4								Not Selected		
W/E15 / Containment Flooding / 5								Not Selected		
W/E16 / High Containment Radiation / 9				R			EA1.1	Ability to operate and/or monitor components, and functions of control and safety systems, including instrumentation, signals, interlocks failure modes, and automatic and manual features	3.1	23
BW/A01 / Plant Runback / 1								Not Selected		
BW/A02 & A03 / Loss of NNI-X/Y / 7								Not Selected		
BW/A04 / Turbine Trip / 4								Not Selected		
BW/A05 / Emergency Diesel Actuation / 6								Not Selected		

ES-401	INDIAN POINT UNIT 3 PWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO)	Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
BW/A07 / Flooding / 8								Not Selected		
BW/E03 / Inadequate Subcooling Margin / 4								Not Selected		
BW/E08; W/E03 / LOCA Cooldown / Depress. / 4								Not Selected		
BW/E09; CE/A13; W/E09 & 10 Natural Circ./ 4								Not Selected		
BW/E13 & E14 / EOP Rules and Enclosures								Not Selected		
CE/A11; W/E08 / RCS Overcooling – PTS / 4						R	G2.1.23	Ability to perform specific system and integrated plant procedures during all modes of plant operation	3.9	26
CE/A16 / Excess RCS Leakage / 2								Not Selected		
CE/E09 / Functional Recovery								Not Selected		
K/A Category Point Totals:	1	1	1	2	2	2		Group Point Total:		9

ES-401	INDIAN POINT UNIT 3 PWR Examination Outline Plant Systems – Tier 2/Group 1 (RO)	Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
003 Reactor Coolant Pump										R		A4.07	Ability to manually operate and / or monitor in the control room RCP seal bypass	2.6	27
003 Reactor Coolant Pump						R						K6.04	Knowledge of the effects of a loss or malfunction on the containment isolation valves affecting RCP operation will have on the RCPs	2.8	38
004 Chemical and Volume Control				R								K4.01	Knowledge of CVCS design feature and / or interlock which provide for oxygen control of the RCS	2.8	28
005 Residual Heat Removal					R							K5.09	Knowledge of the operational implications of dilution and boration considerations	3.2	29
006 Emergency Core Cooling									R			A3.07	Ability to monitor automatic operation of the ECCS, including RHR pumps	3.6	30
007 Pressurizer Relief/Quench Tank											R	G2.4.31	Knowledge of annunciators alarms and indications, and use of the response instructions	3.3	31
008 Component Cooling Water	R											K1.04	Knowledge of the physical connections and / or cause-effect relationship between the CCWS and the RCS, in order to determine sources(s) of RCS leakage into the CCWS	3.3	32
010 Pressurizer Pressure Control										R		A4.02	Ability to manually operate and/or monitor in the control room PZR Heaters	3.6	33
012 Reactor Protection							R					A1.01	Ability to predict and / or monitor changes in parameters exceeding design limit associated with operating the RPS controls including trip setpoint adjustments	2.9	34
013 Engineered Safety Features Actuation							R					A1.09	Ability to predict and / or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ESFAS controls including T-hot.	3.4	35
013 Engineered Safety Features Actuation			R									K3.03	Knowledge of the effects that a loss or malfunction of the ESFAS will have on the containment	4.3	42
022 Containment Cooling		R										K2.01	Knowledge of power supplies to the containment cooling fans	3.0	36
025 Ice Condenser													Not Selected		
026 Containment Spray			R									K3.01	Knowledge of the effect that a loss or malfunction of the CSS will have on the CCS	3.9	37

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
026 Containment Spray									R			A3.01	Ability to monitor automatic operation of the CSS including pump starts and correct MOV positioning	4.3	43
039 Main and Reheat Steam					R							K5.08	Knowledge of the operational implications of the effect of steam removal on reactivity as it applies to the MRSS	3.6	39
039 Main and Reheat Steam	R											K1.07	Knowledge of the physical connections and / or cause-effect relationships between the MRSS and the AFW system	3.4	68
059 Main Feedwater				R								K4.08	Knowledge of MFW design features(s) and / or interlock(s) which provide for feedwater regulatory valve operation (on basis of steam flow, feed flow mismatch	2.5	40
061 Auxiliary / Emergency Feedwater			R									K3.01	Knowledge of the effect that a loss or malfunction of the AFW will have on the RCS	4.4	41
061 Auxiliary / Emergency Feedwater						R						K6.02	Knowledge of the effect of a loss or malfunction of the pumps will have on the AFW components	2.6	44
062 AC Electrical Distribution		R										K2.01	Knowledge of bus power supplies to major system loads	3.3	45
063 DC Electrical Distribution									R			A3.01	Ability to monitor automatic operation of the DC electrical system meters, annunciators, dials, recorders and indicating lights	2.7	54
063 DC Electrical Distribution			R									K3.02	Knowledge of the effects that a loss or malfunction of the DC electrical system will have on components using DC control power	3.5	57
064 Emergency Diesel Generator		R										K2.03	Knowledge of bus power supplies to the control power	3.2	50
073 Process Radiation Monitoring			R									K3.01	Knowledge of the effect that a loss or malfunction of the PRM system will have on radioactive effluent releases	3.6	46
076 Service Water										R		A4.02	Ability to operate and/or monitor in the control room SWS valves	2.6	47
078 Instrument Air											R	G2.4.4	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	48

ES-401	INDIAN POINT UNIT 3 PWR Examination Outline Plant Systems – Tier 2/Group 1 (RO)	Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
103 Containment								R				A2.04	Ability to (a) predict the impacts of containment evacuation (including recognition of the alarm) malfunctions or operation on the containment system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations	3.5	49
103 Containment										R		A4.04	Ability to manually operate and / or monitor in the control room Phase A and Phase B resets	3.5	51
K/A Category Point Totals:	2	3	5	2	2	2	2	1	3	4	2	Group Point Total:			28

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
001 Control Rod Drive													Not Selected		
002 Reactor Coolant						R						K6.02	Knowledge of the effect or a loss or malfunction of the RCP on the RCS	3.6	53
011 Pressurizer Level Control													Not Selected		
014 Rod Position Indication	R											**K1.01**	**Knowledge of the physical connections and / or cause effect relationships between the RPIS and the CRDS**	**3.2**	56
015 Nuclear Instrumentation					R							K5.02	Knowledge of the operational implications of discriminator/compensation operation concepts as they apply to the NIS	2.7	58
016 Non-nuclear Instrumentation													Not Selected		
017 In-Core Temperature Monitor													Not Selected		
027 Containment Iodine Removal													Not Selected		
028 Hydrogen Recombiner and Purge Control								R				A2.03	Malfunctions or operations on the HRPS; and based on those predictions use procedures to correct, control or mitigate the consequences of the hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment	3.4	59
029 Containment Purge													Not Selected		
033 Spent Fuel Pool Cooling													Not Selected		
034 Fuel Handling Equipment													Not Selected		
035 Steam Generator													Not Selected		
041 Steam Dump/Turbine Bypass Control													Not Selected		
045 Main Turbine Generator							R					A1.06	Ability to predict and / or monitor changes in parameters associated with operating the MT/G system controls including expected response of secondary plant parameters following T/G trip	3.3	61
055 Condenser Air Removal			R									K3.01	Knowledge of the effects that a loss or malfunction of the CARS will have on the main condenser	2.5	62
056 Condensate													Not Selected		
068 Liquid Radwaste					R							K5.04	Knowledge of the operational implication of the biological hazards of radiation and the resulting goal of ALARA as they apply to the Liquid Radwaste System	3.2	52

ES-401	INDIAN POINT UNIT 3 PWR RO Examination Outline Plant Systems – Tier 2/Group 2	Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
071 Waste Gas Disposal									R			A3.03	Ability to monitor automatic operation of the Waste Gas Disposal System including radiation monitoring system alarm and actuating signals	3.6	55
072 Area Radiation Monitoring									R			A3.01	Ability to monitor automatic operation of the ARM system including changes in ventilation alignment		63
075 Circulating Water													Not Selected		
079 Station Air													Not Selected		
086 Fire Protection				R								K4.04	Knowledge of design features(s) and /or *interlocks(s) which provide for personnel safety*	3.1	60
K/A Category Point Totals:	1	0	1	1	2	1	1	1	2	0	0	Group Point Total:			10

Facility: Indian Point Unit 3		Date of Exam: 10/23/06	Exam Level: RO	
Category	K/A #	Topic	Imp.	Q#
Conduct of Operations	G2.1.1	Knowledge of conduct of operations requirements	3.7	64
	G2.1.32	Ability to explain and apply all system limits and precautions	3.4	65
				2
	Total			
Equipment Control	G2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could effect reactivity	3.7	66
	G2.2.23	Ability to track limiting conditions for operations	2.6	67
	G2.2.28	Knowledge of new and spent fuel movement procedures	2.6	69
	Total			3
Radiation Control	G2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure	2.9	70
	G2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized	2.5	71
				2
	Total			
Emergency Procedures / Plan	G2.4.18	Knowledge of the specific bases for EOPs	2.7	72
	G2.4.48	Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions	3.5	73
	G2.416	Knowledge of EOP implementation hierarchy and coordination with other support procedures	3.0	74
	Total			3
Tier 3 Point Total RO				10

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	000026AA2.06	Test same area as Tier 2 Group 1 - 003K6.04 - Replaced with 000026AA2.01
2/2	000014K1.02	Previously approved (2) question rejected by NRC, unable to write any other question to meet knowledge – Replaced with 000014K1.01
		20 questions randomly replaced by the NRC with new N/A's picked by the NRC

Facility: Indian Point 3		Date of Exam: 11/17/2006							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			2	6
	2								2			2	4
	Tier Totals								6			4	10
2. Plant Systems	1								3			2	5
	2				1				2				3
	Tier Totals				1				5			2	8
3. Generic Knowledge and Abilities		G2.1			G2.2				G3.3		G4.4		7
		2			2				1		2		

Note:

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

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (SRO)	Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp. SRO	Q#
000007 (BW/E02 & E10; CE/E02) / Reactor Trip – Stabilization – Recovery / 1										
000008 / Pressurizer Vapor Space Accident / 3										
000009 / Small Break LOCA / 3										
000011 / Large Break LOCA / 3										
000015/17 RCP Malfunctions / 4										
000022 / Loss of Reactor Coolant Makeup / 2										
000025 / Loss of RHR System / 4					S		AA2.07	Ability to determine and interpret pump cavitation as it applies to the Loss of Residual Heat Removal System.	3.7	76
000026 / Loss of Component Cooling Water / 8										
000027 / Pressurizer Pressure Control System Malfunction / 3										
000029 / Anticipated Transient w/o Scram / 1										
000038 / Steam Generator Tube Rupture / 3										
000040 (BW/E05; CE/E05; W/E12) / Steam Line Rupture – Excessive Heat Transfer / 4					S		EA2.1	Ability to determine and interpret the facility conditions and selection of appropriate procedures during abnormal and emergency operations as they apply to the Uncontrolled Depressurization of all Steam Generators	4.0	77
000054 (CE/E06) / Loss of Main Feedwater / 4										
000055 / Station Blackout / 6										
000056 / Loss of Off-site Power / 6										
000057 / Loss of Vital AC Elec. Inst. Bus / 6					S		AA2.19	Ability to determine and interpret plant automatic actions that will occur on a loss of a vital ac electrical instrument bus as it applies to the loss of a vital AC Instrument Bus	4.3	79
000058 / Loss of DC Power / 6						S	**G2.1.33**	**Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications**	3.4	80
000062 / Loss of Nuclear Service Water / 4						S	G2.4.6	Knowledge of system based EOP mitigation strategies	4.0	78
000065 / Loss of Instrument Air / 8										
W/E04 / LOCA Outside Containment / 3										
W/E11 / Loss of Emergency Coolant Recirc. / 4										
BW/E04; W/E05 / Inadequate Heat Transfer – Loss of Secondary Heat Sink / 4					S		EA2.1	Ability to determine and interpret facility conditions and selection of appropriate procedures during abnormal and emergency operations as they apply to the Loss of Secondary Heat sink	4.4	81
K/A Category Point Totals:					4	2		Group Point Total:		6

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
000001 / Continuous Rod Withdrawal / 1										
000003 / Dropped Control Rod / 1										
00005 Inoperable/Stuck Control Rod / 1										
000024 Emergency Boration / 1										
000028 / Pressurizer Level Malfunction / 2					S		AA2.03	Ability to determine and interpret charging subsystem flow indicator and controller as they apply to the Pressurizer Level Control Malfunctions	3.3	82
000032 / Loss of Source Range NI / 7										
000033 / Loss of Intermediate Range NI / 7										
000036 (BW/A08) / Fuel Handling Accident / 8										
000037 / Steam Generator Tube Leak / 3										
000051 / Loss of Condenser Vacuum / 4										
000059 / Accidental Liquid Radwaste Rel. / 9										
000060 / Accidental Gaseous Radwaste Rel. / 9										
000061 / ARM System Alarms / 7										
000067 / Plant Fire On-site / 9										
000068 (BW/A06) / Control Room Evac. / 8										
000069 (W/E14) / Loss of CTMT Integrity / 5										
000074 (W/E06 & E07) / Inad. Core Cooling / 4						S	G2.4.4	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	84
000076 / High Reactor Coolant Activity / 9										
WE/01 & 02 / Rediagnosis & SI Termination / 3										
W/E13 / Steam Generator Over-pressure / 4										
W/E15 / Containment Flooding / 5						S	G2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation	4.4	85
W/E16 / High Containment Radiation / 9										
BW/A01 / Plant Runback / 1										
BW/A02 & A03 / Loss of NNI-X/Y / 7										
BW/A04 / Turbine Trip / 4										
BW/A05 / Emergency Diesel Actuation / 6										
BW/A07 / Flooding / 8										
BW/E03 / Inadequate Subcooling Margin / 4										
BW/E08; W/E03 / LOCA Cooldown / Depress. / 4										

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (SRO)	Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	Number	K/A Topic(s)	Imp.	Q#
BW/E09; CE/A13; W/E09 & 10 Natural Circ./ 4					S		EA2.1	Ability to determine and interpret the facility conditions and selection of appropriate procedures during abnormal and emergency operations	3.9	83
BW/E13 & E14 / EOP Rules and Enclosures										
CE/A11; W/E08 / RCS Overcooling – PTS / 4										
CE/A16 / Excess RCS Leakage / 2										
CE/E09 / Functional Recovery										
K/A Category Point Totals:					2	2		Group Point Total:		4

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
003 Reactor Coolant Pump															
004 Chemical and Volume Control								S				A2.32	Ability to predict the impacts of expected reactivity changes after valving in a new mixed=bed demineralizer that has not been preborated and based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations	3.9	86
005 Residual Heat Removal															
006 Emergency Core Cooling															
007 Pressurizer Relief/Quench Tank															
008 Component Cooling Water															
010 Pressurizer Pressure Control															
012 Reactor Protection											S	G2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits	3.7	87
013 Engineered Safety Features Actuation															
022 Containment Cooling															
025 Ice Condenser															
026 Containment Spray															
039 Main and Reheat Steam															
059 Main Feedwater								S				A2.07	Ability to predict the impacts of a trip of MFW pump turbine on the MFW and based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations	3.3	88
061 Auxiliary / Emergency Feedwater											S	G2.1.12	Ability to apply technical specifications for a system	4.0	89
062 AC Electrical Distribution															
063 DC Electrical Distribution															
064 Emergency Diesel Generator															
073 Process Radiation Monitoring															
076 Service Water								S				A2.01	Ability to predict the impacts of loss of SWS and based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations	3.7	90

ES-401	PWR Examination Outline Plant Systems – Tier 2/Group 1 (SRO)	Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
078 Instrument Air															
103 Containment															
K/A Category Point Totals:								3			2	Group Point Total:			5

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
001 Control Rod Drive															
002 Reactor Coolant															
011 Pressurizer Level Control															
014 Rod Position Indication															
015 Nuclear Instrumentation															
016 Non-nuclear Instrumentation															
017 In-Core Temperature Monitor															
027 Containment Iodine Removal															
028 Hydrogen Recombiner and Purge Control															
029 Containment Purge															
033 Spent Fuel Pool Cooling															
034 Fuel Handling Equipment				S								K4.02	Knowledge of design feature(s) and / or interlock(s) which provide for fuel movement	3.3	91
035 Steam Generator								S				A2.03	Ability to predict the impacts of pressure/level transmitter failure on the S/Gs and based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations	3.6	92
041 Steam Dump/Turbine Bypass Control															
045 Main Turbine Generator															
055 Condenser Air Removal															
056 Condensate															
068 Liquid Radwaste								S				A2.04	Ability to predict the impacts of failure of automatic isolation on the Liquid Radwaste System and based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations	3.3	93
071 Waste Gas Disposal															
072 Area Radiation Monitoring															
075 Circulating Water															
079 Station Air															
086 Fire Protection															

ES-401	PWR Examination Outline Plant Systems – Tier 2/Group 2 (SRO)	Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	Number	K/A Topic(s)	Imp.	Q#
K/A Category Point Totals:				1				2				Group Point Total:			3

Facility: Indian Point Unit 3		Date of Exam: 10/23/06		SRO
Category	K/A #	Topic	Imp.	Q#
Conduct of Operations	2.1.11	Knowledge of less than one hour technical specifications for a system	3.8	94
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications	4.0	95
	Total			2
Equipment Control	2.2.28	Knowledge of new and spent fuel movement procedures	3.5	96
	2.2.24	Ability to analyze the affects of maintenance activities on LCO status	3.8	97
	Total			2
Radiation Control	2.3.6	Knowledge of the requirements for reviewing and approving release permits	3.1	98
	Total			1
Emergency Procedures / Plan	2.4.41	Knowledge of emergency action level thresholds and classifications	4.1	99
	2.4.26	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage	3.3	100
	Total			2
Tier 3 Point Total SRO				7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	058G2.1.30	Did not meet guidance in ES-401, Attachment 2 – Replaced with 058G2.1.32 (supplied by NRC)
1/1	058G2.1.32	Unable to write a valid question for K/A – Replaced with 058G2.1.33 (supplied by NRC)
		5 questions randomly replaced by the NRC with 5 new K/A's picked by the NRC

Facility: Indian Point Unit 3 (rev. 2) Date of Examination: 10/23/06

Examination Level: RO ☑ SRO ☐ Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	Perform Daily Containment Leakage Calculation. Elapsed time from previous reading is calculated. Integrator readings are obtained for each of four weld channel zones and the difference from the previous readings are calculated. The four leakage readings are summed and then divided by the elapsed time to obtain daily leakage.
Conduct of Operations	M, R	Determine minimum staffing requirement and determine from *Operations schedule which personnel can/cannot be called in.* Candidate reviews Overtime Scheduling Guidelines and a staff schedule to determine which individuals can cover an unplanned illness without exceeding limits for hours worked.
Equipment Control	M, R	Generate a Manual Tagout Candidate will prepare a manual tagout (normal means using the SOMs computer application is not available). Candidate will review drawings and tagout points and enter the points and desired position/condition onto the manual tagout form.
Radiation Control	R,D,P	Calculate a Release Rate for a Liquid Release. With the computer not available, the candidate uses multiple worksheets to calculate the most restrictive release rate based upon sample activity, boron concentration, dilution flow, and pump capacity.
Emergency Plan		

NOTE: *All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.*

* Type Codes & Criteria:

(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Facility: Indian Point Unit 3 (rev. 2) Date of Examination: 10/23/06

Examination Level: RO ☐ SRO ☑ Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	Review Daily Containment Leakage Calculation (Faulted) A completed calculation is supplied that contains two errors. The CRS will review the calculation, note and correct the errors.
Conduct of Operations	M, R	Determine minimum staffing requirement and determine from Operations schedule which personnel can/cannot be called in. Candidate reviews Overtime Scheduling Guidelines and a staff schedule to determine which individuals can cover an unplanned illness without exceeding limits for hours worked. Candidate provides explanation of why unavailable operators cannot be called in.
Equipment Control	M, R	Review/Approve a Tagging Order (Faulted) Candidate will review P&IDs and associated components identified on the tag-out required to provide protection. An error will be identified (and corrected) by the candidate.
Radiation Control	N, R	Review/Approve a Gaseous Release Permit (Faulted) Candidate will review a completed permit that contains a calculation error. The permit will be reviewed, the error will be identified and corrected.
Emergency Plan	S, M, P	EAL Classification and Part 1 Form Following the simulator scenario, the CRS candidate will classifiy the event (highest level EAL achieved if the classification escalated during the scenario) and complete the NY State part 1 form.

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank ($\leq$ 3 for ROs; $\leq$ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank ($\geq$ 1)
(P)revious 2 exams ($\leq$ 1; randomly selected)

Facility: Indian Point Unit 3 (Rev.1) Date of Examination: 10/23/06
Exam Level: RO ☑ SRO-I ☐ SRO-U ☐ Operating Test No.: 1

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Emergency Borate	A, M, S	1
b. Reset SI Using Key Switches	A, N, S	2
c. Realign SI For High Head Recirculation	D, S	3
d. RCP #2 Seal Failure Actions	N, S	4P
e. Transfer from AFW Feed to Low Flow Bypass Feed	L, N, S	4S
f. Align Containment Spray System During Loss of Emergency Coolant Recirculation	N, S	5
g. Restore Steam Flow Channel to Service	N, S	7
h. Adjust R-20 Process Radiation Monitor Setpoints	N, S	9
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Open Steam Supply Valves to 32 ABFP	A, D	4S
j. Start the Appendix R Diesel	A, E, N	6
k. Align Backup Cooling to the Charging Pumps	A, E, N, R	8

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Indian Point Unit 3 Date of Examination: 10/23/06
Exam Level: RO ☐ SRO-I ☐ SRO-U ☑ Operating Test No.: 1

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a.		
b.		
c.		
d. RCP #2 Seal Failure Actions	N, S	4P
e. Transfer from AFW Feed to Low Flow Bypass Feed	L, N, S	4S
f. Align Containment Spray System During Loss of Emergency Coolant Recirculation	N, S	5
g.		
h.		

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i.		
j. Start the Appendix R Diesel	A, E, N	6
k. Align Backup Cooling to the Charging Pumps	A, E, N, R	8

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: Indian Point Unit 3 (Rev. 1) Date of Examination: 10/23/06
Exam Level: RO ☐ SRO-I ☑ SRO-U ☐ Operating Test No.: 1

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. Emergency Borate	A, M, S	1
b. Reset SI Using Key Switches	A, N, S	2
c. Realign SI For High Head Recirculation	D, S	3
d. RCP #2 Seal Failure Actions	N, S	4P
e. Transfer from AFW Feed to Low Flow Bypass Feed	L, N, S	4S
f. Align Containment Spray System During Loss of Emergency Coolant Recirculation	N, S	5
g. Restore Steam Flow Channel to Service	N, S	7
h.		
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Open Steam Supply Valves to 32 ABFP	A, D	4S
j. Start the Appendix R Diesel	A, E, N	6
k. Align Backup Cooling to the Charging Pumps	A, E, N, R	8

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

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

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:
Scenario begins at 6% power with turbine close to sync speed. The team will continue with the startup by synchronizing the unit to the grid and increasing power.

Turnover:
Continue with the startup. Synchronize the unit to the grid and increase power at 150 MW per hour.

Event No:	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP) N (CRS) R (CRS) R (ATC)	Sync turbine and raise power
2	XMT-RCS052	I (ATC) I (CRS)	Thot fails high. CRS references TS
3	MAL-SGN005D	C (ALL)	SG Tube Leak. CRS references TS
4	MAL-SGN005D	M (ALL)	SGTR – Manual reactor trip and manual SI actuation
5	MAL-EPS006	C (BOP)	Loss of offsite power when 6.9 KV busses transfer
6	MAL-SIS004A MAL-SIS004C	C (BOP)	31 and 33 SI pump auto start failure
7	MAL-SGN004P	C (ATC)	SG safety fails open on ruptured SG

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

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

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:
The scenario begins at 100% power with 32 EDG out of service due to malfunctioning governor.

Turnover:
32 EDG out of service due to malfunctioning governor.
Maintain current plant conditions.

Event No:	Malf. No.	Event Type*	Event Description
1	MAL-SWS001C	C (BOP)	33 SWP trips
2	MAL-EPS005C	C (ALL)	480V Bus 5A Fault
3	N/A	R (ATC) R (CRS) N (BOP) N (CRS)	TS required shutdown
4	MAL-NIS006A	C (ATC) C(CRS)	Power Range Channel 41 Upper Detector Fails High
5	MAL-EPS001	M (ALL)	Station Blackout
6	MAL-DSG001A	C (BOP)	31 EDG fail to start
7	MAL-PRS003D	C (ATC)	PRZ PORV Fails Open
8	MAL-SWS001E	C (BOP)	SW pump does not auto start after bus energized

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

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

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:
The scenario begins at 100% power steady state conditions and no equipment OOS.

Turnover:
Maintain current plant conditions.

Event No:	Malf. No.	Event Type*	Event Description
1	MAL-PRS005A	I (ATC) I (SRO)	PRZR pressure Instrument PT-455 fails high. Spray valves open and actual pressure lowers until manual action is taken. TS for SRO
2	MAL-PRS003C	C (ATC) C (SRO)	PORV 455C fails open. Block valve can be manually closed to isolate the leak. TS for SRO
3	ASISRWST	C (SRO)	Loss of RWST level. Fork truck crashes into RWST resulting in level lowering to about 11 feet over 40 minutes. TS for SRO
4	N/A	R (ATC) R (CRS) N (BOP) N (CRS)	Tech Spec Required Shutdown – Due to inoperable RWST, team commences a shutdown.
5	MAL-RCS007C MAL-RCS012C		RCP Seal malfunction - High vibrations and #1 seal degradation. During shutdown, indications of RCP malfunction occur.
6	MAL-RCS002C	C (ATC)	While team is investigating RCP malfunction the affected RCP trips. RO must manually actuate reactor trip.
7	MAL-RCS001K	M (ALL)	Seal LOCA on affected RCP occurs resulting in eventual Low Pressure SI actuation
8	MAL-SIS001A MAL-SIS001B		SI fails to auto actuate, but manual SI is successful
9	MAL-SIS004B	C (BOP) C (BOP)	32 SI Pump fails to auto start 34 and 35 FCU dampers do not auto reposition to incident mode.

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

Facility: Indian Point 3 Scenario No: 4 Rev.1 Op-Test No: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:
Scenario begins with the plant stable at 100% power. 31 ABFP has been out of service for 10 hours for bearing inspections with an expected return to service in 12 hours.

Turnover:
31 ABFP has been out of service for 10 hours for bearing inspections with an expected return to service in 12 hours.
Maintain Current Plant Conditions

Event No:	Malf. No.	Event Type*	Event Description
1	XMT-MSS019	I (ATC) I (CRS)	PT-412A fails low TS CRS
2	XMT-MSS019	C (ATC) N (BOP) N (CRS) R (ATC) R (CRS)	Loss of Condenser Vacuum and subsequent power reduction
3	AL-CFW005C	C (ALL) R (ATC) R (CRS)	Condensate Pump trip
4	MAL-CFW015	M (ALL)	FW rupture in Turbine bldg
5	MAL-RPS002A	C (ATC)	Auto reactor trip failure, one RTB does not open
6	MAL-CFW001C	C(BOP)	MDAFP 33 fails to start (with 31 MDADP OOS) manual action required to feed with turbine driven ABFP
7	MAL-CFW001B		TDAFP trip, results in loss of heat sink

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