

Facility:		Robert E Ginna		Date of Exam:		October 18, 2012											
Tier	Group	RO K/A Category Points												SRO-Only Points			
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total	
1. Emergency & Abnormal Plant Evolution	1	3	3	3				3	3				3	18	3	3	6
	2	1	1	2	N/A			2	2	N/A			1	9	2	2	4
	Tier Totals	4	4	5				5	5				4	27	5	5	10
2. Plant Systems	1	3	2	3	4	2	2	2	3	2	2	3	28	3	2	5	
	2	1	1	0	1	2	1	1	2	0	0	1	10	0	2	3	
	Tier Totals	4	3	3	5	4	3	3	5	2	2	4	38	5	3	8	
3. Generic Knowledge and Abilities Categories					1	2	3	4	10								
					2	3	3	2									
					1	2	3	4									
					1	2	2	2									

Note:

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

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1	X						EK1.02 – Shutdown Margin Knowledge of the operational implications of the following concepts as they apply to the reactor trip:	3.4	2
000009 Small Break LOCA / 3		X					EK2.03 – S/Gs Knowledge of the interrelations between the small break LOCA and the following:	3.0	8
000011 Large Break LOCA / 3			X				EK3.13 – Hot-leg injection/recirculation Knowledge of the reasons for the following responses as they apply to the Large Break LOCA:	3.8	12
000015/17 RCP Malfunctions / 4				X			AA1.08 – S/G LCS Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow):	3.0	16
000022 Loss of Rx Coolant Makeup / 2				X			AA1.06 CVCS charging pump ammeters and running indicators Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Makeup:	2.9	18
000025 Loss of RHR System / 4							2.4.41 – Knowledge of the emergency action level thresholds and classifications.		22
						X	2.4.11 – Knowledge of abnormal condition procedures	4.0	22
000026 Loss of Component Cooling Water / 8			X				AK3.04 - Effect on the CCW flow header of a loss of CCW Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water:	3.5	28
000027 Pressurizer Pressure Control System Malfunction / 3		X					AK2.03 - Controllers and positioners Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following:	2.6	32
000038 Steam Gen. Tube Rupture / 3	X						EK1.01 Use of steam tables Knowledge of the operational implications of the following concepts as they apply to the SGTR:	3.1	38

000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4		X					AK2.02 Sensors and detectors Knowledge of the interrelations between the Steam Line Rupture and the following:	2.6	42
000054 (CE/E06) Loss of Main Feedwater / 4				X			AA1.03 AFW auxiliaries, including oil cooling water supply Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW):	3.5	48
000056 Loss of Off-site Power / 6							2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions:		52
						X	2.4.9 Knowledge of low power/shutdown implications in accident (e.g., LOCA or loss of residual heat removal) mitigation strategies.	4.2	52
000057 Loss of Vital AC Inst. Bus / 6			X				AK3.01 Actions contained in EOP for loss of vital ac electrical instrument bus Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus:	4.1	56
000062 Loss of Nuclear Svc Water / 4						X	2.4.11 Knowledge of abnormal condition procedures.	4.0	58
W/E04 LOCA Outside Containment / 3					X		EA2.1 – Facility conditions and selection of appropriate procedures during abnormal and emergency operations. Ability to determine and interpret the following as they apply to the (LOCA Outside Containment)	3.4	62
W/E11 Loss of Emergency Coolant Recirc. / 4					X		EA2.2 – Adherence to appropriate procedures and operation within the limitations in the facility license and amendments Ability to determine and interpret the following as they apply to the (Loss of Emergency Coolant Recirculation)	3.4	68
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	X						EK1.1 Components, capacity, and function of emergency systems. Knowledge of the operational implications of the following concepts as they apply to the (Loss of Secondary Heat Sink)	3.8	72
000077 Generator Voltage and Electric Grid Disturbances / 6					X		AA2.06 – Generator frequency limitations Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances:	3.4	75
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000003 Dropped Control Rod / 1		X					AK2.05 – Control rod drive power supplies and logic circuits Knowledge of the interrelations between the Dropped Control Rod and the following:	2.5	10
000005 Inoperable/Stuck Control Rod / 1					X		AA2.03 – Required actions if more than one rod is stuck or inoperable Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod:	3.5	20
000036 (BW/A08) Fuel Handling Accident / 8			X				AK3.03 – Guidance contained in EOP for fuel handling incident Knowledge of the reasons for the following responses as they apply to the Fuel Handling Incidents:	3.7	30
000037 Steam Generator Tube Leak / 3							2.2.38 – Knowledge of conditions and limitations in the facility license		36
						X	2.1.28 – Knowledge of the purpose and function of major system components and controls	3.6	36
000059 Accidental Liquid RadWaste Rel. / 9							AK2.02 – Radioactive gas monitors Knowledge of the interrelations between the Accidental Liquid Radwaste Release and the following:		40
000068 (BW/A06) Control Room Evac. / 8			X				AK3.09 Transfer the following to local control: Charging pumps, charging header flow control valve, PRZR heaters, and boric acid transfer pumps	3.9	40
W/E01 & E02 Rediagnosis & SI Termination / 3					X		EA2.1 – Facility conditions and selection of appropriate procedures during abnormal and emergency operations Ability to determine and interpret the following as they apply to the (Reactor Trip or Safety Injection Rediagnosis)	3.2	50
W/E15 Containment Flooding / 5				X			EA1.2 – Operating behavior characteristics of the facility Ability to operate and / or monitor the following as they apply to the (Containment Flooding)	2.7	60
W/E16 High Containment Radiation / 9				X			EA1.1 – Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features Ability to operate and / or monitor the following as they apply to the (High Containment Radiation)	3.1	70

BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4	X							EK1.3 – Annunciators and conditions indicating signals, and remedial actions associated with the Natural Circulation with Steam Void in Vessel with/without RVLIS Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation Operations)	3.3	73
K/A Category Point Totals:	1	1	2	2	2	1		Group Point Total:		9

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)										Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump						X						K6.14 – Starting requirements Knowledge of the effect of a loss or malfunction on the following will have on the RCPS:	2.6	1
004 Chemical and Volume Control	X											K1.07 – NIS Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems:	2.6	3
005 Residual Heat Removal				X								K4.03 – RHR heat exchanger bypass flow control Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following:	2.9	5
006 Emergency Core Cooling								X				A2.04 – Improper discharge pressure Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	3.4	7
007 Pressurizer Relief/Quench Tank												2.1.23 – Ability to perform specific system and integrated plant procedures during all modes of plant operation.		11
026 Containment Spray											X	2.1.27 Knowledge of system purpose and/or function	3.9	11
007 Pressurizer Relief/Quench Tank												A1.03 – Monitoring quench tank temperature Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including:	2.6	13
064 Emergency Diesel Generator							X					A1.03 – Operating voltages, currents, and temperatures Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G controls including:		13

008 Component Cooling Water																		A1.03 – CCW pressure Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including:		15
				X														K4.01 – Automatic start of standby pump Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following:	3.1	15
008 Component Cooling Water																		2.2.44 – Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions:		33
														X				2.4.21 – Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, RCS integrity, containment conditions, radioactivity release control, etc.	4.2	33
010 Pressurizer Pressure Control			X															K2.02 – Controller for PZR spray valve Knowledge of bus power supplies to the following:	2.5	17
012 Reactor Protection						X												K6.02 – Redundant channels Knowledge of the effect of a loss or malfunction of the following will have on the RPS:	2.9	21
013 Engineered Safety Features Actuation										X								A2.04 – Loss of Instrument bus Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations;	3.6	23
013 Engineered Safety Features Actuation					X													K5.02 – Safety System logic and reliability Knowledge of the operational implications of the following concepts as they apply to the ESFAS:	2.9	25
022 Containment Cooling				X														K4.01 – Cooling of containment penetrations Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following:	2.5	27

022 Containment Cooling																		2.2.44 – Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions:		31
																		2.4.41 – Knowledge of the emergency action level thresholds and classifications		31
																X		2.4.31 – Knowledge of annunciator alarms, indications, or response procedures:	4.2	31
026 Containment Spray			X															K3.01 – CCS Knowledge of the effect that a loss or malfunction of the CSS will have on the following:	3.9	35
039 Main and Reheat Steam			X															K3.06 – SDS Knowledge of the effect that a loss or malfunction of the MRSS (Main and Reheat Steam Sys) will have on the following:	2.8	37
059 Main Feedwater				X														K4.17 – Increased feedwater flow following a reactor trip Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following:	2.5	41
061 Auxiliary/Emergency Feedwater					X													K5.03 – Pump head effects when control valve is shut Knowledge of the operational implications of the following concepts as they apply to the AFW:	2.6	43
062 AC Electrical Distribution	X																	K1.04 – Off-site power sources Knowledge of the physical connections and/or cause effect relationships between the ac distribution system and the following systems:	3.7	45
063 DC Electrical Distribution																X		A3.01 – Meters, annunciators, dials, recorders, and indicating lights Ability to monitor automatic operation of the DC electrical system, including:	2.7	47
063 DC Electrical Distribution											X							A1.01 – Battery capacity as it is affected by discharge rate Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including:	2.5	51
064 Emergency Diesel Generator		X																K2.02 – Fuel oil pumps Knowledge of bus power supplies to the following:	2.8	53

073 Process Radiation Monitoring									X							A2.02 – Detector failure Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	2.7	55
076 Service Water	X															K1.17 – PRMS Knowledge of the physical connections and/or cause- effect relationships between the SWS and the following systems:	3.6	57
078 Instrument Air										X						A3.01 – Air pressure Ability to monitor automatic operation of the IAS, including:	3.1	61
078 Instrument Air																A4.01 – Pressure gauges Ability to manually operate and/or monitor in the control room:		63
012											X					A4.01 – Manual Trip button Ability to manually operate and/or monitor in the control room:	4.5	63
103 Containment			X													K3.03 – Loss of containment integrity under refueling operations Knowledge of the effect that a loss or malfunction of the containment system will have on the following:	3.7	65
103 Containment											X					A4.03 – ESF slave relays Ability to manually operate and/or monitor in the control room:	2.7	67
K/A Category Point Totals:	3	2	3	4	2	2	2	2	3	2	2	3				Group Point Total:		28

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)										Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
001 Control Rod Drive								X				A2.14 – Urgent failure alarm, including rod-out-of-sequence and motion-inhibit alarms 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:	3.7	6
011 Pressurizer Level Control						X						K6.05 - Function of PZR level gauges as post-accident monitors Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS:	3.1	9
014 Rod Position Indication	X											K1.01 – CRDS Knowledge of the physical connections and/or cause effect relationships between the RPIS and the following systems:	3.2	19
015 Nuclear Instrumentation		X										K2.01 - NIS channels, components, and interconnections Knowledge of bus power supplies to the following:	3.3	29
033 Spent Fuel Pool Cooling												2.2.38 – Knowledge of conditions and limitations in the facility license		39
											X	2.2.22 – Knowledge of limiting conditions for operations and safety limits	3.6	39
045 Main Turbine Generator							X					A1.06 - Expected response of secondary plant parameters following T/G trip Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including:	3.3	46

071 Waste Gas Disposal																		K5.04 – Relationship of hydrogen/oxygen concentrations to flammability Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System:		49
016 Non-Nuclear Instrumentation				X														K5.01 – Separation of control and protection circuits Knowledge of the operational implication of the following concepts as they apply to the NNIS	2.7	49
072 Area Radiation Monitoring																		A3.01 – Changes in ventilation alignment Ability to monitor automatic operation of the ARM system, including:		59
002 RCS																		K5.16 Reason for the automatic features of the Feedwater Control system during total loss of reactor coolant flow		59
				X														K5.08 Why PZR level should be kept within the programmed band Knowledge	3.4	59
079 Station Air																		A4.01 – Cross-tie valves with IAS		69
029 Containment Purge System (CPS)										X								A2.01 Maintenance or other activity taking place inside CNMT Ability to (a) predict the impacts of the following malfunction or operations on the CPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	2.9	69
086 Fire Protection				X														K4.02 - Maintenance of fire header pressure Knowledge of design feature(s) and/or interlock(s) which provide for the following:	3.0	74
K/A Category Point Totals:	1	1		1	2	1	1	2						1	Group Point Total:					10

Facility:		Date of Exam:				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.17	Ability to make accurate, clear, and concise verbal reports.	3.9	4		
	2.1.32	Ability to explain and apply system limits and precautions	3.8	4		
	2.1.20	Ability to interpret and execute procedure steps.	4.6	14		
	Subtotal			2		
2. Equipment Control	2.2.14	Knowledge of the process for controlling equipment configuration or status.	3.9	24		
	2.2.20	Knowledge of the process for managing troubleshooting activities.	2.6	26		
	2.2.42	Ability to recognize system parameters that are entry level conditions for Tech Specs	3.9	26		
	2.2.38	Knowledge of conditions and limitations in the facility license.	3.6	34		
	Subtotal			3		
3. Radiation Control	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions.	3.5	44		
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high radiation areas, aligning filters, etc.	3.2	44		
	2.3.11	Ability to control radiation releases.	3.8	54		
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.4	64		
	Subtotal			3		
4. Emergency Procedures / Plan	2.4.13	Knowledge of crew roles and responsibilities during EOP usage.	4.0	66		
	2.4.23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.	3.4	71		
	Subtotal			2		
Tier 3 Point Total				10		

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)							Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)		IR	#
000008 Pressurizer Vapor Space Accident / 3							AA2.10 - High-pressure injection valves and controllers Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident:			77
					X		AA2.28 - Safety parameter display system indications		3.9	77
000029 ATWS / 1						X	2.1.20 - Ability to interpret and execute procedure steps.		4.6	83
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments. Ability to determine and interpret the following as they apply to the (Uncontrolled Depressurization of all Steam Generators)		3.9	87
000055 Station Blackout / 6						X	2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.		4.2	93
000058 Loss of DC Power / 6						X	2.4.20 - Knowledge of the operational implications of EOP warnings, cautions, and notes.		4.3	97
000065 Loss of Instrument Air / 8					X		AA2.07 - Whether backup nitrogen supply is controlling valve position Ability to determine and interpret the following as they apply to the Loss of Instrument Air:		3.2	100
K/A Category Totals:					3	3	Group Point Total:		18/6	

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000068 (BW/A06) Control Room Evac. / 8						X	2.4.6 - Knowledge of EOP mitigation strategies.		80
000069 (W/E14) Loss of CTMT Integrity / 5					X		EA2.1 – Facility conditions and selection of appropriate procedures during abnormal and emergency operations Ability to determine and interpret the following as they apply to (Loss of CTMT Integrity)	3.8	85
000074 (W/E06&E07) Inad. Core Cooling / 4					X		EA2.2 – Adherence to appropriate procedures and operation within the limitations in the facilities license and amendments Ability to determine and interpret the following as they apply to (Inadequate Core Cooling)	3.9	90
000076 High Reactor Coolant Activity / 9						X	2.2.25 - Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	95
K/A Category Point Totals:					2	2	Group Point Total:		9/4

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-2	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump												A2.04 – Effects of fluctuation of VCT pressure on RCP seal injection flow Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:		76
								X				A2.01 – Problems with RCP seals, especially rates of seal leak-off	3.9	76
004 Chemical and Volume Control											X	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	81
062 AC Electrical Distribution								X				A2.08 – Consequences of exceeding voltage limitations Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	3.0	86
064 Emergency Diesel Generator											X	2.4.9 - Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.	4.2	91
073 Process Radiation Monitoring								X				A2.03 – Calibration drift Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	2.9	96
K/A Category Point Totals:								3			2	Group Point Total:		28/ 5

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)												Form ES-401-2	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#	
002 Reactor Coolant								X				A2.02 – Loss of coolant pressure Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	4.4	78	
029 Containment Purge								X				A2.04 – Health physics sampling of containment atmosphere Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	3.2	88	
056 Condensate											X	2.1.32 - Ability to explain and apply system limits and precautions.	4.0	98	
K/A Category Point Totals:								2			1	Group Point Total:		10/ 3	

Facility:		Date of Exam:				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.39	Knowledge of conservative decision making practices.			4.3	79
	Subtotal					1
2. Equipment Control	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	82
	2.2.17	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.			3.8	84
	Subtotal					2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.			3.7	89
	2.3.6	Ability to approve release permits.			3.8	92
	Subtotal					2
4. Emergency Procedures / Plan	2.4.18	Knowledge of the specific bases for EOPs.			4.0	94
	2.4.29	Knowledge of the emergency plan.			4.4	99
	Subtotal					2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
T1 / G1	056 2.2.44	Per 07/06/12 Ginna Outline Comments, questionable duplication of Generic K/A 2.2.44. Replaced with randomly selected 2.4.9 (Q52)
T1 / G2	037 2.2.38	Per 07/06/12 Ginna Outline Comments, questionable duplication of Generic K/A 2.2.38. Replaced with randomly selected 2.1.28 (Q36)
T2 / G1	007 2.2.44	Per 07/06/12 Ginna Outline Comments, questionable duplication of Generic K/A 2.2.44. Replaced with randomly selected 026 2.1.27 (Q11)
T2 / G1	008 2.2.44	Per 07/06/12 Ginna Outline Comments, questionable duplication of Generic K/A 2.2.44. Replaced with randomly selected 2.4.21 (Q33)
T2 / G1	022 2.2.44	Per 07/06/12 Ginna Outline Comments, questionable duplication of Generic K/A 2.2.44. Replaced with randomly selected 2.4.41 (Q31)
T2 / G2	033 2.2.38	Per 07/06/12 Ginna Outline Comments, questionable duplication of Generic K/A 2.2.38. Replaced with randomly selected 2.2.22 (Q39)
T2 / G2	079 A4.01	Per 07/24 telecom with Chief Examiner. He agrees that there could be too much system overlap between this Service Air system K/A and the two 078 Instrument Air K/As selected in T2/G1. He authorized the random replacement of system 079 and its previously selected K/A. Replaced with randomly selected 029 A2.01 (Q69)
T3 / G2	2.2.20	Per 7/26 telecom with Chief Examiner. Our troubleshooting procedure has no involvement with the ROs. Reselection authorized: randomly selected 2.2.42 (Q26)
T2 / G2	072 A3.01	Ginna RMS Area monitors have no automatic operation associated with them. Replaced with 002 K5.16 (Q59). This replacement resulted in Q which was too similar to Q41, replaced K/A with 002.K5.08 (Q59)
T1 / G2	059 AK2.02	Ginna only has one AB gas process monitor. Credible scenario might be possible, but plausible distractors were too difficult. Replaced with 068 AK3.09 (Q40)
T3/G1	2.1.17	Per ES-401-9 Comment, authorized random K/A replacement. Replaced with 2.1.32. (Q4)
T2/G1	007 2.1.23	Per ES-401-9 Comment, PRT at Ginna is a very simple system. Authorized random K/A replacement. Replaced with 026 2.1.27. (Q11)

[illegible]

Facility: <u>Robert E. Ginna</u>		Date of Examination: <u>October 1, 2012</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>2012-N-1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, N	Perform OPG-REACTIVITY-CALC K/A 2.1.37 (4.3 / 4.6) Knowledge of procedures, guidelines, or limitations associated with reactivity management.
Conduct of Operations	R, D	Determine maximum allowable Rx Vessel Head Venting time K/A 2.1.25 (3.9 / 4.2) Ability to interpret reference materials, such as graphs, curves, tables, etc.
Equipment Control	R, N	Perform 1/M plot per O-1.2.1 K/A 2.2.1 (4.5 / 4.4) Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.
Radiation Control	R, N	Utilize site survey map and the Radiation Control Manual to determine stay time for local valve operation in the RCA. K/A 2.3.4 (3.2 / 3.7) Knowledge of radiation exposure limits under normal or emergency conditions.
Emergency Procedures/Plan		N/A
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: <u>Robert E. Ginna</u>		Date of Examination: <u>October 1, 2012</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u>2012-N-1</u>

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, N	Perform IV of OPG-REACTIVITY-CALC K/A 2.1.37 (4.3 / 4.6) Knowledge of procedures, guidelines, or limitations associated with reactivity management.
Conduct of Operations	R, M	Determine the Allowable Hours An Operator Can Work (JR119.001) K/A 2.1.5 (2.9* / 3.9) Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
Equipment Control	R, N	Evaluate 1/M Plot per O-1.2.1 and O-1.2 K/A 2.2.1 (4.5 / 4.4) Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.
Radiation Control	R, N	Determine Worker Availability Based on Radiation Exposure Limits K/A 2.3.4 (3.2 / 3.7) Knowledge of radiation exposure limits under normal or emergency conditions.
Emergency Procedures/Plan	R, M	Determine PAR and complete EPIP 1-5, Att.3a K/A 2.4.44 (2.4 / 4.4) Knowledge of Emergency Plan protective action recommendations.

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: Robert E. GinnaDate of Examination: October 1, 2012Exam Level: RO ☒ SRO-I ☐ SRO-U ☐Operating Test No.: 2012-N-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
<p>A. 004 Chemical and Volume Control System</p> <p>Borate for one rod not fully inserted per ES-0.1 step 4, and ER-CVCS.1</p> <p>004 A4.07 (3.9/3.7): Ability to manually operate and/or monitor in the control room: Boration/dilution</p>	S, N, A	1
<p>B. 006 Emergency Core Cooling System</p> <p>Secure SIPs as part of Termination of Bleed and Feed, per FR-H.1, Response To Loss Of Secondary Heat Sink</p> <p>006 A2.02 (3.9/4.3): Ability to (a) predict the impact of the following operations on the RCS; and (b) based on those predictions, use procedures to control the consequences of those operations: Loss of flow path.</p>	S, N	3
<p>C. 005 Heat Removal – Primary System, RHR System</p> <p>Align RHR and SI Systems For High Head Recirculation</p> <p>002 A2.04 (4.3/4.6): Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Loss of heat sinks.</p>	S, D	4P
<p>D. 045 Heat Removal – Secondary System, Main Turbine Generator</p> <p>Synchronize Generator On-Line (Improper Load Pickup)</p> <p>045 A2.17 (2.7*/2.9*): Ability to (a) predict the impacts of the following malfunctions or operation on the MT/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunction of electrohydraulic control.</p>	S, D, A	4S
<p>E. 015 Nuclear Instrumentation System</p> <p>Perform STP-O-6.1 on Source Range N-31</p> <p>015 A4.02 (3.9/3.9): Ability to manually operate and/or monitor in the control room: NIS indicators.</p>	S, L, N	7

<p>F. 064 Electrical</p> <p>Shutdown the "A" Emergency Diesel Generator (2008 NRC ILT)</p> <p>064 A4.06 (3.9/3.9): Manual start, loading, and stopping of the ED/G.</p>	S, P	6
<p>G. 012 Reactor Protection System</p> <p>Respond to a Spurious CVI While at Full Power</p> <p>012 A2.01 (3.1/3.6): Ability to (a) predict the impacts of the following malfunctions or operation on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty bistable operation.</p>	S, EN, N	7
<p>H. 008 Plant Service Systems</p> <p>Respond to rapidly lowering CCW Surge Tank level</p> <p>008 A2.02 (3.2/3.5): Ability to (a) predict the impacts of the following malfunctions or operation on the CCWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High/low surge tank level.</p>	S, A, N	8
In-Plant Systems® (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
<p>I. 006 Emergency Core Cooling System</p> <p>Makeup to "A" SI Accumulator Using the SI Accumulator Makeup Pump</p> <p>006 A1.13 (3.5/3.7): Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure (level, boron concentration).</p>	R, N	2
<p>J. 071 Waste Gas Disposal System (2010 NRC ILT)</p> <p>Release 'A' Gas Decay Tank</p> <p>071 A4.27 (3.0* / 2.7*): Ability to manually operate and/or monitor in the control room: Opening and closing of the decay tank discharge control valve.</p>	R, P, A	9
<p>K. 103 Containment System</p> <p>Perform Attachment CI/CVI (Intermediate Bldg Cold Side)</p> <p>103 A2.03 (3.5* / 3.8*): Ability to (a) predict the impacts of the following 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: Phase A and B isolation.</p>	E, EN, D	5

<p>@ 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.</p>	
* 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	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

Facility: <u>Robert E. Ginna</u>		Date of Examination: <u>October 1, 2012</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>2012-N-1</u>
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
<p>A. 004 Chemical and Volume Control System</p> <p>Borate for one rod not fully inserted per ES-0.1 step 4, and ER-CVCS.1</p> <p>004 A4.07 (3.9/3.7): Ability to manually operate and/or monitor in the control room: Boration/dilution</p>	S, N, A	1
<p>B. 006 Emergency Core Cooling System</p> <p>Secure SIPs as part of Termination of Bleed and Feed, per FR-H.1, Response To Loss Of Secondary Heat Sink</p> <p>006 A2.02 (3.9/4.3): Ability to (a) predict the impact of the following operations on the RCS; and (b) based on those predictions, use procedures to control the consequences of those operations: Loss of flow path.</p>	S, N	3
<p>C. 005 Heat Removal – Primary System, RHR System</p> <p>Align RHR and SI Systems For High Head Recirculation</p> <p>002 A2.04 (4.3/4.6): Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Loss of heat sinks.</p>	S, D	4P
<p>D. 045 Heat Removal – Secondary System, Main Turbine Generator</p> <p>Synchronize Generator On-Line (Improper Load Pickup)</p> <p>045 A2.17 (2.7*/2.9*): Ability to (a) predict the impacts of the following malfunctions or operation on the MT/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunction of electrohydraulic control.</p>	S, D, A	4S
<p>E. 015 Nuclear Instrumentation System</p> <p>Perform STP-O-6.1 on Source Range N-31</p> <p>015 A4.02 (3.9/3.9): Ability to manually operate and/or monitor in the control room: NIS indicators.</p>	S, L, N	7

<p>F. 064 Electrical</p> <p>Shutdown the "A" Emergency Diesel Generator (2008 NRC ILT)</p> <p>064 A4.06 (3.9/3.9): Manual start, loading, and stopping of the ED/G.</p>	S, P	6
<p>H. 008 Plant Service Systems</p> <p>Respond to rapidly lowering CCW Surge Tank level</p> <p>008 A2.02 (3.2/3.5): Ability to (a) predict the impacts of the following malfunctions or operation on the CCWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High/low surge tank level.</p>	S, A, N	8
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
<p>I. 006 Emergency Core Cooling System</p> <p>Makeup to "A" SI Accumulator Using the SI Accumulator Makeup Pump</p> <p>006 A1.13 (3.5/3.7): Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure (level, boron concentration).</p>	R, N	2
<p>J. 071 Waste Gas Disposal System (2010 NRC ILT)</p> <p>Release 'A' Gas Decay Tank</p> <p>071 A4.27 (3.0* / 2.7*): Ability to manually operate and/or monitor in the control room: Opening and closing of the decay tank discharge control valve.</p>	R, P, A	9
<p>K. 103 Containment System</p> <p>Perform Attachment CI/CVI (Intermediate Bldg Cold Side)</p> <p>103 A2.03 (3.5* / 3.8*): Ability to (a) predict the impacts of the following 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: Phase A and B isolation.</p>	E, EN, D	5
<p>@ 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.</p>		

* 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	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

Facility: <u>Robert E. Ginna</u>		Date of Examination: <u>October 1, 2012</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test No.: <u>2012-N-1</u>
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. 004 Chemical and Volume Control System Borate for one rod not fully inserted per ES-0.1 step 4, and ER-CVCS.1 004 A4.07 (3.9/3.7): Ability to manually operate and/or monitor in the control room: Boration/dilution	S, N, A	1
E. 015 Nuclear Instrumentation System Perform STP-O-6.1 on Source Range N-31 015 A4.02 (3.9/3.9): Ability to manually operate and/or monitor in the control room: NIS indicators.	S, L, N	7
G. 012 Reactor Protection System Respond to a Spurious CVI While at Full Power 012 A2.01 (3.1/3.6): Ability to (a) predict the impacts of the following malfunctions or operation on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty bistable operation.	S, EN, N	7

In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
<p>J. 071 Waste Gas Disposal System (2010 NRC ILT)</p> <p>Release 'A' Gas Decay Tank</p> <p>071 A4.27 (3.0* / 2.7*): Ability to manually operate and/or monitor in the control room: Opening and closing of the decay tank discharge control valve.</p>	R, P, A	9
<p>K. 103 Containment System</p> <p>Perform Attachment CI/CVI (Intermediate Bldg Cold Side)</p> <p>103 A2.03 (3.5* / 3.8*): Ability to (a) predict the impacts of the following 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: Phase A and B isolation.</p>	E, EN, D	5
<p>@ 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.</p>		
* 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	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(EN)gineered safety feature	- / - / ≥ 1 (control room system)	
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

2012 Ginna ILT Operating Exam Review/Walkthrough Comments & Resolution

JPM	Page	Comment	Resolution
Sim JPM 'B' (Secure SI pumps as part of terminating RCS feed and bleed)	1	Prep week version had one PORV failure to open , which had the potential for confusing candidate as to the initial condition entry point within the procedure	Reverted back to initial condition with both PORVs open
	12	Original version allowed a success path "option" to E-1 entry	Removed success path option for E-1 entry and added more detail to Examiner Note
Sim JPM 'D' (Synchronize Generator On-Line with improper load pickup)	3	Original malfunction severity had no consequence beyond procedural violation.	Changed MALF TUR18 from 25MW severity to 0MW severity to provide consequence for inaction (reverse power trip in ~1 min)
Sim JPM 'H' (Respond to rapidly lowering CCW surge tank level)	2	Original version had MALF CLG05 severity set to 100GPM	Changed leakrate severity ramp/insertion times to allow consistent evaluation of operator response
In-Plant JPM 'I' (Makeup to 'A' SI Accumulator using SI Accumulator Makeup Pump)	1	Change Method of Test to "Simulated" and "Plant"	Modified
	2	Ensure Initiating Cue information aligns with Cue Sheet	Modified Cue Sheet, then copied to p2
	10	Delete page reference at top of page. Delete 5 th bullet in Initial Conditions (duplicate information). Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
In-Plant JPM 'J' (Release the "A" Gas Decay Tank)	1	Change Method of Test to "Simulated" and "Plant"	Modified
	2	Typo under Instructor Actions: "and" should be "are". Ensure student H/O is marked up per this note.	Mark up procedure.
	4	Delete first "CUE" in Step 4 – already provided this material to examinee in Step 1, no need for further mention.	Deleted.
	8	Change "As examinee..." to "IF examinee..."	Changed.
	10	Add clarification to CUE <u>when</u> to report that R-14 indicates 2×10^5 cpm. Also, clarification added if asked "Is R-14 in alarm?"	Added clarifications.
	13	Delete page reference at top of page. Clarified first bullet for Initiating Cue. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.

In-Plant JPM 'K' (Perform Attachment CI/CVI for Valves in the Intermediate Building Clean Side)	1	Change Method of Test to "Simulated" and "Plant"	Modified
	3	List possible locations/methods whereby the candidate may locate a copy of the attachment. Add NOTE that applicant must demonstrate eSOMS information himself.	Methods added (FCMS or copy from Control Room) Added NOTE.
	4,5	Changed CUEs for eSOMS locations to NOTES per previous change requiring applicant to determine information himself.	Changed eSOMS CUES as described.
	7	Delete page reference at top of page. Clarify first bullet in Initiating Cue and remove other bulleted information. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	All changes made as requested.
Admin RA-1 (Perform OPG-REACTIVITY-CALC)	2	Remove 2 nd bullet from Initiating Cue to agree with candidate Cue Sheet.	Removed.
	4	Add Examiner NOTE to reflect how the PCNDR spreadsheet program is initialized ("Enable Macros")	Added new EXAMINER NOTE.
	11	Delete page reference at top of page. Remove 2 nd bullet "Do Not Print" directions from Initiating Cue. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
Admin RA-2 (Determine Maximum Allowable RV Head Venting Time)	7	Delete page reference at top of page. Remove 2 nd bullet, guidance for rounding off values, from Initiating Cue. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
	KEY	Add acceptable answer margins contained within the JPM to the answer key.	Acceptable margins added to answer key.
Admin RA-3 (Perform 1/M Plot per O-1.2.1)	2	Add new section to document "Questions"	Added.
	10	Delete page reference at top of page. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
Admin RA-4 (Determine stay time for local valve operation in the RCA)	1	Replace valve with a significant manual valve without divulging its location on the survey map. Make the candidate find the appropriate procedure (allow access to procedures cart). Modify Initial Conditions to reflect changed conditions.	Replaced valve and modified survey map accordingly. Added "procedures cart" to list of required materials. Modified Initial Conditions on this page and on p6.

Admin RA-4 (Cont'd)	2	Do not provide A-1 procedure to candidate, but make available on procedures cart. Change wording on Initiating Cue to reflect new valve, modified conditions.	Changes made as requested.
	3	Modify Step 1 to reflect candidate needs to locate appropriate procedure on cart. Modify Step 2 to reflect new valve/location.	Steps 1 and 2 modified.
	4	Modify calculations to reflect changed dose rates for the year. Determine limiting dose and calculate new stay time.	All calculations revised.
	6	Modify Initial Conditions and Initiating Cue to reflect new values limitations. Delete page reference at top of page. Delete all peripheral directions on CUE sheet beyond technical info.	Changes made as requested.
	7	Add Current Exposure data sheet to the JPM package itself.	Data sheet added to JPM file.
Admin SA-1 (Verify OPG- REACTIVITY-CALC)	4	Add Examiner NOTE to reflect how the PCNDR spreadsheet program is initialized ("Enable Macros")	Added new EXAMINER NOTE.
	11	Delete page reference at top of page. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
Admin SA-2 (Determine The Allowable Hours An Operator Can Work)	8	Delete page reference at top of page. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
Admin SA-3 (Evaluate 1/M Plot per O-1.2.1 and O- 1.2)	12	Delete page reference at top of page. Delete all peripheral directions on CUE sheet to minimize the amount of information the candidate has to read.	Changes made as requested.
Admin SA-4 (Determine Worker Availability Based on Radiation Exposure Limits)	1	Replace valve with a significant manual valve without divulging its location on the survey map. Make the candidate find the appropriate procedure (allow access to procedures cart). Modify Initial Conditions to reflect changed conditions.	Replaced valve and modified survey map accordingly. Added "procedures cart" to list of required materials. Modified Initial Conditions on this page and on p6.
	2	Do not provide A-1 procedure to candidate, but make available on procedures cart. Change wording on Initiating Cue to reflect new valve, modified conditions, more information required of SRO candidate.	Changes made as requested.

Admin SA-4 (Cont'd)	3	Modify Step 1 to reflect candidate needs to locate appropriate procedure on cart. Modify Step 2 to reflect new valve/location and change in dose rate value (same as N-RA-4).	Steps 1 and 2 modified.
	4	Modify calculations to reflect changed dose rates for the year. Determine limiting dose and calculate new stay time to nearest limit.	All calculations revised.
	5	Add new step to identify which dose limit will be exceeded.	Added new step
	6	Modify step to reflect revised dose limit, new approvals.	Modified.
	8	Modify Initial Conditions and Initiating Cue to reflect new values and new required information. Delete page reference at top of page. Delete all peripheral directions on CUE sheet beyond technical info.	Changes made as requested.
	9	Add Worker Exposure data sheet to the JPM package itself.	Data sheet added to JPM file.
Admin SA-5 (Determine PAR and complete EPIP 1-5, Attachment 3a)	1	Add steps to complete EPIP-1.5, Att.3a information in addition to determining PAR recommendation.	New information added.
	6,7	Added new performance steps to evaluate new requirement above.	New steps added.
	10	Added new information to Initial Conditions and Initiating Cue to enable Att.3a to be completed.	Initial Conditions and Initiating Cue modified.
	KEY	Post-Exam Administration. Utility determined that the original answer key to "Shelter" was incorrect.	Provided revised Answer Key to "Evacuate"