

# Draft Submittal

(Pink Paper)

Summer 2007-301  
operating Test 6/4-6/7 2007  
written Examination 6/13/2007

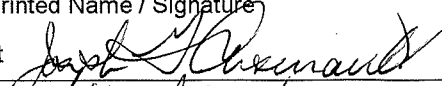
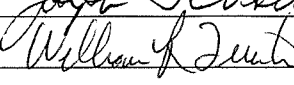
DRAFT Written Exam Quality Checklist (ES-401-6)

& Written Exam Sample Plan

Facility: VC Summer		Date of Exam: 6/4/2007		Exam Level:	RO/SRO	
Item Description				Initial		
				a	b*	c#
1. Questions and answers technically accurate and applicable to facility.				PA	PA	
2. a. NRC K/As referenced for all questions. b. Facility learning objectives referenced as available.				PA	PA	
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401				PA	PA	
4. The sampling process was random and systematic. (If more than 4 RO and 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL Program Office)				PA	PA	
5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: _____ the audit exam was systematically and randomly developed, or _____ the audit exam was completed before the license exam was started, or _____ the examinations were developed independently, or <u>XX</u> the licensee certifies that there is no duplication, or _____ other (explain)				PA	PA	
6. Bank use meets limits (no more than 75 percent from the bank at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.		Bank	Modified	New	PA	PA
		41 / 13	6 / 1	28 / 11		
7. Between 50 and 60 percent of the question on the RO exam are written at the comprehension/analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right		Memory	C/A		PA	PA
		30 / 3	45 / 22			
8. References/handouts provided do not give away answers or aid in the elimination of distractors.				PA	PA	
9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.				PA	PA	
10. Question psychometric quality and format meet the guidelines in ES Appendix B.				PA	PA	
11. The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with value on cover sheet.				PA	PA	
Printed Name / Signature					Date	
a.	Author	Joseph G. Arsenault	<i>Joseph G. Arsenault</i>		4/12/2007	
b.	Facility Reviewer (*)	William R. Quick	<i>William R. Quick</i>		4/14/2007	
c.	NRC Chief Examiner (#)					
d.	NRC Regional Supervisor					
Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.						

ACTUAL DISTRIBUTION

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Facility:	VC Summer	Date of Exam:	6/4/2007	Exam Level:	RO/SRO	
Item Description				Initial		
				a	b*	c#
1.	Questions and answers technically accurate and applicable to facility.			JGA	P	
2.	a. NRC K/As referenced for all questions. b. Facility learning objectives referenced as available.			JGA	P	
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401			JGA	P	
4.	The sampling process was random and systematic. (If more than 4 RO and 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL Program Office)			JGA	P	
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input type="checkbox"/> the audit exam was systematically and randomly developed, or <input type="checkbox"/> the audit exam was completed before the license exam was started, or <input type="checkbox"/> the examinations were developed independently, or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication, or <input type="checkbox"/> other (explain)			JGA	P	
6.	Bank use meets limits (no more than 75 percent from the bank at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right. (IN %)	Bank	Modified	New	JGA	P
		55 / 52	8 / 4	37/44		
7.	Between 50 and 60 percent of the question on the RO exam are written at the comprehension/analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right (IN %)	Memory	C/A		JGA	P
		40 / 12	60 / 88			
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.			JGA	P	
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.			JGA	P	
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.			JGA	P	
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with value on cover sheet.			JGA	P	
		Printed Name / Signature			Date	
a.	Author	Joseph G. Arsenault			4/12/2007	
b.	Facility Reviewer (*)	William R. Quick			4/14/2007	
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DISTRIBUTION  
IN  
PERCENT

DRAFT

Facility:		VC Summer		Date of Exam:		6/4/2007												
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolutions	1	5	4	3				1	3			2	18	3	3	6		
	2	0	1	2				2	2			2	9	2	2	4		
	Tier Totals	5	5	5				3	5			4	27	5	5	10		
2. Plant Systems	1	5	4	3	2	1	0	2	1	4	3	3	28	3	2	5		
	2	0	0	1	2	2	2	1	2	0	0	0	10	0	1	2		
	Tier Totals	5	4	4	4	3	2	3	3	4	3	3	38	4	4	8		
3. Generic Knowledge and Abilities Categories					1	2	3	4					10	1	2	3	4	7
					3	2	2	3					2	2	1	2		
Note:	1.	Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).																
	2.	The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.																
	3.	Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding elimination of inappropriate K/A statements.																
	4.	Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.																
	5.	Absent a plant specific priority, only those KAs 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 (IR) 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. 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 10CFR55.43																

VC Summer  
NRC Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
022 / Loss of Reactor Coolant Makeup / 2						X	AA2.02	Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Pump Makeup: Charging pump problems	3.7	76
029 / Anticipated Transient Without Scram (ATWS) / 1						X	EA2.07	Ability to determine or interpret the following as they apply to a ATWS: Reactor trip breaker indicating lights	4.3	77
038 / Steam Generator Tube Rupture / 3	X						2.4.31	Emergency Procedures / Plan Knowledge of annunciators alarms and indications, and use of the response instructions.	3.4	78
040 / Steam Line Rupture / 4	X						2.4.50	Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	79
055 / Station Blackout / 6						X	EA2.02	Ability to determine or interpret the following as they apply to a Station Blackout: RCS core cooling through natural circulation cooling to S/G cooling	4.6	80
056 / Loss of Off-site Power / 6	X						2.4.6	Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	4.0	81
007 / Reactor Trip / 1				X			EK3.01	Knowledge of the reasons for the following as they apply to a reactor trip: Actions contained in EOP for reactor trip	4.0	39
008 / Pressurizer Vapor Space Accident / 3			X				AK2.01	Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Valves	2.7	40
009 / Small Break LOCA / 3		X					EK1.02	Knowledge of the operational implications of the following concepts as they apply to the small break LOCA: Use of steam tables	3.5	41
011 / Large Break LOCA / 3			X				EK2.02	Knowledge of the interrelations between the and the following Large Break LOCA: Pumps	2.6	42
015 / 17 / Reactor Coolant Pump Malfunctions / 4			X				AK2.08	Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: CCWS	2.6	43
022 / Loss of Reactor Coolant Makeup / 2		X					AK1.02	Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Pump Makeup: Relationship of charging flow to pressure differential between charging and RCS	2.7	44
027 / Pressurizer Pressure Control System Malfunction / 3				X			AK3.01	Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: Isolation of PZR spray following loss of PZR heaters	3.5	45

VC Summer  
NRC Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
029 / Anticipated Transient Without Scram (ATWS) / 1			X				EK2.06	Knowledge of the interrelations between the and the following an ATWS: Breakers, relays, and disconnects	2.9	46
038 / Steam Generator Tube Rupture / 3	X						2.2.22	Equipment Control Knowledge of limiting conditions for operations and safety limits.	3.4	47
054 / Loss of Main Feedwater / 4		X					AK1.01	Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): MFW line break depressurizes the S/G (similar to a steam line break)	4.1	48
055 / Station Blackout / 6					X		EA1.07	Ability to operate and monitor the following as they apply to a Station Blackout: Restoration of power from offsite	4.3	49
056 / Loss of Off-site Power / 6						X	AA2.50	Ability to determine and interpret the following as they apply to the Loss of Offsite Power: That load and VAR limits, alarm setpoints, frequency and voltage limits for ED/Gs are not being exceeded	2.8	50
057 / Loss of Vital AC Electrical Instrument Bus / 6						X	AA2.19	Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The plant automatic actions that will occur on the loss of a vital ac electrical instrument bus	4.0	51
058 / Loss of DC Power / 6						X	AA2.02	Ability to determine and interpret the following as they apply to the Loss of DC Power: 125V dc bus voltage, low/critical low, alarm	3.3	52
065 / Loss of Instrument Air / 8				X			AK3.04	Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Cross-over to backup air supplies	3.0	53
E04 / LOCA Outside Containment / 3		X					EK1.2	Knowledge of the operational implications of the following concepts as they apply to the (LOCA Outside Containment) Normal, abnormal and emergency operating procedures associated with (LOCA Outside Containment).	3.5	54
E11 / Loss of Emergency Coolant Recirculation / 4		X					EK1.1	Knowledge of the operational implications of the following concepts as they apply to the (Loss of Emergency Coolant Recirculation) Components, capacity, and function of emergency systems.	3.7	55
E12 / Uncontrolled Depressurization of all Steam Generators / 4	X						2.2.25	Equipment Control Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	2.5	56

VC Summer  
 NRC Written Examination Outline  
 Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
K/A Category Point Totals:	5	5	4	3	1	6	Group Point Total:			24

VC Summer  
NRC Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
001 / Continuous Rod Withdrawal / 1						X	AA2.05	Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Uncontrolled rod withdrawal, from available indications	4.6	82
E07 / Saturated Core Cooling / 4						X	EA2.2	Ability to determine and interpret the following as they apply to the (Saturated Core Cooling) Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.9	83
E08 / Pressurized Thermal Shock / 4	X						2.2.22	Equipment Control Knowledge of limiting conditions for operations and safety limits.	4.1	84
E15 / Containment Flooding / 5	X						2.1.14	Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.	3.3	85
001 / Continuous Rod Withdrawal / 1						X	AA2.04	Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Reactor power and its trend	4.2	57
028 / Pressurizer Level Control Malfunction / 2				X			AK3.03	Knowledge of the reasons for the following responses as they apply to the Pressurizer Level Control Malfunctions: False indication of PZR level when PORV or spray valve is open and RCS saturated	3.5	58
036 / Fuel Handling Incidents / 8					X		AA1.01	Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: Reactor Building Containment Purge Ventilation System	3.3	59
051 / Loss of Condenser Vacuum / 4				X			AK3.01	Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum	2.8	60
E03 / LOCA Cooldown and Depressurization / 4	X						2.1.33	Conduct of Operations: Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	61
E06 / Degraded Core Cooling / 4			X				EK2.2	Knowledge of the interrelations between the (Degraded Core Cooling) and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.8	62



VC Summer  
 NRC Written Examination Outline  
 Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

E/APE # / Name Safety Function	G	K1	K2	K3	A1	A2	Number	K/A Topic(s)	Imp.	Q#
E08 / Pressurized Thermal Shock / 4						X	EA2.1	Ability to operate and / or monitor the following as they apply to the (Pressurized Thermal Shock) Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	3.4	63
E10 / Natural Circulation with Steam Void in Vessel with/without RVLIS / 4	X						2.1.23	Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	3.9	64
E16 / High Containment Radiation / 9					X		EA1.3	Ability to operate and / or monitor the following as they apply to the (High Containment Radiation) Desired operating results during abnormal and emergency situations.	2.9	65
K/A Category Point Total:	4	0	1	2	2	4	Group Point Total:			13

VC Summer  
NRC Written Examination Outline  
Plant Systems – Tier 2 Group 1

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
004 Chemical and Volume Control									X			A2.15	Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High or low PZR level	3.7	86
010 Pressurizer Pressure Control									X			A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Spray valve failures	3.9	87
022 Containment Cooling	X											2.4.30	Emergency Procedures / Plan Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	88
039 Main and Reheat Steam									X			A2.05	Ability to (a) predict the impacts of the following mal-functions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Increasing steam demand, its relationship to increases in reactor power	3.6	89
076 Service Water	X											2.4.6	Emergency Procedures / Plan Knowledge symptom based EOP mitigation strategies.	4.0	90
003 Reactor Coolant Pump											X	A4.08	Ability to manually operate and/or monitor in the control room: RCP cooling water supplies	3.2	1
004 Chemical and Volume Control										X		A3.05	Ability to monitor automatic operation of the CVCS, including: RCS pressure and temperature	3.9	2
005 Residual Heat Removal				X								K3.07	Knowledge of the effect that a loss or malfunction of the RHRS will have on the following: Refueling operations	3.2	3
006 Emergency Core Cooling			X									K2.01	Knowledge of bus power supplies to the following: ECCS pumps	3.6	4
006 Emergency Core Cooling									X			A3.07	Ability to monitor automatic operation of the ECCS, including: RHR pumps	3.6	5
007 Pressurizer Relief/Quench Tank											X	A4.04	Ability to manually operate and/or monitor in the control room: PZR vent valve	2.6	6
008 Component Cooling Water		X										K1.03	Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following systems: PRMS	2.8	7

VC Summer  
 NRC Written Examination Outline  
 Plant Systems – Tier 2 Group 1

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
010 Pressurizer Pressure Control										X		A3.01	Ability to monitor automatic operation of the PZR PCS, including: PRT temperature and pressure during PORV testing	3.0	8
012 Reactor Protection		X										K1.07	Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: SDS	2.9	9
012 Reactor Protection			X									K2.01	Knowledge of bus power supplies to the following: RPS channels, components, and interconnections	3.3	10
013 Engineered Safety Features Actuation		X										K1.06	Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: ECCS	4.2	11
013 Engineered Safety Features Actuation				X								K3.03	Knowledge of the effect that a loss or malfunction of the ESFAS will have on the following: Containment	4.3	12
022 Containment Cooling	X											2.4.46	Emergency Procedures / Plan Ability to verify that the alarms are consistent with the plant conditions.	3.5	13
026 Containment Spray			X									K2.02	Knowledge of bus power supplies to the following: MOVs	2.7	14
026 Containment Spray					X							K4.07	Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: Adequate level in containment sump for suction (interlock)	3.8	15
039 Main and Reheat Steam					X							K4.06	Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following: Prevent reverse steam flow on steam line break	3.3	16
059 Main Feedwater	X											2.4.50	Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	3.3	17
061 Auxillary/Emergency Feedwater						X						K5.02	Knowledge of the operational implications of the following concepts as the apply to the AFW: Decay heat sources and magnitude	3.2	18
062 AC Electrical Distribution								X				A1.03	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including: Effect on instrumentation and controls of switching power supplies	2.5	19

VC Summer  
NRC Written Examination Outline  
Plant Systems – Tier 2 Group 1

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
062 AC Electrical Distribution										X		A3.04	Ability to monitor automatic operation of the ac distribution system, including: Operation of inverter (e.g., precharging synchronizing light, static transfer)	2.7	20
063 DC Electrical Distribution	X											2.4.4	Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	21
064 Emergency Diesel Generator								X				A1.05	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: D/G room temperature	2.5	22
064 Emergency Diesel Generator		X										K1.01	Knowledge of the physical connections and/or cause-effect relationships between the ED/G system and the following systems: AC distribution system	4.1	23
073 Process Radiation Monitoring											X	A4.01	Ability to manually operate and/or monitor in the control room Effluent release	3.9	24
073 Process Radiation Monitoring		X										K1.01	Knowledge of the physical connections and/or cause-effect relationships between the PRM system and the following systems: Those systems served by PRMs	3.6	25
076 Service Water				X								K3.05	Knowledge of the effect that a loss or malfunction of the SWS will have on the following: RHR components, controls, sensors, indicators, and alarms, including rad monitors	3.0	26
078 Instrument Air			X									K2.02	Knowledge of bus power supplies to the following Emergency air compressor	3.3	27
103 Containment									X			A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the containment system-and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations Containment evacuation (including recognition of the alarm)	3.5	28
K/A Category Point Totals:	5	5	4	3	2	1	0	2	4	4	3	Group Point Total:			33

VC Summer  
NRC Written Examination Outline  
Plant Systems – Tier 2 Group 2

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
001 Control Rod Drive	X											2.1.23	Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.0	91
029 Containment Purge	X											2.1.32	Emergency Procedures / Plan Ability to explain and apply all system limits and precautions.	3.8	92
086 Fire Protection									X			A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the Fire Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Inadvertent actuation of the FPS due to circuit failure or welding	2.9	93
002 Reactor Coolant				X								K3.03	Knowledge of the effect that a loss or malfunction of the RCS will have on the following: Containment	4.2	29
011 Pressurizer Level Control							X					K6.01	Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Reasons for starting charging pump while increasing letdown flow rate	2.8	30
017 In-core Temperature Monitor								X				A1.01	Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the ITM system controls including: Core exit temperature	3.7	31
027 Containment Iodine Removal						X						K5.01	Knowledge of the operational implications of the following concepts as they apply to the CIRS: Purpose of charcoal filters	3.1	32
028 Hydrogen Recombiner and Purge Control							X					K6.01	Knowledge of the effect of a loss or malfunction on the following will have on the HRPS: Hydrogen recombiners	2.6	33
033 Spent Fuel Pool Cooling					X							K4.04	Knowledge of design feature(s) and/or interlock(s) which provide for the following: Maintenance of spent fuel pool radiation	2.7	34
035 Steam Generator						X						K5.03	Knowledge of operational implications of the following concepts as they apply to the S/GS: Shrink and swell concept	2.8	35
041 Steam Dump/Turbine Bypass Control									X			A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the SDS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Steam valve stuck open	3.6	36

VC Summer  
NRC Written Examination Outline  
Plant Systems – Tier 2 Group 2

System #/Name	G	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	Number	K/A Topics	Imp.	Q#
072 Area Radiation Monitoring					X							K4.03	Knowledge of ARM system design feature(s) and/or interlock(s) which provide for the following: Plant ventilation systems	3.2	37
086 Fire Protection									X			A2.01	Ability to (a) predict the impacts of the following malfunctions or operations on the Fire Protection System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Manual shutdown of FPS	2.9	38
K/A Category Point Totals:	2	0	0	1	2	2	2	1	3	0	0	Group Point Total:			13

Facility:	VC Summer	Date of Exam:	6/4/2007				
Category	K/A #	Topic	RO		SRO-Only		
			IR	Q#	IR	Q#	
1. Conduct of Operations	2.1.11	Knowledge of less than one hour technical specification action statements for systems.			3.8	94	
	2.1.6	Ability to supervise and assume a management role during plant transients and upset conditions.			4.3	95	
	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	3.7	66			
	2.1.17	Ability to make accurate, clear and concise verbal reports.	3.5	67			
	2.1.27	Knowledge of system purpose and or function.	2.8	68			
	Subtotal				3		2
2. Equipment Control	2.2.21	Knowledge of pre- and post-maintenance operability requirements.			3.5	96	
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.			3.7	97	
	2.2.24	Ability to analyze the affect of maintenance activities on LCO status.	2.6	69			
	2.2.28	Knowledge of new and spent fuel movement procedures.	2.6	70			
	Subtotal				2		2
3. Radiation Control	2.3.2	Knowledge of facility ALARA program.			2.9	98	
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	71			
	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements	2.6	72			
	Subtotal				2		1
4. Emergency Procedures / Plan	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.			4.0	99	
	2.4.11	Knowledge of abnormal condition procedures.			3.6	100	
	2.4.9	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.	3.3	73			
	2.4.29	Knowledge of the emergency plan.	2.6	74			
	2.4.13	Knowledge of crew roles and responsibilities during EOP flowchart use.	3.3	75			
	Subtotal				3		2
Tier 3 Point Total					10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
3 / 2	2.2.3	Not a dual unit facility. Randomly selected 2.2.25
1 / 2	036 AA1.04	ROs do not operate or monitor any fuel handling equipment, not on task list. Randomly selected 036 AA1.01
2 / 1	022 G2.4.49	There no immediate actions associated with operation of this system. Randomly selected 2.4.46
2 / 1	103 A2.03	Direct overlap with simulator scenario. Randomly selected 103 A2.04
2 / 2	029 G2.4.6	System is not involved anywhere in EOPs. Randomly selected 029 G2.1.32
2 / 2	001 G2.1.28	Purpose/function of system will not yield an SRO item related to 10CFR55.43(b). Randomly selected 001 G2.1.23
2 / 2	086 A2.03	Duplicate item with SRO exam. Randomly selected 086 A2.01

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