

Facility:		Hope Creek 2015		Date of Exam:		02/23/15												
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 & Plant Evolution	1	3	3	2				4	5				3	20	4	3	7	
	2	1	1	2				1	1				1	7	2	1	3	
	Tier Totals	4	4	4				5	6				4	27	6	4	10	
2. Plant Systems	1	3	2	2	3	2	2	3	2	2	2	3	26	3	2	5		
	2	1	1	1	1	1	2	2	0	1	1	1	12	0	3	3		
	Tier Totals	4	3	3	4	3	4	5	2	3	3	4	38	6	2	8		
3. Generic Knowledge & Abilities Categories				1		2		3		4		10	1		2	3	4	7
				3		3		2		2			2		2	1	2	
Note:	<p>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).</p> <p>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 <math>\pm 1</math> 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.</p> <p>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 section D.1.b of ES-401, for guidance regarding elimination of inappropriate K/A statements.</p> <p>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.</p> <p>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.</p> <p>6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.</p> <p>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. Refer to Section D.1.b of ES-401 for the applicable K/A's</p> <p>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. 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.</p> <p>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</p>																	

Hope Creek 2015  
Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 1

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	Q#
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1					X		EA 2.03 - Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : SBLC tank level	4.4	76
295003 Partial or Complete Loss of AC / 6						X	2.2.12 – Equipment Control: Knowledge of surveillance procedures	4.1	77
295031 Reactor Low Water Level / 2					X		EA2.01 - Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor water level	4.6	78
295028 High Drywell Temperature / 5						X	2.4.6 - Emergency Procedures / Plan: Knowledge of EOP mitigation strategies.	4.7	79
295004 Partial or Total Loss of DC Pwr / 6					X		AA2.03 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : Battery voltage	2.9	80
295018 Partial or Total Loss of CCW / 8					X		AA2.03 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Cause for partial or complete loss	3.5	81
295026 Suppression Pool High Water Temp. / 5						X	2.4.47 - Emergency Procedures / Plan: Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	82
295028 High Drywell Temperature / 5	X						EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : Reactor water level measurement	3.5	39
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Thermal limits	3.6	40
295004 Partial or Total Loss of DC Pwr / 6	X						AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : †Automatic load shedding: Plant-Specific	2.9	41
295016 Control Room Abandonment / 7		X					AK2.03 - Knowledge of the interrelations between CONTROL ROOM ABANDONMENT and the following: Control room HVAC	2.9	42
295019 Partial or Total Loss of Inst. Air / 8		X					AK2.06 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Offgas system	2.8	43
295006 SCRAM / 1		X					AK2.07 - Knowledge of the interrelations between SCRAM and the following: Reactor pressure control	4.0	44
295026 Suppression Pool High Water Temp. / 5			X				EK3.04 - Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: SBLC injection	3.7	45

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EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	Q#
295037 SCRAM Conditions Present and Reactor Power Above APRM Downscale or Unknown / 1			X				EK3.01 - Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : Recirculation pump trip runback: Plant-Specific	4.1	46
700000 Generator Voltage and Electric Grid Disturbances				X			AA1.03 - Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Voltage Regulator Controls	3.8	47
295038 High Off-site Release Rate / 9				X			EA1.03 - Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Process liquid radiation monitoring system	3.7	48
295021 Loss of Shutdown Cooling / 4				X			AA1.04 - Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING : Alternate heat removal methods	3.7	49
295018 Partial or Total Loss of CCW / 8				X			AA1.02 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : System loads	3.3	50
295030 Low Suppression Pool Water Level / 5					X		EA2.01 - Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : Suppression pool level	4.1	51
295023 Refueling Acc Cooling Mode / 8					X		AA2.04 - Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS : Occurrence of fuel handling accident	3.4	52
295003 Partial or Complete Loss of AC / 6					X		AA2.02 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Reactor power, pressure, and level	4.2	53
295024 High Drywell Pressure / 5						X	2.4.1 – Emergency Procedures / Plan: Knowledge of EOP entry conditions and immediate action steps.	4.6	54
295031 Reactor Low Water Level / 2						X	2.4.18 – Emergency Procedures / Plan: Knowledge of specific bases for EOPs.	3.3	55
295025 High Reactor Pressure / 3						X	2.2.38 - Equipment Control: Knowledge of conditions and limitations in the facility license.	3.6	56
600000 Plant Fire On-site / 8					X		AA2.13 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Need for emergency plant shutdown	3.2	57
295005 Main Turbine Generator Trip / 3					X		AA2.08 - Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : Electrical distribution status	3.2	58
K/A Category Totals:	3	3	2	4	5/4	3/3	Group Point Total:	20/7	

Hope Creek 2015  
Written Examination Outline  
Emergency and Abnormal Plant Evolutions – Tier 1 Group 2

EAPE # / Name Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	Q#
295033 High Secondary Containment Area Radiation Levels / 9					X		EA2.01 - Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Area radiation levels	3.9	83
295010 High Drywell Pressure / 5						X	2.4.41 - Emergency Procedures / Plan: Knowledge of the emergency action level thresholds and classifications	4.6	84
500000 High CTMT Hydrogen Conc. / 5 13-85					X		EA2.03 - Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Combustible limits for Drywell	3.8	85
295002 Loss of Main Condenser Vac / 3	X						AK1.03 - Knowledge of the operational implications of the following concepts as they apply to LOSS OF MAIN CONDENSER VACUUM : Loss of heat sink	3.6	59
295007 High Reactor Pressure / 3		X					AK2.01 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor/turbine pressure regulating system	3.5	60
295022 Loss of CRD Pumps / 1			X				AK3.02 - Knowledge of the reasons for the following responses as they apply to LOSS OF CRD PUMPS: CRDM high temperature	2.9	61
500000 High CTMT Hydrogen Conc. / 5				X			EA1.03 - Ability to operate and monitor the following as they apply to HIGH CONTAINMENT HYDROGEN CONTROL: Containment atmosphere control system	3.4	62
295020 Inadvertent Cont. Isolation / 5 & 7					X		AA2.06 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION : Cause of isolation	3.4	63
295035 Secondary Containment High Differential Pressure / 5						X	2.4.11 - Emergency Procedures / Plan: Knowledge of abnormal condition procedures.	4.0	64
295032 High Secondary Containment Area Temperature / 5			X				K3.02 - Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Reactor SCRAM.	3.6	65
K/A Category Totals:	1	1	2	1	1/2	1/1	Group Point Total:	7/3	

Hope Creek 2015  
Written Examination Outline  
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		IR	Q#
217000 RCIC											X	2.2.37 - Equipment Control: Ability to determine operability and/or availability of safety related equipment.	4.6	86
230000 RHR/LPCI Torus/Suppression Pool Spray Mode											X	2.1.32 - Conduct of Operations: Ability to explain and apply system limits and precautions.	4.0	87
212000 RPS								X				A2.02 - Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: RPS bus power supply failure	3.9	88
206000 HPCI								X				A2.12 - Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of room cooling: BWR-2,3,4	3.5	89
215004 Source Range Monitor								X				A2.01 - Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Power supply degraded	2.9	90
262001 AC Electrical Distribution	X											K1.02 - Knowledge of the physical connections and/or cause- effect relationships between A.C. ELECTRICAL DISTRIBUTION and the following: D.C. electrical distribution	3.3	1
203000 RHR/LPCI: Injection Mode	X											K1.06 - Knowledge of the physical connections and/or cause- effect relationships between RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) and the following: Knowledge of the physical connections and/or cause effect relationships between RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) and the following: Automatic depressurization	3.9	2

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Written Examination Outline  
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		IR	Q#
<b>218000 ADS</b>		X										K2.01 - Knowledge of electrical power supplies to the following: ADS logic	3.1	3
<b>215004 Source Range Monitor</b>		X										K2.01 - Knowledge of electrical power supplies to the following: SRM channels/detectors	2.6	4
<b>223002 PCIS/Nuclear Steam Supply Shutoff</b>			X									K3.09 - Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on following: Main steam system	3.4	5
<b>205000 Shutdown Cooling</b>			X									K3.02 - Knowledge of the effect that a loss or malfunction of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) will have on following: Reactor water level: Plant-Specific	3.2	6
<b>300000 Instrument Air</b>				X								K4.01 - Knowledge of (INSTRUMENT AIR SYSTEM) design feature(s) and or interlocks which provide for the following: Manual/automatic transfers of control	2.8	7
<b>261000 SGTS</b>				X								K4.01 - Knowledge of STANDBY GAS TREATMENT SYSTEM design feature(s) and/or interlocks which provide for the following: Automatic system initiation	3.7	8
<b>206000 HPCI</b>					X							K5.08 - Knowledge of the operational implications of the following concepts as they apply to HIGH PRESSURE COOLANT INJECTION SYSTEM : Vacuum breaker operation: BWR-2,3,4	3.0	9
<b>212000 RPS</b>					X							K5.01- Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM : Specific logic arrangements	3.3	10
<b>400000 Component Cooling Water</b>						X						K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the CCWS: Valves	2.7	11
<b>209001 LPCS</b>						X						K6.04 - Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM : D.C. power	2.8	12
<b>215003 IRM</b>							X					A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM controls including: Detector position	3.4	13

Hope Creek 2015  
Written Examination Outline  
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		IR	Q#
<b>259002 Reactor Water Level Control</b>							X					A1.04 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including: Reactor water level control controller indications	3.6	14
<b>264000 EDGs</b>								X				A2.09 - Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of A.C. power	3.7	15
<b>262002 UPS (AC/DC)</b>								X				A2.01 - Ability to (a) predict the impacts of the following on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage	2.6	16
<b>263000 DC Electrical Distribution</b>									X			A3.01 - Ability to monitor automatic operations of the D.C. ELECTRICAL DISTRIBUTION including: Meters, dials, recorders, alarms, and indicating lights	3.2	17
<b>211000 SLC</b>									X			A3.07 - Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: Lights and alarms: Plant-Specific	3.7	18
<b>239002 SRVs</b>										X		A4.01 - Ability to manually operate and/or monitor in the control room: SRVs	4.4	19
<b>217000 RCIC</b>										X		A4.07 - Ability to manually operate and/or monitor in the control room: Reactor pressure	3.9	20
<b>215005 APRM / LPRM</b>											X	2.1.23 - Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	21
<b>223002 PCIS/Nuclear Steam Supply Shutoff</b>											X	2.4.3 - Emergency Procedures / Plan: Ability to identify post-accident instrumentation.	3.7	22
<b>215005 APRM / LPRM</b>				X								K4.02 - Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: Reactor SCRAM signals	4.1	23

Hope Creek 2015  
Written Examination Outline  
Plant Systems – Tier 2 Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		IR	Q#
<b>215003 IRM</b>							X					A1.06 - Ability to predict and/or monitor changes in parameters associated with operating the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM controls including: Lights and alarms	3.3	24
<b>206000 HPCI</b>	X											K1.02 - Knowledge of the physical connections and/or cause- effect relationships between HIGH PRESSURE COOLANT INJECTION SYSTEM and the following: Reactor water level: BWR-2,3,4	4.0	25
<b>211000 SLC</b>											X	2.1.25 - Conduct of Operations: Ability to interpret reference materials, such as graphs, curves, tables, etc.	3.9	26
K/A Category Totals:	3	2	2	3	2	2	3	2/3	2	2	3/2	Group Point Total:	26/5	



Hope Creek 2015  
Written Examination Outline  
Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		IR	Q #
202001 Recirculation								X				A2.08 - Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation flow mismatch: Plant-Specific	3.4	91
201001 CRD Hydraulic								X				A2.10 - the CONTROL ROD DRIVE HYDRAULIC SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: †Low HCU accumulator pressure/high level	3.6	92
288000 Plant Ventilation								X				A2.03 - Ability to (a) predict the impacts of the following on the PLANT VENTILATION SYSTEMS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident: Plant-Specific	3.7	93
201001 CRD Hydraulic	X											K1.08 - Knowledge of the physical connections and/or cause- effect relationships between CONTROL ROD DRIVE HYDRAULIC SYSTEM and the following: Reactor manual control system	3.4	27
226001 RHR/LPCI: CTMT Spray Mode		X										K2.02 - Knowledge of electrical power supplies to the following: Pumps	2.9	28
290002 Reactor Vessel Internals			X									K3.03 - Knowledge of the effect that a loss or malfunction of the REACTOR VESSEL INTERNALS will have on following: Reactor power	3.3	29
245000 Main Turbine Gen. / Aux.				X								K4.03 - Knowledge of MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS design feature(s) and/or interlocks which provide for the following: Sealing to prevent hydrogen leakage	2.7	30
234000 Fuel Handling Equipment					X							K5.02 - Knowledge of the operational implications of the following concepts as they apply to FUEL HANDLING EQUIPMENT : †Fuel handling equipment interlocks	3.1	31

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Written Examination Outline  
Plant Systems – Tier 2 Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G		IR	Q #
<b>259001 Reactor Feedwater</b>						X						K6.07 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR FEEDWATER SYSTEM : Reactor water level control system	3.8	32
<b>230000 RHR/LPCI: Torus/Pool Spray Mode</b>							X					A1.10 - Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE controls including: System lineup	3.7	33
<b>201002 RMCS</b>							X					A1.02 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Control rod position	2.7	34
<b>202002 Recirculation Flow Control</b>									X			A3.02 - Ability to monitor automatic operations of the RECIRCULATION FLOW CONTROL SYSTEM including: Lights and alarms	3.4	35
<b>201006 RWM</b>										X		A4.06 - Ability to monitor automatic operations of the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) including: Selected rod position indication	3.2	36
<b>201003 Control Rod and Drive Mechanism</b>											X	2.4.31 - Emergency Procedures / Plan: Knowledge of annunciator alarms, indications, or response procedures.	4.2	37
<b>233000 Fuel Pool Cooling/Cleanup</b>						X						K6.07 Knowledge of the effect that a loss or malfunction of the following will have on the FUEL POOL COOLING AND CLEAN-UP : Component cooling water systems	2.7	38
K/A Category Totals:	1	1	1	1	1	2	2	0/3	1	1	1/0	Group Point Total:	12/3	

Facility:		Hope Creek 2015		Date:		02/23/15	
Category	K/A #	Topic	RO		SRO-Only		
			IR	Q#	IR	Q#	
1. Conduct of Operations	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.			4.4	94	
	2.1.9	Ability to direct personnel activities inside the control room.			4.5	98	
	2.1.3	Knowledge of shift or short-term relief turnover practices.	3.7	66			
	2.1.41	Knowledge of the refueling process.	2.8	67			
	2.1.30	Ability to locate and operate components, including local controls.	4.4	75			
	Subtotal			3		2	
2. Equipment Control	2.2.7	Knowledge of the process for conducting special or infrequent tests.			3.6	95	
	2.2.38	Knowledge of conditions and imitations in the facility license			4.5	99	
	2.2.13	Knowledge of tagging and clearance procedures.	4.1	68			
	2.2.39	Knowledge of less than or equal to one hour Technical Specification action statements for systems.	3.9	69			
	2.2.25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	3.2	74			
Subtotal			3		2		
3. Radiation Control	2.3.6	Ability to approve release permits.			3.8	96	
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	70			
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	71			
Subtotal			2		1		
4. Emergency	2.4.40	Knowledge of the SRO's responsibilities in emergency plan implementation.			4.5	97	

Procedures / Plan	2.4.30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.			4.1	100
	2.4.25	Knowledge of fire protection procedures.	3.3	72		
	2.4.20	Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	73		
	Subtotal			2		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
2 / 2 (#91)	202001 / 2.1.27	<p>2.1.27 - Knowledge of system purpose and/or function.</p> <p>Topic not discriminatory at the SRO level.</p> <p>A2.08 - Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation flow mismatch: Plant-Specific</p>
3 (#100)	2.4.50	<p>Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.</p> <p>Operating controls is not an SRO function. Additionally, this K/A is tested in the operating exam frequently.</p> <p>Randomly selected 2.4.30, Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.</p>
2 / 1 (#2)	203000 / K1.12	<p>Knowledge of the physical connections and/or cause- effect relationships between RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) and the following: Plant air systems: Plant-Specific</p> <p>The only relationship Plant Air has with RHR is via testable check valves. There are no operator functions associated with these valves and they are only looked at during a flow verification test for the RHR loop. Low discriminatory value for a licensed operator exam.</p> <p>Randomly selected K1.06: Automatic depressurization</p>
2 / 1 (#10)	212000 / K5.01	<p>Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM : Fuel thermal time constant.</p> <p>This is a GFES topic – see 293009 K1.29 &amp; K1.30.</p> <p>Selected K5.02 - Specific logic arrangements</p>
2 / 1 (#12)	209001 / K6.11	<p>Knowledge of the effect that a loss or malfunction of the following will have on the LOW PRESSURE CORE SPRAY SYSTEM : ADS.</p> <p>The ADS system has been oversampled, see questions 2 &amp; 3.</p> <p>Randomly selected K6.04: D.C. Power</p>

2 / 1 (#23)	215005 / K4.06	<p>Knowledge of AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM design feature(s) and/or interlocks which provide for the following: Effects of detector aging on LPRM/APRM readings.</p> <p>Very low discriminatory value. More of a GFES topic.</p> <p>Randomly selected K4.02 Reactor SCRAM signals</p>
2 / 1 (#24)	215003 / K2.01	<p>K2.01 - Knowledge of electrical power supplies to the following: IRM channels/detectors.</p> <p>Very low discriminatory value. Electrical supply topic oversampled. See #3, #4</p> <p>Randomly selected A1.06 - Ability to predict and/or monitor changes in parameters associated with operating the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM controls including: Lights and alarms</p>
2 / 2 (#38)	233000 / A2.16	<p>Ability to (a) predict the impacts of the following on the FUEL POOL COOLING AND CLEAN-UP; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of coolant accident signal.</p> <p>Could not write discriminating question at the RO level due to very limited procedural guidance. This K/A had very low rating factor (2.5)</p> <p>Randomly selected K6.07 Knowledge of the effect that a loss or malfunction of the following will have on the FUEL POOL COOLING AND CLEAN-UP : Component cooling water systems</p>
2 / 1 (#34)	268000 / A2.01	<p>A2.01 - Ability to (a) predict the impacts of the following on the RADWASTE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: System rupture</p> <p>The Radwaste system is not operated by the licensed operators and the controls are in a separate Radwaste Control Room.</p> <p>Randomly selected A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the RADWASTE controls including: Radiation Levels</p>
1 / 1 (#47)	70000 / AK3.01	<p>AK3.01 - Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Reactor and turbine trip criteria.</p> <p>Hope Creek abnormal procedures for grid disturbance do not have a bases document for describing specific reasons for turbine trip or reactor scram criteria. The assumption is grid stability and reactor safety. However, the correct answer to the question would not have any documentation for support and</p>

		<p>specific plausible distractors are not available.</p> <p>Randomly selected Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Voltage Regulator Controls</p>
1 / 1 (#57)	600000 / AK2.01	<p>AK1.01 - Knowledge of the operation applications of the following concepts as they apply to Plant Fire On Site: Fire Classifications by type.</p> <p>Very low discriminatory value for a licensed operator exam.</p> <p>Randomly selected AA2.13 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Need for emergency plant shutdown</p>
3 / 4 (#74)	2.4.18	<p>2.4.18 - Knowledge of specific bases for EOPs.</p> <p>This K/A was previously used at Q#55.</p> <p>Randomly selected 2.2.25. - Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.</p>
2 / 2 (#34)	268000 / A1.01	<p>A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the RADWASTE controls including: Radiation Levels</p> <p>Similar concept addressed in #48.</p> <p>Randomly selected 201002 - A1.02 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: Control rod position</p>
2 / 1 (#8)	261000 / A4.03	<p>K4.03 - Knowledge of STANDBY GAS TREATMENT SYSTEM design feature(s) and/or interlocks which provide for the following: Moisture removal</p> <p>Moisture removal for FRVS is minutia, is not operationally discriminating at the licensed operator level.</p> <p>Randomly selected K4.01 - Automatic system initiation</p>

Facility: <u>Hope Creek Generating Station</u>	Date of Examination: <u>2/23/15</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>	Operating Test Number: <u>1</u>

  

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D,S	Complete Daily Surveillance Log. (ZZ016)  Operator completes required Daily Surveillance Log entries in accordance with HC.OP-DL.ZZ-0026. (Items 61-74)
Conduct of Operations	M,S	Perform Power Changes During Operation-Single Loop Operations (ZZ047)  Operator performs Section 5.1, Jet Pump Operability Verification, of HC.OP-ST.BB-0007 and identifies and reports any Unsatisfactory information
Equipment Control	M,S	Isolate Leak (ZZ048) [2013 NRC]  Operator <b>IDENTIFIES</b> the mechanical and electrical components, and their required positions, to <b>ISOLATE, VENT, AND DRAIN</b> aleak identified on an ECCS system pipe using controlled station Mechanical Drawings.
Radiation Control		
Emergency Procedures/Plan	M,S	Perform Licensed Operator Review of MEES.(ZZ014)  Operator performs the Licensed Operator Review of the Major Equipment and Electrical Status (MEES) 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 (≤ 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>Hope Creek Generating Station</u>	Date of Examination: <u>2/23/15</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>	Operating Test Number: <u>1</u>

  

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D,R	Complete an Action Statement Log Entry. (ZZ029)  Operator completes a manual Action Statement log entry for the failure of a containment isolation valve, <u>AND</u> submits for CONCURRENCE REVIEW in accordance with OP-HC-108-115-1001.
Conduct of Operations	N,R	Review Operations Logs In Use During A Shift (ZZ049)  Operator performs the CRS review of Attachment 3 of OP-HC-108-116-1001, Spent Fuel Pool Decay Heat Load Determination.
Equipment Control	M,R	Review Power Distribution Lineup. (ZZ022)  Operator performs the SM/CRS review of the completed HC.OP-ST.ZZ-0001.and identifies applicable Technical Specification requirements.
Radiation Control	D,P,R	Determine Liquid Radwaste Rad Monitor CTB Weir Flow (ZZ050) [2013 NRC]  Operator performs the Control Room Supervisor review, and correction, of HC.OP DL.ZZ 0026 Surveillance Log
Emergency Procedures/Plan	D,S	Classify an event.  Operator classifies an event and makes notifications within identified Critical Times in accordance with EP-HC-111-101

  

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>Hope Creek Generating Station</u>	Date of Examination: <u>2/23/15</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test No: <u>1</u>

  

Control Room Systems <sup>®</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. REACTOR PROTECTION SYSTEM (SB013)  Operator resets RPS, identifies a control rod out of position and reseats the control rod in accordance with HC.OP-SO.SB-0001.	A,D,E	7
b. RWCU (BG003)  Operator responds to a containment isolation and restores RWCU IAW HC.OP-AB.CONT-0002.	E,N	2
c. CRDH SYSTEM (BF012)  Operator responds to a loss of CRD regulating function in accordance with HC.OP-AB.IC-0001.	A,D,E,L	1
d. CONTROL ROOM HVAC (GK003)  Operator places Control Area Ventilation Train B in-service without cooling in accordance with Steps 5.8.1 through 5.8.5 of HC.OP-SO.GK-0001.	EN,N	9
e. PRIMARY CONTAINMENT SYSTEM (GS011)  Operator vents the Drywell, and secures venting the Drywell in accordance with HC.OP-AB.CONT-0001.	EN,N	5
f. SACS (EG008)  Operator implements Condition A of HC.OP-AB.COOL-0002.	A,D,E	8
g. MAIN TURBINE (AC007)  Operator responds to an abnormal Main Turbine condition during Main Turbine roll in accordance with HC.OP-SO.AC-0001.	A,D	3
h. <b>RECIRCULATION SYSTEM (BB001) RO ONLY</b>  Operator resets the Reactor Recirculation Runbacks in accordance with HC.OP-SO.BB-0002	D,E	4

  

In-Plant Systems <sup>®</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. CRDH SYSTEM (BF001)  Operator alternates CRDH System Flow Control Valves in accordance with Section 5.2 of HC.OP-SO.BF-0001.	D,R	1
j. INSTRUMENT GAS (KL006)  Operator overrides a valve containment isolation signal in accordance with HC.OP-AB.COMP-0002	E,EN,N	5

k. 120 VAC Distribution (PN004)  Operator removes a 120 VAC inverter from service IAW HC.OP-SO.PN-0001	A,N	6
@ 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 (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power / Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6 / 4-6 / 2-3  $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ - / - / $\geq 1$ (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$	

Facility: Hope Creek Scenario No.: 1Op-Test No.: 2015

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_ (SRO)  
 \_\_\_\_\_ (RO)  
 \_\_\_\_\_ (BOP)

Initial Conditions: 84% power. Power lowered for RFP maintenance.

Turnover:

Place RFP in service. Raise Reactor power to 100%.

New

Event No.	Malf. No.	Event Type*	Event Description
1		N(BOP) N(SRO)	Place RFP In Service
2		R(ATC) R(SRO)	Raise Reactor Power with Recirculation System
3		C(ATC) C(SRO) TS(SRO)	Recirculation Pump Runaway
4		C(BOP) C(SRO) TS(SRO)	Loss of 1DD482
5		M(ALL)	LOCA
6		C(ATC) C(SRO)	RPS Failure-ATWS/ARI Scram Successful
7		C(BOP) C(SRO)	HPCI Injection Valve Failures-Loss of Condensate

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

Facility: Hope Creek Scenario No.: 2Op-Test No.: 2015

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_ (SRO)  
 \_\_\_\_\_ (RO)  
 \_\_\_\_\_ (BOP)

Initial Conditions: 95% Power. Power reduction in progress for a rod pattern adjustment.

Turnover:

Swap EHC pumps. Reduce power to 85%. Hold for Reactor Engineer review of plant conditions.ESG-073 modified.

Event No.	Malf. No.	Event Type*	Event Description
1		N(BOP) N(SRO)	EHC Pump Swap
2		R(ATC) R(SRO)	Lower Power With Control Rods and Recirculation Flow
3		I(ATC) I(SRO) TS(SRO)	Flow Unit Failure
4		C(ALL)	EHC System Leak
5		M(ALL)	ATWS-Main Turbine Trip-Bypass Valve Failure
6		C(BOP) C(SRO)	Failure of SBLC to Automatically Initiate
7		C(ATC) C(SRO)	CRD Pump trip- EOP Implementation Failure
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Facility: <u>Hope Creek</u>	Scenario No.: <u>3</u>	Op-Test No.: <u>2015</u>
Examiners: _____	Operators: _____	(SRO)
_____	_____	(RO)
_____	_____	(BOP)
Initial Conditions: <u>100% Power.</u>		
Turnover:		
<u>Maintain 100% power.</u>		
<u>ESG-002 Modified</u>		

Event No.	Malfunction No.	Event Type*	Event Description
1		R(ATC) R(SRO) C(BOP)	FWH Leak
2		C(ATC) C(SRO) TS(SRO)	Inadvertent SBLC System Actuation
3		TS(SRO)	Loss of 10D410
4		M(ALL)	Loss of Offsite Power
5		C(BOP) C(SRO)	Auto Start Failure of EDGs
6		C(BOP) C(SRO)	RCIC Overspeed Trip
7		C(ATC) C(SRO)	SACS Pump Trip

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

Facility: <u>Hope Creek</u>	Scenario No.: <u>4</u>	Op-Test No.: <u>2015</u>
Examiners: _____	Operators: _____	(SRO)
_____	_____	(RO)
_____	_____	(BOP)
Initial Conditions: <u>100% Power.</u>		
Turnover:		
<u>Maintain 100% power.</u>		
<u>ESG-082 Modified</u>		

Event No.	Malf. No.	Event Type*	Event Description
1		N(BOP) N(SRO)	Containment O2 Weekly Surveillance Test
2		C(BOP) R(ATC) R(SRO) TS(SRO)	SRV Open/Closes
3		C(BOP) C(SRO)	Earthquake- Service Air Compressor Trip
4		C(ATC) C(SRO)	RWCU Pump Leak-Failure to Automatically Isolate
5		C(ALL)	Air Leak w/Multiple Rod Drift -Scram
6		M(ALL)	LOP-Station Blackout
7		C(BOP) C(SRO)	LOCA Requiring Steam Cooling-RCIC Isolation
8		C(BOP) C(SRO)	RHR Injection Failure

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