ES-401 **BWR Examination Outline** **Form ES-401-1**

Facility: **Hope Creek - RO Exam** Date of Exam: **11/28/2005**

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	3	3	3	N/A			4	3	N/A		4	20			
	2	2	2	1				1	1			0	7			
	Tier Totals	5	5	4				5	4			4	27			
2. Plant Systems	1	2	2	3	3	2	3	3	2	2	2	2	26			
	2	2	1	1	1	1	1	1	2	1	1	0	12			
	Tier Totals	4	3	4	4	3	4	4	4	3	3	2	38			
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	
		3			2			2			3							

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 the 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.

e. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. * The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (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. Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	1	0	0	0	0	0	AK1.03 - Knowledge of the operational implications of the following concepts as they apply to the Partial or Complete Loss of Forced Core Flow Circulation: Thermal Limits :(CFR: 41.8 to 41.10 / 45.3)	3.6	1
295003 Partial or Complete Loss of AC / 6	0	0	0	0	1	0	AA2.05 - Ability to determine and interpret the following as they apply to Partial or Complete Loss of AC : Whether a partial or complete loss of A.C. Power has occurred:(CFR: 41.10 /43.5/ 45.13)	3.9	1
295004 Partial or Total Loss of DC Pwr / 6	0	0	1	0	0	0	AK3.01 - Knowledge of the reasons for the following responses as they apply to Partial or Total Loss of DC Pwr : Load shedding Plant Specific:(CFR: 41.5/41.10 / 45.6 /45.13)	2.6	1
295005 Main Turbine Generator Trip / 3	0	0	0	0	0	1	AG2.1.2 - Knowledge of operator responsibilities during all modes of plant operation (CFR: 41.10 / 45.13)	3.0	1
295006 SCRAM / 1	1	0	0	0	0	0	AK1.03 - Knowledge of the operational implications of the fallowing concepts as they apply to the SCRAM: Reactivity Control:(CFR: 41.8 to 41.10 /45.3)	3.7	1
295016 Control Room Abandonment / 7	0	0	0	0	0	1	AG2.1.30 - Ability to locate and operate components, including local controls. (CFR: 41.7 / 45.7)	3.9	1
295018 Partial or Total Loss of CCW / 8	0	0	0	0	1	0	AA2.04 - Ability to determine and interpret the following as they apply to Partial or Total Loss of CCW System Flow:(CFR: 41.10/43.5/ 45.13)	2.9	1
295019 Partial or Total Loss of Inst. Air / 8	0	0	0	1	0	0	AA1.03 - Ability to operate and / or monitor the following as they apply to Partial or Total Loss of Inst. Air: Instrument Air Compressor Power supplies:(CFR: 41.7145.5/45.6)	3.0	1
295021 Loss of Shutdown Cooling / 4	0	0	0	0	1	0	AA2.05 - Ability to determine and interpret the following as they apply to Loss of Shutdown Cooling: Reactor Vessel Metal Temperature (CFR: 41.10 /43.5/45.13)	3.4	1
295023 Refueling Acc / 8	0	1	0	0	0	0	AK2.03 - Knowledge of the interrelations between Refueling Accidents and the following: Radiation Monitoring equipment (CFR41.7 /45.7/ 45.8)	3.4	1
295024 High Drywell Pressure / 5	0	0	0	1	0	0	EA1.03 - Ability to operate and/ or monitor the following as they apply to High Drywell Pressure: LPCS - Plant specific (CFR41.7/ 45.5/ 45.6)	4.0	1
295025 High Reactor Pressure / 3	0	0	0	1	0	0	EA1.02 - Ability to operate and / or monitor the following as they apply to High Reactor Pressure : Reactor/Turbine pressure regulating system :(CFR: 41.7/45.5/ 45.6)	3.8	1
295026 Suppression Pool High Water Temp. / 5	0	0	0	0	0	1	EG2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation. (CFR: 45.2 / 45.6)	3.9	1

295027 High Containment Temperature / 5	0	0	0	0	0	0			0
295028 High Drywell Temperature / 5	0	0	0	0	0	1	EG2.1.30 - Ability to locate and operate components, including local controls. (CFR: 41.7 / 45.7)	3.9	1
295030 Low Suppression Pool Wtr Lvl / 5	0	0	1	0	0	0	EK3.07 - Knowledge of the reasons for the following responses as they apply to Low Suppression Pool Wtr Lvl: NPSH considerations for ECCS pumps:(CFR: 41.5/41.10/45.6/ 45.13)	3.5	1
295031 Reactor Low Water Level / 2	0	1	0	0	0	0	EK2.10 - Knowledge of the interrelations between Reactor Low Water Level and the foliowing: Redundant reactivity control: Plant specific (CFR: 41.7/45.7/45.8)	4.0	1
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	0	0	0	1	0	0	EA1.02 - Ability to operate and / or monitor the following as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: RRCS: Plant Specific (CFR: 41.7/45.5/ 45.6)	3.8	1
295038 High Off-site Release Rate / 9	0	0	1	0	0	0	EK3.02 - Knowledge of the reasons for the following responses as they apply to High Off-site Release Rate: System Isolations :(CFR: 41.5/41.10/45.6/ 45.13)	3.9	1
600000 Plant Fire On Site / 8	1	0	0	0	0	0	AK1.01 - Knowledge of the operational implications of the following concepts as they apply to the Plant Fire On Site: Fire Classifications by type (CFR: 41.8 to 41.10 /45.3) ,	2.5	1
295005 Main Turbine Generator Trip / 3	0	1	0	0	0	0	AK2.04 Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Main generator protection (CFR: 41.7 / 45.8)	3.3	1
K/A Category Totals:	3	3	3	4	3	4	Group Point Total:		20

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3	0	0	0	0	1	0	AA2.02 - Ability to determine and interpret the following as they apply to Loss of Main Condenser Vacuum's Reactor Power - Plant Specific:(CFR: 41.10/43.5/ 45.13)	3.2	1
295007 High Reactor Pressure / 3	0	0	0	0	0	0			
295008 High Reactor Water Level / 2	0	0	1	0	0	0	AK3.06 - Knowledge of the reasons for the following responses as they apply to High Reactor Water Level: RCIC Turbine Trip - Plant Specific:(CFR: 41.5/41.10/ 45.6/45.13)	3.4	1
295009 Low Reactor Water Level / 2	1	0	0	0	0	0	AK1.02 - Knowledge of the operational implications of the following concepts as they apply to the Low Reactor Water Level: Recirculation pump net positive suction head: Plant Specific:(CFR: 41.8 to 41.10/45.3)	3.0	1
295010 High Drywell Pressure / 5	0	0	0	0	0	0			
295011 High Containment Temp / 5	0	0	0	0	0	0			
295012 High Drywell Temperature / 5	0	0	0	0	0	0			
295013 High Suppression Pool Temp. / 5	0	0	0	0	0	0			
295014 Inadvertent Reactivity Addition / 1	0	0	0	0	0	0			
295015 Incomplete SCRAM / 1	0	0	0	0	0	0			
295017 High Off-site Release Rate / 9	0	0	0	0	0	0			
295020 Inadvertent Cont. Isolation / 5 & 7	0	0	0	0	0	0			
295022 Loss of CRD Pumps / 1	0	0	0	0	0	0			
295029 High Suppression Pool Wtr Lvl / 5	0	1	0	0	0	0	EK2.07 - Knowledge of the interrelations High Suppression Pool Wtr Lvl and the following: Drywell/ containment water level:(CFR: 41.7 /45.7/45.8)	3.1	1
295032 High Secondary Containment Area Temperature / 5	0	0	0	0	0	0			
295033 High Secondary Containment Area Radiation Levels / 9	0	0	0	0	0	0			

295034 Secondary Containment Ventilation High Radiation / 9	0	0	0	1	0	0	EA1.01 - Ability to operate and/ or monitor the following as they apply to Secondary Containment Ventilation High Radiation: Area radiation monitoring system:(CFR41.7/45.5/45.6)	3.8	1
295035 Secondary Containment High Differential Pressure / 5	0	0	0	0	0	0			0
295036 Secondary Containment High Sump/Area Water Level / 5	1	0	0	0	0	0	EK1.01 - Knowledge of the operational implications of the following concepts as they apply to the Secondary Containment High Sump/ Area Water Level: Radiation releases (CFR:41.8 to 41.10/45.3)	2.9	1
500000 High CTMT Hydrogen Conc. / 5	0	1	0	0	0	0	EK2.02 - Knowledge of the interrelations between High CTMT Hydrogen Conc. And the following: Containment oxygen monitoring systems (CFR: 41.7 / 45.7 /45.8)	3.1	1
K/A Category Point Totals:	2	2	1	1	1	0	Group Point Total:		7

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)												Form ES-401-1	
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	#
203000 RHR/LPCI: Injection Mode	0	0	0	0	0	0	1	0	0	0	0	A1.04 Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) controls including: System Pressure (CFR: 41.5 / 45.5)	2.5	1
205000 Shutdown Cooling	0	0	0	0	0	0	0	0	1	0	0	A3.03 - Ability to monitor automatic operations of the Shutdown Cooling System(RHR Shutdown Cooling Mode) including: lights and alarms (CFR:41.7/45.5)	3.5	1
206000 HPCI	0	0	0	0	1	0	0	0	0	0	0	K5.05 - Knowledge of the operational implications of the following concepts as they apply to the HPCI: Turbine speed control: BWR- 2,3,4 (CFR:41.5/ 45.7)	3.3	1
207000 Isolation (Emergency) Condenser	0	0	0	0	0	0	0	0	0	0	0			
209001 LPCS	0	1	0	0	0	0	0	0	0	0	0	K2.01 - Knowledge of electrical power supplies to the following: Pump power (CFR41.7)	3.0	1
209002 HPCS	0	0	0	0	0	0	0	0	0	0	0			
211000 SLC	0	0	0	1	0	0	0	0	0	0	0	K4.04 - Knowledge of SLC design feature(s) and or interlock(s) which provide for the following: Indication of fault in explosive valve firing circuits (CFR41.7)	3.8	1
212000 RPS	0	0	1	0	0	0	0	0	0	0	0	K3.11 - Knowledge of the effect that a loss or malfunction of the RPS will have on the following: Recirculation system (CFR41.7/45.6)	3.0	1
215003 IRM	0	0	0	1	0	0	0	0	0	0	0	K4.04 - Knowledge of the IRM design feature(s) and or interlock(s) which provide for the following: Varying system sensitivity levels using range switches (CFR41.7)	2.9	1
215003 IRM	0	1	0	0	0	0	0	0	0	0	0	K2.01 - Knowledge of electrical power supplies to the following: IRM Channels/ detectors (CFR41.7)	2.5	1
215004 Source Range Monitor	1	0	0	0	0	0	0	0	0	0	0	K1.02- Knowledge of the physical connections and/or cause-effect relationships between Source Range Monitor and the following: Reactor Manual Control (CFR:41.2 to 41.9/45.7 to 45.8)	3.4	1
215005 APRM / LPRM	0	0	0	0	0	0	0	0	0	0	1	G2.1.28 - Knowledge of the purposes and function of major system components and controls (CFR: 41.7)	3.2	1

217000 RCIC	1	0	0	0	0	0	0	0	0	0	0	K1.01 - Knowledge of the physical connections and/or cause-effect relationships between RCIC and the following: Condensate storage and transfer system (CFR:41.2 to 41.9/ 45.7 to 45.8)	3.5	1
218000 ADS	0	0	0	0	0	0	0	0	0	0	1	G2.1.28 - Knowledge of the purpose and function of major system components and controls.	3.2	1
223002 PCIS/Nuclear Steam Supply Shutoff	0	0	0	0	0	0	0	0	0	1	0	A4.02 - Ability to manually operate and/or monitor in the control room: Manually initiate the system (CFR:41.7/45.5 to 45.8)	3.9	1
239002 SRVs	0	0	0	0	0	0	0	0	0	1	0	A4.06- Ability to manually operate and/or monitor in the control room: Reactor water level (CFR: 41.7/45.5 to 45.8)	3.9	1
259002 Reactor Water Level Control	0	0	1	0	0	0	0	0	0	0	0	K3.06 - Knowledge of the effect that a loss or malfunction of the Reactor Water Level Control will have on the following: Main Turbine (CFR:41.7/45.6)	2.8	1
261000 SGTS	0	0	1	0	0	0	0	0	0	0	0	K3.02 - Knowledge of the effect that a loss or malfunction of the SGTS will have on the following: Off-site release rate (CFR:41.7/45.6)	3.6	1
262001 AC Electrical Distribution	0	0	0	1	0	0	0	0	0	0	0	K4.03 - Knowledge of AC Electrical distribution design feature(s) and or interlock(s) which provide for the following: Interlocks between automatic bus transfer and breakers (CFR:41.7)	3.1	1
262002 UPS (AC/DC)	0	0	0	0	0	1	0	0	0	0	0	K6.02 - Knowledge of the effect that a loss or malfunction of the following will have on the UPS (AC/DC): DC electrical power (CFR:41.7/45.7)	2.8	1
263000 DC Electrical Distribution	0	0	0	0	0	0	1	0	0	0	0	A1.01 - Ability to predict and/or monitor changes in parameters associated with operating the DC Electrical distribution controls including: Battery charging/discharging rate (CFR:41.5/45.5)	2.5	1
264000 EDGs	0	0	0	0	0	0	0	1	0	0	0	A2.04 - 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: Consequences of operating under/over excited (CFR: 41.5 / 45.6)	2.9	1
300000 Instrument Air	0	0	0	0	0	0	0	0	1	0	0	A3.02 - Ability to monitor automatic operations of the Instrument Air including: Air temperature (CFR 41.7/45.5)	2.9	1
262001 A.C. Electrical Distribution	0	0	0	0	1	0	0	0	0	0	0	K5.02 - Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Breaker Control (CFR: 41.5 / 45.3)	2.6	1
400000 Component Cooling Water	0	0	0	0	0	1	0	0	0	0	0	K6.01 - Knowledge of the effect that a loss or malfunction of the following will have on the Component Cooling Water: Valves (CFR:41.5/45.5)	2.7	1
215004 Source Range Monitor	0	0	0	0	0	0	1	0	0	0	0	A1.03 - Ability to predict and/or monitor changes in parameters associated with operating the SOURCE RANGE MONITOR (SRM) SYSTEM controls including: RPS status (CFR: 41.5 / 45.5)	3.4	1

223002 PCIS/Nuclear Steam Supply Shutoff	0	0	0	0	0	1	0	0	0	0	0	K6.04 Knowledge of the effect that a loss or malfunction of the following will have on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF :Nuclear boiler instrumentation (CFR: 41.7 / 45.7)	3.3	1
400000 Component Cooling Water	0	0	0	0	0	0	0	1	0	0	0	A2.02 Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: (CFR: 41.5 / 45.6) : High/low surge tank level	2.8	1
K/A Category Point Totals:	2	2	3	3	2	3	3	2	2	2	2	Group Point Total:		26

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)												Form ES-401-1	
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	#
201001 CRD Hydraulic	0	0	0	0	0	0	0	0	0	0	0			
201002 RMCS	0	0	0	0	0	0	0	0	0	0	0			
201003 Control Rod and Drive Mechanism	0	0	0	0	0	0	0	0	0	0	0			
201004 RSCS	0	0	0	0	0	0	0	0	0	0	0			
201005 RCIS	0	0	0	0	0	0	0	0	0	0	0			
201006 RWM	0	0	0	0	0	1	0	0	0	0	0	K6.03 - Knowledge of the effect that a loss or malfunction of the following will have on the RWM: Rod Position indication - Plant Specific	2.9	1
202001 Recirculation	0	0	0	0	0	0	0	0	0	0	0			
202002 Recirculation Flow Control	0	0	0	0	0	0	0	1	0	0	0	A2.07 - Ability to (a) predict the impacts of the following on the Recirculation flow control and (b) based on those predications, use procedures to correct, control, or mitigate the conseqences of those abnormal operation: Loss of feedwater singal inputs: Plant specific (CFR:41.5/43.5/45.3/45.13)	3.3	1
204000 RWCU	0	0	0	0	0	0	0	0	0	0	0			
214000 RPIS	0	0	0	0	0	0	0	0	0	1	0	A4.02 - Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) - Control rod position	3.8	1
215001 Traversing In-core Probe	0	0	0	0	0	0	0	0	0	0	0			
215002 RBM	0	0	0	0	0	0	0	0	0	0	0			
216000 Nuclear Boiler Inst.	0	0	0	0	0	0	0	0	0	0	0			
219000 RHR/LPCI: Torus/Pool Cooling Mode	0	0	0	1	0	0	0	0	0	0	0	K4.03 - Knowledge of RHR/LPCI Torus/Pool Cooling Mode design feature(s) and or interlocks which provide for the following: Unintentional reduction in vessel injection flow during accident conditions: plant specific (CFR:41.7)	3.8	1
223001 Primary CTMT and Aux.	0	1	0	0	0	0	0	0	0	0	0	K2.09 - Knowledge of electrical power supplies to the following: Drywell cooling fans: Plant-Specific (CFR: 41.7)	2.7	1
226001 RHR/LPCI: CTMT Spray Mode	0	0	0	0	0	0	0	0	0	0	0			
230000 RHR/LPCI: Torus/Pool Spray Mode	0	0	0	0	0	0	0	0	0	0	0			
233000 Fuel Pool Cooling/Cleanup	0	0	1	0	0	0	0	0	0	0	0	K3.01 - Knowledge of the effect that a loss or malfunction of the FUEL POOL COOLING AND CLEAN-UP will have on following: (CFR: 41.7 /45.6) - Fuel pool temperature	3.2	1
234000 Fuel Handling Equipment	0	0	0	0	0	0	0	0	0	0	0			

239001 Main and Reheat Steam	0	0	0	0	0	0	0	0	1	0	0	A3.01 - Ability to monitor automatic operations of the Main and Reheat system including: Isolation of main steam system (CFR:41.7/45.5)	4.2	1
239003 MSIV Leakage Control	0	0	0	0	0	0	0	0	0	0	0			
241000 Reactor/Turbine Pressure Regulator	0	0	0	0	0	0	0	0	0	0	0			
245000 Main Turbine Gen. / Aux.	1	0	0	0	0	0	0	0	0	0	0	K1.02 - Knowledge of the physical connections and/or cause effect relationships between Main Turbine Generator / Aux and the following: Condensate system (CFR:41.2 to 41.9 / 45.7 to 45.8)	2.5	1
256000 Reactor Condensate	0	0	0	0	0	0	1	0	0	0	0	A1.07 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR CONDENSATE SYSTEM controls including: (CFR: 41.5 / 45.5) - System lineup	3.1	1
259001 Reactor Feedwater	0	0	0	0	0	0	0	0	0	0	0			
268000 Radwaste	0	0	0	0	0	0	0	1	0	0	0	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 operation: System rupture (CFR:41.5/ 43.5/ 45.3/ 45.13)	2.9	1
271000 Offgas	0	0	0	0	0	0	0	0	0	0	0			
272000 Radiation Monitoring	0	0	0	0	1	0	0	0	0	0	0	K5.01 - Knowledge of the operational implications of the following concepts as they apply to the Radiation Monitoring: Hydrogen injection operation's effect on process radiation indications: Plant specific (CFR: 41.5/ 45.7)	3.2	1
286000 Fire Protection	0	0	0	0	0	0	0	0	0	0	0			
288000 Plant Ventilation	0	0	0	0	0	0	0	0	0	0	0			
290001 Secondary CTMT	0	0	0	0	0	0	0	0	0	0	0			
290003 Control Room HVAC	0	0	0	0	0	0	0	0	0	0	0			
290002 Reactor Vessel Internals	1	0	0	0	0	0	0	0	0	0	0	K1.20 - Knowledge of the physical connections and/or cause effect relationships between Reactor Vessel Internals and the following: Nuclear Instrumentation (CFR:41.2 to 41.9/ 45.7 to 45.8)	3.2	1
K/A Category Point Totals:	2	1	1	1	1	1	1	2	1	1	0	Group Point Total:		12

ES-401 **BWR Examination Outline** **Form ES-401-1**

Facility: **Hope Creek - SRO Only Exam** Date of Exam: **11/28/05**

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				N/A					N/A				3	4	7
	2													2	1	3
	Tier Totals													5	5	10
2. Plant Systems	1													3	2	5
	2													1	2	3
	Tier Totals													4	4	8
3. Generic Knowledge and Abilities Categories		1		2		3		4						1	2	3	4	7
														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 the 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.

e. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. * The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (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. Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	0	0	0	0	0	0			
295003 Partial or Complete Loss of AC / 6	0	0	0	0	0	1	AG2.1.32 - Ability to explain and apply system limits and precautions (CFR 41.10/ 43.2/ 45.12)	3.8	1
295004 Partial or Total Loss of DC Pwr / 6	0	0	0	0	1	0	AA2.04 - Ability to determine and interpret the following as they apply to Partial or Total loss of DC power:(CFR: 41.10 *J* 43.5 / 45.13) - System Lineups	3.3	1
295005 Main Turbine Generator Trip / 3	0	0	0	0	0	0	K/A Randomly Rejected		
295006 SCRAM / 1	0	0	0	0	0	1	AG2.1.32 - Ability to explain and apply system limits and precautions (CFR 41.10/ 43.2/ 45.12)	3.8	1
295016 Control Room Abandonment / 7	0	0	0	0	0	0			
295018 Partial or Total Loss of CCW / 8	0	0	0	0	0	1	G2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies	3.6	1
295019 Partial or Total Loss of Inst. Air / 8	0	0	0	0	1	0	AA2.02 - Ability to determine and interpret the following as they apply to Partial or Total loss of Instrument Air:(CFR: 41.10/43,5/ 45.13) - Status of safety-related instrument air system loads (see AK2.1 - AK2.19)	3.7	1
295021 Loss of Shutdown Cooling / 4	0	0	0	0	0	0			
295023 Refueling Acc / 8	0	0	0	0	0	0			
295024 High Drywell Pressure / 5	0	0	0	0	0	0			
295025 High Reactor Pressure / 3	0	0	0	0	0	0			
295026 Suppression Pool High Water Temp. / 5	0	0	0	0	0	0			
295027 High Containment Temperature / 5	0	0	0	0	0	0			
295028 High Drywell Temperature / 5	0	0	0	0	0	1	EG2.4.50 - Ability to verify system alarm setpoints and operate controls identified in the alarm response manual. (CFR 45.3)	3.3	1
295030 Low Suppression Pool Wtr Lvl / 5	0	0	0	0	1	0	EA2.01 - Ability to determine and interpret the following as they apply to Low Suppression Pool Water level (CFR:41.10/ 43.5/ 45.13) - Suppression Pool level	4.2	1

295031 Reactor Low Water Level / 2	0	0	0	0	0	0			
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	0	0	0	0	0	0			
295038 High Off-site Release Rate / 9	0	0	0	0	0	0			
600000 Plant Fire On Site / 8	0	0	0	0	0	0			
K/A Category Totals:					3	4	Group Point Total:		7

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)							Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3	0	0	0	0	0	0			
295007 High Reactor Pressure / 3	0	0	0	0	0	0			
295008 High Reactor Water Level / 2	0	0	0	0	0	0			
295009 Low Reactor Water Level / 2	0	0	0	0	1	0	AA2.02 - Ability to determine and interpret the following as they apply to Low Reactor Water Level (CFR: 41.10/ 43.5 / 45.13) - Steam flow/ feed flow mismatch	3.7	1
295010 High Drywell Pressure / 5	0	0	0	0	0	1	AG2.4.6 - Knowledge of symptom based EOP mitigation strategies (CFR: 41.10 / 43.5 / 45.13)	4.0	1
295011 High Containment Temp / 5	0	0	0	0	0	0			
295012 High Drywell Temperature / 5	0	0	0	0	1	0	AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : Drywell temperature (CFR: 41.10 / 43.5 / 45.13)	3.8	1
295013 High Suppression Pool Temp. / 5	0	0	0	0	0	0			
295014 Inadvertent Reactivity Addition / 1	0	0	0	0	0	0			
295015 Incomplete SCRAM / 1	0	0	0	0	0	0			
295017 High Off-site Release Rate / 9	0	0	0	0	0	0			
295020 Inadvertent Cont. Isolation / 5 & 7	0	0	0	0	0	0			
295022 Loss of CRD Pumps / 1	0	0	0	0	0	0			
295029 High Suppression Pool Wtr Lvl / 5	0	0	0	0	0	0			
295032 High Secondary Containment Area Temperature / 5	0	0	0	0	0	0			
295033 High Secondary Containment Area Radiation Levels / 9	0	0	0	0	0	0			
295034 Secondary Containment Ventilation High Radiation / 9	0	0	0	0	0	0			

295035 Secondary Containment High Differential Pressure / 5	0	0	0	0	0	0			
295036 Secondary Containment High Sump/Area Water Level / 5	0	0	0	0	0	0			
500000 High CTMT Hydrogen Conc. / 5	0	0	0	0	0	0			
K/A Category Point Totals:					2	1	Group Point Total:		3

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)												Form ES-401-1	
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	#
203000 RHR/LPCI: Injection Mode	0	0	0	0	0	0	0	0	0	0	0			
205000 Shutdown Cooling	0	0	0	0	0	0	0	0	0	0	0			
206000 HPCI	0	0	0	0	0	0	0	0	0	0	1	G2.1.14 - Knowledge of system status criteria which require the notification of plant personnel. (CFR: 43.5 / 45.12)	3.3	1
207000 Isolation (Emergency) Condenser	0	0	0	0	0	0	0	0	0	0	0			
209001 LPCS	0	0	0	0	0	0	0	1	0	0	0	A2.02 - Ability to (a) predict the impacts of the following on the LPCS and (b) based on those predictions, use procedures to correct control or mitigate the consequences of those abnormal operation (CFR: 41.5/ 43.5/ 45.3/ 45.13) - Valve closures	3.2	1
209002 HPCS	0	0	0	0	0	0	0	0	0	0	0			
211000 SLC	0	0	0	0	0	0	0	0	0	0	0			
212000 RPS	0	0	0	0	0	0	0	0	0	0	0			
215003 IRM	0	0	0	0	0	0	0	0	0	0	0			
215004 Source Range Monitor	0	0	0	0	0	0	0	0	0	0	0			
215005 APRM / LPRM	0	0	0	0	0	0	0	1	0	0	0	A2.02 - Ability to (a) predict the impacts of the following on the APRM/ LPRM and (b) based on those predictions, use procedures to correct control or mitigate the consequences of those abnormal operation (CFR: 41.5/ 43.5/ 45.3/ 45.13) - Upscale or downscale trips.	3.7	1
217000 RCIC	0	0	0	0	0	0	0	0	0	0	0			
218000 ADS	0	0	0	0	0	0	0	0	0	0	0			
223002 PCIS/Nuclear Steam Supply Shutoff	0	0	0	0	0	0	0	0	0	0	0			
239002 SRVs	0	0	0	0	0	0	0	0	0	0	0			
259002 Reactor Water Level Control	0	0	0	0	0	0	0	0	0	0	1	G2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. (CFR: 43.2 / 43.3 / 45.3)	4.0	1

261000 SGTS	0	0	0	0	0	0	0	0	0	0	0			
262001 AC Electrical Distribution	0	0	0	0	0	0	0	0	0	0	0			
262002 UPS (AC/DC)	0	0	0	0	0	0	0	0	0	0	0			
263000 DC Electrical Distribution	0	0	0	0	0	0	0	0	0	0	0			
264000 EDGs	0	0	0	0	0	0	0	1	0	0	0	A2.08 - Ability to (a) predict the impacts of the following on the EDGs and (b) based on those predictions, use procedures to correct control or mitigate the consequences of those abnormal operation (CFR: 41.5/ 43.5/ 45.3/ 45.13) - Initiation of emergency generator room fire protection system.	3.7	1
300000 Instrument Air	0	0	0	0	0	0	0	0	0	0	0			
400000 Component Cooling Water	0	0	0	0	0	0	0	0	0	0	0			
K/A Category Point Totals:								3			2	Group Point Total:		5

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)												Form ES-401-1	
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	#
201001 CRD Hydraulic	0	0	0	0	0	0	0	0	0	0	1	G2.1.28 - Knowledge of the purpose and function of major system components and controls. (CFR: 41.7)	3.3	1
201002 RMCS	0	0	0	0	0	0	0	0	0	0	0			
201003 Control Rod and Drive Mechanism	0	0	0	0	0	0	0	0	0	0	0			
201004 RSCS	0	0	0	0	0	0	0	0	0	0	0			
201005 RCIS	0	0	0	0	0	0	0	0	0	0	0			
201006 RWM	0	0	0	0	0	0	0	0	0	0	0			
202001 Recirculation	0	0	0	0	0	0	0	0	0	0	1	G2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation. (CFR: 45.2 /45.6)	4.0	1
202002 Recirculation Flow Control	0	0	0	0	0	0	0	0	0	0	0			
204000 RWCU	0	0	0	0	0	0	0	0	0	0	0			
214000 RPIS	0	0	0	0	0	0	0	0	0	0	0			
215001 Traversing In-core Probe	0	0	0	0	0	0	0	0	0	0	0			
215002 RBM	0	0	0	0	0	0	0	0	0	0	0			
216000 Nuclear Boiler Inst.	0	0	0	0	0	0	0	0	0	0	0			
219000 RHR/LPCI: Torus/Pool Cooling Mode	0	0	0	0	0	0	0	0	0	0	0			
223001 Primary CTMT and Aux.	0	0	0	0	0	0	0	0	0	0	0			
226001 RHR/LPCI: CTMT Spray Mode	0	0	0	0	0	0	0	0	0	0	0			
230000 RHR/LPCI: Torus/Pool Spray Mode	0	0	0	0	0	0	0	0	0	0	0			
233000 Fuel Pool Cooling/Cleanup	0	0	0	0	0	0	0	0	0	0	0			
234000 Fuel Handling Equipment	0	0	0	0	0	0	0	0	0	0	0			
239001 Main and Reheat Steam	0	0	0	0	0	0	0	0	0	0	0			
239003 MSIV Leakage Control	0	0	0	0	0	0	0	0	0	0	0			
241000 Reactor/Turbine Pressure Regulator	0	0	0	0	0	0	0	0	0	0	0			

245000 Main Turbine Gen. / Aux.	0	0	0	0	0	0	0	1	0	0	0	A2.05 - Ability to (a) predict the impacts of the following on the Main Turbine Gen. / Aux and (b) based on those predictions, use procedures to correct control or mitigate the consequences of those abnormal operation (CFR: 41.5/ 43.5/ 45.3/ 45.13) - Generator trip	3.8	1
256000 Reactor Condensate	0	0	0	0	0	0	0	0	0	0	0			
259001 Reactor Feedwater	0	0	0	0	0	0	0	0	0	0	0			
268000 Radwaste	0	0	0	0	0	0	0	0	0	0	0			
271000 Offgas	0	0	0	0	0	0	0	0	0	0	0			
272000 Radiation Monitoring	0	0	0	0	0	0	0	0	0	0	0			
286000 Fire Protection	0	0	0	0	0	0	0	0	0	0	0			
288000 Plant Ventilation	0	0	0	0	0	0	0	0	0	0	0			
290001 Secondary CTMT	0	0	0	0	0	0	0	0	0	0	0			
290003 Control Room HVAC	0	0	0	0	0	0	0	0	0	0	0			
290002 Reactor Vessel Internals	0	0	0	0	0	0	0	0	0	0	0			
K/A Category Point Totals:								1			2	Group Point Total:		3

Facility: Hope Creek - **RO Exam** Date of Exam: **11/28/05**

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.21	Ability to obtain and verify controlled procedure copy (CFR: 45.10 / 45.13)	3.1	1		
	2.1.14	Knowledge of system status criteria which require the notification of plant personnel (CFR: 43.5 / 45.12)	2.5	1		
	2.1.33	Ability to recognize indications for system operating parameters which are entry-level condition for Technical Specifications (CFR: 43.2 / 43.3 / 45.3)	3.4	1		
	2.1.					
	2.1.					
	Subtotal			3		
2. Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. (CFR: 45.1)	3.7	1		
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity (CFR: 43.6)	2.8	1		
	2.2.					
	Subtotal			2		
3. Radiation Control	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements (CFR: 41.12 / 43.4. 45.9 / 45.10).	2.6	1		
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure (CFR: 43.4 / 45.10)	2.9	1		
	2.3.					
	Subtotal			2		

4. Emergency Procedures/ Plan	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1		
	2.4.39	Knowledge of the RO's responsibilities in emergency plan implementation (CFR: 45.11)	3.3	1		
	2.4.31	Knowledge of annunciators alarms and indications / and use of the response instructions. (CFR: 41.10 / 45.3)	3.3	1		
	2.4.					
	Subtotal			3		
Tier 3 Point Total				10		

Facility: **Hope Creek - SRO Only Exam** Date of Exam: **11/28/05**

Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation. (CFR: 43.5 / 45.12 / 45.13)			4.4	1
	2.1.34	Ability to maintain primary and secondary plant chemistry within allowable limits (CFR: 41.10 / 43.5 / 45.12)			2.9	1
	Subtotal					2
2. Equipment Control	2.2.20	Knowledge of the process for managing troubleshooting activities (CFR: 43.5 / 45.13)			3.3	1
	2.2.21	Knowledge of pre- and post-maintenance operability requirements (CFR: 43.2)			3.5	1
	Subtotal					2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized. (CFR: 43.4 / 45.10)			3.1	1
	Subtotal					1
4. Emergency Procedures/ Plan	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations (CFR: 43.5 / 45.12)			4.0	1
	2.4.14	Knowledge of general guidelines for EOP flowchart use. (CFR: 43.5)			3.9	1
	2.4.					
	Subtotal					2
Tier 3 Point Total						7

Tier / Group	Randomly Selected K/A	Reason for Rejection
Tier 1/ Group 1 RO exam	295027 EK2.01	K/A is for a Mark III containment and Hope Creek has a Mark I containment
Tier 2/ Group 1 RO exam	259002, A1.06	Hope Creek does not have (FWCI) Feedwater Coolant Injection
Tier 2/ Group 1 RO exam	262002, A1.02	Not applicable to Hope Creek
Tier 2/ Group 2 RO exam	215002, A4.04	Not applicable to Hope Creek
Tier 2/ Group 2 RO exam	223001 A4.02	Not applicable to Hope Creek
Tier 3 RO exam	G2.2.3	Not applicable to Hope Creek - Not a Multi-unit facility
Tier 2/ Group 1 RO exam	203000 G2.2.25	RO's not required to know bases
Tier 2 Group 1 RO exam	217000 K1.05	Connection between RCIC/RHR no longer used
Tier 2 Group 1 RO exam	218000 A2.04	ADS is always inhibited, therefore there is NO effect on a failure of ADS to initiate
Tier 2 Group 1 RO exam	264000 G2.1.14	RO's not required to make notifications on EDGs
Tier 2 Group 1 RO exam	300000 K5.01	Too many Instrument Air Questions
Tier 2 Group 2 RO exam	286000 K2.03	Too many Fire Protection Questions
Tier 2 Group 2 RO exam	226001 A4.14	No relationship between Containment Spray and Suppression Pool temperature

Tier 1 Group 1 SRO exam	600000 AA2.13	Too many fire protection questions
Tier 1 Group 2 SRO exam	295035 EG2.4.6	No EOP for Secondary Containment High differential pressure
Tier 2 Group 1 RO exam	206000 A2.07	Question similar to question being asked on audit exam
Generic RO exam	2.4.27	Question compromised
Tier 2 Group 2 RO exam	290003 A1.03	Unable to write question that addressed K/A
Generic SRO exam	2.4.36	No SRO tasks require this knowledge.

Facility: Hope Creek Date of Examination: 11/28/05

Examination Level : RO Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	S, A, M	Conduct Weekly Power Distribution Lineup
Equipment Control	S, D	Conduct Reactor Recirculation Single Loop Operation
Conduct of Operations	S, R, D	Perform an Accident Monitoring Instrumentation Channel Check
Radiation Control		None
Emergency Plan	S, M	Complete a 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), (A)lternate Path
(P)revious 2 exams (# 1; randomly selected)

Facility: Hope Creek Date of Examination: 11/28/05

Examination Level : SRO Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R, A, N	Review and Approve a Clearance
Equipment Control	S, D	Conduct Reactor Recirculation Single Loop Operation
Conduct of Operations	R, N	Complete an On The Spot Change (OTSC)
Radiation Control	R, D	Review a Containment Purge Form
Emergency Plan	S, N	Classify an Emergency Event - 2.4.41 - Will be done after a scenario using the simulator.

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), (A)lternate Path
(P)revious 2 exams (# 1; randomly selected)

Facility: Hope Creek Date of Examination: 11/28/05
Exam Level (circle one): **RO** Operating Test No.: _____

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. Perform Quarterly Turbine Stop Valve Testing	N, S	3
b. Place RACS in Service (ED-003)	D, S, A	8
c. Recirc Flow Control System / Reset a Recirc MG Set Scoop Tube Lockup (Alt. Path - Recirc speed inexplicably rises following reset) (BB002)	M, S, A	4
d. Transfer 1E Power Supply to Backup	N, S, A	6
e. PCIS / Resetting Isolation Systems	N, S	5
f. Feeding the Reactor Vessel with the Condensate System	N, S, L	2
g. Initiate SLC and verify RWCU isolates (BH-001)	D, S, A	1
h. Manually Start FRVS system (GU-001)	D, S	9
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i. Main Steam/ Establish Control from Outside the Control Room	N, E	3
j. A/C Electrical / Startup a 20KVA Inverter	N	6
k. Control Rod Drive / Isolate a CRD HCU (BF-006)	D, R	1

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path (4)	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank (4)	# 9 / # 8 / # 4
(E)mergency or abnormal in-plant (1)	1 / 1 / 1
(L)ow-Power (1)	$ 1 / $ 1 / $ 1
(N)ew or (M)odified from bank including 1(A) (7)	$ 2 / $ 2 / $ 1
(P)revious 2 exams (0)	# 3 / # 3 / # 2 (randomly selected)
(R)CA (1)	$ 1 / $ 1 / $ 1
(S)imulator	

Facility: Hope Creek Date of Examination: 11/28/05
Exam Level (circle one): **SRO** Operating Test No.: _____

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. Perform Quarterly Turbine Stop Valve Testing	N, S	3
b. Place RACS in Service (ED-003)	D, S, A	8
c. Recirc Flow Control System / Reset a Recirc MG Set Scoop Tube Lockup (Alt. Path - Recirc speed inexplicably rises following reset) (BB002)	M, S, A	4
d. Transfer 1E Power Supply to Backup	N, S, A	6
e. PCIS / Resetting Isolation Systems	N, S	5
f. Feeding the Reactor Vessel with the Condensate System	N, S, L	2
g. Initiate SLC and verify RWCU isolates (BH-001)	D, S, A	1
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
h. Main Steam/ Establish Control from Outside the Control Room	N, E	3
i. A/C Electrical / Startup a 20KVA Inverter	N	6
j. Control Rod Drive / Isolate a CRD HCU (BF-006)	D, R	1

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path (4)	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank (3)	# 9 / # 8 / # 4
(E)mergency or abnormal in-plant (1)	1 / 1 / 1
(L)ow-Power (1)	$ 1 / $ 1 / $ 1
(N)ew or (M)odified from bank including 1(A) (7)	$ 2 / $ 2 / $ 1
(P)revious 2 exams (0)	# 3 / # 3 / # 2 (randomly selected)
(R)CA (1)	$ 1 / $ 1 / $ 1
(S)imulator	

Facility: _Hope Creek_____ Scenario No.: __1_____ Op-Test No.: _____

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: _4% power, Reactor Startup in progress, "B" EHC pump blocked for maintenance
_____
_____
_____

Turnover:
_____
_A Reactor Startup is in progress with IOP-3 completed up to step 5.3.21. Reactor power is approximately 4%. 1BP116 EHC pump is tagged out for maintenance and will be out of service until a new pressure compensator arrives tomorrow.____

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO) R (CRS)	Withdraw Group 7 control rods to position 8
2		I (RO) I (CRS)	PT-N078B, Steam Dome Pressure Transmitter fails LOW (TS)
3		I (ALL)	Loss of "B" MG Set
4		C (RO) C(CRS)	Control Rod 22-35 inadvertently scrams (TS)
5		C (RO) C (CRS)	"A" CRD pump trip
6		M (ALL)	Steam Leak from RCIC piping
7		C (BOP) C (CRS)	RCIC isolation valves fail to close
8		C (BOP) C (CRS)	"E" SRV fails to close

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

Facility: _Hope Creek_____ Scenario No.: __2_____ Op-Test No.: _____

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: _80% power, middle of cycle. A control rod sequence exchange has just been performed and Operators are preparing to raise power to 80% load and return the 3rd RFP back to service._____
_____

Turnover:
_____
SLC pump AP-208 has been tagged out for a motor replacement and is expected back in 48 hours. No other equipment is Out of Service. Raise power to ~80% electrical load and place the 3rd RFP in service (currently running on recirc)

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO) R (CRS)	Power Increase using Recirc Flow
2		N (BOP)	Place 3rd RFP in service
3		I (BOP) I (CRS)	Inadvertent HPCI initiation (TS)
4		C (ALL)	480 Volt Unit Substation 10B130 trips, causing a trip of “B” Recirc pump
5		C (BOP)	EHC pump filters clog
6		M (ALL)	Electrical ATWS
7		M (ALL)	Small Break LOCA
8		C (RO)	RHR pump being placed in Drywell Spray trips

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