Facility: Date of Exam: June 25, 2010

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	4				4	4			2	20					7				
	2	0	1	0	N/A			2	1	N/A		3	7					3				
	Tier Totals	3	4	4				6	5			5	27					10				
2. Plant Systems	1	3	2	1	3	1	2	4	2	4	3	1	26					5				
	2	2	0	1	2	1	0	1	1	1	1	2	12					3				
	Tier Totals	5	2	2	5	2	2	5	3	5	4	3	38					8				
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7				
		3			3			2			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/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
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 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. Refer to Section D.1.b of ES-401 for the applicable K/As.
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; 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.
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 Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)

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				X			**Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: AA1.07 Nuclear boiler instrumentation system**	3.1	6 H
295003 Partial or Complete Loss of AC / 6			X				**Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: AK3.05 Reactor SCRAM**	3.7	38 H
295004 Partial or Total Loss of DC Pwr / 6		X					**Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: AK2.03 D.C. bus loads**	3.3	11 H
295005 Main Turbine Generator Trip / 3				X			**Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP: AA1.02 RPS**	3.6	13 H
295006 SCRAM / 1	X						**Knowledge of the operational implications of the following concepts as they apply to SCRAM: AK1.03 Reactivity control**	3.7	3 F
295016 Control Room Abandonment / 7									
295018 Partial or Total Loss of CCW / 8	X						**Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: AK1.01 Effects on component/system operations**	3.5	25 H
295019 Partial or Total Loss of Inst. Air / 8		X					**Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: AK2.06 Offgas system**	2.8	39 H
295021 Loss of Shutdown Cooling / 4	X						**Knowledge of the operational implications of the following concepts as they apply to LOSS OF SHUTDOWN COOLING: AK1.03 Adequate core cooling**	3.9	40 H
295023 Refueling Acc / 8		X					**Knowledge of the interrelations between REFUELING ACCIDENTS and the following: AK2.04 RMCS/Rod control and information system**	3.2	21 F

295024 High Drywell Pressure / 5					X		**Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: EA2.03 Suppression pool level**	3.8	24 H
295025 High Reactor Pressure / 3			X				**Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE: EK3.09 Low-low set initiation**	3.7	42 F
295026 Suppression Pool High Water Temp. / 5					X		**Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: EA2.02 Suppression pool level**	3.8	14 H
295027 High Containment Temperature / 5						X	**2.4.18 Knowledge of the specific bases for EOPs**	3.3	7 F
295028 High Drywell Temperature / 5					X		**Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: EA2.04 Drywell pressure**	4.1	50 H
295030 Low Suppression Pool Wtr Lvl / 5			X				**Knowledge of the reasons for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: EK3.03 RCIC operation**	3.6	43 H
295031 Reactor Low Water Level / 2				X			**Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL: EA1.04 High pressure core spray**	4.3	30 H
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1					X		**Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: EA2.03 SBLC tank level**	4.3	20 H
295038 High Off-site Release Rate / 9			X				**Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: EK3.02 System isolations**	3.9	5 F
600000 Plant Fire On Site / 8						X	**2.1.30 Ability to locate and operate components, including local controls.**	4.4	26 F
700000 Generator Voltage and Electric Grid Disturbances / 6				X			**Ability to operate and/or monitor the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: AA1.01 Grid frequency and voltage**	3.6	44 F
K/A Category Totals:	3	3	4	4	4	2	Group Point Total:		20

ES-401 BWR Examination Outline Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)

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									
295007 High Reactor Pressure / 3						X	**2.2.42 Ability to recognize system parameters that are entry-level conditions for Technical Specifications.**	3.9	15 F
295008 High Reactor Water Level / 2		X					**Knowledge of the interrelations between HIGH REACTOR WATER LEVEL and the following: AK2.03 Reactor water level control**	3.6	73 H
295009 Low Reactor Water Level / 2									
295010 High Drywell Pressure / 5									
295011 High Containment Temp / 5									
295012 High Drywell Temperature / 5									
295013 High Suppression Pool Temp. / 5									
295014 Inadvertent Reactivity Addition / 1					X		**Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: AA2.02 Reactor period**	3.9	31 H
295015 Incomplete SCRAM / 1									
295017 High Off-site Release Rate / 9									
295020 Inadvertent Cont. Isolation / 5 & 7									
295022 Loss of CRD Pumps / 1				X			**Ability to operate and/or monitor the following as they apply to LOSS OF CRD PUMPS: AA1.01 CRD hydraulic system**	3.1	64 F
295029 High Suppression Pool Wtr Lvl / 5						X	**2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.**	4.1	32 H
295032 High Secondary Containment Area Temperature / 5									
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9						X	**2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.**	4.5	17 F
295035 Secondary Containment High Differential Pressure / 5									

295036 Secondary Containment High Sump/Area Water Level / 5				X			**Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREAWATER LEVEL: EA1.01 Secondary containment equipment and floor drain systems**	3.2	27 H
500000 High CTMT Hydrogen Conc. / 5									
K/A Category Point Totals:	0	1	0	2	1	3	Group Point Total:		7

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)												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		X										**Knowledge of electrical power supplies to the following: K2.03 Initiation logic**	2.7	12 F
							X					**Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) controls including: A1.08 Emergency generator loading**	3.7	65 H
205000 Shutdown Cooling										X		**Ability to manually operate and/or monitor in the control room: A4.03 SDC/RHR discharge valves**	3.6	45 H
206000 HPCI														
207000 Isolation (Emergency) Condenser														
209001 LPCS		X										**Knowledge of electrical power supplies to the following: K2.02 Valve power**	2.5	1 F
209002 HPCS									X			**Ability to monitor automatic operations of the HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) including: A3.04 System flow**	3.7	10 H
211000 SLC									X			**Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: A3.01 Pump discharge pressure**	3.5	46 H
212000 RPS								X				**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: A2.02 RPS bus power supply failure**	3.7	47 H
215003 IRM						X						**Knowledge of the effect that a loss or malfunction of the following will have on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM: K6.04 Detectors**	3.0	8 H

215004 Source Range Monitor								X				**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: A2.02 SRM inop condition**	3.4	48 H
215005 APRM / LPRM							X					**Ability to predict and/or monitor changes in parameters associated with operating the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM controls including: A1.07 APRM (gain adjustment factor)**	3.0	28 H
217000 RCIC			X									**Knowledge of the effect that a loss or malfunction of the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) will have on following: K3.04 Adequate core cooling**	3.6	29 H
					X							**Knowledge of the operational implications of the following concepts as they apply to REACTOR CORE ISOLATION COOLING SYSTEM (RCIC): K5.02 Flow indication**	3.1	49 H
218000 ADS						X						**Knowledge of the effect that a loss or malfunction of the following will have on the AUTOMATIC DEPRESSURIZATION SYSTEM: K6.03 Nuclear boiler instrument system (level indication)**	3.8	51 H
223002 PCIS/Nuclear Steam Supply Shutoff	X											**Knowledge of the physical connections and/or cause- effect relationships between PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUT-OFF and the following: K1.02 Reactor water cleanup**	3.3	52 F
239002 SRVs				X								**Knowledge of RELIEF/SAFETY VALVES design feature(s) and/or interlocks which provide for the following: K4.09 Manual opening of the SRV**	3.7	53 F
259002 Reactor Water Level Control										X		**Ability to manually operate and/or monitor in the control room: A4.11 High level lockout reset controls**	3.5	54 H
261000 SGTS									X			**Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: A3.01 System flow**	3.2	55 F

262001 AC Electrical Distribution				X								**Knowledge of A.C. ELECTRICAL DISTRIBUTION design feature(s) and/or interlocks which provide for the following: K4.06 Redundant power sources to vital buses**	3.6	56 H
262002 UPS (AC/DC)				X								**Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: K4.01 Transfer from preferred power to alternate power supplies**	3.1	57 F
263000 DC Electrical Distribution	X											**Knowledge of the physical connections and/or cause-effect relationships between D.C. ELECTRICAL DISTRIBUTION and the following: K1.02 Battery charger and battery**	3.2	66 H
								X				**Ability to monitor automatic operations of the D.C. ELECTRICAL DISTRIBUTION including: A3.01 Meters, dials, recorders, alarms, and indicating lights**	3.2	74 F
264000 EDGs							X					**Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: A1.09 Maintaining minimum load on emergency generator (to prevent reverse power)**	3.0	69 H
											X	**2.1.28 Knowledge of the purpose and function of major system components and controls.**	4.1	75 F
300000 Instrument Air	X											**Knowledge of the connections and / or cause effect relationships between INSTRUMENT AIR SYSTEM and the following: K1.05 Main Steam Isolation Valve air**	3.1	2 F
400000 Component Cooling Water							X					**Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: A1.02 CCW temperature**	2.8	62 H
										X		**Ability to manually operate and / or monitor in the control room: A4.01 CCW indications and control**	3.1	58 H
K/A Category Point Totals:	3	2	1	3	1	2	4	2	4	3	1	Group Point Total:		26

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO)												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														
201002 RMCS														
201003 Control Rod and Drive Mechanism										X		**Ability to manually operate and/or monitor in the control room: A4.01 CRD mechanism temperature**	2.6	35 F
201004 RSCS														
201005 RCIS											X	**2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.**	4.2	67 H
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU				X								**Knowledge of REACTOR WATER CLEANUP SYSTEM design feature(s) and/or Interlocks which provide for the following: K4.03 Over temperature protection for system components**	2.9	18 F
214000 RPIS														
215001 Traversing In-core Probe														
215002 RBM														
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode					X							**Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: TORUS / SUPPRESSION POOL COOLING MODE : K5.04 Heat exchanger operation**	2.9	70 F
223001 Primary CTMT and Aux.														
226001 RHR/LPCI: CTMT Spray Mode	X											**Knowledge of the physical connections and/or cause effect relationships between RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE and the following: K1.13 Containment instrumentation**	3.1	36 F

230000 RHR/LPCI: Torus/Pool Spray Mode													
233000 Fuel Pool Cooling/Cleanup							X				**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: A2.03 Low surge tank level/high level**	2.8	16 H
234000 Fuel Handling Equipment	X										**Knowledge of the physical connections and/or cause-effect relationships between FUEL HANDLING EQUIPMENT and the following: K1.01**	3.2	68 F
239001 Main and Reheat Steam										X	**2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.**	4.5	33 F
239003 MSIV Leakage Control													
241000 Reactor/Turbine Pressure Regulator													
245000 Main Turbine Gen. / Aux.						X					**Ability to predict and/or monitor changes in parameters associated with operating the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS controls including: A1.04 Steam flow**	2.7	34 H
256000 Reactor Condensate													
259001 Reactor Feedwater													
268000 Radwaste													
271000 Offgas			X								**Knowledge of the effect that a loss or malfunction of the OFFGAS SYSTEM will have on following: K3.01 Condenser vacuum**	3.5	9 H
272000 Radiation Monitoring													
286000 Fire Protection													
288000 Plant Ventilation													
290001 Secondary CTMT													
290003 Control Room HVAC								X			**Ability to monitor automatic operations of the CONTROL ROOM HVAC including: A3.01 Initiation/reconfiguration**	3.3	59 F

290002 Reactor Vessel Internals				X							**Knowledge of REACTOR VESSEL INTERNALS design feature(s) and/or interlocks which provide for the following:K4.02 Separation of fluid flow paths within the vessel**	3.1	37 F
K/A Category Point Totals:	2	0	1	2	1	0	1	1	1	1	2	Group Point Total:	12

Facility:		Date of Exam:				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.13	**Knowledge of facility requirements for controlling vital/controlled access.**	2.5	22 F		
	2.1.18	**Ability to make accurate, clear, and concise logs, records, status boards, |and reports.**	3.6	23 F		
	2.1.32	**Ability to explain and apply system limits and precautions.**	3.8	60 F		
	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.**	4.5	71 F		
	2.2.6	**Knowledge of the process for making changes to procedures.**	3.0	61 F		
	2.2.7	**Knowledge of the process for conducting special or infrequent tests.**	2.9	4 F		
	Subtotal			3		
3. Radiation Control	2.3.7	**Ability to comply with radiation work permit requirements during normal or abnormal conditions.**	3.5	41 H		
	2.3.13	**Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.**	3.4	19 F		
	Subtotal			2		
4. Emergency Procedures / Plan	2.4.18	**Knowledge of the specific bases for EOPs.**	3.3	72 F		
	2.4.29	**Knowledge of the emergency plan.**	3.1	63 H		
	Subtotal			2		
Tier 3 Point Total				10		

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	600000 2.4.9	Could not write an RO-level question for this KA that would not be double-jeopardy with the context of an already-written (and preferred) SRO-level question (#77). Re-sampled within the Generics and replaced by: 2.1.30.
1 / 2	295022 AA1.03	Could not write an operationally valid question for this KA (i.e., GGNS operators are not in the least bit focused on Recirc system behavior upon trip of a CRD Pump). Re-sampled within AA1 and replaced by: AA1.01.
1 / 2	295035 EK3.02	Could not create any operationally-valid, RO-level question for 295035 that would not pose a double-jeopardy concern for already-written (and preferred) question #5. Re-sampled within Tier 1 Group 2 and then across the KA Categories; replaced by: 295008 AK2.03.
2 / 1	218000 K6.01	The only type of operationally-valid RO-level question for this KA has already been included on the pre-NRC Audit Exam for this LOT Class. We've decided it is to remain on that exam. Re-sampled within K6 and replaced by: K6.03.
3	2.1.27	NRC review of the initial exam submittal determined that the originally sampled KA (2.1.37) was an inappropriate fit for a Tier 3 type question. Per Chief Examiner's direction, re-sampled within Tier 3, Category 1 and replaced by 2.1.18.

SYSTEMS DELETED	
201002	Reactor Manual Control System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).
201004	Rod Sequence Control System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).
201006	Rod Worth Minimizer System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).
214000	Rod Position Information System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).
215002	Rod Block Monitor System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).
206000	High Pressure Coolant Injection (HPCI) – System is not part of BWR-6 design.
207000	Isolation (Emergency) Condenser – System is not part of BWR-6 design.

230000	RHR/LPCI: Torus/Pool Spray Mode – System is not part of the BWR-6 Mark III Containment design.

Facility: Date of Exam: June 25, 2010

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			20	2	5	7
	2												7	1	2	3
	Tier Totals												27	3	7	10
2. Plant Systems	1												26	1	4	5
	2												12	1	2	3
	Tier Totals												38	2	6	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1 / 2	2 / 1	7
														2	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/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
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 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. Refer to Section D.1.b of ES-401 for the applicable K/As.
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; 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.
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 Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)

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									
295003 Partial or Complete Loss of AC / 6									
295004 Partial or Total Loss of DC Pwr / 6					X		**Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: AA2.02 Extent of partial or complete loss of D.C. power**	3.9	87 H
295005 Main Turbine Generator Trip / 3									
295006 SCRAM / 1									
295016 Control Room Abandonment / 7						X	**2.4.41 Knowledge of the emergency action level thresholds and classifications.**	4.6	83 H
295018 Partial or Total Loss of CCW / 8									
295019 Partial or Total Loss of Inst. Air / 8									
295021 Loss of Shutdown Cooling / 4									
295023 Refueling Acc / 8									
295024 High Drywell Pressure / 5						X	**2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.**	4.2	76 F
295025 High Reactor Pressure / 3									
295026 Suppression Pool High Water Temp / 5									
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5									
295030 Low Suppression Pool Wtr Lvl / 5									
295031 Reactor Low Water Level / 2						X	**2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.**	4.4	99 H
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1						X	**2.2.36 Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.**	4.2	81 H
295038 High Off-site Release Rate / 9						X	**2.2.40 Ability to apply Technical Specifications for a system.**	4.7	84 H

600000 Plant Fire On Site / 8					X		**Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: AA2.14 Equipment that will be affected by fire suppression activities in each zone**	3.6	77 H
700000 Generator Voltage and Electric Grid Disturbances / 6									
K/A Category Totals:	0	0	0	0	2	5	Group Point Total:		7

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

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						X	**2.4.6 Knowledge of EOP mitigation strategies.**	4.7	94 H
295007 High Reactor Pressure / 3									
295008 High Reactor Water Level / 2									
295009 Low Reactor Water Level / 2					X		**Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL: AA2.01 Reactor water level**	4.2	80 H
295010 High Drywell Pressure / 5									
295011 High Containment Temp / 5									
295012 High Drywell Temperature / 5									
295013 High Suppression Pool Temp / 5									
295014 Inadvertent Reactivity Addition / 1									
295015 Incomplete SCRAM / 1									
295017 High Off-site Release Rate / 9									
295020 Inadvertent Cont. Isolation / 5 & 7									
295022 Loss of CRD Pumps / 1									
295029 High Suppression Pool Wtr Lvl / 5									
295032 High Secondary Containment Area Temperature / 5						X	**2.2.12 Knowledge of surveillance procedures.**	4.1	78 H
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9									
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5									
500000 High CTMT Hydrogen Conc. / 5									
K/A Category Point Totals:	0	0	0	0	1	2	Group Point Total:		3

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (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														
205000 Shutdown Cooling											X	**2.2.22 Knowledge of limiting conditions for operations and safety limits.**	4.7	90 F
206000 HPCI														
207000 Isolation (Emergency) Condenser														
209001 LPCS														
209002 HPCS								X				**Ability to (a) predict the impacts of the following on the HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.08 Inadequate system flow: BWR-5,6**	3.2	97 H
211000 SLC														
212000 RPS														
215003 IRM														
215004 Source Range Monitor														
215005 APRM / LPRM														
217000 RCIC														
218000 ADS														
223002 PCIS/Nuclear Steam Supply Shutoff														
239002 SRVs														
259002 Reactor Water Level Control														
261000 SGTS														
262001 AC Electrical Distribution											X	**2.4.41 Knowledge of the emergency action level thresholds and classifications.**	4.6	88 H
262002 UPS (AC/DC)											X	**2.2.19 Knowledge of maintenance work order requirements.**	3.4	100 H
263000 DC Electrical Distribution														

264000 EDGs													
300000 Instrument Air										X	**2.4.6 Knowledge of EOP mitigation strategies.**	4.7	89 H
400000 Component Cooling Water													
K/A Category Point Totals:	0	0	0	0	0	0	0	1	0	0	4	Group Point Total:	5

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (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														
201002 RMCS														
201003 Control Rod and Drive Mechanism														
201004 RSCS														
201005 RCIS														
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe														
215002 RBM														
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode														
223001 Primary CTMT and Aux.											X	**2.2.40 Ability to apply Technical Specifications for a system.**	4.7	95 F
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment														
239001 Main and Reheat Steam														
239003 MSIV Leakage Control														
241000 Reactor/Turbine Pressure Regulator											X	**2.2.40 Ability to apply Technical Specifications for a system.**	4.7	96 H
245000 Main Turbine Gen. / Aux.														
256000 Reactor Condensate														
259001 Reactor Feedwater														
268000 Radwaste														
271000 Offgas														
272000 Radiation Monitoring														
286000 Fire Protection														

288000 Plant Ventilation								X				**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: A2.02 Low reactor water level**	3.6	98 H
290001 Secondary CTMT														
290003 Control Room HVAC														
290002 Reactor Vessel Internals														
K/A Category Point Totals:	0	0	0	0	0	0	0	1	0	0	2	Group Point Total:		3

Facility:		Date of Exam:				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.34	**Knowledge of primary and secondary plant chemistry limits.**			3.5	79 F
	2.1.35	**Knowledge of the fuel-handling responsibilities of SROs.**			3.9	91 F
	Subtotal					2
2. Equipment Control	2.2.21	**Knowledge of pre- and post-maintenance operability requirements.**			4.1	82 H
	2.2.40	**Ability to apply Technical Specifications for a system.**			4.7	85 H
	Subtotal					2
3. Radiation Control	2.3.4	**Knowledge of radiation exposure limits under normal or emergency conditions.**			3.7	92 F
	Subtotal					1
4. Emergency 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	86 F
	2.4.44	**Knowledge of emergency plan protective action recommendations.**			4.4	93 F
	Subtotal					2
Tier 3 Point Total						7

Tier / Group	Randomly Selected K/A	Reason for Rejection
2 / 1	211000 2.4.20	This was a poorly-matched Generic for 211000 from the start. We did not recognize this until late in the exam development process. By that time, rather than re-sampling within the Generics, we re-sampled within Tier 2 Group 1 to avoid excessive sampling of Standby Liquid Control, either directly or indirectly, across the entire RO/SRO exam to be given to the ISRO Candidates. KA replaced by: 262002 2.2.19.
1 / 1	295031 2.2.22	Could not write an operationally-valid SRO-only question, for this KA, that provides sufficient discriminatory validity. Generally, a poor Generic match for this E/APE for an SRO-only item. Re-sampled within the Generics and replaced by: 295031 2.4.16.
2 / 2	241000 2.2.37	NRC review of initial exam submittal identified KA mismatch for the associated question. Post-review discussion determined the only solution was to re-sample within Tier 3 for system 241000. Re-sampled and replaced by 241000 2.2.40.
SYSTEMS DELETED		
201002	Reactor Manual Control System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).	
201004	Rod Sequence Control System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).	
201006	Rod Worth Minimizer System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).	
214000	Rod Position Information System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).	
215002	Rod Block Monitor System – System is not part of BWR-6 design. Functions of this system are incorporated into the Rod Control & Information System (201005).	
206000	High Pressure Coolant Injection (HPCI) – System is not part of BWR-6 design.	
207000	Isolation (Emergency) Condenser – System is not part of BWR-6 design.	
230000	RHR/LPCI: Torus/Pool Spray Mode – System is not part of the BWR-6 Mark III Containment design.	