

Facility: <b>Clinton Nuclear Power Station</b>														Date of Exam: <b>September 9 – 20, 2019</b>					
Tier	Group	RO K/A Category Points												SRO-Only Points					
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2		G*		Total	
1. Emergency and Abnormal Plant Evolutions	1	3	3	3	N/A			3	4	N/A			4	20	4		3		7
	2	2	1	1				1	1				1	7	2		1		3
	Tier Totals	5	4	4				4	5				5	27	6		4		10
2. Plant Systems	1	3	2	2	3	2	2	2	2	3	2	3	26	2		3		5	
	2	1	1	1	1	1	1	1	1	2	1	1	12	0	2	1		3	
	Tier Totals	4	3	3	4	3	3	3	3	3	5	3	4	38	4		4		8
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7	
					3		2		2		3			2	2	1	2		

- Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outline sections (i.e., except for one category in Tier 3 of the SRO-only section, the "Tier Totals" in each K/A category shall not be less than two). (One Tier 3 radiation control K/A is allowed if it is replaced by a K/A from another Tier 3 category.)
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  $\pm 1$  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 outline. Systems or evolutions that do not apply at the facility should be deleted with justification. 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. 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' 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 a category 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.

G\* Generic K/As

- \* These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.
- \*\* These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan.

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (RO)						Form ES-401-1	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
295001 (APE 1) Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					03		AA2.03 – Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW RECIRCULATION: Actual core flow. (CFR: 41.10 / 43.5 / 45.13)	3.3	1
295003 (APE 3) Partial or Complete Loss of AC Power / 6						04.09	G2.4.9 – Knowledge of low power / shutdown implications in accident (e.g, loss of coolant accident or loss of residual heat removal) mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)	3.8	2
295004 (APE 4) Partial or Total Loss of DC Power / 6	04						AK1.04 – Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF DC POWER: Effect of battery discharge rate on capacity. (CFR: 41.8 to 41.10)	2.8	3
295005 (APE 5) Main Turbine Generator Trip / 3		05					AK2.05 – Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Extraction steam system. (CFR: 41.7 / 45.8)	2.6	4
295006 (APE 6) Scram / 1			02				AK3.02 – Knowledge of the reasons for the following responses as they apply to SCRAM: Reactor power response. (CFR: 41.5 / 45.6)	4.1	5
295016 (APE 16) Control Room Abandonment / 7				04			AA1.04 – Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: AC electrical distribution. (CFR: 41.7 / 45.6)	3.1	6
295018 (APE 18) Partial or Complete Loss of CCW / 8					05		AA2.05 – Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: System pressure. (CFR: 41.10 / 43.5 / 45.13)	2.9	7
295019 (APE 19) Partial or Complete Loss of Instrument Air / 8						04.46	G2.4.46 – Ability to verify that the alarms are consistent with the plant conditions. (CFR: 41.10 / 43.5 / 45.3,12)	4.2	8
295021 (APE 21) Loss of Shutdown Cooling / 4	04						AK1.04 – Knowledge of the operational implications of the following concepts as they apply to LOSS OF SHUTDOWN COOLING: Natural circulation. (CFR: 41.8 to 41.10)	3.6	9
295023 (APE 23) Refueling Accidents / 8		03					AK2.03 – Knowledge of the interrelations between REFUELING ACCIDENTS and the following: Radiation monitoring equipment. (CFR: 41.7 / 45.8)	3.4	10
295024 High Drywell Pressure / 5			04				EK3.04 – Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: Emergency depressurization. (CFR: 41.5 / 45.6)	3.7	11
295025 (EPE 2) High Reactor Pressure / 3				01			EA1.01 – Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: Main steam line drains. (CFR: 41.7 / 45.6)	2.9	12
295026 (EPE 3) Suppression Pool High Water Temperature / 5					02		EA2.02 – Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool level. (CFR: 41.10 / 43.5 / 45.13)	3.8	13

295027 (EPE 4) High Containment Temperature (Mark III Containment Only) / 5					04.01	G2.4.1 – Knowledge of EOP entry conditions and immediate action steps. (CFR: 41.10 / 43.5 / 45.13)	4.6	14
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5								
295030 (EPE 7) Low Suppression Pool Water Level / 5	01					EK1.01 – Knowledge of the operational implications of the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: Steam condensation. (CFR: 41.8 to 41.10)	3.8	15
295031 (EPE 8) Reactor Low Water Level / 2		15				EK2.15 – Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following: AC distribution: Plant-specific. (CFR: 41.7 / 45.8)	3.2	16
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1			02			EK3.02 – Knowledge of the reasons for the following responses as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: SBLC injection. (CFR: 41.5 / 45.6)	4.3	17
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9				03		EA1.03 – Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Process liquid radiation monitoring system. (CFR: 41.7 / 45.6)	3.7	18
600000 (APE 24) Plant Fire On Site / 8					06	AA2.06 – Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Need for pressurizing control room (recirculating mode)	2.5	19
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6					01.07	G2.1.7 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12,13)	4.4	20
K/A Category Totals:	3	3	3	3	4	4	Group Point Total:	20

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (RO)							Form ES-401-1	
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#	
295002 (APE 2) Loss of Main Condenser Vacuum / 3										
295007 (APE 7) High Reactor Pressure / 3	02						AK1.02 – Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: Decay heat generation. (CFR: 41.8 to 41.10)	3.1	21	
295008 (APE 8) High Reactor Water Level / 2		08					AK2.08 – Knowledge of the interrelations between HIGH REACTOR WATER LEVEL and the following: Main turbine: Plant-Specific. (CFR: 41.7 / 45.8)	3.4	22	
295009 (APE 9) Low Reactor Water Level / 2										
295010 (APE 10) High Drywell Pressure / 5										
295011 (APE 11) High Containment Temperature (Mark III Containment only) / 5			01				AK3.01 – Knowledge of the reasons for the following responses as they apply to HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY): Increased containment cooling: Mark-III. (CFR: 41.5 / 45.6)	3.6	23	
295012 (APE 12) High Drywell Temperature / 5										
295013 (APE 13) High Suppression Pool Temperature. / 5										
295014 (APE 14) Inadvertent Reactivity Addition / 1										
295015 (APE 15) Incomplete Scram / 1				04			AA1.04 – Ability to operate and/or monitor the following as they apply to INCOMPLETE SCRAM: Rod control and information system: Plant-specific. (CFR: 41.7 / 45.6)	3.4	24	
295017 (APE 17) Abnormal Offsite Release Rate / 9										
295020 (APE 20) Inadvertent Containment Isolation / 5 & 7					03		AA2.03 – Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION: Reactor power. (CFR: 41.10 / 43.5 / 45.13)	3.7	25	
295022 (APE 22) Loss of Control Rod Drive Pumps / 1						04.08	G2.4.8 – Knowledge of how abnormal operating procedures are used in conjunction with EOPs. (CFR: 41.10 / 43.5 / 45.13)	3.8	26	
295029 (EPE 6) High Suppression Pool Water Level / 5										
295032 (EPE 9) High Secondary Containment Area Temperature / 5										
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9										
295034 (EPE 11) Secondary Containment Ventilation High Radiation / 9	01						EK1.01 – Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION: Personnel protection. (CFR: 41.8 to 41.10)	3.8	27	

295035 (EPE 12) Secondary Containment High Differential Pressure / 5									
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5									
500000 (EPE 16) High Containment Hydrogen Concentration / 5									
K/A Category Point Totals:	2	1	1	1	1	1	Group Point Total:		7

ES-401 BWR Examination Outline Plant Systems—Tier 2/Group 1 (RO)													Form ES-401-1	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
203000 (SF2, SF4 RHR/LPCI) RHR/LPCI: Injection Mode			04									K3.04 – Knowledge of the effect that a loss or malfunction of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) will have on following: Adequate core cooling. (CFR: 41.7 / 45.4)	4.6	28
205000 (SF4 SCS) Shutdown Cooling				02								K4.02 – Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlock(s) which provide for the following: High pressure isolation: Plant-Specific. (CFR: 41.7)	3.7	29
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection														
207000 (SF4 IC) Isolation (Emergency) Condenser														
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray					04							K5.04 – Knowledge of the operational implications of the following concepts as they apply to LOW PRESSURE CORE SPRAY SYSTEM: Heat removal (transfer) mechanisms. (CFR: 41.5 / 45.3)	2.8	30
209002 (SF2, SF4 HPCS) High-Pressure Core Spray						01						K6.01 – Knowledge of the effect that a loss or malfunction of the following will have on the HIGH PRESSURE CORE SPRAY SYSTEM (HPCS): Electrical power: BWR-5,6 (CFR: 41.7 / 45.7)	3.6	31
211000 (SF1 SLCS) Standby Liquid Control	01											K1.01 – Knowledge of the physical connections and/or cause-effect relationships between STANDBY LIQUID CONTROL SYSTEM and the following: Core spray line break detection: Plant-Specific. (CFR: 41.2 to 41.9 / 45.7 to 45.8)	3.0	32
												A1.03 – Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Pump discharge pressure. (CFR: 41.5 / 45.5)	3.6	33
212000 (SF7 RPS) Reactor Protection								03				A2.03 – 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: Surveillance testing. (CFR: 41.5 / 45.6)	3.3	34
215003 (SF7 IRM) Intermediate-Range Monitor									02			A3.02 – Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: Annunciator and alarm signals. (CFR: 41.7 / 45.7)	3.3	35

215004 (SF7 SRMS) Source-Range Monitor										01	A4.01 – Ability to manually operate and/or monitor in the control room: SRM count rate and period. (CFR: 41.7 / 45.5 to 45.8)	3.9	36
215005 (SF7 PRMS) Average Power Range Monitor/Local Power Range Monitor										01.19	G2.1.19 – Ability to use plant computers to evaluate system or component status. (CFR: 41.10 / 45.12)	3.9	37
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling	07										K1.07 – Knowledge of the physical connections and/or cause-effect relationships between REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) and the following: Leak detection. (CFR: 41.2 to 41.9 / 45.7 to 45.8)	3.1	38
218000 (SF3 ADS) Automatic Depressurization		01								04	K2.01 – Knowledge of electrical power supplies to the following: ADS logic. (CFR: 41.7)  A3.04 – Ability to monitor automatic operations of the AUTOMATIC DEPRESSURIZATION SYSTEM including: Primary containment pressure. (CFR: 41.7 / 45.7)	3.1  3.7	39  40
223002 (SF5 PCIS) Primary Containment Isolation/Nuclear Steam Supply Shutoff			23								K3.23 – Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUT-OFF will have on the following: High pressure core spray: Plant-Specific. (CFR: 41.7 / 45.4)	3.6	41
239002 (SF3 SRV) Safety Relief Valves				08							K4.08 – Knowledge of RELIEF / SAFETY VALVES design feature(s) and/or interlock(s) which provides for the following: Opening of the SRV from either an electrical or mechanical signal. (CFR: 41.7)  G2.2.38 – Knowledge of conditions and limitations in the facility license. (CFR: 41.7 / 41.10 / 43.1 / 45.13)	3.6  3.6	42  43
259002 (SF2 RWLCS) Reactor Water Level Control					07						K5.07 – Knowledge of the operational implications of the following concepts as they apply to REACTOR WATER LEVEL CONTROL SYSTEM: Turbine speed control mechanisms: TDRFP. (CFR: 41.5 / 45.3)	2.7	44
261000 (SF9 SGTS) Standby Gas Treatment						04					K6.04 – Knowledge of the effect that a loss or malfunction of the following will have on the STANDBY GAS TREATMENT SYSTEM: Process radiation monitoring. (CFR: 41.7 / 45.7)	2.9	45
262001 (SF6 AC) AC Electrical Distribution							01				A1.01 – Ability to predict and/or monitor changes in parameters associated with operating the AC ELECTRICAL DISTRIBUTION controls including: Effect on instrumentation and controls of switching power supplies. (CFR: 41.5 / 45.5)	3.1	46

262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)								02				A2.02 – Ability to (a) predict the impacts of the following on the UNINTERRUPTIBLE POWER SUPPLY (AC/DC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Over voltage (CFR: 41.5 / 45.6)	2.5	47
263000 (SF6 DC) DC Electrical Distribution		01										K2.01 – Knowledge of electrical power supplies to the following: Major DC loads. (CFR: 41.7)	3.1	48
									01			A3.01 – Ability to monitor automatic operations of the DC ELECTRICAL DISTRIBUTION including: Meters, dials, recorders, alarms, and indicating lights. (CFR: 41.7 / 45.7)	3.2	49
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG				08								K4.08 – Knowledge of EMERGENCY GENERATORS (DIESEL/JET) design feature(s) and/or interlock(s) which provide for the following: Automatic startup (CFR: 41.7)	3.8	50
										05		A4.05 – Ability to manually operate and/or monitor in the control room: Transfer of emergency generator (with load) to grid. (CFR: 41.7 / 45.5 to 45.8)	3.6	51
300000 (SF8 IA) Instrument Air											04.47	G2.4.47 – Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. (CFR: 41.10 / 43.5 / 45.12)	4.2	52
400000 (SF8 CCS) Component Cooling Water	04											K1.04 – Knowledge of the physical connections and/or cause-effect relationships between CCWS and the following: Reactor coolant system, in order to determine source(s) of RCS leakage into CCWS. (CFR: 41.2 to 41.9 / 45.7 to 45.8)	2.9	53
510000 (SF4 SWS*) Service Water (Normal and Emergency)														
K/A Category Point Totals:	3	2	2	3	2	2	2	2	3	2	3	Group Point Total:		26



BWR Examination Outline Plant Systems—Tier 2/Group 2 (RO)														Form ES-401-1	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)		IR	#
201001 (SF1 CRDH) CRD Hydraulic									07			A3.07 – Ability to monitor automatic operations of the CONTROL ROD DRIVE HYDRAULIC SYSTEM including: HCU accumulator pressure/level. (CFR: 41.7 / 45.7)		3.3	54
201002 (SF1 RMCS) Reactor Manual Control															
201003 (SF1 CRDM) Control Rod and Drive Mechanism															
201004 (SF7 RSCS) Rod Sequence Control															
201005 (SF1, SF7 RCIS) Rod Control and Information										02		A4.02 – Ability to manually operate and/or monitor in the control room: Rod display module (lights and push buttons): BWR-6 (CFR: 41.7 / 45.5 to 45.8)		3.7	55
201006 (SF7 RWMS) Rod Worth Minimizer															
202001 (SF1, SF4 RS) Recirculation											02.42	G2.2.42 – Ability to recognize system parameters that are entry-level conditions for Technical Specifications. (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)		3.9	56
202002 (SF1 RSCTL) Recirculation Flow Control															
204000 (SF2 RWCU) Reactor Water Cleanup	02											K1.02 – Knowledge of the physical connections and/or cause-effect relationships between REACTOR WATER CLEANUP SYSTEM and the following: Recirculation system: Plant-specific. (CFR: 41.2 to 41.9 / 45.7 to 45.8)		2.9	57
214000 (SF7 RPIS) Rod Position Information															
215001 (SF7 TIP) Traversing In-Core Probe															
215002 (SF7 RBMS) Rod Block Monitor															
216000 (SF7 NBI) Nuclear Boiler Instrumentation															
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode		02										K2.02 – Knowledge of electrical power supplies to the following: Pumps. (CFR: 41.7)		3.1	58
223001 (SF5 PCS) Primary Containment and Auxiliaries															
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode			03									K3.03 – Knowledge of the effect that a loss or malfunction of the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE will have on following: Containment/drywell/suppression chamber components, continued operation with elevated pressure and/or temperature and/or level. (CFR: 41.7 / 45.4)		2.9	59
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode															
233000 (SF9 FPCCU) Fuel Pool Cooling/Cleanup				07								K4.07 – Knowledge of FUEL POOL COOLING AND CLEAN-UP design feature(s) and/or interlock(s) which provide for the following: Supplemental heat removal capability. (CFR: 41.7)		2.7	60
234000 (SF8 FH) Fuel-Handling Equipment															
239001 (SF3, SF4 MRSS) Main and Reheat Steam					03							K5.03 – Knowledge of the operational implications of the following concepts as they apply to MAIN AND REHEAT STEAM SYSTEM: Definition and causes of thermal stress. (CFR: 41.5 / 45.3)		2.7	61
239003 (SF9 MSVLCS) Main Steam Isolation Valve Leakage Control															

241000 (SF3 RTPRS) Reactor/Turbine Pressure Regulating							11						K6.11 – Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR/TURBINE PRESSURE REGULATING SYSTEM: Main stop/throttle valves. (CFR: 41.7 / 45.7)	3.4	62
245000 (SF4 MTGEN) Main Turbine Generator/Auxiliary															
256000 (SF2 CDS) Condensate							04						A1.04 – Ability to predict and/or monitor changes in parameters associated with operating the REACTOR CONDENSATE SYSTEM controls, including: Hotwell level. (CFR: 41.5 / 45.5)	2.9	63
259001 (SF2 FWS) Feedwater								05					A2.05 – Ability to (a) predict the impacts of the following on the REACTOR FEEDWATER SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of applicable plant air systems. (CFR: 41.5 / 45.6)	3.0	64
268000 (SF9 RW) Radwaste															
271000 (SF9 OG) Offgas															
272000 (SF7, SF9 RMS) Radiation Monitoring															
286000 (SF8 FPS) Fire Protection															
288000 (SF9 PVS) Plant Ventilation									01				A3.01 – Ability to monitor automatic operations of the PLANT VENTILATION SYSTEMS including: Isolation/initiation signals. (CFR: 41.7 / 45.7)	3.8	65
290001 (SF5 SC) Secondary Containment															
290003 (SF9 CRV) Control Room Ventilation															
290002 (SF4 RVI) Reactor Vessel Internals															
51001 (SF8 CWS*) Circulating Water															
K/A Category Point Totals:	1	1	1	1	1	1	1	1	2	1	1		Group Point Total:		12



600000 (APE 24) Plant Fire On Site / 8									
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6									
K/A Category Totals:					4	3	Group Point Total:		7

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E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
295002 (APE 2) Loss of Main Condenser Vacuum / 3					01		AA2.01 – Ability to determine and/or interpret the following as they apply to LOSS OF MAIN CONDENSER VACUUM: Condenser vacuum / absolute pressure. (CFR: 41.10 / 43.5 / 45.13)	3.1	83
295007 (APE 7) High Reactor Pressure / 3									
295008 (APE 8) High Reactor Water Level / 2									
295009 (APE 9) Low Reactor Water Level / 2						04.20	G2.4.20 – Knowledge of the operational implications of EOP warnings, cautions, and notes. (CFR: 41.10 / 43.5 / 45.13)	4.3	84
295010 (APE 10) High Drywell Pressure / 5									
295011 (APE 11) High Containment Temperature (Mark III Containment only) / 5									
295012 (APE 12) High Drywell Temperature / 5									
295013 (APE 13) High Suppression Pool Temperature. / 5									
295014 (APE 14) Inadvertent Reactivity Addition / 1									
295015 (APE 15) Incomplete Scram / 1									
295017 (APE 17) High Offsite Release Rate / 9					03		AA2.03 – Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Radiation levels: Plant-specific. (CFR: 41.10 / 43.5 / 45.13)	3.9	85
295020 (APE 20) Inadvertent Containment Isolation / 5 & 7									
295022 (APE 22) Loss of Control Rod Drive Pumps / 1									
295029 (EPE 6) High Suppression Pool Water Level / 5									
295032 (EPE 9) High Secondary Containment Area Temperature / 5									
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9									
295034 (EPE 11) Secondary Containment Ventilation High Radiation / 9									
295035 (EPE 12) Secondary Containment High Differential Pressure / 5									
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5									
500000 (EPE 16) High Containment Hydrogen Concentration / 5									
K/A Category Point Totals:					2	1	Group Point Total:		3





BWR Examination Outline Plant Systems—Tier 2/Group 2 (SRO)													Form ES-401-1		
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#	
201001 (SF1 CRDH) CRD Hydraulic															
201002 (SF1 RMCS) Reactor Manual Control															
201003 (SF1 CRDM) Control Rod and Drive Mechanism															
201004 (SF7 RSCS) Rod Sequence Control															
201005 (SF1, SF7 RCIS) Rod Control and Information															
201006 (SF7 RWMS) Rod Worth Minimizer															
202001 (SF1, SF4 RS) Recirculation															
202002 (SF1 RSCTL) Recirculation Flow Control								04				A2.04 – Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM; and (b) based on those prediction, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation pump speed mismatch between loops: Plant-specific. (CFR: 41.5 / 45.6)	3.2	91	
204000 (SF2 RWCU) Reactor Water Cleanup															
214000 (SF7 RPIS) Rod Position Information															
215001 (SF7 TIP) Traversing In-Core Probe															
215002 (SF7 RBMS) Rod Block Monitor															
216000 (SF7 NBI) Nuclear Boiler Instrumentation															
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode															
223001 (SF5 PCS) Primary Containment System and Auxiliaries											02.40	G2.2.40 – Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)	4.7	92	
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode															
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode															
233000 (SF9 FPCCU) Fuel Pool Cooling/Cleanup															
234000 (SF8 FH) Fuel-Handling Equipment															
239001 (SF3, SF4 MRSS) Main and Reheat Steam															
239003 (SF9 MSVLC) Main Steam Isolation Valve Leakage Control															
241000 (SF3 RTPRS) Reactor/Turbine Pressure Regulating															
245000 (SF4 MTGEN) Main Turbine Generator/Auxiliary															
256000 (SF2 CDS) Condensate															
259001 (SF2 FWS) Feedwater															
268000 (SF9 RW) Radwaste															
271000 (SF9 OG) Offgas															



272000 (SF7, SF9 RMS) Radiation Monitoring									11				A2.11 – Ability to (a) predict the impacts of the following on the RADIATION MONITORING SYSTEM; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations: Leakage and/or breaks from contaminated systems to atmosphere or to other process systems. (CFR: 41.5 / 45.6)	3.7	93
286000 (SF8 FPS) Fire Protection															
288000 (SF9 PVS) Plant Ventilation															
290001 (SF5 SC) Secondary Containment															
290003 (SF9 CRV) Control Room Ventilation															
290002 (SF4 RVI) Reactor Vessel Internals															
51001 (SF8 CWS*) Circulating Water															
K/A Category Point Totals:									2			1	Group Point Total:		3