

Facility Name: Clinton		Date of Exam: 8/24/09																
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	4	3	3	N/A			3	4	N/A			3	20	3	4	7	
	2	1	1	1	N/A			1	2	N/A			1	7	1	2	3	
	Tier Totals	5	4	4	N/A			4	6	N/A			4	27	4	6	10	
2. Plant Systems	1	2	3	2	3	2	3	2	2	3	2	2	26	3	2	5		
	2	1	1	1	1	1	1	2	1	1	1	1	12	0	2	3		
	Tier Totals	3	4	3	4	3	4	4	3	4	3	3	38	5	3	8		
3. Generic Knowledge and Abilities Categories					1	2	3	4					10	1	2	3	4	7
					3	2	3	2						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 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				0 2			RPS	3.3	1
295003 Partial or Complete Loss of AC / 6	0 2						Load shedding	3.1	1
295004 Partial or Total Loss of DC Pwr / 6					0 3		Battery voltage	2.8	1
295005 Main Turbine Generator Trip / 3					0 8		Electrical distribution status	3.2	1
295006 SCRAM / 1						01. 20	Ability to interpret and execute procedure steps.	4.6	1
295016 Control Room Abandonment / 7				0 8			Reactor pressure	4	1
295018 Partial or Total Loss of CCW / 8		0 1					System loads	3.3	1
295019 Partial or Total Loss of Inst. Air / 8		1 0					Fuel pool cooling	2.8	1
295021 Loss of Shutdown Cooling / 4					0 3		Reactor water level	3.5	1
295023 Refueling Acc / 8			0 1				Refueling floor evacuation	3.6	1
295024 High Drywell Pressure / 5						04. 50	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2	1
295025 High Reactor Pressure / 3			0 1				Safety/relief valve opening	4.2	1
295026 Suppression Pool High Water Temp. / 5			0 1				Emergency/normal depressurization	3.8	1
295027 High Containment Temperature / 5	0 2						Reactor water level measurement: Mark-III	3	1
295028 High Drywell Temperature / 5						02. 38	Knowledge of conditions and limitations in the facility license.	3.6	1
295030 Low Suppression Pool Wtr Lvl / 5	0 3						Heat capacity	3.8	1
295031 Reactor Low Water Level / 2					0 1		Reactor water level	4.6	1
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	0 5						Cold shutdown boron weight: Plant-Specific	3.4	1
295038 High Off-site Release Rate / 9				0 6			Plant ventilation	3.5	1
600000 Plant Fire On Site / 8									0
700000 Generator Voltage and Electric Grid Disturbances / 6		0 1					Motors	3.1	1
K/A Category Totals:	4	3	3	3	4	3	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				0 8			Recirculating flow control system	2.6 1
295007 High Reactor Pressure / 3					0 1		Reactor pressure	4.1 1
295008 High Reactor Water Level / 2								0
295009 Low Reactor Water Level / 2								0
295010 High Drywell Pressure / 5					0 3		Drywell radiation levels	3.3 1
295011 High Containment Temp / 5						04. 06	Knowledge of EOP mitigation strategies.	3.7 1
295012 High Drywell Temperature / 5								0
295013 High Suppression Pool Temp. / 5								0
295014 Inadvertent Reactivity Addition / 1								0
295015 Incomplete SCRAM / 1			0 1				Bypassing rod insertion blocks	3.4 1
295017 High Off-site Release Rate / 9								0
295020 Inadvertent Cont. Isolation / 5 & 7								0
295022 Loss of CRD Pumps / 1		0 1					Recirculation system: Plant-Specific	2.8 1
295029 High Suppression Pool Wtr Lvl / 5								0
295032 High Secondary Containment Area Temperature / 5								0
295033 High Secondary Containment Area Radiation Levels / 9								0
295034 Secondary Containment Ventilation High Radiation / 9	0 2						Radiation releases	4.1 1
295035 Secondary Containment High Differential Pressure / 5								0
295036 Secondary Containment High Sump/Area Water Level / 5								0
500000 High CTMT Hydrogen Conc. / 5								0
K/A Category Totals:	1	1	1	1	2	1	Group Point Total:	7

ES-401	BWR Examination Outline											Form ES-401-1		
Plant Systems - Tier 2/Group 1 (RO)														
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode	08											A.C. electrical power	3.5	1
205000 Shutdown Cooling								03				A.C. failure	3.2	1
206000 HPCI														0
207000 Isolation (Emergency) Condenser														0
209001 LPCS		02										Valve power	2.5	1
209002 HPCS			03									Adequate core cooling: BWR-5, 6	3.9	1
211000 SLC		01		04								SBLC pumps ; Indication of fault in explosive valve firing circuits	2.9; 3.8	2
212000 RPS						05		06				RPS sensor inputs ; High reactor power	3.5; 4.1	2
215003 IRM					01							Detector operation	2.6	1
215004 Source Range Monitor		01				04						SRM channels/detectors ; Detectors	2.6; 2.9	2
215005 APRM / LPRM				01								Rod withdrawal blocks	3.7	1
217000 RCIC									01			Valve operation	3.5	1
218000 ADS									02			ADS valve tail pipe temperatures	3.6	1
223002 PCIS/Nuclear Steam Supply Shutoff						01						A.C. electrical distribution	3.1	1
239002 SRVs							06					Reactor power	3.7	1
259002 Reactor Water Level Control					01							GEMAC/Foxboro/Bailey controller operation: Plant-Specific	3.1	1
261000 SGTS										01		Off-site release levels: Plant-Specific	3.2	1
262001 AC Electrical Distribution				06							01.20	Redundant power sources to vital buses; Ability to interpret and execute procedure steps.	3.6; 4.6	2
262002 UPS (AC/DC)			15									Main turbine operation: Plant-Specific	2.6	1
263000 DC Electrical Distribution									03		04.11	Battery discharge rate: Plant-Specific; Knowledge of abnormal condition procedures.	2.7; 4	2
264000 EDGs							03					Operating voltages, currents, and temperatures	2.8	1
300000 Instrument Air									02			Air temperature	2.9	1
400000 Component Cooling Water	01											Service water system	3.2	1
														0
K/A Category Totals:	2	3	2	3	2	3	2	2	3	2	2	Group Point Total:		26

ES-401	BWR Examination Outline											Form ES-401-1		
Plant Systems - Tier 2/Group 2 (RO)														
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					CRD system flow	2.9	1
201002 RMCS							3							0
201003 Control Rod and Drive Mechanism														0
201004 RSCS														0
201005 RCIS										0		Back panel indicating lights: BWR-6	3.4	1
201006 RWM										3				0
202001 Recirculation		0										Recirculation pumps: Plant-Specific	3.2	1
202002 Recirculation Flow Control		1												0
204000 RWCU														0
214000 RPIS														0
215001 Traversing In-core Probe														0
215002 RBM														0
216000 Nuclear Boiler Inst.											01.	Ability to identify and interpret diverse indications to validate the response of another indicator.	4.3	1
219000 RHR/LPCI: Torus/Pool Cooling Mode				0								Pump minimum flow protection	3	1
223001 Primary CTMT and Aux.				5										0
226001 RHR/LPCI: CTMT Spray Mode						0						Pressure measurement	2.7	1
230000 RHR/LPCI: Torus/Pool Spray Mode				8										0
233000 Fuel Pool Cooling/Cleanup														0
234000 Fuel Handling Equipment														0
239001 Main and Reheat Steam	1											Extraction steam system	2.7	1
239003 MSIV Leakage Control	0													0
241000 Reactor/Turbine Pressure Regulator														0
245000 Main Turbine Gen. / Aux.														0
256000 Reactor Condensate									0			Valve openings	2.8	1
259001 Reactor Feedwater						0			3			Reactor water level control system	3.8	1
268000 Radwaste						7								0
271000 Offgas														0
272000 Radiation Monitoring			1									Control room ventilation: Plant-Specific	2.9	1
286000 Fire Protection			0									System pressure	2.9	1
288000 Plant Ventilation							0							0
290001 Secondary CTMT							1							0
290003 Control Room HVAC										0		Initiation/reconfiguration	3.3	1
290002 Reactor Vessel Internals										1				0
K/A Category Totals:	1	1	1	1	1	1	2	1	1	1	1	Group Point Total:		12

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									0
295003 Partial or Complete Loss of AC / 6						02. 42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	4.6	1
295004 Partial or Total Loss of DC Pwr / 6									0
295005 Main Turbine Generator Trip / 3					0 5		Reactor power	3.9	1
295006 SCRAM / 1									0
295016 Control Room Abandonment / 7						04. 41	Knowledge of the emergency action level thresholds and classifications.	4.6	1
295018 Partial or Total Loss of CCW / 8									0
295019 Partial or Total Loss of Inst. Air / 8						04. 21	Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release.	4.6	1
295021 Loss of Shutdown Cooling / 4						01. 20	Ability to interpret and execute procedure steps.	4.6	1
295023 Refueling Acc / 8									0
295024 High Drywell Pressure / 5									0
295025 High Reactor Pressure / 3									0
295026 Suppression Pool High Water Temp. / 5					0 3		Reactor pressure	4	1
295027 High Containment Temperature / 5					0 1		Containment temperature: Mark-III	3.7	1
295028 High Drywell Temperature / 5									0
295030 Low Suppression Pool Wtr Lvl / 5									0
295031 Reactor Low Water Level / 2									0
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1									0
295038 High Off-site Release Rate / 9									0
600000 Plant Fire On Site / 8									0
700000 Generator Voltage and Electric Grid Disturbances / 6									0
K/A Category Totals:	0	0	0	0	3	4	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									0
295007 High Reactor Pressure / 3									0
295008 High Reactor Water Level / 2									0
295009 Low Reactor Water Level / 2									0
295010 High Drywell Pressure / 5									0
295011 High Containment Temp / 5									0
295012 High Drywell Temperature / 5									0
295013 High Suppression Pool Temp. / 5									0
295014 Inadvertent Reactivity Addition / 1					0 2		Reactor period	3.9	1
295015 Incomplete SCRAM / 1									0
295017 High Off-site Release Rate / 9						04. 04	Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.7	1
295020 Inadvertent Cont. Isolation / 5 & 7									0
295022 Loss of CRD Pumps / 1									0
295029 High Suppression Pool Wtr Lvl / 5						02. 25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	1
295032 High Secondary Containment Area Temperature / 5									0
295033 High Secondary Containment Area Radiation Levels / 9									0
295034 Secondary Containment Ventilation High Radiation / 9									0
295035 Secondary Containment High Differential Pressure / 5									0
295036 Secondary Containment High Sump/Area Water Level / 5									0
500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:	0	0	0	0	1	2	Group Point Total:		3

ES-401	BWR Examination Outline											Form ES-401-1		
Plant Systems - Tier 2/Group 1 (SRO)														
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								1 6				Loss of coolant accident	4.5	1
205000 Shutdown Cooling Mode														0
206000 HPCI														0
207000 Isolation (Emergency) Condenser														0
209001 LPCS											02. 37	Ability to determine operability and/or availability of safety related equipment.	4.6	1
209002 HPCS								1 0				Valve openings: BWR-5, 6	3	1
211000 SLC														0
212000 RPS														0
215003 IRM														0
215004 Source Range Monitor														0
215005 APRM / LPRM														0
217000 RCIC														0
218000 ADS											04. 06	Knowledge of EOP mitigation strategies.	4.7	1
223002 PCIS/Nuclear Steam Supply Shutoff														0
239002 SRVs								0 3				Stuck open SRV	4.2	1
259002 Reactor Water Level Control														0
261000 SGTS														0
262001 AC Electrical Distribution														0
262002 UPS (AC/DC)														0
263000 DC Electrical Distribution														0
264000 EDGs														0
300000 Instrument Air														0
400000 Component Cooling Water														0
														0
K/A Category Totals:	0	0	0	0	0	0	0	3	0	0	2	Group Point Total:		5

ES-401	BWR Examination Outline										Form ES-401-1			
Plant Systems - Tier 2/Group 2 (SRO)														
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
201002 RMCS														0
201003 Control Rod and Drive Mechanism														0
201004 RSCS														0
201005 RCIS														0
201006 RWM														0
202001 Recirculation														0
202002 Recirculation Flow Control														0
204000 RWCU														0
214000 RPIS														0
215001 Traversing In-core Probe														0
215002 RBM														0
216000 Nuclear Boiler Inst.														0
219000 RHR/LPCI: Torus/Pool Cooling Mode														0
223001 Primary CTMT and Aux.														0
226001 RHR/LPCI: CTMT Spray Mode														0
230000 RHR/LPCI: Torus/Pool Spray Mode														0
233000 Fuel Pool Cooling/Cleanup														0
234000 Fuel Handling Equipment											01. 32	Ability to explain and apply system limits and precautions.	4	1
239001 Main and Reheat Steam														0
239003 MSIV Leakage Control														0
241000 Reactor/Turbine Pressure Regulator														0
245000 Main Turbine Gen. / Aux.								0 2				Loss of lube oil	3.5	1
256000 Reactor Condensate														0
259001 Reactor Feedwater														0
268000 Radwaste														0
271000 Offgas														0
272000 Radiation Monitoring														0
286000 Fire Protection														0
288000 Plant Ventilation								0 2				Low reactor water level: Plant-Specific	3.6	1
290001 Secondary CTMT														0
290003 Control Room HVAC														0
290002 Reactor Vessel Internals														0
K/A Category Totals:	0	0	0	0	0	0	0	2	0	0	1	Group Point Total:		3

Facility Name:Clinton Date of Exam:8/24/09						
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1. 01	Knowledge of conduct of operations requirements.	3.8	1		
	2.1. 30	Ability to locate and operate components, including local controls.	4.4	1		
	2.1. 34	Knowledge of primary and secondary plant chemistry limits.	2.7	1		
	2.1.					
	2.1. 36	Knowledge of procedures and limitations involved in core alterations.			4.1	1
	2.1. 05	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.			3.9	1
	Subtotal				3	
2. Equipment Control	2.2. 38	Knowledge of conditions and limitations in the facility license.	3.6	1		
	2.2. 43	Knowledge of the process used to track inoperable alarms.	3	1		
	2.2.					
	2.2. 20	Knowledge of the process for managing troubleshooting activities.			3.8	1
	2.2. 35	Ability to determine Technical Specification Mode of Operation.			4.5	1
	2.2.					
Subtotal				2		2
3. Radiation Control	2.3. 12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2	1		
	2.3. 14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	3.4	1		
	2.3. 15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	1		
	2.3.					
	2.3. 04	Knowledge of radiation exposure limits under normal or emergency conditions.			3.7	1
	2.3.					
Subtotal				3		1
4. Emergency Procedures / Plan	2.4. 18	Knowledge of the specific bases for EOPs.	3.3	1		
	2.4. 37	Knowledge of the lines of authority during implementation of the emergency plan.	3	1		
	2.4.					
	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	1
	2.4. 29	Knowledge of the emergency plan.			4.4	1
	2.4.					
Subtotal				2		2
Tier 3 Point Total				10		7