Facility: **Clinton** Date of Exam: **08/27/2018**

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			4	4	N/A		3	20	4	3	7
	2	1	1	1				1	1			2	7	1	2	3
	Tier Totals	4	4	4				5	5			5	27	5	5	10
2. Plant Systems	1	3	3	3	3	2	2	2	2	2	2	2	26	3	2	5
	2	1	1	1	1	2	1	1	1	1	1	1	12	0 2	1	3
	Tier Totals	4	4	4	4	4	3	3	3	3	3	3	38	5	3	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 ±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						Form ES-401-1		
Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (RO)									
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				07			Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Nuclear boiler instrumentation system	3.1	1
295003 (APE 3) Partial or Complete Loss of AC Power / 6					02		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Reactor power / pressure / and level	4.2	1
295004 (APE 4) Partial or Total Loss of DC Power / 6						01-19	Ability to use plant computers to evaluate system or component status.	3.9	1
295005 (APE 5) Main Turbine Generator Trip / 3	01						Knowledge of the operational implications of the following concepts as they apply to MAIN TURBINE GENERATOR TRIP: Pressure effects on reactor power	4.0	1
295006 (APE 6) Scram / 1		05					Knowledge of the interrelations between SCRAM and the following: CRD mechanism	3.1	1
295016 (APE 16) Control Room Abandonment / 7			03				Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT: Disabling control room controls	3.5	1
295018 (APE 18) Partial or Complete Loss of CCW / 8				02			Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF CCW: System loads	3.3	1
295019 (APE 19) Partial or Complete Loss of Instrument Air (IA) / 8					01		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Instrument air system pressure	3.5	1
295021 (APE 21) Loss of Shutdown Cooling / 4						02-37	Ability to determine operability and/or availability of safety related equipment.	3.6	1
295023 (APE 23) Refueling Accidents / 8	02						Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS: Shutdown margin	3.2	1
295024 High Drywell Pressure / 5		16					Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: SPDS/ERIS/CRIDS: Plant-Specific	3.2	1
295025 (EPE 2) High Reactor Pressure / 3			06				Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE: Alternate rod insertion: Plant-Specific	4.2	1
295026 (EPE 3) Suppression Pool High Water Temperature / 5				03			Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Temperature monitoring	3.9	1
295027 (EPE 4) High Containment Temperature (Mark III Containment Only) / 5					04		Ability to determine and/or interpret the following as they apply to HIGH CONTAINMENT TEMPERATURE: Containment radiation levels	3.3	1
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5							Not Applicable		0
295030 (EPE 7) Low Suppression Pool Water Level / 5						04-34	Knowledge of RO tasks performed outside the main control room during an emergency and resultant operational effects.	4.2	1
295031 (EPE 8) Reactor Low Water Level / 2	01						Knowledge of the operational implications of the following as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling	4.6	1
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1		08					Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: SPDS/ERIS/CRIDS/GDS: Plant-Specific	2.7	1
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9			03				Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: Control room ventilation isolation: Plant-Specific	3.7	1
600000 (APE 24) Plant Fire On Site / 8				08			Ability to operate and / or monitor the following as they apply to PLANT FIRE ON SITE: Firefighting equipment used on each class of fire	2.6	1
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6					09		Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Operational status of emergency diesel generators	3.9	1
K/A Category Totals:	3	3	3	4	4	3	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									0
295007 (APE 7) High Reactor Pressure / 3						01-30	Ability to locate and operate components, including local controls.	4.4	1
295008 (APE 8) High Reactor Water Level / 2									0
295009 (APE 9) Low Reactor Water Level / 2									0
295010 (APE 10) High Drywell Pressure / 5	03						Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE: Temperature increases	3.2	1
295011 (APE 11) High Containment Temperature (Mark III Containment only) / 5									0
295012 (APE 12) High Drywell Temperature / 5		02					Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell cooling	3.6	1
295013 (APE 13) High Suppression Pool Temperature. / 5									0
295014 (APE 14) Inadvertent Reactivity Addition / 1			02				Knowledge of the reasons for the following responses as they apply to INADVERTENT REACTIVITY ADDITION: Control rod blocks	3.7	1
295015 (APE 15) Incomplete Scram / 1									0
295017 (APE 17) Abnormal Offsite Release Rate / 9				03			Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Plant ventilation systems	3.4	1
295020 (APE 20) Inadvertent Containment Isolation / 5 & 7									0
295022 (APE 22) Loss of Control Rod Drive Pumps / 1					02		Ability to determine and/or interpret the following as they apply to LOSS OF CRD PUMPS: CRD system status	3.3	1
295029 (EPE 6) High Suppression Pool Water Level / 5									0
295032 (EPE 9) High Secondary Containment Area Temperature / 5									0
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9						02-12	Knowledge of surveillance procedures.	3.7	1
295034 (EPE 11) Secondary Containment Ventilation High Radiation / 9									0
295035 (EPE 12) Secondary Containment High Differential Pressure / 5									0
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5									0
500000 (EPE 16) High Containment Hydrogen Concentration / 5									0
K/A Category Point Totals:	1	1	1	1	1	2	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 (SF2, SF4 RHR/LPCI) RHR/LPCI: Injection Mode	16										01-27	Knowledge of the physical connections and/or cause-effect relationships between RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) and the following: CCW systems Knowledge of system purpose and/or function.	3.1 3.9	2
205000 (SF4 SCS) Shutdown Cooling	15	02										Knowledge of the physical connections and/or cause-effect relationships between SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) and the following: RHR service water: Plant-Specific Knowledge of electrical power supplies to the following: Motor operated valves	3.5 2.5	2
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection												Not Applicable		0
207000 (SF4 IC) Isolation (Emergency) Condenser												Not Applicable		0
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray		02	02									Knowledge of electrical power supplies to the following: Valve power Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on following: ADS logic	2.5 3.8	2
209002 (SF2, SF4 HPCS) High-Pressure Core Spray			03	07								Knowledge of the effect that a loss or malfunction of HPCS will have on following: Adequate core cooling: BWR-5,6 Knowledge of HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) design feature(s) and/or interlocks which provide for the following: Override of reactor water level interlock: Plant-Specific	3.9 3.5	2
211000 (SF1 SLCS) Standby Liquid Control (SLC)				05	03							Knowledge of STANDBY LIQUID CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: Dispersal of boron upon injection into the vessel Knowledge of the operational implications of the following concepts as they apply to STANDBY LIQUID CONTROL SYSTEM: Shutdown margin	3.4 3.2	2
212000 (SF7 RPS) Reactor Protection						05						Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR PROTECTION SYSTEM: RPS sensor inputs	3.5	1
215003 (SF7 IRM) Intermediate-Range Monitor							04					Ability to predict and/or monitor changes in parameters associated with operating the IRM SYSTEM controls including: Control rod block status	3.4	1
215004 (SF7 SRMS) Source-Range Monitor								05				Ability to (a) predict the impacts of the following on the SRM SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Faulty or erratic operation of detectors/system	3.3	1
215005 (SF7 PRMS) Average Power Range Monitor (APRM) / Local Power Range Monitor (LPRM)									03			Ability to monitor automatic operations of the APRM / LPRM SYSTEM including: Meters and recorders	3.3	1
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling										04		Ability to manually operate and/or monitor in the control room: Manually initiated controls	3.6	1
218000 (SF3 ADS) Automatic Depressurization											04-08	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	3.8	1
223002 (SF5 PCIS) Primary Containment Isolation / Nuclear Steam Supply Shutoff (NSSS)	13											Knowledge of the physical connections and/or cause-effect relationships between PCIS / NSSS and the following: Traversing in-core probe system	2.7	1
239002 (SF3 SRV) Safety Relief Valves		01										Knowledge of electrical power supplies to the following: SRV solenoids	2.8	1
259002 (SF2 RWLCS) Reactor Water Level Control			07									Knowledge of the effect that a loss or malfunction of the REACTOR WATER LEVEL CONTROL SYSTEM will have on following: Reactor water level indication	3.4	1
261000 (SF9 SGTS) Standby Gas Treatment				01								Knowledge of STANDBY GAS TREATMENT SYSTEM design feature(s) and/or interlocks which provide for the following: Automatic system initiation	3.7	1
262001 (SF6 AC) AC Electrical Distribution					01							Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: Principle involved with paralleling two A.C. sources	3.1	1
262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)						03						Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): Static inverter	2.7	1
263000 (SF6 DC) DC Electrical Distribution							01					Ability to predict and/or monitor changes in parameters associated with operating the D.C. ELECTRICAL DISTRIBUTION controls including: Battery charging / discharging rate	2.5	1
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG								05				Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Synchronization of the emergency generator with other electrical supplies	3.6	1
300000 (SF8 IA) Instrument Air									02			Ability to monitor automatic operations of the INSTRUMENT AIR SYSTEM including: Air temperature	2.9	1
400000 (SF8 CCS) Component Cooling Water (CCW)										01		Ability to manually operate and/or monitor in the control room: CCW indications and control	3.1	1
510000 (SF4 SWS*) Service Water (Normal and Emergency)												Not Applicable		0
K/A Category Point Totals:	3	3	3	3	2	2	2	2	2	2	2	Group Point Total:		26

ES-401 BWR Examination Outline Form ES-401-1
Plant Systems—Tier 2/Group 2 (RO)

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
201001 (SF1 CRDH) CRD Hydraulic														0
201002 (SF1 RMCS) Reactor Manual Control												Not Applicable		0
201003 (SF1 CRDM) Control Rod and Drive Mechanism														0
201004 (SF7 RSCS) Rod Sequence Control												Not Applicable		0
201005 (SF1, SF7 RCIS) Rod Control and Information					06							Knowledge of the operational implications of the following concepts as they apply to ROD CONTROL AND INFORMATION SYSTEM (RCIS): Target rod pattern: BWR-6	2.8	1
201006 (SF7 RWMS) Rod Worth Minimizer												Not Applicable		0
202001 (SF1, SF4 RS) Recirculation						03						Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION SYSTEM: A.C. power: Plant-Specific	2.9	1
202002 (SF1 RSCTL) Recirculation Flow Control														0
204000 (SF2 RWCU) Reactor Water Cleanup							09					Ability to predict and/or monitor changes in parameters associated with operating the RWCU SYSTEM controls including: Reactor water conductivity	3.0	1
214000 (SF7 RPIS) Rod Position Information								01				Ability to (a) predict the impacts of the following on the ROD POSITION INFORMATION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failed reed switches	3.1	1
215001 (SF7 TIP) Traversing In-Core Probe														0
215002 (SF7 RBMS) Rod Block Monitor												Not Applicable		0
216000 (SF7 NBI) Nuclear Boiler Instrumentation									01			Ability to monitor automatic operations of the NUCLEAR BOILER Instrumentation including: Relationship between meter/recorder readings and actual parameter values: Plant-Specific	3.4	1
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode														0
223001 (SF5 PCS) Primary Containment and Auxiliaries										07		Ability to manually operate and/or monitor in the control room: Drywell pressure	4.2	1
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode														0
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode												Not Applicable		0
233000 (SF9 FPCCU) Fuel Pool Cooling/Cleanup														0
234000 (SF8 FH) Fuel-Handling Equipment											02-38	Knowledge of conditions and limitations in the facility license.	3.6	1
239001 (SF3, SF4 MRSS) Main and Reheat Steam														0
239003 (SF9 MSVLCS) Main Steam Isolation Valve Leakage Control												Not Applicable		0
241000 (SF3 RTPRS) Reactor/Turbine Pressure Regulating System	28											Knowledge of the physical connections and/or cause-effect relationships between REACTOR/TURBINE PRESSURE REGULATING SYSTEM and the following: Reactor startup	3.2	1
245000 (SF4 MTGEN) Main Turbine Generator/Auxiliary														0
256000 (SF2 CDS) Condensate														0
259001 (SF2 FWS) Feedwater		01										Knowledge of electrical power supplies to the following: Reactor feedwater pump(s): Motor-Driven-Only	3.3	1
268000 (SF9 RW) Radwaste														0
271000 (SF9 OG) Offgas														0
272000 (SF7, SF9 RMS) Radiation Monitoring			06									Knowledge of the effect that a loss or malfunction of the RADIATION MONITORING System will have on following: Reactor building ventilation: Plant-Specific	3.4	1
286000 (SF8 FPS) Fire Protection														0
288000 (SF9 PVS) Plant Ventilation														0
290001 (SF5 SC) Secondary Containment				03								Knowledge of SECONDARY CONTAINMENT design feature(s) and/or interlocks which provide for the following: Fluid leakage collection	2.8	1
290003 (SF9 CRV) Control Room Ventilation														0
290002 (SF4 RVI) Reactor Vessel Internals					05							Knowledge of the operational implications of the following concepts as they apply to REACTOR VESSEL INTERNALS: Brittle fracture	3.1	1
51001 (SF8 CWS*) Circulating Water												Not Applicable		0
K/A Category Point Totals:	1	1	1	1	2	1	1	1	1	1	1	Group Point Total:		12

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (SRO)						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									0
295003 (APE 3) Partial or Complete Loss of AC Power / 6					03		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Battery status: Plant-Specific	3.5	1
295004 (APE 4) Partial or Total Loss of DC Power / 6									0
295005 (APE 5) Main Turbine Generator Trip / 3									0
295006 (APE 6) Scram / 1									0
295016 (APE 16) Control Room Abandonment / 7						04-41	Knowledge of the emergency action level thresholds and classifications.	4.6	1
295018 (APE 18) Partial or Complete Loss of CCW / 8									0
295019 (APE 19) Partial or Complete Loss of Instrument Air / 8					02		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Status of safety-related instrument air system loads (see AK2.1 - AK2.19)	3.7	1
295021 (APE 21) Loss of Shutdown Cooling / 4									0
295023 (APE 23) Refueling Accidents / 8									0
295024 High Drywell Pressure / 5						01-23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	1
295025 (EPE 2) High Reactor Pressure / 3									0
295026 (EPE 3) Suppression Pool High Water Temperature / 5					01		Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool water temperature	4.2	1
295027 (EPE 4) High Containment Temperature (Mark III Containment Only) / 5									0
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5							Not Applicable		0
295030 (EPE 7) Low Suppression Pool Water Level / 5									0
295031 (EPE 8) Reactor Low Water Level / 2									0
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1						02-44	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.	4.4	1
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9									0
600000 (APE 24) Plant Fire On Site / 8					09		Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: That a failed fire alarm detector exists	2.8	1
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6									0
K/A Category Totals:	0	0	0	0	4	3	Group Point Total:		7

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (SRO)						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									0
295007 (APE 7) High Reactor Pressure / 3									0
295008 (APE 8) High Reactor Water Level / 2									0
295009 (APE 9) Low Reactor Water Level / 2									0
295010 (APE 10) High Drywell Pressure / 5									0
295011 (APE 11) High Containment Temperature (Mark III Containment only) / 5						04-03	Ability to identify post-accident instrumentation.	3.9	1
295012 (APE 12) High Drywell Temperature / 5									0
295013 (APE 13) High Suppression Pool Temperature. / 5					01		Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL TEMPERATURE: Suppression pool temperature	4.0	1
295014 (APE 14) Inadvertent Reactivity Addition / 1									0
295015 (APE 15) Incomplete Scram / 1									0
295017 (APE 17) Abnormal Offsite Release Rate / 9									0
295020 (APE 20) Inadvertent Containment Isolation / 5 & 7									0
295022 (APE 22) Loss of Control Rod Drive Pumps / 1									0
295029 (EPE 6) High Suppression Pool Water Level / 5									0
295032 (EPE 9) High Secondary Containment Area Temperature / 5									0
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9									0
295034 (EPE 11) Secondary Containment Ventilation High Radiation / 9									0
295035 (EPE 12) Secondary Containment High Differential Pressure / 5									0
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5						01-32	Ability to explain and apply system limits and precautions.	4.0	1
500000 (EPE 16) High Containment Hydrogen Concentration / 5									0
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 (SF2, SF4 RHR/LPCI) RHR/LPCI: Injection Mode														0
205000 (SF4 SCS) Shutdown Cooling														0
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection												Not Applicable		0
207000 (SF4 IC) Isolation (Emergency) Condenser												Not Applicable		0
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray														0
209002 (SF2, SF4 HPCS) High-Pressure Core Spray														0
211000 (SF1 SLCS) Standby Liquid Control (SLC)														0
212000 (SF7 RPS) Reactor Protection											02-25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	1
215003 (SF7 IRM) Intermediate-Range Monitor								04				Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Up-scale or down scale trips	3.8	1
215004 (SF7 SRMS) Source-Range Monitor														0
215005 (SF7 PRMS) Average Power Range Monitor (APRM) /Local Power Range Monitor														0
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling											04-46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	1
218000 (SF3 ADS) Automatic Depressurization														0
223002 (SF5 PCIS) Primary Containment Isolation/Nuclear Steam Supply Shutoff (NSSS)								06				Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Containment instrumentation failures	3.2	1
239002 (SF3 SRV) Safety Relief Valves														0
259002 (SF2 RWLCS) Reactor Water Level Control														0
261000 (SF9 SGTS) Standby Gas Treatment														0
262001 (SF6 AC) AC Electrical Distribution								11				Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Degraded system voltages	3.6	1
262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)														0
263000 (SF6 DC) DC Electrical Distribution														0
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG														0
300000 (SF8 IA) Instrument Air														0
400000 (SF8 CCS) Component Cooling Water (CCW)														0
510000 (SF4 SWS*) Service Water (Normal and Emergency)												Not Applicable		0
K/A Category Point Totals:	0	0	0	0	0	0	0	3	0	0	2	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 (SF1 CRDH) CRD Hydraulic								1 3				Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low cooling water flow	2.8	1
201002 (SF1 RMCS) Reactor Manual Control												Not Applicable		0
201003 (SF1 CRDM) Control Rod and Drive Mechanism														0
201004 (SF7 RSCS) Rod Sequence Control												Not Applicable		0
201005 (SF1, SF7 RCIS) Rod Control and Information														0
201006 (SF7 RWMS) Rod Worth Minimizer												Not Applicable		0
202001 (SF1, SF4 RS) Recirculation														0
202002 (SF1 RSCTL) Recirculation Flow Control														0
204000 (SF2 RWCU) Reactor Water Cleanup														0
214000 (SF7 RPIS) Rod Position Information														0
215001 (SF7 TIP) Traversing In-Core Probe											01-07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	1
215002 (SF7 RBMS) Rod Block Monitor												Not Applicable		0
216000 (SF7 NBI) Nuclear Boiler Instrumentation														0
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode														0
223001 (SF5 PCS) Primary Containment and Auxiliaries														0
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode														0
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode												Not Applicable		0
233000 (SF9 FPCCU) Fuel Pool Cooling/Cleanup														0
234000 (SF8 FH) Fuel-Handling Equipment														0
239001 (SF3, SF4 MRSS) Main and Reheat Steam														0
239003 (SF9 MSVLCS) Main Steam Isolation Valve Leakage Control												Not Applicable		0
241000 (SF3 RTPRS) Reactor/Turbine Pressure Regulating System														0
245000 (SF4 MTGEN) Main Turbine Generator/Auxiliary								0 1				Ability to (a) predict the impacts of the following on the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Turbine trip	3.9	1
256000 (SF2 CDS) Condensate														0
259001 (SF2 FWS) Feedwater														0
268000 (SF9 RW) Radwaste														0
271000 (SF9 OG) Offgas														0
272000 (SF7, SF9 RMS) Radiation Monitoring														0
286000 (SF8 FPS) Fire Protection														0
288000 (SF9 PVS) Plant Ventilation														0
290001 (SF5 SC) Secondary Containment														0
290003 (SF9 CRV) Control Room Ventilation														0
290002 (SF4 RVI) Reactor Vessel Internals														0
51001 (SF8 CWS*) Circulating Water												Not Applicable		0
K/A Category Point Totals:	0	0	0	0	0	0	0	2	0	0	1	Group Point Total:		3

ES-401 **Generic Knowledge and Abilities Outline (Tier 3)** **Form ES-401-3**

Facility: **Clinton** Date of Exam: **08/27/2018**

Category	K/A #	Topic	RO		SRO-only	
			IR	#	IR	#
1. Conduct of Operations	2.1.2	Knowledge of operator responsibilities during all modes of plant operation.	4.1	1	-	-
	2.1.4	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, “no-solo” operation, maintenance of active license status, 10CFR55, etc.	-	-	3.8	1
	2.1.35	Knowledge of the fuel-handling responsibilities of SROs.	-	-	3.9	1
	2.1.42	Knowledge of new and spent fuel movement procedures.	2.5	1	-	-
	2.1.44	Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.9	1	-	-
	2.1.		-	-	-	-
	Subtotal			3		2
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	1	-	-
	2.2.6	Knowledge of the process for making changes to procedures.	3.0	1	-	-
	2.2.7	Knowledge of the process for conducting special or infrequent tests.	-	-	3.6	1
	2.2.23	Ability to track Technical Specification limiting conditions for operations.	-	-	4.6	1
	2.2.		-	-	-	-
	2.2.		-	-	-	-
	Subtotal			2		2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	-	-	3.7	1
	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	1	-	-
	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	1	-	-
	2.3.		-	-	-	-
	2.3.		-	-	-	-
	2.3.		-	-	-	-
	Subtotal			2		1
4. Emergency Procedures/Plan	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	-	-	4.3	1
	2.4.13	Knowledge of crew roles and responsibilities during EOP usage.	4.0	1	-	-
	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.	3.6	1	-	-
	2.4.43	Knowledge of emergency communications systems and techniques.	3.2	1	-	-
	2.4.47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	-	-	4.2	1
	2.4.		-	-	-	-
	Subtotal			3		2
Tier 3 Point Total				10		7