Facility: FERMI Date of Exam: Week of 2/26/2018

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	4	N/A			4	3	N/A		3	20	4		3		7		
	2	1	2	1				1	1			1	7	2		1		3		
	Tier Totals	4	5	5				5	4			4	27	6		4		10		
2. Plant Systems	1	3	2	2	2	2	3	2	2	3	2	3	26	2		3		5		
	2	1	1	1	2	1	1	1	1	1	1	1	12		2	1		3		
	Tier Totals	4	3	3	4	3	4	3	3	4	3	4	38	4		4		8		
3. Generic Knowledge and Abilities Categories		1		2		3		4		10		1	2	3	4	7				
		3		3		2		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 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	01						Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Natural Circulation.	3.5	
295003 (APE 3) Partial or Complete Loss of AC Power / 6		02					Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following: Emergency Generators.	4.1	
295004 (APE 4) Partial or Total Loss of DC Power / 6			02				Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Ground isolation/fault determination.	2.9	
295005 (APE 5) Main Turbine Generator Trip / 3				05			Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP: Reactor/turbine pressure regulating system.	3.6	
295006 (APE 6) Scram / 1					06		Ability to determine and/or interpret the following as they apply to SCRAM: Cause of reactor SCRAM.	3.5	
295016 (APE 16) Control Room Abandonment / 7						1. 23	Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.3	
295018 (APE 18) Partial or Complete Loss of CCW / 8					03		Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Cause for partial or complete loss.	3.2	
295019 (APE 19) Partial or Complete Loss of Instrument Air / 8			02				Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Standby air compressor operation.	3.5	
295021 (APE 21) Loss of Shutdown Cooling / 4				02			Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: RHR/shutdown cooling.	3.5	
295023 (APE 23) Refueling Accidents / 8		05					Knowledge of the interrelations between REFUELING ACCIDENTS and the following: Secondary containment ventilation.	3.5	
295024 High Drywell Pressure / 5		09					Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Suppression pool makeup.	2.9	
295025 (EPE 2) High Reactor Pressure / 3	05						Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: Exceeding safety limits	4.4	
295026 (EPE 3) Suppression Pool High Water Temperature / 5			03				Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool spray.	3.5	
295027 (EPE 4) High Containment Temperature (Mark III Containment Only) / 5									
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5				02			Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell ventilation system.	3.9	

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	IR	#
295030 (EPE 7) Low Suppression Pool Water Level / 5					03		Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: Reactor pressure.	3.7	
295031 (EPE 8) Reactor Low Water Level / 2						2.42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9	
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				08			Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Rod control and information system	3.6	
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9						4.18	Knowledge of specific bases for EOPs.	3.3	
600000 (APE 24) Plant Fire On Site / 8			04				Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE: Actions contained in the abnormal procedure for plant fire on site.	2.8	
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6	03						Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Under-excitation.	3.3	
K/A Category Totals:	3	3	4	4	3	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						4. 04	Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.5	
295007 (APE 7) High Reactor Pressure / 3	02						Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE: Decay heat generation.	3.1	
295008 (APE 8) High Reactor Water Level / 2		03					Knowledge of the interrelations between HIGH REACTOR WATER LEVEL and the following: Reactor water level control.	3.6	
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									
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) Abnormal Offsite Release Rate / 9									
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		01					Knowledge of the interrelations between SECONDARY CONTAINMENT VENTILATION HIGH RADIATION and the following: Process radiation monitoring system.	3.9	
295035 (EPE 12) Secondary Containment High Differential Pressure / 5			02				Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment ventilation response.	3.3	
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5				02			Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Affected systems so as to isolate damaged portions.	3.5	

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G		IR	#
500000 (EPE 16) High Containment Hydrogen Concentration / 5					04		Ability to determine and / or interpret the following as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Combustible limits for wetwell.	3.3	
K/A Category Point Totals:	1	2	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, RHR/LPCI) RHR/LPCI: Injection Mode									07			Ability to monitor automatic operations of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) including: Loop selection.	4.2	
205000 (SF4 SCS) Shutdown Cooling										12		Ability to manually operate and/or monitor in the control room: Recirculation loop temperatures.	3.4	
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection											1. 20	Ability to interpret and execute procedure steps.	4.6	
207000 (SF4 IC) Isolation (Emergency) Condenser														
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray	10											Knowledge of the physical connections and/or cause effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following: Emergency Generator.	3.7	
209002 (SF2, SF4 HPCS) High-Pressure Core Spray														
211000 (SF1 SLCS) Standby Liquid Control		02										Knowledge of electrical power supplies to the following: Explosive valves.	3.1	
212000 (SF7 RPS) Reactor Protection			02									Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on following: Primary containment isolation system/nuclear steam supply shut-off.	3.7	
215003 (SF7 IRM) Intermediate-Range Monitor				01								Knowledge of INTERMEDIATE RANGE MONITOR (IRM) SYSTEM design feature(s) and/or interlocks which provide for the following: Rod withdrawal blocks.	3.7	
215004 (SF7 SRMS) Source-Range Monitor					01							Knowledge of the operational implications of the following concepts as they apply to SOURCE RANGE MONITOR (SRM) SYSTEM: Detector Operation.	2.6	
215005 (SF7 PRMS) Average Power Range Monitor/Local Power Range Monitor						04						Knowledge of the effect that a loss or malfunction of the following will have on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM: Trip units.	3.1	
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling							05					Ability to predict and/or monitor changes in parameters associated with operating the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) controls including: RCIC Turbine Speed.	3.7	
218000 (SF3 ADS) Automatic Depressurization								06				Ability to (a) predict the impacts of the following on the AUTOMATIC DEPRESSURIZATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS initiation signals present	4.2	
223002 (SF5 PCIS) Primary Containment Isolation/Nuclear Steam Supply Shutoff									01			Ability to monitor automatic operations of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF including: System Indicating lights and alarms.	3.4	

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
259002 (SF2 RWLCS) Reactor Water Level Control	08											Knowledge of the physical connections and/or cause effect relationships between REACTOR WATER LEVEL CONTROL SYSTEM and the following: Recirculation system.	3.2	
261000 (SF9 SGTS) Standby Gas Treatment											2. 12	Knowledge of surveillance procedures.	3.7	
262001 (SF6 AC) AC Electrical Distribution			03									Knowledge of the effect that a loss or malfunction of the A.C. ELECTRICAL DISTRIBUTION will have on following: D.C. electrical distribution.	2.9	
262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)				01								Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: Transfer from preferred power to alternate power supplies.	3.1	
263000 (SF6 DC) DC Electrical Distribution		01										Knowledge of electrical power supplies to the following: Major DC Loads.	3.1	
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG					06							Knowledge of the operational implications of the following concepts as they apply to EMERGENCY GENERATORS (DIESEL/JET): Load Sequencing.	3.4	
300000 (SF8 IA) Instrument Air						13						Knowledge of the effect that a loss or malfunction of the following will have on the INSTRUMENT AIR SYSTEM: Filters.	2.8	
400000 (SF8 CCS) Component Cooling Water							03					Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: CCW Pressure.	2.7	
203000 (SF2, RHR/LPCI) RHR/LPCI: Injection Mode								13				Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve openings.	3.2	
205000 (SF4 SCS) Shutdown Cooling									02			Ability to monitor automatic operations of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) including: Pump trips.	3.2	
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection										12		Ability to manually operate and/or monitor in the control room: Turbine trip controls.	4.0	
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray											4. 3	Ability to identify post-accident instrumentation.	3.7	
211000 (SF1 SLCS) Standby Liquid Control	02											Knowledge of the physical connections and/or cause effect relationships between STANDBY LIQUID CONTROL SYSTEM and the following: Core plate differential pressure indication.	2.7	
212000 (SF7 RPS) Reactor Protection						03						Knowledge of the effect that a loss or malfunction of the following well have on the REACTOR PROTECTION SYSTEM: Nuclear Boiler Instrumentation.	3.5	
K/A Category Point Totals:	3	2	2	2	2	3	2	2	3	2	3	Group Point Total:		26

ES-401	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								Knowledge of CONTROL ROD DRIVE HYDRAULIC SYSTEM design feature(s) and/or interlocks which provide for the following: Testing SCRAM discharge volume isolation valves.	2.8	
201002 (SF1 RMCS) Reactor Manual Control														
201003 (SF1 CRDM) Control Rod and Drive Mechanism								05				Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reactor Scram.	4.1	
201004 (SF7 RSCS) Rod Sequence Control														
201005 (SF1, SF7 RCIS) Rod Control and Information														
201006 (SF7 RWMS) Rod Worth Minimizer					08							Knowledge of the operational implications of the following concepts as they apply to ROD WORTH MINIMIZER SYSTEM (RWM): Operating sequence.	2.9	
202001 (SF1, SF4 RS) Recirculation														
202002 (SF1 RSCTL) Recirculation Flow Control														
204000 (SF2 RWCU) Reactor Water Cleanup									04			Ability to monitor automatic operations of the REACTOR WATER CLEANUP SYSTEM including: Response to interlocks and trips designed to protect system components.	3.4	
214000 (SF7 RPIS) Rod Position Information														
215001 (SF7 TIP) Traversing In-Core Probe						04						Knowledge of the effect that a loss or malfunction of the following will have on the TRAVERSING IN-CORE PROBE: Primary containment isolation system.	3.1	
215002 (SF7 RBMS) Rod Block Monitor														
216000 (SF7 NBI) Nuclear Boiler Instrumentation										02		Ability to manually operate and/or monitor in the control room: Channel select controls.	3.3	
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode														
223001 (SF5 PCS) Primary Containment and Auxiliaries														
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode							07					Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE controls including: System pressure.	3.1	
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode														
233000 (SF9 FPCCU) Fuel Pool Cooling/Cleanup														
234000 (SF8 FH) Fuel-Handling Equipment											1.27	Knowledge of system purpose and/or function.	3.9	

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
239001 (SF3, SF4 MRSS) Main and Reheat Steam														
239003 (SF9 MSVLCS) Main Steam Isolation Valve Leakage Control														
241000 (SF3 RTPRS) Reactor/Turbine Pressure Regulating														
245000 (SF4 MTGEN) Main Turbine Generator/Auxiliary	09											Knowledge of the physical connections and/or cause effect relationships between MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS and the following: D. C. electrical distribution.	2.7	
256000 (SF2 CDS) Condensate														
259001 (SF2 FWS) Feedwater		01										Knowledge of electrical power supplies to the following: Reactor feedwater pump(s): Motor Driven Only.	3.3	
268000 (SF9 RW) Radwaste														
271000 (SF9 OG) Offgas														
272000 (SF7, SF9 RMS) Radiation Monitoring			08									Knowledge of the effect that a loss or malfunction of the RADIATION MONITORING System will have on following: Auxiliary building ventilation.	2.9	
286000 (SF8 FPS) Fire Protection														
288000 (SF9 PVS) Plant Ventilation														
290001 (SF5 SC) Secondary Containment				01								Knowledge of SECONDARY CONTAINMENT design feature(s) and/or interlocks which provide for the following: Personnel access without breaching secondary containment.	3.5	
290003 (SF9 CRV) Control Room Ventilation														
290002 (SF5 RVI) Reactor Vessel Internals														
K/A Category Point Totals:	1	1	1	2	1	1	1	1	1	1	1	Group Point Total:		12

START SRO WRITTEN EXAM OUTLINE

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									
295003 (APE 3) Partial or Complete Loss of AC Power / 6						4. 18	Knowledge of the specific bases for EOPs.	4.0	
295004 (APE 4) Partial or Total Loss of DC Power / 6									
295005 (APE 5) Main Turbine Generator Trip / 3									
295006 (APE 6) Scram / 1					02		Ability to determine and/or interpret the following as they apply to SCRAM: Control Rod position.	3.6	
295016 (APE 16) Control Room Abandonment / 7									
295018 (APE 18) Partial or Complete Loss of CCW / 8									
295019 (APE 19) Partial or Complete Loss of Instrument Air / 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	
295021 (APE 21) Loss of Shutdown Cooling / 4									
295023 (APE 23) Refueling Accidents / 8									
295024 High Drywell Pressure / 5						1. 32	Ability to explain and apply system limits and precautions.	4.0	
295025 (EPE 2) High Reactor Pressure / 3									
295026 (EPE 3) Suppression Pool High Water Temperature / 5						2. 25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	
295027 (EPE 4) High Containment Temperature (Mark III Containment Only) / 5									
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5					02		Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Reactor pressure.	3.9	
295030 (EPE 7) Low Suppression Pool Water Level / 5									
295031 (EPE 8) Reactor Low Water Level / 2									
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1									
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9					04		Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Source of offsite release.	4.1	
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

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									
295007 (APE 7) High Reactor Pressure / 3									
295008 (APE 8) High Reactor Water Level / 2									
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									
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						1. 30	Ability to locate and operate components, including local controls.	4.0	
295017 (APE 17) Abnormal Offsite Release Rate / 9									
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					01		Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Suppression pool water level.	3.9	
295032 (EPE 9) High Secondary Containment Area Temperature / 5									
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9					01		Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Area radiation levels.	3.9	
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

ES-401	BWR Examination Outline Plant Systems—Tier 2/Group 1 **(SRO)**											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														
205000 (SF4 SCS) Shutdown Cooling								11				Ability to (a) predict the impacts of the following on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation pump trips.	2.7	
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection														
207000 (SF4 IC) Isolation (Emergency) Condenser														
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray														
209002 (SF2, SF4 HPCS) High-Pressure Core Spray														
211000 (SF1 SLCS) Standby Liquid Control														
212000 (SF7 RPS) Reactor Protection														
215003 (SF7 IRM) Intermediate-Range Monitor														
215004 (SF7 SRMS) Source-Range Monitor														
215005 (SF7 PRMS) Average Power Range Monitor/Local Power Range Monitor														
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling														
218000 (SF3 ADS) Automatic Depressurization								03				Ability to (a) predict the impacts of the following on the AUTOMATIC DEPRESSURIZATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of air supply to ADS valves.	3.6	
223002 (SF5 PCIS) Primary Containment Isolation/Nuclear Steam Supply Shutoff														
239002 (SF3 SRV) Safety Relief Valves											2.40	Ability to apply Technical Specifications for a system.	4.7	
259002 (SF2 RWLCS) Reactor Water Level Control														
261000 (SF9 SGTS) Standby Gas Treatment														
262001 (SF6 AC) AC Electrical Distribution														
262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)														

263000 (SF6 DC) DC Electrical Distribution										1.07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.7	
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG													
300000 (SF8 IA) Instrument Air										4.46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	
400000 (SF8 CCS) Component Cooling Water													
K/A Category Point Totals:							2			3	Group Point Total:		5

ES-401	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								01				Ability to (a) predict the impacts of the following on the RECIRCULATION FLOW CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Recirculation pump trip	3.4	
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											2.37	Ability to determine operability and/or availability of safety related | equipment.	4.6	
216000 (SF7 NBI) Nuclear Boiler Instrumentation														
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode														
223001 (SF5 PCS) Primary Containment and Auxiliaries														
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								10				Ability to (a) predict the impacts of the following on the MAIN AND REHEAT STEAM SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Closure of one or more MSIV's at power.	3.9	
239003 (SF9 MSVLCS) 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													
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													
K/A Category Point Totals:							2			1	Group Point Total:		3

Facility: FERMI		Date of Exam: Week of 2/26/2018				
Category	K/A #	Topic	RO		SRO-only	
			IR	#	IR	#
1. Conduct of Operations	2.1.	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (2.1.7)	4.4			
	2.1.	Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup. (2.1.31)	4.6			
	2.1.	Ability to identify and interpret diverse indications to validate the response of another indication. (2.1.45)	4.3			
	2.1.	Ability to interpret reference materials, such as graphs, curves, tables, etc. (2.1.25)			4.2	
	2.1.	Knowledge of procedures, guidelines, or limitations associated with reactivity management. (2.1.37)			4.6	
	Subtotal			3		2
2. Equipment Control	2.2.	Knowledge of surveillance procedures. (2.2.12)	3.7			
	2.2.	Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. (2.2.15)	3.9			
	2.2.	Knowledge of less than or equal to one hour Technical Specification action statements for systems. (2.2.39)	3.9			
	2.2.	Knowledge of maintenance work order requirements. (2.2.19)			3.4	
	2.2.	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (2.2.25)			4.2	
	Subtotal			3		2
3. Radiation Control	2.3.	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. (2.3.12)	3.2			
	2.3.	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. (2.3.14)	3.4			
	2.3.	Ability to approve release permits. (2.3.6)			3.8	
	Subtotal			2		1
4. Emergency Procedures/ Plan	2.4.	Knowledge of abnormal condition procedures. (2.4.11)	4.0			
	2.4.	Knowledge of operator response to loss of all annunciators. (2.4.32)	3.6			
	2.4.	Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. (2.4.38)			4.4	
	2.4.	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. (2.4.47)			4.2	
	Subtotal			2		2
Tier 3 Point Total				10		7