

Facility:	J.A. FitzPatrick											Date of Exam:		June 16, 2006				
Tier	Group	RO K/A Category Points												SRO-Only Points				
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolutions	1	N/A												20	4	3	7	
	2													7	2	1	3	
	Tier Totals													27	6	4	10	
2. Plant Systems	1	N/A												26	2	3	5	
	2													12	3	0	3	
	Tier Totals													38	5	3	8	
3. Generic Knowledge and Abilities Categories				1		2		3		4		10	1	2	3	4	7	
				N/A						2	2		1	2				

- Notes:
1. Ensure that at least two topics from every 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 or justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, 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.
 8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IR) 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. 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 Emergency and Abnormal Plant Evolutions – Tier 1/Group 1 (RO / SRO)						Form ES-401-1	
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	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
295003 Partial or Complete Loss of AC / 6					1		AA2.04 (10CFR 55.43.5) Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: ♦ System lineups	3.7	1
295004 Partial or Total Loss of DC Pwr / 6					1		AA2.02 (10CFR 55.43.5) Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: ♦ Extent of partial or complete loss of D.C. power	3.9	2
295005 Main Turbine Generator Trip / 3						1	G2.4.17 (10CFR 55.43.5) Knowledge of EOP terms and definitions.	3.8	3
295006 SCRAM / 1	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
295016 Control Room Abandonment / 7	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
295018 Partial or Total Loss of CCW / 8	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
295019 Partial or Total Loss of Inlet Air / 8	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
295021 Loss of Shutdown Cooling / 4	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
295023 Refueling Acc / 8						1	G2.1.12 (10CFR 55.43.2/4/6/7) Ability to apply technical specifications for a system.	4.0	4
295024 High Drywell Pressure / 5					1		EA2.06 (10CFR 55.43.2/5) Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: ♦ Suppression pool temperature	4.1	5

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E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295025 High Reactor Pressure / 3					1		EA2.04 (10CFR 55.43.2/5) Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: ♦ Suppression pool level	3.9	6
295026 Suppression Pool High Water Temp / 5	--	--	--	--	--	--	RANDOMLY REJECTED ON OVERLAP WITH 295024 and 295025. RANDOMLY SELECTED REPLACEMENT E/APE 295004.		
295027 High Containment Temperature / 5	--	--	--	--	--	--	N/A for JAF – K/A for Mark III Containments ONLY.		
295028 High Drywell Temperature / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED.		
295030 Low Suppression Pool Wtr Lvl / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED.		
295031 Reactor Low Water Level / 2						1	G2.3.9 (10CFR 55.43.4) Knowledge of the process for performing a containment purge.	3.4	7
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	--	--	--	--	--	--	NOT RANDOMLY SELECTED.		
295038 High Off-site Release Rate / 9	--	--	--	--	--	--	NOT RANDOMLY SELECTED.		
600000 Plant Fire On Site / 8	--	--	--	--	--	--	NOT RANDOMLY SELECTED.		
K/A Category Totals: (RO)							Group Point Total: (RO)	N/A	
K/A Category Totals: (SRO)	4 3						Group Point Total: (SRO)	7	

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO / SRO)						Form ES-401-1	
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	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295007 High Reactor Pressure / 3						1	G2.1.30 (10CFR 55.43.5) Ability to locate and operate components / including local controls.	3.4	8
295008 High Reactor Water Level / 2					1		AA2.04 (10 CFR 55.43.5) Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL: ♦ Heatup rate: Plant-Specific	3.3	9
295009 Low Reactor Water Level / 2	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295010 High Drywell Pressure / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295011 High Containment Temp / 5	--	--	--	--	--	--	N/A for JAF – K/A for Mark III Containments ONLY	-----	-----
295012 High Drywell Temperature / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295013 High Suppression Pool Temp / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295014 Inadvertent Reactivity Addition / 1					1		AA2.02 (10 CFR 55.43.6) Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: ♦ Reactor period	3.9	10
295015 Incomplete SCRAM / 1	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295017 High Off-site Release Rate / 9	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295020 Inadvertent Cont. Isolation / 5 & 7	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
295022 Loss of CRD Pumps / 1	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2 (RO / SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
205020 High Suppression Pool Wtr Lvl / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
205032 High Secondary Containment Area Temperature / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
205033 High Secondary Containment Area Radiation Levels / 9	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
205034 Secondary Containment Ventilation High Radiation / 9	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
205035 Secondary Containment High Differential Pressure / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
205036 Secondary Containment High Sump/Area Water Level / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
500000 High CTMT Hydrogen Conc. / 5	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
K/A Category Totals: (RO)								Group Point Total: (RO)	N/A
K/A Category Totals: (SRO)					2	1		Group Point Total: (SRO)	3

BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / SRO)													Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI Injection Mode	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
205000 Shutdown Cooling	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
206000 HPCI											1	G2.4.19 (10CFR 55.43.5) Knowledge of EOP layout / symbols / and icons.	3.7	11
207000 Isolation (Emergency) Condenser	--	--	--	--	--	--	--	--	--	--	--	N/A for JAF – No Isolation Condenser(s)	-----	-----
209001 LPCS	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
209002 HPCS	--	--	--	--	--	--	--	--	--	--	--	N/A for JAF – No HPCS System	-----	-----
211000 SLC											1	G2.2.24 (10CFR 55.43.2) Ability to analyze the effect of maintenance activities on LCO status.	3.8	12
212000 RPS	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
215003 IRM	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
215004 Source Range Monitor	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
215005 APRM / LPRM	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
217000 RCIC								1				A2.11 (10CFR 55.43.5) Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Inadequate system flow	3.2	13
218000 ADS	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----
223002 PCIS/Nuclear Steam Supply Shutoff	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED	-----	-----

ES-401		BWR Examination Outline Plant Systems – Tier 2/Group 1 (RO / 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	#		
239002 SRVs								1				A2.01 (10CFR 55.43.5) Ability to (a) predict the impacts of the following on the RELIEF / SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Stuck open vacuum breakers	3.3	14		
259002 Reactor Water Level Control											1	G2.2.11 (10CFR 55.43.3) Knowledge of the process for controlling temporary changes.	3.4	15		
261000 SGTs	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
262001 AC Electrical Distribution	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
262002 UPS (AC/DC)	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
263000 DC Electrical Distribution	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
264000 EDGs	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
300000 Instrument Air	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
400000 Component Cooling Water	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED				
K/A Category Point Totals: (RO)												Group Point Total: (RO)		N/A		
K/A Category Point Totals: (SRO)												2	3	Group Point Total: (SRO)		5

ES-401		BWR Examination Outline Plant Systems – Tier 2/Group 2 (RO / SRO)										Form ES-401-1		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
201002 RMGS	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
201003 Control Rod and Drive Mechanism								1				A2.01 (10CFR 55.43.5) 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: ♦ Stuck rod	3.6	16
201004 RSCS	--	--	--	--	--	--	--	--	--	--	--	N/A for JAF – BWR 4/5 ONLY-----	-----	-----
201005 RCIS	--	--	--	--	--	--	--	--	--	--	--	N/A for JAF – BWR 6 ONLY-----	-----	-----
201006 RWM	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
202001 Recirculation	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
202002 Recirculation Flow Control	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
204000 RWCU	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
214000 RPIS	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
215001 Traversing In-core Probe	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
215002 RBM	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED-----	-----	-----
216000 Nuclear Boiler Inst.								1				A2.03 (10CFR 55.43.5) Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Instrument line leakage	3.1	17

ES-401		BWR Examination Outline Plant Systems – Tier 2/Group 2 (RO / 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	#
219000 RHR/LPCI: Torus/Pool Cooling Mode								1				A2.12 (10CFR 55.43.5) Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS / SUPPRESSION POOL COOLING MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ♦ Valve logic failure: Plant-Specific	3.1	18
223001 Primary CTMT and Aux.	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
226001 RHR/LPCI- CTMT Spray Mode	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
230000 RHR/LPCI: Torus/Pool Spray Mode	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
233000 Fuel Pool Cooling/Cleanup	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
234000 Fuel Handling Equipment	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
239001 Main and Reheat Steam	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
239003 MSIV Leakage Control	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
241000 Reactor/Turbine Pressure Regulator	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
245000 Main Turbine Gen. / Aux.	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
256000 Reactor Condensate	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
259001 Reactor Feedwater	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
268000 Radwaste	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
271000 Offgas	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		
272000 Radiation Monitoring	--	--	--	--	--	--	--	--	--	--	--	NOT RANDOMLY SELECTED		

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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	#
286000 Fire Protection	—	—	—	—	—	—	—	—	—	—	—	NOT RANDOMLY SELECTED	-----	-----
288000 Plant Ventilation	—	—	—	—	—	—	—	—	—	—	—	NOT RANDOMLY SELECTED	-----	-----
290001 Secondary CTMT	—	—	—	—	—	—	—	—	—	—	—	NOT RANDOMLY SELECTED	-----	-----
290003 Control Room HVAC	—	—	—	—	—	—	—	—	—	—	—	NOT RANDOMLY SELECTED	-----	-----
290002 Reactor Vessel Internals	—	—	—	—	—	—	—	—	—	—	—	NOT RANDOMLY SELECTED	-----	-----
K/A Category Point Totals: (RO)												Group Point Total: (RO)	N/A	
K/A Category Point Totals: (SRO)	<div style="display: flex; justify-content: space-between; width: 100%;"> 3 0 </div>											Group Point Total: (SRO)	3	

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Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.	G2.1.11 (10CFR 55.43.2) Knowledge of less than one hour technical specification action statements for systems.			3.8	19
	2.1.	G2.1.6 (10CFR 55.43.5) Ability to supervise and assume a management role during plant transients and upset conditions.			4.3	20
	2.4.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	2.4.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	2.4.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	2.4.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	Subtotal			N/A		2
2. Equipment Control	2.2.	G2.2.17 (10CFR 55.43.5) Knowledge of the process for managing maintenance activities during power operations.			3.5	21
	2.2.	G2.2.27 (10CFR 55.43.6) Knowledge of the refueling process.			3.5	22
	2.2.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	2.2.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	2.2.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	2.2.	NOT RANDOMLY SELECTED-----	-----	-----	-----	-----
	Subtotal			N/A		2

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Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
3. Radiation Control	2.3	G2.3.6 (10CFR 55.43.4) Knowledge of the requirements for reviewing and approving release permits.			3.1	23
	2-3	G2.3.2 DESELECTED -----	----	----	----	----
	2-3	NOT RANDOMLY SELECTED-----	----	----	----	----
	2-3	NOT RANDOMLY SELECTED-----	----	----	----	----
	2-3	NOT RANDOMLY SELECTED-----	----	----	----	----
	2-3	NOT RANDOMLY SELECTED-----	----	----	----	----
	Subtotal			N/A		1
4. Emergency Procedures / Plan	2.4	G2.4.08 (10CFR 55.43.5) Knowledge of how event-based emergency/abnormal operating procedures are used in conjunction with the symptom based EOPs.			3.7	24
	2.4.	G2.4.49 (10CFR 55.43.2) **Industry OE – JAF CA** Ability to perform without reference to procedure those actions that require immediate operation of system components and controls.			4.0	25
	2-4.	NOT RANDOMLY SELECTED-----	----	----	----	----
	2-4.	NOT RANDOMLY SELECTED-----	----	----	----	----
	2-4.	NOT RANDOMLY SELECTED-----	----	----	----	----
	2-4.	NOT RANDOMLY SELECTED-----	----	----	----	----
	Subtotal			N/A		2
Tier 3 Point Total				N/A		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	295026	Random Number Generator hit on a "7" for a second time on this draw. This would have resulted in two questions in Suppression Pool High Water Temperature.
1 / 2	295010 G	All three Tier 1 Group 2 randomly selected as "Generic". Randomly chose one to become an A2 versus G. Random Number Generator kicked out a "1" which corresponded to the first selection on the page.
1 / 1	295026	Rejected on overlap with 295024 and 295025 – all suppression pool related. Randomly sampled which one of three to revise. Randomly re-sampled category A2 /G, which again yielded A2. Due to limited A2 selections, rejected 295026 and randomly determined a new E/APE, which yielded 295004.
3	G2.3.5	No identified linkage to 10CFR 55.43, per BWR Exam Outline (Form ES-401-1) Note 9.
3	G2.3.7	No identified linkage to 10CFR 55.43, per BWR Exam Outline (Form ES-401-1) Note 9.
3	G2.1.2	No identified linkage to 10CFR 55.43, per BWR Exam Outline (Form ES-401-1) Note 9.
2 / 2	268000 A2.03	Rejected on K/A < 2.5 (2.3). No plant-specific priority.
1 / 1	295038 G2.2.12	No identified linkage to 10CFR 55.43. Rejected in accordance with ES-401, Attachment 2, K/A Elimination Guidance, Note 1.
3	G2.3.2	K&A not amendable to SRO only question.