

Facility: River Bend Station				Date of Exam: FEBRUARY, 2003				Exam Level: RO					
Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	One	3	3	1	0	0	0	4	2	0	0	0	13
	Two	3	4	2	0	0	0	4	4	0	0	2	19
	Three	1	1	0	0	0	0	0	2	0	0	0	4
	Tier Totals	7	8	3	0	0	0	8	8	0	0	2	36
2. Plant Systems	One	3	2	3	3	0	5	3	3	3	2	1	28
	Two	1	0	2	3	2	2	3	4	1	1	0	19
	Three	0	0	1	1	0	0	0	1	0	0	1	4
	Tier Totals	4	2	6	7	2	7	6	8	4	3	2	51
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		13	
				4		3		2		4			

Notes:

1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., 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 exam must total 100 points.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6. * The generic 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.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics’ importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above.

RIVER BEND STATION			BWR RO EXAMINATION OUTLINE								ES-401-2	
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS- TIER 1 GROUP 1									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295005 Main Turbine Generator Trip / 3 CFR 41.4		04					Interrelations between Main Turbine Generator Trip and MAIN GENERATOR PROTECTION	3.3	NEW	BOTH 66	789	
295006 SCRAM / 1 CFR 41.10/43.5					03		Determine/interpret REACTOR WATER LEVEL as it applies to SCRAM	4.0	NEW	BOTH 39	733	
295007 High Reactor Pressure / 3 CFR 41.1/41.10	03						Operational implications of High Reactor Pressure on REACTOR POWER	3.8	BANK	BOTH 32	599	
295007 High Reactor Pressure / 3 CFR 41.5/41.7/41.14		01 (1)					Interrelations between High Reactor Pressure and TURBINE PRESSURE REGULATING SYSTEM	3.7	BANK	BOTH 34	664	
295009 Low Reactor Water Level / 2 CFR 41.7				02			Operate/monitor REACTOR WATER LEVEL CONTROL as it applies to Low Reactor Water Level.	4.0	BANK	BOTH 27	553	
295010 High Drywell Pressure / 5 CFR 41.7				06			Operate/monitor LEAK DETECTION SYSTEM as it applies to High Drywell Pressure	3.3	MOD	BOTH 72	798	
295014 Inadvertent Reactivity Addition / 1 CFR 41.2/41.6				04			Operate/monitor RCIS as it applies to Inadvertent Reactivity Addition	3.3	BANK	BOTH 5	5	
295015 Incomplete SCRAM / 1 CFR 41.7		04					Interrelations between Incomplete Scram and REACTOR PROTECTION SYSTEM	4.0	MOD	BOTH 53	763	
295024 High Drywell Pressure / 5 CFR 41.9/41.10	01						Operational implications of DRYWELL INTEGRITY as it applies to High Drywell Pressure	4.1	BANK	BOTH 28	573	
295025 High Reactor Pressure / 3 CFR 41.5/43.1/43.2	05						Operational implications of High Reactor Pressure on EXCEEDING SAFETY LIMITS	4.4	NEW	BOTH 67	790	
PAGE 1 TOTAL TIER 1 GROUP 1	3	3	0	3	1	0	PAGE ONE TOTAL POINTS	10				

(1) Randomly selected AK2.01 to replace initial selection AA1.01, which is not part of RBS design.

RIVER BEND STATION			BWR RO EXAMINATION OUTLINE							ES-401-2		
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1, continued									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295031 Reactor Low Water Level / 2 CFR 41.10/43.5					04		Determine/interpret ADEQUATE CORE COOLING as it applies to Reactor Low Water Level	4.6	NEW	BOTH 11	19	
295037 SCRAM/Power >APRM Dnsc/Unkn / 1 CFR 41.1/41.10/41.14/43.5/43.6			03				Reasons for LOWERING REACTOR WATER LEVEL as it applies to ATWS	4.1	BANK	BOTH 4	4	
500000 High Containment Hydrogen Conc. / 5 CFR 41.7-41.10				03			Operate/monitor the HYDROGEN RECOMBINERS as applied to High Containment Hydrogen Conc.	3.4	MOD	BOTH 25	546	
PAGE 2 TIER 1 GROUP 1 TOTAL	0	0	1	1	1	0	PAGE TWO TOTAL POINTS	3				
PAGE 1 TIER 1 GROUP 1 TOTAL	3	3	0	3	1	0	PAGE ONE TOTAL POINTS	10				
K/A CATEGORY TOTALS	3	3	1	4	2	0	TIER ONE GROUP ONE TOTAL	13				

RIVER BEND STATION				BWR RO EXAMINATION OUTLINE								ES-401-2	
FEBRUARY 2003				EMERGENCY & ABNORMAL PLANT EVOLUTIONS- TIER 1 GROUP 2									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.		
295001 Loss of Forced Core Circulation / 1 & 4 CFR 41.3/41.5/41.6/41.14					04		Determine/interpret JET PUMP FLOWS as applied to Loss of Forced Core Flow Circulation	3.0	NEW	BOTH 41	738		
295002 Loss of Main Condenser Vacuum / 3 CFR 41.4/41.5/41.10/43.5					01 (1)		Determine/interpret CONDENSER VACUUM as it applies to Loss of Main Condenser Vacuum	2.9	MOD	RO 84	863		
295003 Loss of AC Power / 6 CFR 41.8-41.10	06						Operational implications of STATION BLACKOUT as it applies to Loss of AC Power	3.8	MOD	BOTH 38	732		
295004 Partial or Total Loss of DC Power / 6 CFR 41.7/41.8		03					Interrelations between DC BUS LOADS and Partial or Total Loss of DC Power	3.3	BANK	BOTH 24	539		
295008 High Reactor Water Level / 2 CFR 41.4/41.7				07			Operate/monitor the MAIN TURBINE as applied to High Reactor Water Level	3.4	MOD	BOTH 59	774		
295011 High Containment Temperature / 5 CFR 41.9/41.10/43.2	01 (2)					2.4. 4	Ability to recognize abnormal indications which are ENTRY-LEVEL conditions for EOPs and AOPs	4.0	MOD	BOTH 10	10		
295012 High Drywell Temperature / 5 CFR 41.9				02			Operate/monitor DRYWELL COOLING as applied to High Drywell Temperature	3.8	NEW	BOTH 57	769		
295013 High Suppression Pool Temp. / 5 CFR 41.5			02				Reasons for LIMITING HEAT ADDITION as applied to High Suppression Pool Temp	3.6	BANK	BOTH 19	373		
295016 Control Room Abandonment / 7 CFR 41.7				07			Operate/monitor CR/LOCAL CONTROL TRANSFER MECHANISMS for CR Abandonment	4.2	BANK	BOTH 17	251		
295017 High Offsite Release Rate / 9 CFR 41.10/41.12/43.4	02 (3)					2.3. 11	Ability to control RADIATION RELEASES	2.7	NEW	BOTH 71	797		
PAGE 1 TIER 1 GROUP 2 TOTAL	1	1	1	3	2	2	PAGE ONE TOTAL POINTS	10					

- (1) Randomly selected AA2.01 to replace initial selection AA2.03 with RO importance <2.5.
- (2) Substituted Generic 2.4.4 for randomly selected K1.01.
- (3) Substituted Generic 2.3.11 for randomly selected K1.02.

RIVER BEND STATION				BWR RO EXAMINATION OUTLINE								ES-401-2	
FEBRUARY 2003				EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2, continued									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.		
295018 Partial or Total Loss of CCW / 8 CFR 41.4/43.5					03		Determine/interpret the CAUSE FOR LOSS on a Partial or Total Loss of CCW	3.2	BANK	BOTH 26	550		
295019 Partial or Total Loss of Inst. Air / 8 CFR													
295020 Inadvertent Cont. Isolation / 5 & 7 CFR 41.9					06		Determine/interpret the CAUSE OF ISOLATION on an Inadvertent Containment Isolation	3.4	NEW	BOTH 43	742		
295022 Loss of CRD Pumps / 1 CFR 41.1/41.5/41.6/43.6			01				Reasons for REACTOR SCRAM as applied to Loss of CRD Pumps	3.7	NEW	BOTH 25	752		
295026 Suppression Pool High Water Temp. / 5 CFR													
295027 High Containment Temperature / 5 CFR 41.9/41.10/43.5				03			Operate/monitor EMERG. DEPRESSURIZATION as applied to High Containment Temperature	3.7	MOD	BOTH 49	758		
295028 High Drywell Temperature / 5 CFR 41.5/41.7/41.14		03					Interrelations between RPV LEVEL INDICATION and High Drywell Temperature	3.6	NEW	BOTH 52	761		
295029 High Suppression Pool Water Level / 5 CFR 41.9		06 (1)					Interrelations between SRVs AND DISCHARGE PIPING and High SP Water Level	3.4	MOD	RO 87	866		
295030 Low Suppression Pool Water Level / 5 CFR 41.9/41.10/41.14	03						Operational implications of HEAT CAPACITY as it applies to Low SP Water Level	3.8	BANK	BOTH 23	513		
295033 High Secondary Containment Area Radiation Levels / 9 CFR													
PAGE 2 TIER 1 GROUP 2 TOTAL	1	2	1	1	2	0	PAGE TWO TOTAL POINTS	7					

(1) Randomly selected EK2.06 to replace initial selection EK2.04 with RO importance <2.5.

RIVER BEND STATION			BWR RO EXAMINATION OUTLINE						ES-401-2			
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2, continued									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295034 Secondary Containment Ventilation High Radiation / 9 CFR 41.9/41.11/41.13/43.4	02						Operational implications of RADIATION RELEASES applied to Sec. CTMT Vent High Rad	4.1	BANK	BOTH 29	576	
295038 High Offsite Release Rate / 9 CFR 41.7/41.13/43.4		03					Interrelations between PLANT VENTILATION and High Offsite Release Rate	3.6	MOD	BOTH 75	806	
600000 Plant Fire On Site / 8 CFR												
PAGE 3 TIER 1 GROUP 2 TOTAL	1	1	0	0	0	0	PAGE THREE TOTAL POINTS	2				
PAGE 1 TIER 1 GROUP 2 TOTAL	1	1	1	3	2	2	PAGE ONE TOTAL POINTS	10				
PAGE 2 TIER 1 GROUP 2 TOTAL	1	2	1	1	2	0	PAGE TWO TOTAL POINTS	7				
K/A CATEGORY TOTALS	3	4	2	4	4	2	TIER ONE GROUP TWO TOTAL	19				

RIVER BEND STATION FEBURARY 2003							BWR RO EXAMINATION OUTLINE EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 3				
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.
295021 Loss of Shutdown Cooling / 4 CFR 41.2/41.3/41.8/41.14	04						Operational implications of NATURAL CIRC as applied to Loss Of Shutdown Cooling	3.6	MOD	BOTH 73	800
295023 Refueling Accidents Cooling Mode / 8 CFR 41.10/41.12/43.4/43.5/43.7		02					Interrelations between FUEL POOL COOLING AND CLEANUP and Refueling Accidents	2.9	NEW	BOTH 40	734
295032 High Sec. CTMT Area Temperature / 5 CFR 41.9					03		Determine/interpret the CAUSE OF HIGH TEMP as applied to High Sec. CTMT Area Temperature	3.8	BANK	BOTH 35	669
295035 Secondary Containment High Differential Pressure / 5 CFR											
295036 Sec. CTMT High Sump/Area Water Level / 5 CFR 41.10/43.5					01		Determine COMPONENT OPERABILITY as applied to Sec CTMT High Sump/Area Water Level	3.0	BANK	RO 78	857
K/A CATEGORY TOTALS:	1	1	0	0	2	0	TIER ONE GROUP THREE TOTAL	4			

RIVER BEND STATION							BWR RO EXAMINATION OUTLINE							ES-401-2			
FEBRUARY 2003							PLANT SYSTEMS - TIER 2 GROUP 1										
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
201001 CRD Hydraulic CFR 41.6/41.7		04										Power supplies to SDV VENT & DRAIN VALVE SOLENOIDS	3.2	NEW	BOTH 7	7	
201005 RCIS CFR 41.6			02									Effect of loss or malfunction of RCIS on REACTOR STARTUP	3.5	MOD	BOTH 44	743	
202002 Recirculation Flow Control CFR 41.7						04						Effect of a loss or malfunction of FW FLOW INPUTS on Recirc Flow Cont.	3.5	BANK	BOTH 9	9	
202002 Recirculation Flow Control CFR 41.6									01			Monitor automatic operations of Recirc FLOW CONTROL VALVE	3.6	NEW	RO 83	862	
203000 RHR/LPCI Mode CFR 41.7				06								Design features/ interlocks that provide ADEQUATE PUMP NPSH	3.5	BANK	BOTH 13	140	
209001 LPCS CFR 41.5/41.8								05				Predict impact of CORE SPRAY LINE BREAK on LPCS	3.3	BANK	BOTH 3	3	
209002 HPCS CFR 41.7		02										Power supplies to HPCS ELECTRICAL VALVES	2.8	MOD	BOTH 54	765	
211000 SLC CFR 41.6/41.7									03			Monitor automatic operations of SLC EXPLOSIVE VALVES	3.8	NEW	BOTH 51	760	
212000 RPS CFR 41.7						02						Effect of loss of NUCLEAR INSTRUMENTATION on RPS	3.7	NEW	BOTH 60	776	
215003 IRM CFR 41.2/41.7/41.6			03									Effect of loss or malfunction of IRMs on RCIS	3.7	BANK	BOTH 1	1	
PAGE 1 TIER 2 GROUP 1 TOTAL	0	2	2	1	0	2	0	1	2	0	0	PAGE ONE TOTAL POINTS	10				

RIVER BEND STATION				BWR RO EXAMINATION OUTLINE										ES-401-2			
FEBRUARY 2003				PLANT SYSTEMS - TIER 2 GROUP 1, continued													
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
215003 IRM CFR 41.7										06		Operate/monitor IRM DETECTOR DRIVES	3.0	NEW	RO 81	860	
215004 Source Range Monitor CFR 41.2/41.5								03				Predict impact of a STUCK SRM DETECTOR	3.0	NEW	BOTH 61	777	
215005 APRM / LPRM CFR 41.2/41.5							07					Predict/monitor changes in AGAF on APRMs	3.0	NEW	BOTH 48	756	
216000 Boiler Instrumentation CFR 41.7						01						Effect that a loss or malfunction of AC POWER will have on NBI	3.1	NEW	RO 79	858	
216000 Boiler Instrumentation CFR 41.2/41.5/41.14/43.5									01(1)		2.1.32	Ability to explain and apply system LIMITS AND PRECAUTIONS	3.4	MOD	BOTH 45	745	
217000 RCIC CFR 41.5/41.7/41.8							06					Predict/monitor changes in CST LEVEL when operating RCIC	3.2	MOD	BOTH 58	771	
218000 ADS CFR 41.4/41.5/41.7							03					Predict/monitor changes in SUPPLY AIR PRESS when operating ADS	3.2	NEW	RO 88	867	
218000 ADS CFR 41.7/41.8				03								Design features/interlocks for ADS LOGIC CONTROL	3.8	BANK	BOTH 14	176	
223001 Primary Cntmt / Auxiliaries CFR 41.5/41.9								09				Predict impact of VACUUM BREAKER MALFUNCTION	3.4	BANK	BOTH 8	8	
223002 PCIS / NSSSS CFR 41.7									01			Monitor automatic operation of NSSSS LIGHTS AND ALARMS	3.4	NEW	RO 94	873	
PAGE 2 TIER 2 GROUP 1 TOTAL	0	0	0	1	0	1	3	2	1	1	1	PAGE TWO TOTAL POINTS	10				

(1) Substituted Generic 2.1.32 for randomly selected A3.01.

RIVER BEND STATION						BWR RO EXAMINATION OUTLINE										ES-401-2			
FEBRUARY 2003						PLANT SYSTEMS - TIER 2 GROUP 1, continued													
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.			
223002 PCIS / NSSSS CFR 41.7/41.9						08 (1)						Effect loss or malfunction of RPS will have on PCIS / NSSSS	3.5	NEW	BOTH 46	746			
239002 SRVs CFR 41.2/41.3/41.14	03											Cause and effect relationship between SRVs and BOILER INSTR.	3.5	NEW	BOTH 2	2			
241000 Turbine Press. Regulator CFR 41.7			08 (2)									Effect loss or malfunction of EHC will have on CONTROL VALVES	3.7	NEW	BOTH 55	766			
259001 Reactor Feedwater CFR 41.4										02		Operate/monitor Reactor Feedwater to MANUALLY START AN RFP	3.9	NEW	BOTH 56	767			
259002 Rtr Water Level Control CFR 41.7						05						Effect of a loss or malfunction of RPV WATER LEVEL INPUT	3.5	MOD	BOTH 74	805			
261000 SGTS CFR 41.7/41.9/41.11	08 (3)											Cause and effect relationship between SGTS and PROCESS RAD	2.8	BANK	BOTH 31	591			
264000 EDGs CFR 41.7				07 (4)								Design features/ interlocks for LOCAL OPERATION/CONTROL	3.6	NEW	RO 84	876			
264000 EDGs CFR 41.7	07											Cause and effect relationship between EDG and ECCS	3.9	NEW	BOTH 69	792			
PAGE 3 TIER 2 GROUP 1 TOTAL	3	0	1	1	0	2	0	0	0	1	0	PAGE THREE TOTAL POINTS	8						
PAGE 1 TIER 2 GROUP 1 TOTAL	0	2	2	1	0	2	0	1	2	0	0	PAGE ONE TOTAL POINTS	10						
PAGE 2 TIER 2 GROUP 1 TOTAL	0	0	0	1	0	1	3	2	1	1	1	PAGE TWO TOTAL POINTS	10						
K/A CATEGORY TOTALS	3	2	3	3	0	5	3	3	3	2	1	TIER TWO GROUP ONE TOTAL	28						

- (1) Randomly selected K6.08 to replace random selection K2.01 with RO importance <2.5.
(2) Substituted K3.08 pertaining to RBS LER 2001-01 to replace initial random selection K1.37 with RO/SRO importance <2.5 and not applicable to RBS turbine design.
(3) Randomly selected K1.08 to replace initial selection K5 with RO importance <2.5.
(4) Randomly selected K4.07 to replace initial selection A2.05 covered in CR Systems and Facility Walkthrough RO JPM no. 5.

RIVER BEND STATION				BWR RO EXAMINATION OUTLINE										ES-401-2			
FEBRUARY 2003				PLANT SYSTEMS - TIER 2 GROUP 2													
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
201003 Control Rod / Drive Mech. CFR 41.2/41.5/41.6								03				Predict impact of DRIFTING ROD and correct, control or mitigate	3.4	BANK	BOTH 12	49	
202001 Recirculation CFR 41.7				13								Design features/interlocks for EOC RPT	3.7	NEW	BOTH 42	739	
202001 Recirculation CFR 41.6						05						Effect loss or malfunction of CRDH will have on the Recirculation System	2.7	NEW	RO 96	875	
204000 RWCU CFR 41.4										03 (1)		Manually operate/monitor RWCU DRAIN FLOW CONTROLLER	3.2	NEW	BOTH 64	786	
205000 Shutdown Cooling CFR 41.7/41.14			01									Effect loss or malfunction of SDC will have on REACTOR PRESSURE	3.3	MOD	BOTH 50	759	
219000 RHR/Supp Pool Clg Mode CFR 41.5/41.10								14				Predict impact of LOCA and correct, control or mitigate	4.1	MOD	RO 82	861	
239001 Main and Reheat Steam CFR 41.4/41.5					06 (2)							Operational implications of MSIVs applicable to Main and Reheat Steam	2.8	BANK	BOTH 6	6	
245000 Turbine Gen. and Aux. CFR 41.4/41.5/41.7							04					Predict/monitor changes in STEAM FLOW when operating Main Turbine	2.7	NEW	RO 89	868	
256000 Reactor Condensate CFR 41.4/41.7			06									Effect loss or malfunction of Reactor Condensate will have on RCIC	3.2	NEW	RO 92	871	
262001 AC Distribution CFR 41.4/41.10/43.3								02				Predict impact of LOCA and correct, control or mitigate	3.6	BANK	BOTH 18	261	
PAGE 1 TIER 2 GROUP 2 TOTAL	0	0	2	1	1	1	1	3	0	1	0	PAGE ONE TOTAL POINTS	10				

- (1) Randomly selected A4.03 to replace initial selection K2.02 due to all RWCU K2 KAs having RO/SRO importance <2.5.
(2) Randomly selected K5.06 to replace initial selection K5.04 with RO/SRO importance <2.5.

RIVER BEND STATION							BWR RO EXAMINATION OUTLINE							ES-401-2			
FEBRUARY 2003							PLANT SYSTEMS - TIER 2 GROUP 2, continued										
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
262002 UPS (AC/DC) CFR 41.4/41.11	18 (1)											Cause and effect relationship between UPS and PROCESS RAD.	2.5	NEW	RO 80	859	
263000 DC Electrical Distribution CFR 41.4/41.5							01					Predict/monitor changes in BATTERY CHARGING/DISCHG	2.5	NEW	BOTH 65	788	
271000 Offgas CFR 41.4				04								Design features/interlocks to prevent HYDROGEN EXPLOSIONS/FIRES	3.3	BANK	RO 93	872	
272000 Radiation Monitoring CFR 41.7/41.11						01						Effect that a loss or malfunction of RPS will have on Rad Monitoring	3.0	BANK	RO 86	865	
286000 Fire Protection CFR 41.4					05							Operational implications of DIESEL OPERATION applied to Fire Prot.	3.0	NEW	BOTH 62	780	
290001 Secondary CTMT CFR 41.5/41.9							02					Predict/monitor changes in AREA TEMPS operating Secondary CTMT	3.6	NEW	BOTH 68	791	
290003 Control Room HVAC CFR 41.5								03				Predict impact of RECONFIG. FAILURE and correct, control	3.4	NEW	RO 85	864	
300000 Instrument Air CFR 41.4/41.7				02								Design features/interlocks for CROSS-OVER TO OTHER AIR SYS	3.0	BANK	BOTH 36	703	
400000 Component Cooling Water CFR 41.4									01			Monitor automatic operation of CCW including SETPOINTS	3.0	NEW	BOTH 63	781	
PAGE 2 TIER 2 GROUP 2 TOTAL	1	0	0	2	1	1	2	1	1	0	0	PAGE TWO TOTAL POINTS	9				
PAGE 1 TIER 2 GROUP 2 TOTAL	0	0	2	1	1	1	1	3	0	1	0	PAGE ONE TOTAL POINTS	10				
K/A CATEGORY TOTALS:	1	0	2	3	2	2	3	4	1	1	0	TIER TWO GROUP TWO TOTAL	19				

(1) Randomly selected K1.18 to replace initial selection K2 that had no KA statements.

RIVER BEND STATION							BWR RO EXAMINATION OUTLINE							ES-401-2			
FEBRUARY 2003							PLANT SYSTEMS - TIER 2 GROUP 3										
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
215001 Traversing In-core Probe CFR																	
233000 Fuel Pool Clg and Cleanup CFR 41.5/41.10/43.7					06 (1)						2.1. 25	Ability to obtain/interpret ref. matls which contain performance data.	2.8	BANK	BOTH 30	582	
234000 Fuel Handling Equipment CFR																	
239003 MSIV Leakage Control CFR 41.7/41.9				06								Design features/interlocks for DEPRESSRIZATION OF MSLs	3.1	BANK	BOTH 15	190	
268000 Radwaste CFR 41.5			04									Effect loss or malfunction of Radwaste will have on DR SUMPS	2.7	NEW	RO 90	869	
288000 Plant Ventilation CFR 41.5								02				Predict impact of LOW REACTOR WATER LEVEL	3.4	NEW	RO 95	874	
280002 Reactor Vessel Internals CFR																	
K/A CATEGORY TOTALS:	0	0	1	1	0	0	0	1	0	0	1	TIER TWO GROUP THREE TOT.	4				

(1) Substituted Generic 2.1.25 for randomly selected K5.06.

RIVER BEND STATION FEBURARY 2003					BWR RO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES - TIER 3					ES-401-5
GENERIC CATEGORY CFR REFERENCE	C1 K/A	C2 K/A	C3 K/A	C4 K/A	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
2.1 CONDUCT OF OPERATIONS CFR 41.7/43.5	2				Knowledge of operator responsibilities during all modes of plant operation.	3.0	BANK	BOTH 21	411	
2.1 CONDUCT OF OPERATIONS CFR 41.10	21 (1)				Ability to obtain and verify controlled procedure copy .	3.1	NEW	RO 100	879	
2.1 CONDUCT OF OPERATIONS CFR 41.5	22 (2)				Ability to determine Mode of Operation .	2.8	MOD	RO 91	870	
2.1 CONDUCT OF OPERATIONS CFR 41.10	23				Ability to perform system and integrated plant procedures during different modes of plant operation.	3.9	BANK	RO 98	877	
2.2 EQUIPMENT CONTROL CFR 41.10		12			Knowledge of surveillance procedures .	3.0	MOD	RO 99	878	
2.2 EQUIPMENT CONTROL CFR 41.10/43.5		13 (3)			Knowledge of tagging and clearance procedures .	3.6	BANK	BOTH 22	432	
2.2 EQUIPMENT CONTROL CFR 41.8		24 (4)			Ability to analyze the affect of maintenance activities on LCO status .	2.6	BANK	RO 76	855	
2.3 RADIATION CONTROL CFR 41.10/41.12/43.4			1		Knowledge of 10CFR20 and related facility radiation control procedures .	2.6	BANK	BOTH 71	411	
2.3 RADIATION CONTROL CFR 41.10/41.12/43.4			10		Ability to perform procedures to reduce excessive levels of radiation and personnel exposure.	2.9	BANK	BOTH 20	389	
PAGE 1 TIER 3 TOTAL	4	3	2	0	PAGE ONE TOTAL POINTS	9				

- (1) Randomly selected 2.1.21 to replace random selection 2.1.5 with RO importance <2.5.
- (2) Randomly selected 2.1.22 to replace random selection 2.1.34 with RO importance <2.5.
- (3) Randomly selected 2.2.13 to replace random selection 2.2.8 with RO importance <2.5.
- (4) Randomly selected 2.2.24 to replace random selection 2.2.19 with RO importance <2.5.

RIVER BEND STATION FEBURARY 2003					BWR RO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES - TIER 3					ES-401-5
GENERIC CATEGORY CFR REFERENCE	C1 K/A	C2 K/A	C3 K/A	C4 K/A	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/43.5				6	Knowledge symptom based EOP mitigation strategies.	3.1	BANK	BOTH 16	211	
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/43.5				14	Knowledge of general guidelines for EOP flowchart use.	3.0	MOD	BOTH 47	750	
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/41.5				21	Knowledge of the parameters and logic used to assess the status of safety functions	3.7	BANK	RO 77	856	
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.4/41.10/43.1				43	Knowledge of emergency communications systems and techniques.	2.8	NEW	BOTH 70	793	
PAGE 2 TOTAL TIER 3	0	0	0	4	PAGE TWO TOTAL POINTS	4				
PAGE 1 TOTAL TIER 3	4	3	2	0	PAGE ONE TOTAL POINTS	9				
K/A CATEGORY TOTALS:	4	3	2	4	TIER THREE TOTAL	13	13			

(1) Randomly selected 2.4.43 to replace random selection 2.4.38 with RO importance <2.5.

Facility: River Bend Station				Date of Exam: FEBRUARY, 2003				Exam Level: SRO					
Tier	Group	K/A Category Points											Point Total
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	
1. Emergency & Abnormal Plant Evolutions	One	6	4	5	0	0	0	6	3	0	0	2	26
	Two	2	4	2	0	0	0	3	5	0	0	1	17
	Tier Totals	8	8	7	0	0	0	9	8	0	0	3	43
2. Plant Systems	One	3	1	2	2	0	5	3	4	1	0	2	23
	Two	0	1	3	3	2	0	1	0	1	2	0	13
	Three	0	0	0	1	1	0	0	1	0	0	1	4
	Tier Totals	3	2	5	6	3	5	4	5	2	2	3	40
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		17	
				5		4		2		6			
Notes: <ol style="list-style-type: none"> 1. Ensure that at least two topics from every K/A category are sampled within each tier (i.e., 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 an tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final exam must total 100 points. 3. Select topics from many systems; avoid selecting more that two or three K/A topics from a given system unless they relate to plant-specific priorities. 4. Systems/evolutions with in each group are identified on the associated outline. 5. The shaded areas are not applicable to the category/tier. 6. * The generic 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. 7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics’ importance ratings for the SRO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorities. Enter the tier totals for each category in the table above. 													

RIVER BEND STATION			BWR SRO EXAMINATION OUTLINE							ES-401-1		
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS- TIER 1 GROUP 1									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295003 Loss of AC Power / 6 CFR 41.8-41.10	06						Operational implications of STATION BLACKOUT as it applies to Loss of AC Power	4.0	MOD	BOTH 38	732	
295006 SCRAM / 1 CFR 41.8-41.10/43.2	02						Operational implications of SHUTDOWN MARGIN as it applies to SCRAM	3.7	BANK	SRO 96	850	
295006 SCRAM / 1 CFR 41.10/43.5					03		Determine/interpret REACTOR WATER LEVEL as it applies to SCRAM	4.2	NEW	BOTH 39	733	
295007 High Reactor Pressure / 3 CFR 41.1/41.10	03						Operational implications of High Reactor Pressure on REACTOR POWER	3.9	BANK	BOTH 32	599	
295007 High Reactor Pressure / 3 CFR 41.7/41.14		01 (1)					Interrelations between High Reactor Pressure and TURBINE PRESSURE REGULATING SYSTEM	3.7	BANK	BOTH 34	664	
295009 Low Reactor Water Level / 2 CFR 41.7				02			Operate/monitor REACTOR WATER LEVEL CONTROL as it applies to Low Reactor Water Level.	4.0	BANK	BOTH 27	553	
295010 High Drywell Pressure / 5 CFR 41.7				06			Operate/monitor LEAK DETECTION SYSTEM as it applies to High Drywell Pressure	3.5	MOD	BOTH 72	798	
295013 High Suppression Pool Temp. / 5 CFR 41.9/41.10			02				Reasons for LIMITING HEAT ADDITION as applied to High Suppression Pool Temp	3.8	BANK	BOTH 19	373	
295014 Inadvertent Reactivity Addition / 1 CFR 41.2/41.6				04			Operate/monitor RCIS as it applies to Inadvertent Reactivity Addition	3.3	BANK	BOTH 5	5	
295015 Incomplete SCRAM / 1 CFR 41.1/41.2/41.6/43.6		04					Interrelations between Incomplete Scram and REACTOR PROTECTION SYSTEM	4.1	MOD	BOTH 53	763	
PAGE 1 TIER 1 GROUP 1 TOTAL	3	2	1	3	1	0	PAGE ONE TOTAL POINTS	10				

(1) Randomly selected AK2.01 to replace initial selection AA1.01, which is not part of RBS design.

RIVER BEND STATION				BWR SRO EXAMINATION OUTLINE								ES-401-1	
FEBRUARY 2003				EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1, continued									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.		
295016 Control Room Abandonment / 7 CFR 41.7				07			Operate/monitor CR/LOCAL CONTROL TRANSFER MECHANISMS for CR Abandonment	4.3	BANK	BOTH 17	251		
295017 High Offsite Release Rate / 9 CFR 41.10/41.12/43.4	02 (1)					2.3. 11	Ability to control RADIATION RELEASES	3.2	NEW	BOTH 71	797		
295023 Refueling Accidents Cooling Mode / 8 CFR 41.10/41.12/43.4/43.5/43.7		02					Interrelations between FUEL POOL COOLING AND CLEANUP and Refuel Accidents	3.2	NEW	BOTH 40	734		
295023 Refueling Accidents Cooling Mode / 8 CFR 41.11/41.12/43.5/43.7					05		Determine/interpret E-PLAN ENTRY CONDITIONS as applied to Refueling Accidents	4.6	BANK	SRO 86	840		
295024 High Drywell Pressure / 5 CFR 41.9/41.10	01						Operational implications of DRYWELL INTEGRITY as it applies to High Drywell Pressure	4.2	BANK	BOTH 28	573		
295025 High Reactor Pressure / 3 CFR 41.5/43.1/43.2	05						Operational implications of High Reactor Pressure on EXCEEDING SAFETY LIMITS	4.7	NEW	BOTH 67	790		
295026 Suppression Pool High Water Temp. / 5 CFR 41.6/41.9/41.10/43.5			04				Reasons for SBLC INJECTION as it applies to Suppression Pool High Water Temp.	4.1	MOD	SRO 94	848		
295027 High Containment Temperature / 5 CFR 41.9/41.10/43.5				03			Operate/monitor EMERG. DEPRESSURIZATION as applied to High Containment Temperature	3.8	MOD	BOTH 49	758		
295030 Low Suppression Pool Water Level / 5 CFR 41.9/41.10/41.14	03						Operational implications of HEAT CAPACITY as it applies to Low SP Water Level	4.1	BANK	BOTH 23	513		
295031 Reactor Low Water Level / 2 CFR 41.2/41.14/43.2			02				Reasons for CORE COVERAGE as it applies to Reactor Low Water Level	4.7	BANK	SRO 88	842		
PAGE 2 TIER 1 GROUP 1 TOTAL	3	1	2	2	1	1	PAGE TWO TOTAL POINTS	10					

(1) Substituted Generic 2.3.11 for randomly selected K1.02.

RIVER BEND STATION			BWR SRO EXAMINATION OUTLINE							ES-401-1		
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1, continued									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295031 Reactor Low Water Level / 2 CFR 41.10/43.5					04		Determine/interpret ADEQUATE CORE COOLING as it applies to Reactor Low Water Level	4.8	NEW	BOTH 11	19	
295037 SCRAM/Power >APRM Dnsc/Unkn / 1 CFR 41.1/41.10/41.14/43.5/43.6			03				Reasons for LOWERING REACTOR WATER LEVEL as it applies to ATWS	4.5	BANK	BOTH 4	4	
295037 SCRAM/Power >APRM Dnsc/Unkn / 1 CFR 41.1/41.2/41.6/43.5/43.6	02 (1)					2.4. 22	Bases for prioritizing safety functions during ABNORMAL/EMERGENCY OPERATIONS	4.0	NEW	SRO 84	838	
295038 High Offsite Release Rate / 9 CFR 41.7/41.13/43.4		03					Interrelations between PLANT VENTILATION and High Offsite Release Rate	3.8	MOD	BOTH 75	806	
295038 High Offsite Release Rate / 9 CFR 41.10/41.13/43.4/43.5			04				Reasons for EMERGENCY DEPRESSRIZATION as it applies to High Offsite Release Rate	3.9	NEW	SRO 77	831	
500000 High Containment Hydrogen Conc. / 5 CFR 41.7-41.10				03			Operate/monitor HYDROGEN RECOMBINERS for High Containment Hydrogen Conc.	3.2	MOD	BOTH 25	546	
PAGE 3 TIER 1 GROUP 1 TOTAL	0	1	2	1	1	1	PAGE THREE TOTAL POINTS	6				
PAGE 1 TIER 1 GROUP 1 TOTAL	3	2	1	3	1	0	PAGE ONE TOTAL POINTS	10				
PAGE 2 TIER 1 GROUP 1 TOTAL	3	1	2	2	1	1	PAGE TWO TOTAL POINTS	10				
K/A CATEGORY TOTALS	6	4	5	6	3	2	TIER ONE GROUP ONE TOTAL	26				

(1) Substituted Generic 2.4.22 for randomly selected K1.02.

RIVER BEND STATION			BWR SRO EXAMINATION OUTLINE								ES-401-1	
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS- TIER 1 GROUP 2									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295001 Loss of Forced Core Circulation / 1 & 4 CFR 41.3/41.5/41.6/41.14					04		Determine/interpret JET PUMP FLOWS as applied to Loss of Forced Core Flow Circulation	3.1	NEW	BOTH 41	738	
295002 Loss of Main Condenser Vacuum / 3 CFR												
295004 Partial or Total Loss of DC Power / 6 CFR 41.7/41.8		03					Interrelations between DC BUS LOADS and Partial or Total Loss of DC Power	3.3	BANK	BOTH 24	539	
295005 Main Turbine Generator Trip / 3 CFR 41.4		04					Interrelations between Main Turbine Generator Trip and MAIN GENERATOR PROTECTION	3.3	NEW	BOTH 66	789	
295008 High Reactor Water Level / 2 CFR 41.4/41.7				07			Operate/monitor the MAIN TURBINE as applied to High Reactor Water Level	3.4	MOD	BOTH 59	774	
295011 High Containment Temperature / 5 CFR 41.9/41.10/43.2	01 (1)					2.4. 4	Ability to recognize abnormal indications which are ENTRY-LEVEL conditions for EOPs and AOPs	4.3	MOD	BOTH 10	10	
295012 High Drywell Temperature / 5 CFR 41.9				02			Operate/monitor DRYWELL COOLING as applied to High Drywell Temperature	3.8	NEW	BOTH 57	769	
295018 Partial or Total Loss of CCW / 8 CFR 41.4/43.5					03		Determine/interpret the CAUSE FOR LOSS on a Partial or Total Loss of CCW	3.5	BANK	BOTH 26	550	
295019 Partial or Total Loss of Inst. Air / 8 CFR 41.741.10/43.5			01				Reasons for BACKUP AIR SYSTEM SUPPLY as applied to a Loss of Instrument Air	3.4	NEW	SRO 97	851	
295020 Inadvertent CTMT Isolation / 5 & 7 CFR 41.9					06		Determine/interpret the CAUSE OF ISOLATION on an Inadvertent Containment Isolation	3.8	NEW	BOTH 43	742	
295021 Loss of Shutdown Cooling / 4 CFR 41.2/41.3/41.8/41.14	04						Operational implications of NATURAL CIRC as applied to Loss Of Shutdown Cooling	3.7	MOD	BOTH 73	800	
PAGE 1 TIER 1 GROUP 2 TOTAL	1	2	1	2	3	1	PAGE ONE TOTAL POINTS	10				

(1) Substituted Generic 2.4.4 for randomly selected K1.01.

RIVER BEND STATION			BWR SRO EXAMINATION OUTLINE							ES-401-1		
FEBRUARY 2003			EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2, continued									
E/APE#/NAME/SAFETY FUNCTION CFR REFERENCES	K1	K2	K3	A1	A2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
295022 Loss of CRD Pumps / 1 CFR 41.1/41.5/41.6/43.6			01				Reasons for REACTOR SCRAM as applied to Loss of CRD Pumps	3.9	NEW	BOTH 25	752	
295028 High Drywell Temperature / 5 CFR 41.5/41.7/41.14		03					Interrelations between RPV LEVEL INDICATION and High Drywell Temperature	3.8	NEW	BOTH 52	761	
295029 High Suppression Pool Water Level / 5 CFR												
295032 High Sec. CTMT Area Temperature / 5 CFR 41.9					03		Determine/interpret the CAUSE OF HIGH TEMP as applied to High Sec. CTMT Area Temperature	4.0	BANK	BOTH 35	669	
295033 High Secondary Containment Area Radiation Levels / 9 CFR 41.9/41.11/41.13/43.4				04			Operate/monitor STANDBY GAS TREATMENT as applied to High Sec. CTMT Area Rad. Levels	4.2	NEW	SRO 83	837	
295034 Secondary Containment Ventilation High Radiation / 9 CFR 41.9/41.11/41.13/43.4	02						Operational implications of RAD RELEASES as it applies to Sec. CTMT Vent. High Rad	4.4	BANK	BOTH 29	576	
295035 Secondary Containment High Differential Pressure / 5 CFR 41.9/43.4		03					Interrelations between Sec. CTMT High Diff. Pressure and OFF-SITE RELEASE	4.1	BANK	SRO 93	847	
295036 Secondary Containment High Sump/Area Water Level / 5 CFR												
600000 Plant Fire On Site / 8 CFR 41.4/41.10/43.3					15		Determine/interpret requirements for establishing a fire watch.	3.5	BANK	SRO 95	849	
PAGE 2 TIER 1 GROUP 2 TOTAL	1	2	1	1	2	0	PAGE TWO TOTAL POINTS	7				
PAGE 1 TIER 1 GROUP 2 TOTAL	1	2	1	2	3	1	PAGE ONE TOTAL POINTS	10				
K/A CATEGORY TOTALS	2	4	2	3	5	1	TIER ONE GROUP TWO TOTAL	17				

RIVER BEND STATION FEBRUARY 2003				BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 1								ES-401-1				
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.
201005 RCIS CFR 41.6			02									Effect of loss or malfunction of RCIS on REACTOR STARTUP	3.5	MOD	BOTH 44	743
201005 RCIS CFR 41.5/41.6/41.7/43.2/43.6						01						Effect of a loss or malfunction of OPEN BYPASS VALVES on RCIS	3.2	NEW	SRO 99	853
202002 Recirculation Flow Control CFR 41.6						04						Effect of a loss or malfunction of FW FLOW INPUTS on Recirc Flow Cont.	3.5	BANK	BOTH 9	9
203000 RHR/LPCI Mode CFR 41.7/41.14				06								Design features/ interlocks that provide ADEQUATE PUMP NPSH	3.5	BANK	BOTH 13	140
209001 LPCS CFR 41.5/41.8								05				Predict impact of CORE SPRAY LINE BREAK on LPCS	3.6	BANK	BOTH 3	3
209001 LPCS CFR 41.5/41.7/41.8/43.2								07 (1)			2.2. 24	Ability to analyze the affect of maintenance on LCO STATUS	3.8	NEW	SRO 85	839
209002 HPCS CFR 41.7		02										Power supplies to HPCS ELECTRICAL VALVES	2.9	MOD	BOTH 54	765
211000 SLC CFR 41.6/41.7									03			Monitor automatic operations of SLC EXPLOSIVE VALVES	3.8	NEW	BOTH 51	760
212000 RPS CFR 41.2/41.7						02						Effect of a loss of NUCLEAR INSTRUMENTATION on RPS	3.9	NEW	BOTH 60	776
215004 Source Range Monitor CFR 41.2/41.5								03				Predict impact of a STUCK SRM DETECTOR	3.3	NEW	BOTH 61	777
PAGE 1 TIER 2 GROUP 1 TOTAL	0	1	1	1	0	3	0	2	1	0	1	PAGE ONE TOTAL POINTS	10			

(1) Substituted Generic 2.2.24 for randomly selected A2.07.

RIVER BEND STATION							BWR SRO EXAMINATION OUTLINE							ES-401-1			
FEBRUARY 2003							PLANT SYSTEMS - TIER 2 GROUP 1, continued										
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
215005 APRM / LPRM CFR 41.2/41.5							07					Predict/monitor changes in AGAF on APRMs	3.4	NEW	BOTH 48	756	
216000 Boiler Instrumentation CFR 41.2/41.5/41.14/43.5									01 (1)		2.1. 32	Ability to explain and apply system LIMITS AND PRECAUTIONS	3.8	MOD	BOTH 45	745	
217000 RCIC CFR 41.5/41.7/41.8							06					Predict/monitor changes in CST LEVEL with operating RCIC	3.3	MOD	BOTH 58	771	
218000 ADS CFR 41.7/41.8				03								Design features/interlocks for ADS LOGIC CONTROL	4.0	BANK	BOTH 14	176	
223001 Primary Cntmt / Auxiliaries CFR 41.5/41.9								09				Predict impact of VACUUM BREAKER MALFUNCTION	3.6	BANK	BOTH 8	8	
223002 PCIS / NSSSS CFR 41.7/41.9						08						Effect loss or malfunction of RPS will have on PCIS / NSSSS	3.7	NEW	BOTH 46	746	
239002 SRVs CFR 41.2/41.3/41.14	03											Cause and effect relationship between SRVs and BOILER INSTR.	3.6	NEW	BOTH 2	2	
241000 Turbine Press. Regulator CFR 41.7			08 (2)									Effect loss or malfunction of EHC will have on CONTROL VALVES	3.7	NEW	BOTH 55	766	
259002 Rtr Water Level Control CFR 41.7						05						Effect of a loss or malfunction of RPV WATER LEVEL INPUT	3.5	MOD	BOTH 74	805	
261000 SGTS CFR 41.7/41.9/41.11	08 (3)											Cause and effect relationship between SGTS and PROCESS RAD	3.1	BANK	BOTH 31	591	
PAGE 2 TIER 2 GROUP 1 TOTAL	2	0	1	1	0	2	2	1	0	0	1	PAGE TWO TOTAL POINTS	10				

(1) Substituted Generic 2.1.32 for randomly selected A3.01.

(2) Substituted K3.02 pertaining to RBS LER 2001-01 to replace initial random selection K1.37 with RO/SRO importance <2.5 and not applicable to RBS turbine design.

(3) Randomly selected K1.08 to replace initial selection K5 with RO importance <2.5.

RIVER BEND STATION							BWR SRO EXAMINATION OUTLINE							ES-401-1			
FEBRUARY 2003							PLANT SYSTEMS - TIER 2 GROUP 1, continued										
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
262001 AC Distribution CFR 41.4/41.10/43.3								02				Predict impact of LOCA and correct, control or mitigate	3.9	BANK	BOTH 18	261	
264000 EDGs CFR 41.7	07											Cause and effect relationship between EDG and ECCS	4.1	NEW	BOTH 69	792	
290001 Secondary CTMT CFR 41.5/41.9							02					Predict/monitor changes in AREA TEMPS operating Secondary CTMT	3.6	NEW	BOTH 68	791	
PAGE 3 TIER 2 GROUP 1 TOTAL	1	0	0	0	0	0	1	1	0	0	0	PAGE THREE TOTAL POINTS	3				
PAGE 1 TIER 2 GROUP 1 TOTAL	0	1	1	1	0	3	0	2	1	0	1	PAGE ONE TOTAL POINTS	10				
PAGE 2 TIER 2 GROUP 1 TOTAL	2	0	1	1	0	2	2	1	0	0	1	PAGE TWO TOTAL POINTS	10				
K/A CATEGORY TOTALS	3	1	2	2	0	5	3	4	1	0	2	TIER TWO GROUP ONE TOTAL	23				

RIVER BEND STATION FEBRUARY 2003				BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 2								ES-401-1				
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.
201001 CRD Hydraulic CFR 41.6/41.7		04										Power supplies to SDV VENT & DRAIN VALVE SOLENOIDS	3.3	NEW	BOTH 7	7
202001 Recirculation CFR 41.7				13								Design features/interlocks for EOC RPT	4.0	NEW	BOTH 42	739
204000 RWCUC CFR 41.4										03 (1)		Manually operate/monitor RWCUC DRAIN FLOW CONTROLLER	3.1	NEW	BOTH 64	786
205000 Shutdown Cooling CFR 41.7/41.14			01									Effect loss or malfunction of SDC will have on REACTOR PRESSURE	3.3	MOD	BOTH 50	759
215003 IRM CFR 41.2/41.7/43.6			03									Effect loss or malfunction of IRMs will have on RCIS	3.7	BANK	BOTH 1	1
219000 RHR/Supp Pool Cooling Mode CFR																
234000 Fuel Handling Equipment CFR 41.4/41.6/43.7					02							Operational implications of FUEL HANDLING EQUIP. INTERLOCKS	3.7	BANK	SRO 76	825
239003 MSIV Leakage Control CFR 41.7/41.9				06								Design features/interlocks for DEPRESSURIZATION OF MSLs	3.3	BANK	BOTH 15	190
245000 Turbine Gen. and Auxiliaries CFR																
259001 Reactor Feedwater CFR 41.4										02		Operate/monitor Reactor Feedwater to MANUALLY START AN RFP	3.7	NEW	BOTH 56	767
PAGE 1 TIER 2 GROUP 2 TOTAL	0	1	2	2	1	0	0	0	0	2	0	PAGE ONE TOTAL POINTS	8			

(1) Randomly selected A4.03 to replace initial selection K2.02 due to all RWCUC K2 KAs having RO/SRO importance <2.5.

RIVER BEND STATION							BWR SRO EXAMINATION OUTLINE							ES-401-1			
FEBRUARY 2003							PLANT SYSTEMS - TIER 2 GROUP 2, continued										
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
262002 UPS (AC/DC) CFR																	
263000 DC Electrical Distribution CFR 41.4/41.5							01					Predict/monitor changes in BATTERY CHARGING/DISCHG	2.8	NEW	BOTH 65	788	
271000 Offgas CFR																	
272000 Radiation Monitoring CFR 41.11/41.13/43.4			05									Effect loss or malfunction of Rad Monitoring will have on OFFGAS	3.7	BANK	SRO 92	846	
286000 Fire Protection CFR 41.4					05							Operational implications of DIESEL OPERATION applied to Fire Prot.	3.1	NEW	BOTH 62	780	
290003 Control Room HVAC CFR																	
300000 Instrument Air CFR 41.4/41.7				02								Design features/interlocks for CROSS-OVER TO OTHER AIR SYS	3.0	BANK	BOTH 36	703	
400000 Component Cooling Water CFR 41.4									01			Monitor automatic operation of CCW including SETPOINTS	3.0	NEW	BOTH 63	781	
PAGE 2 TIER 2 GROUP 2 TOTAL	0	0	1	1	1	0	1	0	1	0	0	PAGE TWO TOTAL POINTS	5				
PAGE 1 TIER 2 GROUP 2 TOTAL	0	1	2	2	1	0	0	0	0	2	0	PAGE ONE TOTAL POINTS	8				
K/A CATEGORY TOTALS	0	1	3	3	2	0	1	0	1	2	0	TIER TWO GROUP TWO TOTAL	13				

RIVER BEND STATION FEBRUARY 2003				BWR SRO EXAMINATION OUTLINE PLANT SYSTEMS - TIER 2 GROUP 3								ES-401-1				
SYSTEM#/NAME CFR REFERENCE	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.
201003 Cont. Rod and Drive Mech. CFR 41.2/41.5/41.6								03				Predict impact of DRIFTING ROD and correct, control or mitigate	3.7	BANK	BOTH 12	49
215001 Traversing In-core Probe CFR																
233000 Fuel Pool Clg and Cleanup CFR 41.5/41.10/43.7					06 (1)						2.1. 25	Ability to obtain/interpret ref. matls which contain performance data.	3.1	BANK	BOTH 30	582
239001 Main and Reheat Steam CFR 41.4/41.5					06 (2)							Operational implications of MSIVs applicable to Main and Reheat Steam	2.9	BANK	BOTH 6	6
256000 Reactor Condensate CFR																
268000 Radwaste CFR																
288000 Plant Ventilation CFR																
290002 Reactor Vessel Internals CFR 41.3/43.2				01								Design features/interlocks for 2/3 CORE COVERAGE POST LOCA	3.9	BANK	SRO 79	833
K/A CATEGORY TOTALS	0	0	0	1	1	0	0	1	0	0	1	TIER TWO GROUP THREE TOT.	4			

(1) Substituted Generic 2.1.25 for randomly selected K5.06.

(2) Randomly selected K5.06 to replace initial selection K5.04 with RO/SRO importance <2.5.

RIVER BEND STATION FEBURARY 2003		BWR SRO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES - TIER 3								ES-401-5
GENERIC CATEGORY CFR REFERENCE	C1 K/A	C2 K/A	C3 K/A	C4 K/A	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.	
2.1 CONDUCT OF OPERATIONS CFR 41.7/43.5	2				Knowledge of operator responsibilities during all modes of plant operation.	4.0	BANK	BOTH 21	411	
2.1 CONDUCT OF OPERATIONS CFR 43.1	10				Knowledge of conditions and limitations in the facility license .	3.9	BANK	SRO 91	845	
2.1 CONDUCT OF OPERATIONS CFR 43.2	19				Ability to use plant computer to evaluate parametric information on system or component status.	3.0	MOD	SRO 81	835	
2.1 CONDUCT OF OPERATIONS CFR 41.10/43.2	32				Ability to explain and apply system limits and precautions .	3.8	BANK	SRO 93	645	
2.1 CONDUCT OF OPERATIONS CFR 41.5/41.10/43.5	34				Ability to maintain primary plant chemistry within allowable limits.	2.9	NEW	SRO 80	834	
2.2 EQUIPMENT CONTROL CFR 41.10/43.3		11			Knowledge of the process for controlling temporary changes .	3.4	NEW	SRO 100	854	
2.2 EQUIPMENT CONTROL CFR 41.10		13			Knowledge of tagging and clearance procedures .	3.8	BANK	BOTH 22	432	
2.2 EQUIPMENT CONTROL CFR 41.10/43.2/43.5		22			Knowledge of limiting conditions for operation and safety limits.	4.1	BANK	SRO 78	832	
2.2 EQUIPMENT CONTROL CFR 43.6		33			Knowledge of control rod programming .	2.9	NEW	SRO 89	843	
PAGE 1 TIER 3 TOTAL	5	4	0	0	PAGE ONE TOTAL POINTS	9				

RIVER BEND STATION FEBURARY 2003		BWR SRO EXAMINATION OUTLINE GENERIC KNOWLEDGE AND ABILITIES - TIER 3						ES-401-5	
GENERIC CATEGORY CFR REFERENCE	C1 K/A	C2 K/A	C3 K/A	C4 K/A	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.
2.3 RADIATION CONTROL CFR 41.10/41.12/43.4			1		Knowledge of 10CFR20 and related facility radiation control procedures.	3.0	BANK	BOTH 71	411
2.3 RADIATION CONTROL CFR 41.10/41.12/43.4			10		Ability to perform procedures to reduce excessive levels of radiation and personnel exposure.	3.3	BANK	BOTH 20	389
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/43.5				6	Knowledge of symptom based EOP mitigation strategies .	3.8	BANK	BOTH 16	211
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/43.5				14	Knowledge of general guidelines for EOP flowchart use .	3.9	MOD	BOTH 47	750
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.5/41.10/43.5				20	Knowledge of operational implications of EOP warnings, cautions and notes .	4.0	MOD	SRO 87	841
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/43.5				37	Knowledge of the lines of authority during an emergency .	3.5	BANK	SRO 82	836
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.10/43.5				43	Knowledge of emergency communications systems and techniques.	3.5	NEW	BOTH 70	793
2.4 EMERGENCY PROCEDURES / PLAN CFR 41.5/43.7				48	Ability to interpret control room indications to verify the status and operation of systems.	3.6	BANK	SRO 90	844
PAGE 2 TOTAL TIER 3	0	0	2	6	PAGE TWO TOTAL POINTS	8			
PAGE 1 TOTAL TIER 3	5	4	0	0	PAGE ONE TOTAL POINTS	9			
K/A CATEGORY TOTALS	5	4	2	6	TIER THREE TOTAL	17			

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u> RO </u> Operating Test Number: <u> 1 </u>					
Administrative Topic No./Subject		Evaluation Method (Type Code*) K/A Statement(s) / Description	K/As	Imp.	NOTES
A.1.1	Conduct of Operations	JPM No. 976-03 (M) Use plant computer to obtain and evaluate parametric information on system or component status. Complete Daily Logs verification of Power Distr. Limits during Single Loop Ops	2.1.19	3.0	
A.1.2		JPM No. 402-01 (N) Obtain and interpret station electrical and mechanical drawings Determine the effects of removing fuse for Control Room ventilation damper.	2.1.24	2.8	
A.2	Equipment Control	JPM No. 203-08 (M) Knowledge of tagging and clearance procedures Perform Independent Verification of “A” RHR tagout.	2.2.13	3.6	
A.3	Radiation Control	JPM No. 001-01 (N) Exposure limits and contamination control Entry and egress from the Controlled Access Area including entry into a Contamination Zone.	2.3.4	2.5	
A.4	Emergency Plan	JPM No. 940-02 (M) Knowledge of RO's responsibilities in E-Plan implementation. Make the Required Emergency Plan Notifications	2.4.39	3.3	
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew					

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u> SRO </u> Operating Test Number: <u> 1 </u>					
Administrative Topic No./Subject		Evaluation Method (Type Code*) K/A Statement(s) / Description	K/As	Imp.	NOTES
A.1.1	Conduct of Operations	JPM No. 976-03 (D) Ability to evaluate plant performance and make operational judgments based on operating characteristics/reactor behavior/and instrument interpretation. Perform calculations per GOP-0004 for entering Single Loop Operation.	2.1.7	4.4	
A.1.2		JPM No. 256-04 (N) Apply technical specifications for a system. Complete LCO Status Sheet for Emergency Diesel Generator Inoperative.	2.1.12	4.0	
A.2	Equipment Control	JPM No. 204-09 (M) Knowledge of tagging and clearance procedures Perform a supervisory review and authorization of a clearance HPCS.	2.2.13	3.8	
A.3	Radiation Control	JPM No. 001-01 (N) Exposure limits and contamination control Entry and egress from the Controlled Access Area including entry into a Contamination Zone	2.3.4	3.1	
A.4	Emergency Plan	JPM No. 980-01 (N) Emergency Protective Action Recommendations. Determine PARs for given radiological and meteorological conditions	2.4.44	4.0	
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew					

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u> RO </u> Operating Test Number: <u> 1 </u>				
B.1 CONTROL ROOM SYSTEMS				
System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 202001 Recirculation System Restart Recirculation Pump “A” in fast following trip at power with low suction temperature alarm before start. JPM No. 053-08 (N) (A) (S)	1	K1.10 K4.10 A2.21 A4.01	2.8 3.3 3.3 3.7	ARP-P680-04-C02 contains alternate path actions to clear low suction temp conditions by securing seal purge.
2. 259002 Reactor Water Level Control System Transfer FWLC from Startup Controller to Master Controller. JPM No. 501-03 (D) (S) (L)	2	K5.01 A4.03	3.1 3.8	
3. 239001 Main and Reheat Steam System Open Inboard MSIVs following a scram. JPM No. 109-05 (N) (S) (L)	3	K4.01 K4.09 A4.01 A4.02	3.8 3.3 4.2 3.2	
4. 209002 High Pressure Core Spray System Shutdown HPCS following spurious initiation with trip of HPCS line fill pump. JPM No. 203-07 (N) (A) (S)	4	K1.01 K1.02 A3.01 A4.01 A4.02	3.4 3.5 3.3 3.7 3.6	ARP-P601-16-G04 contains alternate path actions to restart line fill pump and vent.
5. 262001 AC Electrical Distribution 295003 Partial/Complete Loss of AC Power Parallel Offsite power to ENS-SWG1A supplied by the Div 1 Standby Diesel. JPM No. 309-05 (N) (S) (L)	6	A2.01 A2.05 A4.02 AA1.02	3.5 3.6 3.4 4.2	AOP-0004, Step 5.16.12 SOP-0053, Section 5.1. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u> RO </u> Operating Test Number: <u> 1 </u>				
B.1 CONTROL ROOM SYSTEMS (continued)				
System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
6. 214000 Rod Position Information System Bypass Control Rod Position Information in the Rod Action Control System Cabinets. JPM No. 500-02 (N) (C)	7	A4.01	3.2	
7. 261000 Standby Gas Treatment System High Volume Drywell Purge using Standby Gas Treatment System. JPM No. 403-03 (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.4 3.2 3.2 3.0	
B.2 FACILITY WALK-THROUGH				
1. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. Perform emergency containment venting for high H₂ concentration per EOP Encl. 21. JPM No. 800-21 (D) (P) (R) (L)	5	K1.10 K4.08 EK1.01	3.1 3.3 3.3	Install jumpers in CR backpanel to bypass isolation. Verify CR panel lineup. In Aux Bldg, open final MOV to vent.
2. 264000 Emergency Diesel Generators 295016 Control Room Abandonment Place Standby Service Water in service for Div I EDG from Remote Shutdown Panel with SWP P2A pump trip. JPM No. 200-08 (M) (A) (P) (L)	6	K6.07 AK2.01 AK2.02	3.8 4.4 4.0	With failure, must start P2C from different panel (EGS-PNL4C) then complete lineup at Remote Shutdown Panel per AOP-0031. (PRA-related)
3. 286000 Fire Protection System 295031 Reactor Low Water Level Local emergency start of diesel fire pump FPW-P1A. JPM No. 251-01 (N) (P) (L)	8	A4.06 EA1.08	3.4 3.9	With failure to start from local panel, local emergency start is required per SOP. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: **RIVER BEND STATION** Date of Examination: 2/10/2003 – 2/14/2003
 Examination Level: **SRO-Instant** Operating Test Number: 1

B.1 CONTROL ROOM SYSTEMS

System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 202001 Recirculation System Restart Recirculation Pump “A” in fast following trip at power with low suction temperature alarm before start. JPM No. 053-08 (N) (A) (S)	1	K1.10 K4.10 A2.21 A4.01	2.8 3.4 3.7 3.7	ARP-P680-04-C02 contains alternate path actions to clear low suction temp conditions by securing seal purge.
2. 259002 Reactor Water Level Control System Transfer FWLC from Startup Controller to Master Controller. JPM No. 501-03 (D) (S) (L)	2	K5.01 A4.03	3.1 3.6	
3. 239001 Main and Reheat Steam System Open Inboard MSIVs following a scram. JPM No. 109-05 (N) (S) (L)	3	K4.01 K4.09 A4.01 A4.02	3.8 3.3 4.0 3.2	
4. 209002 High Pressure Core Spray System Shutdown HPCS following spurious initiation with trip of HPCS line fill pump. JPM No. 203-07 (N) (A) (S)	4	K1.01 K1.02 A3.01 A4.01 A4.02	3.4 3.5 3.3 3.7 3.6	ARP-P601-16-G04 contains alternate path actions to restart line fill pump and vent.
5. 262001 AC Electrical Distribution 295003 Partial/Complete Loss of AC Power Parallel Offsite power to ENS-SWG1A supplied by the Div 1 Standby Diesel. JPM No. 309-05 (N) (S) (L)	6	A2.01 A2.05 A4.02 AA1.02	3.6 3.6 3.4 4.3	AOP-0004, Step 5.16.12 SOP-0053, Section 5.1. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u>SRO-Instant</u> Operating Test Number: <u>1</u>				
B.1 CONTROL ROOM SYSTEMS (continued)				
System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
6. 214000 Rod Position Information System Bypass Control Rod position information in the Rod Action Control System Cabinets. JPM No. 500-02 (N) (C)	7	A4.01	3.3	
7. 261000 Standby Gas Treatment System High Volume Drywell Purge using Standby Gas Treatment System. JPM No. 403-03 (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.6 3.4 4.0 3.0	
B.2 FACILITY WALK-THROUGH				
1. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. Perform emergency containment venting for high H₂ concentration per EOP Encl. 21. JPM No. 800-21 (D) (P) (R) (L)	5	K1.10 K4.08 EK1.01	3.2 3.7 3.9	Install jumpers in CR backpanel to bypass isolation. Verify CR panel lineup. In Aux Bldg, open final MOV to vent.
2. 264000 Emergency Diesel Generators 295016 Control Room Abandonment Place Standby Service Water in service for Div I EDG from Remote Shutdown Panel with SWP P2A pump trip. JPM No. 200-08 (M) (A) (P) (L)	6	K6.07 AK2.01 AK2.02	3.9 4.5 4.1	With failure, must start P2C from different panel (EGS-PNL4C) then complete lineup at Remote Shutdown Panel per AOP-0031. (PRA-related)
3. 286000 Fire Protection System 295031 Reactor Low Water Level Local emergency start of diesel fire pump FPW-P1A. JPM No. 251-01 (N) (A) (P) (L)	8	A4.06 EA1.08	3.4 3.9	With failure to start from local panel, local emergency start is required per SOP. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: **RIVER BEND STATION** Date of Examination: 2/10/2003 – 2/14/2003
 Examination Level: **SRO-Upgrade** Operating Test Number: 1

B.1 CONTROL ROOM SYSTEMS

System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 202001 Recirculation System Restart Recirculation Pump “A” in fast following trip at power with low suction temperature alarm before start. JPM No. 053-08 (N) (A) (S)	1	K1.10 K4.10 A2.21 A4.01	2.8 3.4 3.7 3.7	ARP-P680-04-C02 contains alternate path actions to clear low suction temp conditions by securing seal purge.
2. 239001 Main and Reheat Steam System Open Inboard MSIVs following a scram. JPM No. 109-05 (N) (S) (L)	3	K4.01 K4.09 A4.01 A4.02	3.8 3.3 4.0 3.2	
3. 261000 Standby Gas Treatment System High Volume Drywell Purge using Standby Gas Treatment System. JPM No. 403-03 (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.6 3.4 4.0 3.0	

B.2 FACILITY WALK-THROUGH

1. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. Perform emergency containment venting for high H₂ concentration per EOP Encl. 21. JPM No. 800-21 (D) (P) (R) (L)	5	K1.10 K4.08 EK1.01	3.2 3.7 3.9	Install jumpers in CR backpanel to bypass isolation. Verify CR panel lineup. In Aux Bldg, open final MOV to vent.
2. 264000 Emergency Diesel Generators 295016 Control Room Abandonment Place Standby Service Water in service for Div I EDG from Remote Shutdown Panel with SWP P2A pump trip. JPM No. 200-08 (M) (A) (P) (L)	6	K6.07 AK2.01 AK2.02	3.9 4.5 4.1	With failure, must start P2C from different panel (EGS-PNL4C) then complete lineup at Remote Shutdown Panel per AOP-0031. (PRA-related)

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry

Facility: **RIVER BEND STATION** Date of Examination: 2/10/2003 – 2/14/2003
Examination Level: **RO** Operating Test Number: **1**

B.1 CONTROL ROOM SYSTEMS

System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 202001 Recirculation System Restart Recirculation Pump “A” in fast following trip at power with low suction temperature alarm before start. JPM No. 053-08 (N) (A) (S)	1	K1.10 K4.10 A2.21 A4.01	2.8 3.3 3.3 3.7	ARP-P680-04-C02 contains alternate path actions to clear low suction temp conditions by securing seal purge.
2. 259002 Reactor Water Level Control System Transfer FWLC from Startup Controller to Master Controller. JPM No. 501-03 (D) (S) (L)	2	K5.01 A4.03	3.1 3.8	
3. 239001 Main and Reheat Steam System Open Inboard MSIVs following a scram. JPM No. 109-05 (N) (S) (L)	3	K4.01 K4.09 A4.01 A4.02	3.8 3.3 4.2 3.2	
4. 209002 High Pressure Core Spray System Shutdown HPCS following spurious initiation with trip of HPCS line fill pump. JPM No. 203-07 (N) (A) (S)	4	K1.01 K1.02 A3.01 A4.01 A4.02	3.4 3.5 3.3 3.7 3.6	ARP-P601-16-G04 contains alternate path actions to restart line fill pump and vent.
5. 262001 AC Electrical Distribution 295003 Partial/Complete Loss of AC Power Parallel Offsite power to ENS-SWG1A supplied by the Div 1 Standby Diesel. JPM No. 309-05 (N) (S) (L)	6	A2.01 A2.05 A4.02 AA1.02	3.5 3.6 3.4 4.2	AOP-0004, Step 5.16.12 SOP-0053, Section 5.1. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u> RO </u> Operating Test Number: <u> 1 </u>				
B.1 CONTROL ROOM SYSTEMS (continued)				
System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
6. 214000 Rod Position Information System Bypass Control Rod Position Information in the Rod Action Control System Cabinets. JPM No. 500-02 (N) (C)	7	A4.01	3.2	
7. 261000 Standby Gas Treatment System High Volume Drywell Purge using Standby Gas Treatment System. JPM No. 403-03 (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.4 3.2 3.2 3.0	
B.2 FACILITY WALK-THROUGH				
1. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. Perform emergency containment venting for high H₂ concentration per EOP Encl. 21. JPM No. 800-21 (D) (P) (R) (L)	5	K1.10 K4.08 EK1.01	3.1 3.3 3.3	Install jumpers in CR backpanel to bypass isolation. Verify CR panel lineup. In Aux Bldg, open final MOV to vent.
2. 264000 Emergency Diesel Generators 295016 Control Room Abandonment Place Standby Service Water in service for Div I EDG from Remote Shutdown Panel with SWP P2A pump trip. JPM No. 200-08 (M) (A) (P) (L)	6	K6.07 AK2.01 AK2.02	3.8 4.4 4.0	With failure, must start P2C from different panel (EGS-PNL4C) then complete lineup at Remote Shutdown Panel per AOP-0031. (PRA-related)
3. 286000 Fire Protection System 295031 Reactor Low Water Level Local emergency start of diesel fire pump FPW-P1A. JPM No. 251-01 (N) (P) (L)	8	A4.06 EA1.08	3.4 3.9	With failure to start from local panel, local emergency start is required per SOP. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: **RIVER BEND STATION** Date of Examination: 2/10/2003 – 2/14/2003
Examination Level: **SRO-Instant** Operating Test Number: 1

B.1 CONTROL ROOM SYSTEMS

System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 202001 Recirculation System Restart Recirculation Pump “A” in fast following trip at power with low suction temperature alarm before start. JPM No. 053-08 (N) (A) (S)	1	K1.10 K4.10 A2.21 A4.01	2.8 3.4 3.7 3.7	ARP-P680-04-C02 contains alternate path actions to clear low suction temp conditions by securing seal purge.
2. 259002 Reactor Water Level Control System Transfer FWLC from Startup Controller to Master Controller. JPM No. 501-03 (D) (S) (L)	2	K5.01 A4.03	3.1 3.6	
3. 239001 Main and Reheat Steam System Open Inboard MSIVs following a scram. JPM No. 109-05 (N) (S) (L)	3	K4.01 K4.09 A4.01 A4.02	3.8 3.3 4.0 3.2	
4. 209002 High Pressure Core Spray System Shutdown HPCS following spurious initiation with trip of HPCS line fill pump. JPM No. 203-07 (N) (A) (S)	4	K1.01 K1.02 A3.01 A4.01 A4.02	3.4 3.5 3.3 3.7 3.6	ARP-P601-16-G04 contains alternate path actions to restart line fill pump and vent.
5. 262001 AC Electrical Distribution 295003 Partial/Complete Loss of AC Power Parallel Offsite power to ENS-SWG1A supplied by the Div 1 Standby Diesel. JPM No. 309-05 (N) (S) (L)	6	A2.01 A2.05 A4.02 AA1.02	3.6 3.6 3.4 4.3	AOP-0004, Step 5.16.12 SOP-0053, Section 5.1. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: RIVER BEND STATION Date of Examination: 2/10/2003 – 2/14/2003 Examination Level: <u>SRO-Instant</u> Operating Test Number: <u>1</u>				
B.1 CONTROL ROOM SYSTEMS (continued)				
System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
6. 214000 Rod Position Information System Bypass Control Rod position information in the Rod Action Control System Cabinets. JPM No. 500-02 (N) (C)	7	A4.01	3.3	
7. 261000 Standby Gas Treatment System High Volume Drywell Purge using Standby Gas Treatment System. JPM No. 403-03 (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.6 3.4 4.0 3.0	
B.2 FACILITY WALK-THROUGH				
1. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. Perform emergency containment venting for high H₂ concentration per EOP Encl. 21. JPM No. 800-21 (D) (P) (R) (L)	5	K1.10 K4.08 EK1.01	3.2 3.7 3.9	Install jumpers in CR backpanel to bypass isolation. Verify CR panel lineup. In Aux Bldg, open final MOV to vent.
2. 264000 Emergency Diesel Generators 295016 Control Room Abandonment Place Standby Service Water in service for Div I EDG from Remote Shutdown Panel with SWP P2A pump trip. JPM No. 200-08 (M) (A) (P) (L)	6	K6.07 AK2.01 AK2.02	3.9 4.5 4.1	With failure, must start P2C from different panel (EGS-PNL4C) then complete lineup at Remote Shutdown Panel per AOP-0031. (PRA-related)
3. 286000 Fire Protection System 295031 Reactor Low Water Level Local emergency start of diesel fire pump FPW-P1A. JPM No. 251-01 (N) (A) (P) (L)	8	A4.06 EA1.08	3.4 3.9	With failure to start from local panel, local emergency start is required per SOP. (PRA-related)
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry				

Facility: **RIVER BEND STATION** Date of Examination: 2/10/2003 – 2/14/2003
 Examination Level: **SRO-Upgrade** Operating Test Number: 1

B.1 CONTROL ROOM SYSTEMS

System / JPM Title / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 202001 Recirculation System Restart Recirculation Pump “A” in fast following trip at power with low suction temperature alarm before start. JPM No. 053-08 (N) (A) (S)	1	K1.10 K4.10 A2.21 A4.01	2.8 3.4 3.7 3.7	ARP-P680-04-C02 contains alternate path actions to clear low suction temp conditions by securing seal purge.
2. 239001 Main and Reheat Steam System Open Inboard MSIVs following a scram. JPM No. 109-05 (N) (S) (L)	3	K4.01 K4.09 A4.01 A4.02	3.8 3.3 4.0 3.2	
3. 261000 Standby Gas Treatment System High Volume Drywell Purge using Standby Gas Treatment System. JPM No. 403-03 (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.6 3.4 4.0 3.0	

B.2 FACILITY WALK-THROUGH

1. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. Perform emergency containment venting for high H₂ concentration per EOP Encl. 21. JPM No. 800-21 (D) (P) (R) (L)	5	K1.10 K4.08 EK1.01	3.2 3.7 3.9	Install jumpers in CR backpanel to bypass isolation. Verify CR panel lineup. In Aux Bldg, open final MOV to vent.
2. 264000 Emergency Diesel Generators 295016 Control Room Abandonment Place Standby Service Water in service for Div I EDG from Remote Shutdown Panel with SWP P2A pump trip. JPM No. 200-08 (M) (A) (P) (L)	6	K6.07 AK2.01 AK2.02	3.9 4.5 4.1	With failure, must start P2C from different panel (EGS-PNL4C) then complete lineup at Remote Shutdown Panel per AOP-0031. (PRA-related)

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA entry

Facility: River Bend Station **Scenario No.:** 1 (SIS-18.00 R0) **Op.-Test No.:** 1

Examiners: _____ **Operators:** CRS – Control Room Suprv. (SRO)
 _____ ATC – At-the-Controls (RO)
 _____ UO – Unit Operator (BOP-RO)

Initial Conditions: Plant startup in progress, at 28% reactor power. APRM 'B' inoperable and bypassed. SWP – P7A tagged out. Condensate Full-Flow Filtration is bypassed. Lube oil leak found on Reactor Feed Pump FWS-P1B. Three LPRMs bypassed.

Turnover: APRM 'B' power supply failed and bypassed. SWP – P7A tagged out for bearing replacement. Condensate Full-Flow Filtration is bypassed. Lube Oil leak on RFP-P1B found and LO for pump has been shutdown. Start RFP-P1A lube oil system. Raise power to 35% to continue plant startup. Completed GOP-0001 through Section G, Step 20. LPRMs bypassed per LPRM Bypass Log.

Event No.	Malf. No.	Event Type *	Event Description
1 T = 0 min.	N/A	N (UO/CRS)	Start FWS-P1A Reactor Feed Pump Lube Oil System
2 T = 5 min.	N/A	R (ATC/CRS)	Raise reactor power with control rods.
3 T = 15 min.	B21005	I (ATC/CRS)	Reactor pressure transmitter B21-N078A fails upscale causing half scram. (Tech Spec for CRS)
4 T = 20 min.	FWS014 AO_C33-R603C	I (ATC/CRS)	Steam flow Channel C to FWLC fails downscale
5 T = 30 min.	RPS003A	C (UO/CRS)	RPS MG Set 'A' Output breaker trips (Loss of RPS A)
	DI_IAS- MOV106	C (UO/CRS)	IAS-MOV106 will not reopen after RPS Bus A is re-energized from Alternate power source.
Due to Event 5, the crew may elect to manually SCRAM when it is determined that MOV106 cannot be opened, or an automatic SCRAM will occur when the Inboard MSIVs close due to loss of air.			
6 T = 32 min	RPS001B RPS001C	C (ATC)	RPS fails to de-energize, ARI functions to insert control rods <ul style="list-style-type: none"> • Failure to SCRAM Auto • Failure to SCRAM Manual
7 T = 33 min	MSS001 MSS002	M (ATC/UO/CRS)	Steam Leak in Drywell (on MSIV closure) propagates to Steam Line Rupture in Drywell (After EOP entry)
8 T = 35 min.	LPCS002	C (UO)	LPCS Injection Valve F005 fails to auto open (After EOP Entry)

* (N) normal, (R) reactivity, (I) instrument, (C) component, (M) major

Facility: River Bend Station Scenario No.: 2 (SIS-15.00 R0) Op.-Test No.: 1

Examiners: _____ Operators: CRS – Control Room Suprv. (SRO)
 _____ ATC – At-the-Controls (RO)
 _____ UO – Unit Operator (BOP RO)

Initial Conditions: Plant is stable at 65% reactor power after entering Single Loop Operation. APRM 'A' is bypassed. CCS - P1C is tagged out. Condensate Full-Flow Filtration is bypassed. Three LPRMs bypassed.

Turnover: APRM 'A' inoperable and bypassed. CCS - P1C tagged out for motor repairs. Reactor Recirc Pump "A" tripped an hour ago with investigation on-going. Management has decided to perform plant shutdown. Attachment 1 of GOP-0004 has been completed. At Step 5 of GOP-0004, Attachment 3, Shutdown from Single Loop Operation. Condensate Full-Flow Filtration is bypassed. Failed LPRMs per LPRM Bypass Log.

Event No.	Malf. No.	Event Type*	Event Description
1 T = 0 min.	N/A	N (UO/CRS)	Remove SPC from service (SOP-0140).
2 T = 5 min.	FWS007B	I (ATC/CRS)	'B' Feedwater Reg Valve fails open
3 T = 15 min.	NMS015A	I (ATC/CRS)	APRM F flow reference signal fails downscale. (Tech Spec for CRS)
4 T = 20 min.	FWS011	C (ATC/CRS)	Tube failure in E5A feedwater heater causes isolation of LP feedwater heater string (AOP-0007).
	N/A	R (ATC)	Control rod insertion to exit restricted zone of power-to-flow map (AOP-0007).
5 T = 30 min.	CRD001A	C (UO/CRS)	CRD Pump Trip
Automatic SCRAM signal will be generated by Turbine Trip caused by Main Generator Trip.			
6 T = 40 min.	MGEN001	C (ATC/CRS)	Main Generator Trip
	RPS001A	M (ATC/UO/CRS)	Hydraulic ATWS, ARI fails to insert the control rods
7 T = 42 min.	(Overrides)	C (UO/CRS)	SLC 'A' trips after start (after EOP entry)

* (N) normal, (R) reactivity, (I) instrument, (C) component, (M) major

Facility: River Bend Station **Scenario No.:** 3 (SIS-17.00 R0) **Op.-Test No.:** 1

Examiners: _____ **Operators:** CRS – Control Room Suprv. (SRO)
 _____ ATC – At-the-Controls (RO)
 _____ UO – Unit Operator (BOP-RO)

Initial Conditions: Reactor Power is 85%. HPCS is tagged out. APRM B is bypassed. Condensate Full-Flow Filtration is bypassed. RHR B is in Suppression Pool Cooling for RCIC testing completed on the previous shift.

Turnover: Raise power following rod sequence exchange. HPCS was tagged out at the end of last shift for motor oil replacement. APRM 'B' is bypassed, I & C replacing averaging amplifier. Condensate Full-Flow Filtration is bypassed. Suppression pool temperatures are back to normal following RCIC testing completed on the previous shift. Suppression Pool Cooling to be secured.

Event No.	Malf. No.	Event Type *	Event Description
1 T = 0 min.	N/A	N (UO/CRS)	Remove RHR B from Suppression Pool Cooling.
2 T = 10 min.	NMS011D CRDM3213	I (ATC/CRS)	APRM D upscale failure with single rod scram (Tech Specs for CRS)
3 T = 20 min.	OR_P680_3a:d-6	C (ATC/CRS)	Loss of TPCCW to Reactor Feed Pump FWS-P1C Gear Increaser Lube Oil Cooler (requiring P1C shutdown).
4 T = 25 min.	ED003E	C (UO/CRS)	Loss of NNS-SWG2B (loss of two condenser circ water pumps).
	N/A	R (ATC)	Lower reactor power with Recirc flow to maintain vacuum per AOP-0005
Crew is expected to initiate a manual Scram before the rise in neutron flux or reactor pressure cause an automatic scram as the control valves close in Event 5.			
5 T = 35 min.	EHC006A	I (ALL)	EHC Governor Fails Low closing Control Valves. [RBS LER 2001-01]
	CNM006	M (ALL)	Condensate Full-Flow Filtration bypass valve FCV-200 fails shut causing total loss of feedwater. [RBS LER 2002-01]
6 T = 37 min.	EHC002C	C (ALL)	One turbine Steam Bypass Valve sticks open (After EOP Entry).
7 T = 37 min.	RCIC001	C (UO/CRS)	RCIC trip after start (After EOP Entry).

* (N) normal, (R) reactivity, (I) instrument, (C) component, (M) major

Facility: River Bend Station **Scenario No.:** Backup (SIS-16.00 R0) **Op.-Test No.:** 1

Examiners: _____ **Operators:** CRS – Control Room Suprv. (SRO)
 _____ ATC – At-the-Controls (RO)
 _____ UO – Unit Operator (BOP-RO)

Initial Conditions: Steady state operation at 100% power. RCIC is ready for post-maintenance testing. CRD Pump P1A tagged out. Condensate Full-Flow Filtration is bypassed. APRM 'A' bypassed. Three LPRMs bypassed.

Turnover: RCIC is ready to be tested following repair of the trip throttle valve linkage. CRD Pump P1A is tagged out for seal repairs. RHR A to be placed in Suppression Pool Cooling as soon as possible in preparation for testing of RCIC. Condensate Full-Flow Filtration is bypassed. APRM 'A' is inoperable and bypassed. Failed LPRMs per LPRM Bypass Log.

Event No.	Malf. No.	Event Type*	Event Description
1 T = 0 min.	N/A	N (UO/CRS)	Place RHR A in Suppression Pool Cooling
2 T = 10 min.	LPRMUP0615D	I (ATC/CRS)	LPRM 06-15D Fails Upscale (Tech Specs for CRS)
3 T = 15 min.	CNM015A	C (ATC/CRS)	Heater drain pump HDL-P1D Overload.
4 T = 25 min.	MSS005N MSS006L	C (UO/CRS)	SRV F051G Fails Open and Sticks Open (Closed by fuses) (Tech Specs for CRS)
	N/A	R (ATC/CRS)	Lower reactor power with reactor recirculation flow to 90%
5 T = 35 min.	MSS001 (~40 gpm)	C (UO/CRS)	Steam Leak into Drywell develops when SRV F051G closes.
Scram should be manually initiated prior to reaching automatic scram on high drywell pressure.			
6 T = 37 min.	ED001	M (ATC/UO/CRS)	Loss of Offsite Power occurs when Main Generator output breakers open on reverse power. [PRA – DAS]
7 T = 37 min.	RPS001B	C (UO/CRS)	Div 3 Diesel Generator Fails to Auto Start (After EOP Entry)

* (N) normal, (R) reactivity, (I) instrument, (C) component, (M) major