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	
	4	**3**	**2**	**4**	**13**

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 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 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.

E/APE#/NAME/SAFETY FUNCTION *CFR REFERENCES*	K 1	K 2	K 3	A 1	A 2	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		BOTH 1	
295006 SCRAM / 1 *CFR 41.10/43.5*					03		**Determine/interpret** REACTOR WATER LEVEL as it applies to SCRAM	4.0		BOTH 2	
295007 High Reactor Pressure / 3 *CFR 41.1/41.10*	03						**Operational implications** of High Reactor Pressure on REACTOR POWER	3.8		BOTH 3	
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		BOTH 4	
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		BOTH 5	
295010 High Drywell Pressure / 5 *CFR 41.7*				06			**Operate/monitor** LEAK DETECTION SYSTEM as it applies to High Drywell Pressure	3.3		BOTH 6	
295014 Inadvertent Reactivity Addition / 1 *CFR 41.2/41.6*				04			**Operate/monitor** RCIS as it applies to Inadvertent Reactivity Addition	3.3		BOTH 7	
295015 Incomplete SCRAM / 1 *CFR 41.7*		04					**Interrelations between** Incomplete Scram and REACTOR PROTECTION SYSTEM	4.0		BOTH 8	
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		BOTH 9	
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		BOTH 10	
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.

E/APE#/NAME/SAFETY FUNCTION *CFR REFERENCES*	K 1	K 2	K 3	A 1	A 2	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		BOTH 11	
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		BOTH 12	
500000 High Containment Hydrogen Conc. / 5 *CFR 41.7-41.10*				03			**Operate/monitor** HYDROGENRECOMBINERS as applied to High Containment Hydrogen Conc.	3.4		BOTH 13	
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*	K 1	K 2	K 3	A 1	A 2	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		BOTH 14	
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		**RO** 76	
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		BOTH 15	
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		BOTH 16	
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		BOTH 17	
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		BOTH 18	
295012 High Drywell Temperature / 5 *CFR 41.9*				02			**Operate/monitor** DRYWELL COOLING as applied to High Drywell Temperature	3.8		BOTH 19	
295013 High Suppression Pool Temp. / 5 *CFR 41.5*			02				**Reasons for** LIMITING HEAT ADDITION as applied to High Suppression Pool Temp	3.6		BOTH 20	
295016 Control Room Abandonment / 7 *CFR 41.7*				07			**Operate/monitor** CR/LOCAL CONTROL TRANSFER MECHANISMS for CR Abandonment	4.2		BOTH 21	
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		BOTH 22	
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.

E/APE#/NAME/SAFETY FUNCTION *CFR REFERENCES*	K 1	K 2	K 3	A 1	A 2	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		BOTH 23	
295019 Partial or Total Loss of Inst. Air / 8 *CFR*											
295020 Inadvertent CTMT Isolation / 5 & 7 *CFR 41.9*					06		**Determine/interpret** the CAUSE OF ISOLATION on an Inadvertent Containment Isolation	3.4		BOTH 24	
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		BOTH 25	
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		BOTH 26	
295028 High Drywell Temperature / 5 *CFR 41.5/41.7/41.14*		03					**Interrelationships between** RPV LEVEL INDICATION and High Drywell Temperature	3.6		BOTH 27	
295029 High Suppression Pool Water Level / 5 *CFR 41.7*		06 **(1)**					**Interrelationships between** SRVs AND DISCHARGE PIPING and High SP Water Level	3.4		**RO** 77	
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		BOTH 28	
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.

E/APE#/NAME/SAFETY FUNCTION *CFR REFERENCES*	K 1	K 2	K 3	A 1	A 2	G	K/A TOPIC(S)	IMP	ORIGIN	EXAM USE	REC NO.
295034 Secondary CTMT 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		BOTH 29	
295038 High Offsite Release Rate / 9 *CFR 41.7/41.13/43.4*		03					**Interrelationships between** PLANT VENTILATION and High Offsite Release Rate	3.6		BOTH 30	
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***	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**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		BOTH 31	
295023 Refueling Accidents Cooling Mode / 8 *CFR 41.10/41.12/43.4/43.5/43.7*		02					**Interrelationships** between FUEL POOL COOLING AND CLEANUP and Refueling Accidents	2.9		BOTH 32	
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		BOTH 33	
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		**RO** 78	
K/A CATEGORY TOTALS:	**1**	**1**	**0**	**0**	**2**	**0**	**TIER ONE GROUP THREE TOTAL**	**4**			

SYSTEM#/NAME *CFR REFERENCE*	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)	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		BOTH 34	
201005 RCIS *CFR 41.6*			02									Effect of **loss or malfunction** of RCIS on REACTOR STARTUP	3.5		BOTH 35	
202002 Recirculation Flow Control *CFR 41.7*						04						Effect of a **loss or malfunction** of FW FLOW INPUTS on Recirc Flow Cont.	3.5		BOTH 36	
202002 Recirculation Flow Control *CFR 41.6*									01			Monitor **automatic operations** of Recirc FLOW CONTROL VALVE	3.6		**RO** 79	
203000 RHR/LPCI Mode *CFR 41.7*				06								Design features/**interlocks** that provide ADEQUATE PUMP NPSH	3.5		BOTH 37	
209001 LPCS *CFR 41.5/41.8*								05				**Predict impact** of CORE SPRAY LINE BREAK on LPCS	3.3		BOTH 38	
209002 HPCS *CFR 41.7*		02										**Power supplies** to HPCS ELECTRICAL VALVES	2.8		BOTH 39	
211000 SLC *CFR 41.6/41.7*									03			Monitor **automatic operations** of SLC EXPLOSIVE VALVES	3.8		BOTH 40	
212000 RPS *CFR 41.7*						02						Effect of **loss** of NUCLEAR INSTRUMENTATION on RPS	3.7		BOTH 41	
215003 IRM *CFR 41.2/41.7/41.6*			03									Effect of **loss or malfunction** of IRMs on RCIS	3.7		BOTH 42	
PAGE 1 TIER 2 GROUP 1 TOTAL	0	2	2	1	0	2	0	1	2	0	0	PAGE ONE TOTAL POINTS	10			

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**IMP**	**ORIGIN**	**EXAM USE**	**REC NO.**
215003 IRM *CFR 41.7*										06		**Operate/monitor** IRM DETECTOR DRIVES	3.0		**RO** 80	
215004 Source Range Monitor *CFR 41.2/41.5*								03				**Predict impact** of a STUCK SRM DETECTOR	3.0		BOTH 43	
215005 APRM / LPRM *CFR 41.2/41.5*							07					**Predict/monitor changes** in AGAF on APRMs	3.0		BOTH 44	
216000 Boiler Instrumentation *CFR 41.7*						01						Effect that a **loss or malfunction** of AC POWER will have on NBI	3.1		**RO** 81	
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		BOTH 45	
217000 RCIC *CFR 41.5/41.7/41.8*							06					**Predict/monitor changes** in CST LEVEL when operating RCIC	3.2		BOTH 46	
218000 ADS *CFR 41.4/41.5/41.7*							03					**Predict/monitor changes** in SUPPLY AIR PRESS when operating ADS	3.2		**RO** 82	
218000 ADS *CFR 41.7/41.8*				03								Design features/**interlocks** for ADS LOGIC CONTROL	3.8		BOTH 47	
223001 Primary CTMT/Auxiliaries *CFR 41.5/41.9*								09				**Predict impact** of VACUUM BREAKER MALFUNCTION	3.4		BOTH 48	
223002 PCIS / NSSSS *CFR 41.7*									01			Monitor **automatic operation** of NSSSS LIGHTS AND ALARMS	3.4		**RO** 83	
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 K3.01.

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**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		BOTH 49	
239002 SRVs *CFR 41.2/41.3/41.14*	03											**Cause and effect relationship** between SRVs and BOILER INSTR.	3.5		BOTH 50	
241000 Turbine Press. Regulator *CFR 41.7*			02 **(2)**									Effect **loss or malfunction** of EHC will have on CONTROL VALVES	3.7		BOTH 51	
259001 Reactor Feedwater *CFR 41.4*										02		**Operate/monitor** Reactor Feedwater to MANUALLY START AN RFP	3.9		BOTH 52	
259002 Rtr Water Level Control *CFR 41.7*						05						Effect of a **loss or malfunction** of RPV WATER LEVEL INPUT	3.5		BOTH 53	
261000 SGTS *CFR 41.7/41.9/41.11*	08 **(3)**											**Cause and effect relationship** between SGTS and PROCESS RAD	2.8		BOTH 54	
264000 EDGs *CFR 41.7*				07 **(4)**								Design features/**interlocks** for LOCAL OPERATION/CONTROL	3.6		**RO** 84	
264000 EDGs *CFR 41.7*	07											**Cause and effect relationship** between EDG and ECCS	3.9		BOTH 55	
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 K3.02 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.
(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*	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)	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		BOTH 56	
202001 Recirculation *CFR 41.7*				13								Design features/**interlocks** for EOC RPT	3.7		BOTH 57	
202001 Recirculation *CFR 41.7*						05						Effect **loss or malfunction** of CRDH will have on the Recirculation System	2.7		**RO** 85	
204000 RWCU *CFR 41.4*										03 **(1)**		**Manually operate/monitor** RWCU DRAIN FLOW CONTROLLER	3.2		BOTH 58	
205000 Shutdown Cooling *CFR 41.7/41.14*			01									Effect **loss or malfunction** of SDC will have on REACTOR PRESSURE	3.3		BOTH 59	
219000 RHR/ Supp Pool Clg Mode *CFR 41.5/41.10*								14				**Predict impact** of LOCA and correct, control or mitigate	4.1		**RO** 86	
239001 Main and Reheat Steam *CFR 41.4/41.5*					06 **(2)**							**Operational implications** of MSIVs applicable to Main and Reheat Steam	2.8		BOTH 60	
245000 Turbine Gen, and Aux. *CFR 41.4/41.5*							04					**Predict/monitor changes** in STEAM FLOW when operating Main Turbine	2.7		**RO** 87	
256000 Reactor Condensate *CFR 41.4/41.7*			06									Effect **loss or malfunction** of Reactor Condensate will have on RCIC	3.2		**RO** 88	
262001 AC Distribution *CFR 41.4/41.10/43.3*								02				**Predict impact** of LOCA and correct, control or mitigate	3.6		BOTH 61	
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.

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**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		**RO** 89	
263000 DC Electrical Distribution *CFR 41.4/41.*5							01					**Predict/monitor changes** in BATTERY CHARGING/DISCHG	2.5		BOTH 62	
271000 Offgas *CFR 41.4/41.7*				04								**Design features/interlocks** to prevent HYDROGEN EXPLOSIONS/FIRES	3.3		**RO** 90	
272000 Radiation Monitoring *CFR 41.7/41.11*						01						Effect that a **loss or malfunction** of RPS will have on Rad Monitoring	3.0		**RO** 91	
286000 Fire Protection *CFR 41.4*					05							**Operational implications** of DIESEL OPERATION applied to Fire Prot.	3.0		BOTH 63	
290001 Secondary CTMT *CFR 41.5/41.9*							02					**Predict/monitor changes** in AREA TEMPS operating Secondary CTMT	3.6		BOTH 64	
290003 Control Room HVAC *CFR 41.*5								03				**Predict impact** of RECONFIG. FAILURE and correct, control	3.4		**RO** 92	
300000 Instrument Air *CFR 41.4/41.7*				02								**Design features/interlocks** for CROSS-OVER TO OTHER AIR SYS	3.0		BOTH 65	
400000 Component Cooling Water *CFR 41.4*									01			Monitor **automatic operation** of CCW including SETPOINTS	3.0		BOTH 66	
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*	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)	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)**						2.2.28	**Knowledge** of NEW and SPENT FUEL MOVEMENT procedures	2.5		BOTH 67	
234000 Fuel Handling Equipment *CFR*																
238003 MSIV Leakage Control *CFR 41.7/41.9*				06								**Design features/interlocks** for DEPRESSRIZATION OF MSLs	3.1		BOTH 68	
268000 Radwaste *CFR 41.5*			04									Effect **loss or malfunction** of Radwaste will have on DR SUMPS	2.7		**RO** 93	
288000 Plant Ventilation *CFR 41.5*								04				**Predict impact** of LOW REACTOR WATER LEVEL	3.7		**RO** 94	
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 2.2.28 for randomly selected K5.06.

RIVER BEND STATION	BWR RO EXAMINATION OUTLINE	ES-401-5
FEBURARY 2003	GENERIC KNOWLEDGE AND ABILITIES - TIER 3	

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		BOTH 69	
2.1 CONDUCT OF OPERATIONS *CFR 41.10*	21 **(1)**				Ability to **obtain and verify controlled procedure copy**.	3.1		**RO** 95	
2.1 CONDUCT OF OPERATIONS *CFR 41.5*	22 **(2)**				Ability to **determine Mode of Operation**.	2.8		**RO** 96	
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		**RO** 97	
2.2 EQUIPMENT CONTROL *CFR 41.10*		12			Knowledge of **surveillance procedures**.	3.0		**RO** 98	
2.2 EQUIPMENT CONTROL *CFR 41.10/43.5*		13 **(3)**			Knowledge of **tagging and clearance procedures**.	3.6		BOTH 70	
2.2 EQUIPMENT CONTROL *CFR 41.8*		24 **(4)**			Ability to analyze the **affect of maintenance activities on LCO status.**	2.6		**RO** 99	
2.3 RADIATION CONTROL *CFR 41.10/41.12/43.4*			1		Knowledge of **10CFR20 and related facility radiation control procedures**.	2.6		BOTH 71	
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		BOTH 72	
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	BWR RO EXAMINATION OUTLINE	ES-401-5
FEBURARY 2003	GENERIC KNOWLEDGE AND ABILITIES - TIER 3	

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		BOTH 73	
2.4 EMERGENCY PROCEDURES / PLAN *CFR 41.10/43.5*				14	Knowledge of **general guidelines for EOP flowchart use**.	3.0		BOTH 74	
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		**RO** 100	
2.4 EMERGENCY PROCEDURES / PLAN *CFR 41.4/41.10/43.1*				43 **(1)**	Knowledge of **emergency communications systems** and techniques.	2.8		BOTH 75	
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**			

(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**	**4**	0	0	0	**6**	**4**	0	0	**2**	**26**
	Two	**2**	**4**	**2**	0	0	0	**3**	**5**	0	0	**1**	**17**
	Tier Totals	**8**	**8**	**6**	0	0	0	**9**	**9**	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		
					5		**4**		**2**		**6**		**17**

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 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*	K 1	K 2	K 3	A 1	A 2	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		BOTH 15	
295006 SCRAM / 1 *CFR 41.8-41.10/**43.2***	02						**Operational implications** of SHUTDOWN MARGIN as it applies to SCRAM	3.7		**SRO** 76	
295006 SCRAM / 1 *CFR 41.10/43.5*					03		**Determine/interpret** REACTOR WATER LEVEL as it applies to SCRAM	4.2		BOTH 2	
295007 High Reactor Pressure / 3 *CFR 41.1/41.10*	03						**Operational implications** of High Reactor Pressure on REACTOR POWER	3.9		BOTH 3	
295007 High Reactor Pressure / 3 *CFR 41.7/41.14*		01 **(1)**					**Interrelations between** High Reactor Pressure and TURBINE PRESSURE REGULATING SYSTEM	3.7		BOTH 4	
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		BOTH 5	
295010 High Drywell Pressure / 5 *CFR 41.7*				06			**Operate/monitor** LEAK DETECTION SYSTEM as it applies to High Drywell Pressure	3.5		BOTH 6	
295013 High Suppression Pool Temp. / 5 *CFR41.9/41.10*			02				**Reasons for** LIMITING HEAT ADDITION as applied to High Suppression Pool Temp	3.8		BOTH 20	
295014 Inadvertent Reactivity Addition / 1 *CFR 41.2/41.6*				04			**Operate/monitor** RCIS as it applies to Inadvertent Reactivity Addition	3.3		BOTH 7	
295015 Incomplete SCRAM / 1 *CFR 41.1/41.2/41.6/43.6*		04					**Interrelations between** Incomplete Scram and REACTOR PROTECTION SYSTEM	4.1		BOTH 8	
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.

E/APE#/NAME/SAFETY FUNCTION ***CFR REFERENCES***	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**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		BOTH 21	
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		BOTH 22	
295023 Refueling Accidents Cooling Mode / 8 *CFR 41.10/41.12/43.4/43.5/43.7*		02					**Interrelationships** between FUEL POOL COOLING AND CLEANUP and Refuel Accidents	3.2		BOTH 32	
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		**SRO** 77	
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		BOTH 9	
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		BOTH 10	
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		**SRO** 78	
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		BOTH 26	
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		BOTH 28	
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		**SRO** 79	
PAGE 2 TIER 1 GROUP 1 TOTAL	3	1	1	2	2	1	PAGE TWO TOTAL POINTS	10			

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

E/APE#/NAME/SAFETY FUNCTION ***CFR REFERENCES***	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**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		BOTH 11	
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		BOTH 12	
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		**SRO** 80	
295038 High Offsite Release Rate / 9 *CFR 41.7/41.13/43.4*		03					**Interrelationships between** PLANT VENTILATION and High Offsite Release Rate	3.8		BOTH 30	
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			**SRO** 81	
500000 High Containment Hydrogen Conc. / 5 *CFR 41.7-41.10*				03			**Operate/monitor** HYDROGEN RECOMBINERS for High Containment Hydrogen Conc.	3.2		BOTH 13	
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	1	2	2	1	PAGE TWO TOTAL POINTS	10			
K/A CATEGORY TOTALS	**6**	**4**	**4**	**6**	**4**	**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*	K 1	K 2	K 3	A 1	A 2	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		BOTH 14	
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		BOTH 16	
295005 Main Turbine Generator Trip / 3 *CFR 41.4*		04					**Interrelations between** Main Turbine Generator Trip and MAIN GENERATOR PROTECTION	3.3		BOTH 1	
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		BOTH 17	
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	4.1		BOTH 18	
295012 High Drywell Temperature / 5 *CFR 41.9*				02			**Operate/monitor** DRYWELL COOLING as applied to High Drywell Temperature	3.8		BOTH 19	
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		BOTH 23	
295019 Partial or Total Loss of Inst. Air / 8 *CFR 41.741.10/**43.5***			01				**Determine/interpret** STATUS OF SAFETY-RELATED LOADS on a Loss of Instrument Air	3.7		**SRO** 82	
295020 Inadvertent CTMT Isolation / 5 & 7 *CFR 41.9*					06		**Determine/interpret** the CAUSE OF ISOLATION on an Inadvertent Containment Isolation	3.8		BOTH 24	
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		BOTH 31	
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.

E/APE#/NAME/SAFETY FUNCTION ***CFR REFERENCES***	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**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		BOTH 25	
295028 High Drywell Temperature / 5 *CFR 41.5/41.7/41.14*		03					**Interrelationships between** RPV LEVEL INDICATION and High Drywell Temperature	3.8		BOTH 27	
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		BOTH 33	
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		**SRO** 83	
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		BOTH 29	
295035 Secondary Containment High Differential Pressure / 5 *CFR 41.9/**43.4***		03					**Interrelationships between** Sec. CTMT High Diff. Pressure and OFF-SITE RELEASE	4.1		**SRO** 84	
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		**SRO** 85	
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**			

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**IMP**	**ORIGIN**	**EXAM USE**	**REC NO.**
201005 RCIS *CFR 41.6*			02									Effect of **loss or malfunction** of RCIS on REACTOR STARTUP	3.5		BOTH 35	
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		**SRO** 86	
202002 Recirculation Flow Control *CFR 41.6*						04						Effect of a **loss or malfunction** of FW FLOW INPUTS on Recirc Flow Cont.	3.5		BOTH 36	
203000 RHR/LPCI Mode *CFR 41.7/41.14*				06								Design features/**interlocks** that provide ADEQUATE PUMP NPSH	3.5		BOTH 37	
209001 LPCS *CFR 41.5/41.8*								05				**Predict impact** of CORE SPRAY LINE BREAK on LPCS	3.6		BOTH 38	
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		**SRO** 87	
209002 HPCS *CFR 41.7*		02										**Power supplies** to HPCS ELECTRICAL VALVES	2.9		BOTH 39	
211000 SLC *CFR 41.6/41.7*									03			Monitor **automatic operations** of SLC EXPLOSIVE VALVES	3.8		BOTH 40	
212000 RPS *CFR 41.2/41.7*						02						Effect of a **loss** of NUCLEAR INSTRUMENTATION on RPS	3.9		BOTH 41	
215004 Source Range Monitor *CFR 41.2/41.5*								03				**Predict impact** of a STUCK SRM DETECTOR	3.3		BOTH 43	
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.

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**IMP**	**ORIGIN**	**EXAM USE**	**REC NO.**
215005 APRM / LPRM *CFR 41.2/41.5*							07					**Predict/monitor changes** in AGAF on APRMs	3.4		BOTH 44	
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		BOTH 45	
217000 RCIC *CFR 41.5/41.7/41.8*							06					**Predict/monitor changes** in CST LEVEL with operating RCIC	3.3		BOTH 46	
218000 ADS *CFR 41.7/41.8*				03								Design features/**interlocks** for ADS LOGIC CONTROL	4.0		BOTH 47	
223001 Primary CTMT/Auxiliaries *CFR 41.5/41.9*								09				**Predict impact** of VACUUM BREAKER MALFUNCTION	3.6		BOTH 48	
223002 PCIS / NSSSS *CFR 41.7/41.9*						08						Effect **loss or malfunction** of RPS will have on PCIS / NSSSS	3.7		BOTH 49	
239002 SRVs *CFR 41.2/41.3/41.14*	03											**Cause and effect relationship** between SRVs and BOILER INSTR.	3.6		BOTH 50	
241000 Turbine Press. Regulator *CFR 41.7*			02 **(2)**									Effect **loss or malfunction** of EHC will have on CONTROL VALVES	3.7		BOTH 51	
259002 Rtr Water Level Control *CFR 41.7*						05						Effect of a **loss or malfunction** of RPV WATER LEVEL INPUT	3.5		BOTH 52	
261000 SGTS *CFR 41.7/41.9/41.11*	08 **(3)**											**Cause and effect relationship** between SGTS and PROCESS RAD	3.1		BOTH 54	
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 K3.01.
(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.

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**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		BOTH 61	
264000 EDGs *CFR 41.7*	07											**Cause and effect relationship** between EDG and ECCS	4.1		BOTH 55	
290001 Secondary CTMT *CFR 41.5/41.9*							02					**Predict/monitor changes** in AREA TEMPS operating Secondary CTMT	3.6		BOTH 64	
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	BWR SRO EXAMINATION OUTLINE	ES-401-1
FEBRUARY 2003	PLANT SYSTEMS - TIER 2 GROUP 2	

SYSTEM#/NAME *CFR REFERENCE*	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)	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		BOTH 34	
202001 Recirculation *CFR 41.7*				13								Design features/**interlocks** for EOC RPT	4.0		BOTH 57	
204000 RWCU *CFR 41.4*										03 **(1)**		**Manually operate/monitor** RWCU DRAIN FLOW CONTROLLER	3.1		BOTH 58	
205000 Shutdown Cooling *CFR 41.7/41.14*			01									Effect **loss or malfunction** of SDC will have on REACTOR PRESSURE	3.3		BOTH 59	
215003 IRM *CFR 41.2/41.7/41.6*			03									Effect **loss or malfunction** of IRMs will have on RCIS	3.7		BOTH 42	
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		**SRO** 88	
238003 MSIV Leakage Control *CFR 41.7/41.9*				06								**Design features/interlocks** for DEPRESSRIZATION OF MSLs	3.3		BOTH 68	
245000 Turbine Gen. and Auxiliaries *CFR*																
259001 Reactor Feedwater *CFR 41.4*										02		**Operate/monitor** Reactor Feedwater to MANUALLY START AN RFP	3.7		BOTH 52	
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 RWCU K2 KAs having RO/SRO importance <2.5.

SYSTEM#/NAME ***CFR REFERENCE***	**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)**	**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		BOTH 62	
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		**SRO** 89	
286000 Fire Protection *CFR 41.4*					05							**Operational implications** of DIESEL OPERATION applied to Fire Prot.	3.1		BOTH 63	
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		BOTH 65	
400000 Component Cooling Water *CFR 41.4*									01			Monitor **automatic operation** of CCW including SETPOINTS	3.0		BOTH 66	
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	BWR SRO EXAMINATION OUTLINE	ES-401-1
FEBRUARY 2003	PLANT SYSTEMS - TIER 2 GROUP 3	

SYSTEM#/NAME *CFR REFERENCE*	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)	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			BOTH 56	
215001 Traversing In-core Probe *CFR*																
233000 Fuel Pool Clg and Cleanup *CFR 41.5/41.10/43.7*					06 **(1)**						2.2. 28	**Operational implications** of MAX NORMAL HEAT LOAD to FPCC	3.5		BOTH 67	
239001 Main and Reheat Steam *CFR 41.4/41.5*					06 **(2)**							**Operational implications** of MSIVs applicable to Main and Reheat Steam	2.9		BOTH 60	
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		**SRO** 90	
K/A CATEGORY TOTALS	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**TIER TWO GROUP THREE TOT.**	**4**			

(1) Substituted Generic 2.2.28 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		BOTH 69	
2.1 CONDUCT OF OPERATIONS *CFR **43.1***	10				Knowledge of conditions and limitations in the **facility license**.	3.9		**SRO** 91	
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		**SRO** 92	
2.1 CONDUCT OF OPERATIONS *CFR 41.10/**43.2***	32				Ability to explain and apply **system limits and precautions**.	3.8		**SRO** 93	
2.1 CONDUCT OF OPERATIONS *CFR 41.5/41.10/**43.5***	34				Ability to maintain **primary plant chemistry** within allowable limits.	2.9		**SRO** 94	
2.2 EQUIPMENT CONTROL *CFR 41.10/**43.3***		11			Knowledge of the process for **controlling temporary changes**.	3.4		**SRO** 95	
2.2 EQUIPMENT CONTROL *CFR 41.10*		13			Knowledge of **tagging and clearance procedures**.	3.8		BOTH 70	
2.2 EQUIPMENT CONTROL *CFR **43.2***		22			Knowledge of **limiting conditions for operation** and safety limits.	4.1		**SRO** 96	
2.2 EQUIPMENT CONTROL *CFR **43.6***		33			Knowledge of **control rod programming**.	2.9		**SRO** 97	
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		BOTH 71	
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		BOTH 72	
2.4 EMERGENCY PROCEDURES / PLAN *CFR 41.10/43.5*				6	Knowledge **symptom based EOP mitigation strategies**.	3.8		BOTH 73	
2.4 EMERGENCY PROCEDURES / PLAN *CFR 41.10/43.5*				14	Knowledge of **general guidelines for EOP flowchart use**.	3.9		BOTH 74	
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		**SRO** 98	
2.4 EMERGENCY PROCEDURES / PLAN *CFR 41.10/**43.5***				37	Knowledge of the **lines of authority during an emergency**.	3.5		**SRO** 99	
2.4 EMERGENCY PROCEDURES / PLAN *CFR 41.10/43.5*				43	Knowledge of **emergency communications systems** and techniques.	3.5		BOTH 75	
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		**SRO** 100	
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: **RO** Operating Test Number: 1

Administrative Topic No./Subject		Evaluation Method (Type Code*) K/A Statement(s) / **Description**	K/As	Imp.	NOTES
A.1	Conduct of Operations	JPM (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	
		JPM (N) Obtain and interpret station electrical and mechanical drawings **Determine the effects of a failed component on system operation.**	2.1.24	2.8	
A.2	Equipment Control	JPM (M) Knowledge of tagging and clearance procedures **Perform the duties of an independent verifier for a tagout.**	2.2.13	3.6	
A.3	Radiation Control	JPM (N) Exposure limits and contamination control **Entry and egress from the Controlled Access Area including entry into a High Contamination Zone**	2.3.4	2.5	
A.4	Emergency Plan	JPM (N) Knowledge of RO's responsibilities in E-Plan implementation. **Complete preparations for OSC search and rescue assignment.**	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: **SRO** Operating Test Number: 1

Administrative Topic No./Subject		Evaluation Method (Type Code*) K/A Statement(s) / **Description**	K/As	Imp.	NOTES
A.1	Conduct of Operations	JPM (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	
		JPM (N) Apply technical specifications for a system. **Perform SRO review of LCO Status Sheet requiring a Safety Function Determination to enter LCO 3.0.6.**	2.1.12	4.0	
A.2	Equipment Control	JPM (M) Knowledge of tagging and clearance procedures **Perform a supervisory review and authorization of a clearance.**	2.2.13	3.8	
A.3	Radiation Control	JPM (N) Exposure limits and contamination control **Entry and egress from the Controlled Access Area including entry into a High Contamination Zone**	2.3.4	3.1	
A.4	Emergency Plan	JPM (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

ES-301 **Control Room Systems and Facility Walk-Through Test Outline** Form ES-301-2

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.** (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 from Startup Controller to Master Controller.** (D) (S) (L)	2	K5.01 A4.03	3.1 3.8	
3. 239001 Main and Reheat Steam System **Open MSIVs following auto isolation during plant startup.** (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 Pump following surveillance test with trip of HPCS line fill pump.** (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 an offsite power source to the Standby Diesel with rapid load shift to offsite on synchronization.** (N) (A) (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. Caution alerts of possible load shift after sync and action to remedy. (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 (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.** (N) (C)	7	A4.01	3.2	
7. 261000 Standby Gas Treatment System **Purge Drywell using Standby Gas Treatment System.** (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.4 3.2 3.2 3.0	
B.2 FACILITY WALK-THROUGH				
8. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. **Perform emergency containment venting for high H_2 concentration per EOP Encl. 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.
9. 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.** (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)
10. 286000 Fire Protection System 295031 Reactor Low Water Level **Local emergency start of diesel fire pump FPW-P1A.** (N) (P) (L)	8	A4.06 EA1.08	3.4 3.9	(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.** (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 from Startup Controller to Master Controller.** (D) (S) (L)	2	K5.01 A4.03	3.1 3.6	
3. 239001 Main and Reheat Steam System **Open MSIVs following auto isolation during plant startup.** (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 Pump following surveillance test with trip of HPCS line fill pump.** (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 an offsite power source to the Standby Diesel with rapid load shift to offsite on synchronization.** (N) (A) (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. Caution alerts of possible load shift after sync and action to remedy. (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 (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.** (N) (C)	7	A4.01	3.3	
7. 261000 Standby Gas Treatment System **Purge Drywell using Standby Gas Treatment System.** (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.6 3.4 4.0 3.0	
B.2 FACILITY WALK-THROUGH				
8. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. **Perform emergency containment venting for high H_2 concentration per EOP Encl. 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.
9. 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.** (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)
10. 286000 Fire Protection System 295031 Reactor Low Water Level **Local emergency start of diesel fire pump FPW-P1A.** (N) (P) (L)	8	A4.06 EA1.08	3.4 3.9	(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.** (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 MSIVs following auto isolation during plant startup.** (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 **Purge Drywell using Standby Gas Treatment System.** (D) (S)	9	K1.01 K1.02 A4.01 A4.03	3.6 3.4 4.0 3.0	
B.2 FACILITY WALK-THROUGH				
4. 223002 Containment Isolation System 500000 High Containment Hydrogen Conc. **Perform emergency containment venting for high H_2 concentration per EOP Encl. 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.
5. 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.** (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: **Backup JPMs** Operating Test Number: 1

B.1 CONTROL ROOM SYSTEMS

System / **JPM Title** / (Type Codes*)	S/F	K/A	Imp.	NOTES
1. 217000 Reactor Core Isolation Cooling **Shutdown RCIC and place in Standby following an automatic initiation.** (D) (S) (L)	2/4	A4.01 A4.02 A4.03	3.7/3.7 3.9/3.9 3.4/3.3	
2. 223001 Primary Containment and Auxiliaries 295028 High Drywell Temperature **Bypass drywell cooling isolation interlocks and restore drywell cooling with drywell temperature exceeding 200°F during the evolution.** (M) (A) (C) (L)	5	A2.10 EK2.04 EA1.03	3.6/3.8 3.6/3.8 3.9/3.9	After completing first five steps of EOP Enclosure 20 to bypass interlocks and restore cooling, DW temp exceeds 200°F requiring procedure to be stopped and alignment left as-is without completing the last four steps.
B.2 FACILITY WALK-THROUGH				
3. 233000 Fuel Pool Cooling and Cleanup 600000 Plant Fire On Site **Respond to Fire Outside the Control Room by verifying SFC upper pool cooling valve lineup.** (D) (P) (R)	9	A2.11 AK3.04	3.6/3/8 2.8/3.4	Requires opening three circuit breakers on two MCCs in Control Bldg and verifying three valve positions inside RCA.

* 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 • 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.	t 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