

Facility Name: River Bend Station		Date of Exam: 4/19/2010																
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolutions	1	4	3	3	N/A			5	4	N/A			1	20	0	0	0	
	2	2	0	0	N/A			1	1	N/A			3	7	0	0	0	
	Tier Totals	6	3	3	N/A			6	5	N/A			4	27	0	0	0	
2. Plant Systems	1	3	1	2	3	1	4	2	2	3	2	3	26	0	0	0		
	2	2	1	2	1	1	0	1	1	1	1	1	12	0	0	0		
	Tier Totals	5	2	4	4	2	4	3	3	4	3	4	38	0	0	0		
3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1	2	3	4	0
				3		3		2		2		0		0		0		

Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).

2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.

3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.

4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.

5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.

7.\* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.

8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G\* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.

9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	BWR Examination Outline							Form ES-401-1		
Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)										
Q#	E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
1	295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	0 2						Knowledge of the operational applications of power/flow distribution as it applies to partial or complete loss of forced core circulation.	3.3	1
2	295003 Partial or Complete Loss of AC / 6			0 4				Knowledge of the reasons for ground isolation as it applies to partial or complete loss of AC.	3	1
3	295004 Partial or Total Loss of DC Pwr / 6		0 3					Knowledge of the interrelations between partial or total loss of DC power and DC loads.	3.3	1
4	295005 Main Turbine Generator Trip / 3				0 2			Ability to operate and/or monitor RPS as it applies to main turbine generator trip.	3.6	1
5	295006 SCRAM / 1				0 5			Ability to operate and/or monitor neutron monitoring system as it applies to scram.	4.2	1
6	295016 Control Room Abandonment / 7					0 4		Ability to determine and interpret suppression pool temperature as it applies to control room abandonment.	3.9	1
7	295018 Partial or Total Loss of CCW / 8	0 1						Knowledge of the operational applications of effects on components/system operation as it applies to partial or total loss of CCW.	3.5	1
8	295019 Partial or Total Loss of Inst. Air / 8					0 1		Ability to determine and interpret instrument air pressure as it applies to partial or total loss of instrument air.	3.5	1
9	295021 Loss of Shutdown Cooling / 4		0 3					Knowledge of the interrelations between loss of shutdown cooling and RHR shutdown cooling.	3.6	1
10	295023 Refueling Acc / 8					0 2		Ability to determine and interpret fuel pool level as it applies to refueling accident.	3.4	1
11	295024 High Drywell Pressure / 5					0 1		Ability to determine and interpret drywell pressure as it applies to high drywell pressure.	4.2	1
12	295025 High Reactor Pressure / 3	0 3						Knowledge of the operational applications of SRV tailpipe pressure/temperature relationship as it applies to high reactor pressure.	3.6	1
13	295026 Suppression Pool High Water Temp. / 5				0 1			Ability to operate and/or monitor suppression pool cooling as it applies to suppression pool high water temperature.	4.1	1
14	295027 High Containment Temperature / 5			0 1				Knowledge of the reasons for emergency depressurization as it applies to high containment temperature.	3.7	1
	295028 High Drywell Temperature / 5									0
15	295030 Low Suppression Pool Wtr Lvl / 5				0 6			Ability to operate and/or monitor condensate storage and transfer (makeup to the suppression pool) as it applies to low suppression pool water level.	3.4	1
16	295031 Reactor Low Water Level / 2	0 2						Knowledge of the operational applications of natural circulation as it applies to reactor low water level.	3.8	1
17	295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1		0 4					Knowledge of the interrelations between scram condition present and reactor power above APRM downscale or unknown and SBLC system.	4.4	1
18	295038 High Off-site Release Rate / 9			0 3				Knowledge of the reasons for control room ventilation isolation as it applies to high off-site release rate.	3.7	1
19	600000 Plant Fire On Site / 8						04. 49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6	1
20	700000 Generator Voltage and Electric Grid Disturbances / 6				0 3			Ability to operate and/or monitor voltage regulator controls as it applies to generator voltage and electric grid disturbances.	3.8	1
K/A Category Totals:		4	3	3	5	4	1	Group Point Total:		20

ES-401		BWR Examination Outline						Form ES-401-1		
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)										
Q#	E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
21	295002 Loss of Main Condenser Vac / 3				0 3			Ability to operate and/or monitor RPS as it applies to loss of main condenser vacuum.	3.4	1
	295007 High Reactor Pressure / 3									0
	295008 High Reactor Water Level / 2									0
	295009 Low Reactor Water Level / 2									0
22	295010 High Drywell Pressure / 5	0 2						Knowledge of the operational applications of submergence vent control as it applies to high drywell pressure.	2.8	1
	295011 High Containment Temp / 5									0
23	295012 High Drywell Temperature / 5					0 2		Ability to determine and interpret drywell pressure as it applies to high drywell temperature.	3.9	1
	295013 High Suppression Pool Temp. / 5									0
	295014 Inadvertent Reactivity Addition / 1									0
24	295015 Incomplete SCRAM / 1						04. 47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	1
	295017 High Off-site Release Rate / 9									0
25	295020 Inadvertent Cont. Isolation / 5 & 7						04. 20	Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	1
	295022 Loss of CRD Pumps / 1									0
	295029 High Suppression Pool Wtr Lvl / 5									0
26	295032 High Secondary Containment Area Temperature / 5	0 1						Knowledge of the operational applications of personnel protection as it applies to high secondary containment area temperature.	3.6	1
	295033 High Secondary Containment Area Radiation Levels / 9									0
27	295034 Secondary Containment Ventilation High Radiation / 9						04. 46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	1
	295035 Secondary Containment High Differential Pressure / 5									0
	295036 Secondary Containment High Sump/Area Water Level / 5									0
	500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:		2	0	0	1	1	3	Group Point Total:	7	

ES-401		BWR Examination Outline											Form ES-401-1		
		Plant Systems - Tier 2/Group 1 (RO)													
Q#	System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
28,29	203000 RHR/LPCI: Injection Mode				1 4			0 9					28) Knowledge of RHR/LPCI: Injection Mode design feature(s) and or interlock(s) which provide for operation from remote shutdown panels. 29) Ability to predict and/or monitor changes in parameters associated with operating RHR/LPCS: Injection Mode controls including component cooling water systems.	3.6; 2.9	2
30	205000 Shutdown Cooling	1 5											Knowledge of the physical connections and/or cause-effect relationships between shutdown cooling and RHR service water.	3.5	1
	206000 HPCI														0
	207000 Isolation (Emergency) Condenser														0
31	209001 LPCS									0 6			Ability to monitor automatic operations of LPCS including lights and alarms.	3.6	1
32	209002 HPCS											02. 22	Knowledge of limiting conditions for operations and safety limits.	4	1
33,34	211000 SLC									0 4		04. 06	33)Ability to manually operate and/or monitor reactor power in the control room regarding SLC. 34) Knowledge of EOP mitigation strategies regarding SLC.	4.5; 3.7	2
35	212000 RPS									0 6			Ability to manually operate and/or monitor control rod position in the control room.	4.2	1
36	215003 IRM						0 5						Knowledge of the effect that a loss or malfunction of trip units will have on IRMs.	3.1	1
37	215004 Source Range Monitor				0 1								Knowledge of Source Range Monitor design feature(s) and or interlock(s) which provide for rod withdrawal blocks.	3.7	1
38	215005 APRM / LPRM						0 1						Knowledge of the effect that a loss or malfunction of RPS will have on APRM/LPRMs.	3.7	1
39	217000 RCIC									0 2			Ability to monitor automatic operations of RCIC including turbine startup.	3.6	1
40	218000 ADS				0 1								Knowledge of the operational implications of ADS logic operation as it applies to ADS.	3.8	1
41	223002 PCIS/Nuclear Steam Supply Shutoff						0 6						Knowledge of the effect that a loss or malfunction of various process information will have on Nuclear Steam Supply Shutoff.	2.8	1
42	239002 SRVs											04. 31	Knowledge of annunciator alarms, indications, or response procedures.	4.2	1
43,44	259002 Reactor Water Level Control			0 2				0 1					43) Knowledge of the effect that a loss or malfunction of the reactor water level control will have on reactor feedwater system. 44) Ability to predict and/or monitor changes in parameters associated with operating reactor water level controls including reactor water level.	3.7; 3.8	2
45	261000 SGTS			0 2									Knowledge of the effect that a loss or malfunction of the SGTS will have on off-site release rates.	3.6	1
46	262001 AC Electrical Distribution									0 4			Ability to monitor automatic operations of AC Electrical Distribution including load sequencing.	3.4	1
47	262002 UPS (AC/DC)				0 1								Knowledge of UPS (AC/DC) design feature(s) and or interlock(s) which provide for transferring from preferred power to alternate power supplies.	3.1	1
48,49	263000 DC Electrical Distribution		0 1				0 1						48) Knowledge of the electrical power supplies to major DC loads. 49) Knowledge of the effect that a loss or malfunction of AC electrical distribution will have on DC electrical distribution.	3.1; 3.2	2
50,51	264000 EDGs	0 1							0 8				50) Knowledge of the physical connections and/or cause-effect relationships between EDGs and AC electrical distribution. 51)Ability to (a) predict the impact of initiation of emergency generator room fire protection system on the EDGs and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.	3.8; 3.3	2
52	300000 Instrument Air	0 5											Knowledge of the physical connections and/or cause-effect relationships between instrument air system and Main Steam Isolation Valve air.	3.1	1
53	400000 Component Cooling Water							0 2					Ability to (a) predict the impact of high/low surge tank level on the CCW system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.	2.8	1
															0
K/A Category Totals:		3	1	2	3	1	4	2	2	3	2	3	Group Point Total:		26

ES-401		BWR Examination Outline											Form ES-401-1		
Plant Systems - Tier 2/Group 2 (RO)															
Q#	System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
	201001 CRD Hydraulic														0
	201002 RMCS														0
54	201003 Control Rod and Drive Mechanism	04											Knowledge of the physical connections and/or cause-effect relationships between control rod drive mechanism and reactor vessel.	2.9	1
	201004 RSCS														0
	201005 RCIS														0
	201006 RWM														0
	202001 Recirculation														0
55	202002 Recirculation Flow Control								02				Ability to monitor automatic operations of Recirculation Flow Control including lights and alarms.	3.4	1
56	204000 RWCU	05											Knowledge of the physical connections and/or cause-effect relationships between RWCU and plant air system.	2.7	1
	214000 RPIS														0
	215001 Traversing In-core Probe														0
	215002 RBM														0
57	216000 Nuclear Boiler Inst.							01					Ability to (a) predict the impact of detector equalizing valve leaks on the Nuclear Boiler Instrumentation system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.	2.9	1
58	219000 RHR/LPCI: Torus/Pool Cooling Mode	02											Knowledge of the electrical power supplies to pumps.	3.1	1
	223001 Primary CTMT and Aux.														0
	226001 RHR/LPCI: CTMT Spray Mode														0
	230000 RHR/LPCI: Torus/Pool Spray Mode														0
	233000 Fuel Pool Cooling/Cleanup														0
	234000 Fuel Handling Equipment														0
	239001 Main and Reheat Steam														0
60	239003 MSIV Leakage Control									02.22			Knowledge of limiting conditions for operations and safety limits.	4	1
61	241000 Reactor/Turbine Pressure Regulator							12					Ability to predict and/or monitor changes in parameters associated with operating Reactor/Turbine Pressure Regulator controls including reactor/turbine pressure regulating system load set reference.	2.9	1
62	245000 Main Turbine Gen. / Aux.			10									Knowledge of main turbine generator auxiliaries design feature(s) and or interlock(s) which provide for extraction steam.	2.6	1
	256000 Reactor Condensate														0
63	259001 Reactor Feedwater									01			Ability to manually operate and/or monitor reactor feedwater system flow in the control room.	3.6	1
	268000 Radwaste														0
64	271000 Offgas				04								Knowledge of the operational implications of hydrogen concentration measurement as it applies to Offgas.	2.9	1
	272000 Radiation Monitoring														0
	286000 Fire Protection														0
59	288000 Plant Ventilation			05									Knowledge of the effect that a loss or malfunction of plant ventilation will have on reactor building pressure.	3.1	1
	290001 Secondary CTMT														0
65	290003 Control Room HVAC			03									Knowledge of the effect that a loss or malfunction of the control room HVAC will have on control room temperature.	2.9	1
	290002 Reactor Vessel Internals														0
K/A Category Totals:		2	1	2	1	1	0	1	1	1	1	1	Group Point Total:		12

Facility Name: River Bend Station Date of Exam: 4/19/2010

Q#	Category	K/A #	Topic	RO		SRO-Only	
				IR	#	IR	#
66	1. Conduct of Operations	2.1. 03	Knowledge of shift or short-term relief turnover practices.	3.7	1		
67		2.1. 13	Knowledge of facility requirements for controlling vital/controlled access.	2.5	1		
68		2.1. 34	Knowledge of primary and secondary plant chemistry limits.	2.7	1		
		2.1.					
		2.1.					
		2.1.					
Subtotal					3		0
69	2. Equipment Control	2.2. 06	Knowledge of the process for making changes to procedures.	3	1		
70		2.2. 17	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.	2.6	1		
71		2.2. 42	Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9	1		
		2.2.					
		2.2.					
		2.2.					
Subtotal					3		0
72	3. Radiation Control	2.3. 12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2	1		
73		2.3. 05	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9	1		
		2.3.					
		2.3.					
		2.3.					
		2.3.					
Subtotal					2		0
74	4. Emergency Procedures / Plan	2.4. 30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	2.7	1		
75		2.4. 43	Knowledge of emergency communications systems and techniques.	3.2	1		
		2.4.					
		2.4.					
		2.4.					
		2.4.					
Subtotal					2		0
Tier 3 Point Total					10		0

Facility Name: River Bend Station														Date of Exam: 4/16/2010			
Tier	Group	RO K/A Category Points											SRO-Only Points				
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total	
1. Emergency & Abnormal Plant Evolutions	1	0	0	0	N/A			0	0	N/A			0	0	4	3	7
	2	0	0	0	N/A			0	0	N/A			0	0	2	1	3
	Tier Totals	0	0	0	N/A			0	0	N/A			0	0	6	4	10
2. Plant Systems	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	5
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
	Tier Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	8
3. Generic Knowledge and Abilities Categories				1	2	3	4	0				1	2	3	4	7	
				0	0	0	0					2	1	2	2		

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2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.

3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.

4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.

5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.

6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.

7.\* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.

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9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401		BWR Examination Outline						Form ES-401-1		
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	295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4									0
76	295003 Partial or Complete Loss of AC / 6					0 2		Ability to determine and interpret reactor power, pressure and level as it applies to a partial or complete loss of AC.	4.3	1
77	295004 Partial or Total Loss of DC Pwr / 6						04. 46	Ability to verify that the alarms are consistent with the plant conditions.	4.2	1
	295005 Main Turbine Generator Trip / 3									0
78	295006 SCRAM / 1					0 4		Ability to determine and interpret reactor pressure as it applies to a scram.	4.1	1
	295016 Control Room Abandonment / 7									0
	295018 Partial or Total Loss of CCW / 8									0
	295019 Partial or Total Loss of Inst. Air / 8									0
79	295021 Loss of Shutdown Cooling / 4					0 7		Ability to determine and interpret reactor recirculation flow as it applies to loss of shutdown cooling.	3.1	1
	295023 Refueling Acc / 8									0
	295024 High Drywell Pressure / 5									0
80	295025 High Reactor Pressure / 3					0 4		Ability to determine and interpret suppression pool level as it applies to high reactor pressure.	3.9	1
	295026 Suppression Pool High Water Temp. / 5									0
	295027 High Containment Temperature / 5									0
81	295028 High Drywell Temperature / 5						04. 06	Knowledge of EOP mitigation strategies.	4.7	1
82	295030 Low Suppression Pool Wtr Lvl / 5						02. 37	Ability to determine operability and/or availability of safety related equipment.	4.6	1
	295031 Reactor Low Water Level / 2									0
	295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1									0
	295038 High Off-site Release Rate / 9									0
	600000 Plant Fire On Site / 8									0
	700000 Generator Voltage and Electric Grid Disturbances / 6									0
K/A Category Totals:		0	0	0	0	4	3	Group Point Total:		7

ES-401		BWR Examination Outline							Form ES-401-1	
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)										
Q#	E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
83	295002 Loss of Main Condenser Vac / 3					0 1		Ability to determine and interpret condenser vacuum/absolute pressure as it applies to loss of main condenser vacuum.	3.1	1
	295007 High Reactor Pressure / 3									0
	295008 High Reactor Water Level / 2									0
	295009 Low Reactor Water Level / 2									0
	295010 High Drywell Pressure / 5									0
84	295011 High Containment Temp / 5					0 1		Ability to determine and interpret containment temperature as it applies to high containment temperature.	3.9	1
	295012 High Drywell Temperature / 5									0
	295013 High Suppression Pool Temp. / 5									0
	295014 Inadvertent Reactivity Addition / 1									0
	295015 Incomplete SCRAM / 1									0
	295017 High Off-site Release Rate / 9									0
	295020 Inadvertent Cont. Isolation / 5 & 7									0
	295022 Loss of CRD Pumps / 1									0
	295029 High Suppression Pool Wtr Lvl / 5									0
	295032 High Secondary Containment Area Temperature / 5									0
	295033 High Secondary Containment Area Radiation Levels / 9									0
	295034 Secondary Containment Ventilation High Radiation / 9									0
85	295035 Secondary Containment High Differential Pressure / 5						04. 45	Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	1
	295036 Secondary Containment High Sump/Area Water Level / 5									0
	500000 High CTMT Hydrogen Conc. / 5									0
K/A Category Totals:		0	0	0	0	2	1	Group Point Total:		3

ES-401		BWR Examination Outline											Form ES-401-1		
Plant Systems - Tier 2/Group 1 (SRO)															
Q#	System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
	203000 RHR/LPCI: Injection														0
	205000 Shutdown Cooling Mode														0
	206000 HPCI														0
	207000 Isolation (Emergency) Condenser														0
	209001 LPCS														0
	209002 HPCS														0
	211000 SLC														0
	212000 RPS														0
86	215003 IRM								0 3				Ability to (a) predict the impact of a stuck detector on the IRMs and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.	3.1	1
	215004 Source Range Monitor														0
	215005 APRM / LPRM														0
87	217000 RCIC								0 3				Ability to (a) predict the impact of valve closures on RCIC and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.	3.3	1
	218000 ADS														0
	223002 PCIS/Nuclear Steam Supply Shutoff														0
	239002 SRVs														0
88	259002 Reactor Water Level Control								0 3				Ability to (a) predict the impact of a loss of reactor water level input on the Reactor Water Level Control system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.	3.7	1
89	261000 SGTS											02. 25	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	1
	262001 AC Electrical Distribution														0
	262002 UPS (AC/DC)														0
	263000 DC Electrical Distribution														0
	264000 EDGs														0
	300000 Instrument Air														0
90	400000 Component Cooling Water											02. 44	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.4	1
															0
K/A Category Totals:		0	0	0	0	0	0	0	3	0	0	2	Group Point Total:		5

ES-401		BWR Examination Outline										Form ES-401-1			
Plant Systems - Tier 2/Group 2 (SRO)															
Q#	System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	IR	#
	201001 CRD Hydraulic														0
	201002 RMCS														0
	201003 Control Rod and Drive Mechanism														0
	201004 RSCS														0
	201005 RCIS														0
	201006 RWM														0
	202001 Recirculation														0
	202002 Recirculation Flow Control														0
	204000 RWCU														0
	214000 RPIS														0
	215001 Traversing In-core Probe														0
	215002 RBM														0
	216000 Nuclear Boiler Inst.														0
	219000 RHR/LPCI: Torus/Pool Cooling Mode														0
	223001 Primary CTMT and Aux.														0
	226001 RHR/LPCI: CTMT Spray Mode														0
	230000 RHR/LPCI: Torus/Pool Spray Mode														0
	233000 Fuel Pool Cooling/Cleanup														0
91	234000 Fuel Handling Equipment						0 3						Knowledge of the effect that a loss or malfunction of RC & IS will have on Fuel Handling Equipment.	3.6	1
	239001 Main and Reheat Steam														0
	239003 MSIV Leakage Control														0
	241000 Reactor/Turbine Pressure Regulator														0
	245000 Main Turbine Gen. / Aux.														0
	256000 Reactor Condensate														0
	259001 Reactor Feedwater														0
	268000 Radwaste														0
	271000 Offgas														0
92	272000 Radiation Monitoring												04. Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4	1
	286000 Fire Protection														0
	288000 Plant Ventilation														0
	290001 Secondary CTMT														0
	290003 Control Room HVAC														0
93	290002 Reactor Vessel Internals												02. Ability to apply Technical Specifications for a system.	4.7	1
K/A Category Totals:		0	0	0	0	0	1	0	0	0	0	2	Group Point Total:		3

Facility Name: River Bend Station      Date of Exam: 4/16/2010							
Q#	Category	K/A #	Topic	RO		SRO-Only	
				IR	#	IR	#
94	1. Conduct of Operations	2.1. 07	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.			4.7	1
95		2.1. 25	Ability to interpret reference materials, such as graphs, curves, tables, etc.			4.2	1
		2.1.					
		2.1.					
		2.1.					
		2.1.					
		Subtotal				0	
96	2. Equipment Control	2.2. 43	Knowledge of the process used to track inoperable alarms.			3.3	1
		2.2.					
		2.2.					
		2.2.					
		2.2.					
		2.2.					
	Subtotal				0		1
97	3. Radiation Control	2.3. 14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	1
98		2.3. 06	Ability to approve release permits			3.8	1
		2.3.					
		2.3.					
		2.3.					
		2.3.					
	Subtotal				0		2
99	4. Emergency Procedures / Plan	2.4. 11	Knowledge of abnormal condition procedures.			4.2	1
100		2.4. 23	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.			4.4	1
		2.4.					
		2.4.					
		2.4.					
		2.4.					
	Subtotal				0		2
Tier 3 Point Total					0		7

Facility: <u>River Bend Station</u> Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Date of Examination: <u>4/19/2010</u> Operating Test Number: <u>NRC</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,R	A1 Determine Primary Containment Water Level During Containment Flooding  (KA 2.1.25)
Conduct of Operations	N,R	A3 Determination of H2 Recombiner Settings  (KA 2.1.23)
Equipment Control	D,R	A2 Identify required tags and hanging sequence for SLC pump relief valve removal and replacement.  (KA 2.2.13)
Radiation Control	N,R	A8 Determine acceptability of a Radiation Work Permit  (KA 2.3.7)
Emergency Procedures/Plan	N,R	
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)		

Facility: <u>River Bend Station</u> Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Date of Examination: <u>4/19/2010</u> Operating Test Number: <u>NRC</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D,R	A5 Generate a manual LCO tracking sheet  (KA 2.1.18)
Conduct of Operations	N,R	A6 Determine Personnel Call-Out Availability  (KA 2.1.5)
Equipment Control	D,S	A7 Determination of Plant Safety Index  (KA 2.2.17)
Radiation Control	N,R	A8 Determine acceptability of a Radiation Work Permit  (KA 2.3.7)
Emergency Procedures/Plan	D,R	A9 Classify an Emergency  (KA 2.4.41)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: <ul style="list-style-type: none"> <li>(C)ontrol room, (S)imulator, or Class(R)oom</li> <li>(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs &amp; RO retakes)</li> <li>(N)ew or (M)odified from bank (≥ 1)</li> <li>(P)revious 2 exams (≤ 1; randomly selected)</li> </ul>		

Facility: <u>River Bend Station</u>		Date of Examination: <u>4/19/2010</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>NRC</u>
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
(S1) Perform Control Rod Operability Surveillance	A, S, D, E	1
(S2) Start ARC pump with separator level alarm	A, S, N, L	2
(S3) Shift Main EHC pumps (Low pressure)	A, S, N	3
(S4) Place suppression pool cooling and cleanup in service.	S, N	5
(S5) CCP Quarterly Valve Stroke STP	A, S, D, EN	8
(S6) Unload and secure Standby Diesel Generator	S, D	6
(C1) Bypass MSR steam supply interlocks (Enclosure 5)	C, D, E, L	4
(C2) Bypass an LPRM	C, D	7
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
(IP1) Vent the scram air header per Enclosure 11	D, E, R	1
(IP2) Place SWP pump in service from RSS	A, D, E, L, EN	8
(IP3) Shift Control Bldg chilled water in standby loop	D, EN	9
<p><b>@</b> All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A) lternate path	4-6 / 4-6 / 2-3	
(C) ontrol room		
(D) irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E) mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN) gineered safety feature	- / - / ≥ 1 (control room system)	
(L) ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N) ew or (M) odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P) revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R) CA		
(S) imulator	≥ 1 / ≥ 1 / ≥ 1	

Facility: <u>River Bend Station</u>		Date of Examination: <u>4/19/2010</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>NRC</u>
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
(S1) Perform Control Rod Operability Surveillance	A, S, D, E	1
(S2) Start ARC pump with separator level alarm	A, S, N, L	2
(S3) Shift Main EHC pumps (Low pressure)	A, S, N	3
(S4) Place suppression pool cooling and cleanup in service.	S, N	5
(S5) CCP Quarterly Valve Stroke STP	A, S, D, EN	8
(S6) Unload and secure Standby Diesel Generator	S, D	6
(C2) Bypass an LPRM	C, D	7
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
(IP1) Vent the scram air header per Enclosure 11	D, E, R	1
(IP2) Place SWP pump in service from RSS	A, D, E, L, EN	8
(IP3) Shift Control Bldg chilled water in standby loop	D, EN	9
<p><b>@</b> All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A) lternate path	4-6 / 4-6 / 2-3	
(C) ontrol room		
(D) irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E) mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN) gineered safety feature	- / - / ≥1 (control room system)	
(L) ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N) ew or (M) odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P) revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R) CA	≥ 1 / ≥ 1 / ≥ 1	
(S) imulator		

Facility: <u>River Bend Station</u>		Date of Examination: <u>4/19/2010</u>
Exam Level: RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test No.: <u>NRC</u>
Control Room Systems <sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
(S2) Start ARC pump with separator level alarm	A, S, N, L	2
(S3) Shift Main EHC pumps (Low pressure)	A, S, N	3
(S5) CCP Quarterly Valve Stroke STP	A, S, D, EN	8
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
(IP1) Vent the scram air header per Enclosure 11	D, E, R	1
(IP3) Shift Control Bldg chilled water in standby loop	D, EN	9
<p><b>@</b> All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(EN)gineered safety feature	- / - / ≥ 1 (control room system)	
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / ≥ 1	
(S)imulator		

Facility: River Bend Station Scenario No.: 1 Op-Test No.: NRC

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: Mode 1 100% power.

Turnover: Complete section 7.3 of STP-205-6301 for scheduled monthly performance. Complete STP-509-0101 MAIN TURBINE BYPASS SYSTEM VALVE CYCLE TEST

Event No.	Malf. No.	Event Type*	Event Description
1	NA	N (BOP,SRO)	Run Low Pressure Core Spray pump per STP-205-6301.
2	NA	N (ATC,SRO)	Complete STP-509-0101 MAIN TURBINE BYPASS SYSTEM VALVE CYCLE TEST
3	LPCS001	C (BOP,SRO)	Low Pressure Core Spray pump trip. (Technical Specifications)
4	CCS001A, CCS003C	C (BOP,SRO)	CCS Pump A trips, CCS Pump C fails to auto start. (Requires manual start of standby pump per AOP-0012)
5	MSS005J	C (BOP,SRO) R (ATC)	SRV B21-F047C fails open. (Technical Specifications) Lower reactor <90% by lowering reactor recirculation flow.
6	MSS001	M (All)	Steam leak in the drywell on SRV closure. Manual scram or automatic scram on high drywell pressure.
7	HPCS003	C (BOP,SRO)	HPCS fails to automatically initiate. (After EOP entry)
8	MSC007	C (All)	Drywell to Containment Leakage (After EOP entry).

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Total Malfunctions (7): LPCS trip, CCS A trip, CCS C fail, SRV open, Steak Leak, HPCS fail, DW to Cont Leakage.

Malfunctions after EOP entry (2): HPCS fail, DW to Cont Leakage

Abnormal events (3): AOP-0012, AOP-0001, AOP-0002

Major transients (1): Steam Leak

EOPs entered (2): EOP-0001, EOP-0002

EOP contingencies (1): Emergency depressurization

Critical tasks (2): Close SRV (Cont. integrity), Open 7 ADS SRVs when PSP exceeded. (Cont integrity)

Facility: River Bend Station                      Scenario No.: 2                      Op-Test No.: NRC

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: Mode 1, 87% power. Plant startup is in progress. GOP-0001 complete through step G.41

Turnover: Swap level control input to FWLC to support I&C surveillance. Continue with power ascension with reactor recirculation flow per RE instructions.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	N (ATC,SRO)	Swap Feedwater Level Control level input to alternate channel to support I&C surveillance scheduled later today.
2	NA	R (ATC)	Raise power with reactor recirculation flow.
3	RCIC005	I (BOP,SRO)	Inadvertent initiation of RCIC. (Technical Specifications)
4	ED003B	C (BOP,SRO)	Loss of NNS-SWG1B.
5		C (ATC,SRO)	Control Rod Drifts in. (AOP-0061). (Technical Specification) At the examiner's discretion a second control rod drifts in. Manual Scram.
6	CRD0014 RPS001A	M (All)	ATWS Hydraulic lock.
7	MGEN001	C (All)	Main Turbine/Generator Trip (After EOP entry)
8	SLC002A SLC001B	C (BOP,SRO)	SLC A sheared coupling. (After EOP entry) SLC B suction valve fails to open. (After EOP entry)

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Total Malfunctions (6):RCIC Initiation, NNS-SWG1B Loss, Rod Drift, ATWS, Turbine trip, SLC failures  
 Malfunctions after EOP entry (2): Turbine Trip, SLC failure  
 Abnormal events (2): AOP-0061, AOP-0001  
 Major transients (1): ATWS  
 EOPs entered (2): EOP-0001, EOP-0002  
 EOP contingencies (1): EOP-0001A  
 Critical tasks (2): Terminate injection to RPV, Begin inserting control rods

Facility: <u>River Bend Station</u>	Scenario No.: <u>3</u>	Op-Test No.: <u>NRC</u>	
Examiners: _____	Operators: _____	_____	
_____	_____	_____	
_____	_____	_____	
<p>Initial Conditions: <u>Mode 1, 70% power. Tech Spec required shutdown in progress due to expiration of TS 3.8.1 Condition B. Condition F entered 3 hours ago. Must be in Mode 3 in 9 hours. Div 2 Diesel Generator tagged out.</u></p> <p>Turnover: <u>GOP-0002 complete to Step 11. Remove FWS-P1A from service. Continue shutdown by driving control rods per RE instruction.</u></p>			
Event No.	Malf. No.	Event Type*	Event Description
1	NA	N (BOP,SRO)	Secure Feedwater Pump A per SOP-0009.
2	NA	R (ATC)	Reduce reactor power by control rod insertion.
3	B21001A	I (CRS)	RPV Level Instrument 004A fails downscale (Tech Requirement Manual) <i>Fail instrument which is NOT selected.</i>
4	RPS003A	C (SRO,BOP)	Loss of RPS Bus A
5	SASMO V102P	C (BOP,SRO)	SAS-MOV102 failed to automatically isolate. (Technical Specifications)
6	ED001	M (All)	Loss of offsite power.
7	RCIC002	C (BOP,SRO)	RCIC fails to automatically initiate. (After EOP entry)
8	HPCS002	C (BOP,SRO)	E22-F004 fails to open. (After EOP entry)
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Total Malfunctions (6): Level Instrument, RPS A, SAS-MOV102, LOP, RCIC, E22-F004

Malfunctions after EOP entry (2): RCIC, E22-F004

Abnormal events (2): AOP-0010, AOP-0004

Major transients (1): Loss of offsite power

EOPs entered (1): EOP-0001, EOP-0002

EOP contingencies (1): Alternate Level Control

Critical tasks (2): Reopen IAS-MOV106, Recover reactor water level.

Facility: <u>River Bend Station</u>	Scenario No.: <u>4</u>	Op-Test No.: <u>NRC</u>	
Examiners: _____	Operators: _____	_____	
_____	_____	_____	
_____	_____	_____	
Initial Conditions: <u>69% power</u>			
Turnover: <u>Rotate CCP pumps to support scheduled maintenance. Place CCP-P1A in service, secure CCP-P1C. Power ascension in progress. GOP-001 complete through G 41. Continue power ascension per the RCP at step 83.</u>			
Event No.	Malf. No.	Event Type*	Event Description
1	NA	N (BOP,SRO)	Rotate Reactor Plant Component Cooling Water Pumps.
2	NA	R (ATC)	Raise reactor power with control rods.
3	FWS006B	C (ATC,SRO)	Feedwater pump B minimum flow valve fails open.
4	RHR008A	C (SRO)	Division I ECCS Line Fill pump trip (Technical Specifications)
5	RCS016	C (SRO,ATC)	Reactor Recirculation FCV B LVDT failure (Technical Specification)
6	NA	C (BOP,SRO)	Gland steam evaporator outlet pressure control valve failure
7	RCS001A	M (All)	Reactor Recirculation Loop A Rupture
8	ED004A	C (All)	Loss of NJS-LDC1A (After EOP entry)
9	RHR001B	C (BOP,SRO)	RHR B Injection valve fails to open (After EOP entry).
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Total Malfunctions (6): Gland steam failure, FWS min flow valve, Line fill trip, LVDT failure, Loop Rupture, Inj valve failure.

Malfunctions after EOP entry (2): NJS-LDC1A, RHR B Inj Valve

Abnormal events (2): AOP-0006, AOP-0061

Major transients (1): Loop Rupture

EOPs entered (2): EOP-0001, EOP-0002

EOP contingencies (1): Alternate Level Control

Critical tasks (2): Isolate leak, Restore level above TAF