

# COVER SHEET

## -- INTERNAL DOCUMENTS -- ALL IN ONE ADAMS DOCUMENT

BROWNS FERRY 2000-301  
50-259, 260, and 296/2000-301

JUNE 12 - 15, JUNE 27 - 29, AND  
JUNE 30, 2000

*ES-401-1, -2, 4-5 - EXAM OUTLINES*

ES-201-1 - Exam Preparation Checklist *✓ RMB*

ES-501-1 - Post Exam Check Sheet *✓ RMB NOT COMPLETED*

ES-401-7 - Written Exam Quality Checklist *✓ RMB*

ES-401-9 - Written Exam Review Worksheet *N/A*

ES-301-3 - Operating Test Quality Checklist *✓ RMB*

ES-301-4 - Simulator Scenario Quality Checklist *✓ RMB*

ES-301-5 - Transient & Event Checklist *✓ RMB*

ES-301-6 - Competencies Checklist *✓ RMB*

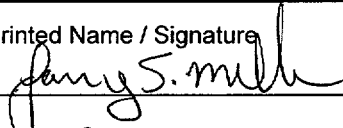

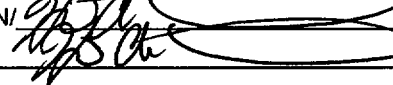
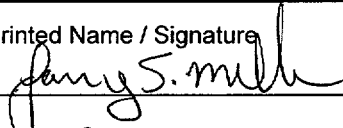

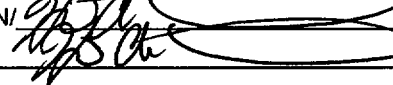
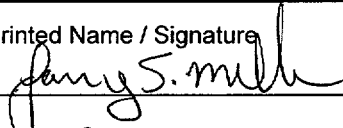

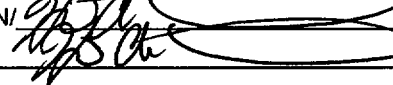
ES-403-1 - Written Exam Grading Quality Checklist *RO/SLO ✓ RMB*

ES-201-3 - Exam Security Agreements ☐

*201-2 EXAM OUTLINE QUAL. CHECKLIST ✓*

Facility: <u>Browns Ferry Nuclear Plant</u>		Date of Examination: <u>6/12-15, 27-29/00</u> Written 6/30/00
Examinations Developed by: <u>NRC</u>		
Target Date*	Task Description / Reference	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a & b)	RSB
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	RSB
-120	3. Facility contact briefed on security & other requirements (C.2.c)	RSB
-120	4. Corporate notification letter sent (C.2.d)	RSB
[-90]	[5. Reference material due (C.1.e; C.3.c)]	RSB
-75	6. Integrated examination outline(s) due (C.1.e & f; C.3.d)	RSB
-70	7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	NRC DEVELOPED RSB
-45	8. Proposed examinations, supporting documentation, and reference materials due (C.1.e, f, g & h; C.3.d)	RSB
-30	9. Preliminary license applications due (C.1.i; C.2.g; ES-202)	RSB
-14	10. Final license applications due and assignment sheet prepared (C.1.i; C.2.g; ES-202)	RSB
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	RSB
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f & h; C.3.g)	RSB
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	RSB
-7	14. Final applications reviewed; assignment sheet updated; waiver letters sent (C.2.g, ES-204)	RSB
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee and authorization granted to give written exams (if applicable) (C.3.k)	RSB
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	RSB
<p>* Target dates are keyed to the examination date identified in the corporate notification letter. They are for planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.</p> <p>[ ] Applies only to examinations prepared by the NRC.</p>		

Task Description		Date Complete
1.	Facility written exam comments or graded exams received and verified complete	7/12/00
2.	Facility written exam comments reviewed and incorporated and NRC grading completed, if necessary	7/14/00
3.	Operating tests graded by NRC examiners	7/19/00
4.	NRC Chief examiner review of written exam and operating test grading completed	7/14/00
5.	Responsible supervisor review completed	7/21/00
6.	Management (licensing official) review completed	7/21/00
7.	License and denial letters mailed	7/26/00
8.	Facility notified of results	7/27/00
9.	Examination report issued (refer to NRC MC 0610)	
10.	Reference material returned after final resolution of any appeals	N/A

Facility: BROWNS FERRY		Date of Exam: JUNE 30, 2000		Exam Level: SRO																																
Item Description				Initial																																
				a	b*	c#																														
1.	Questions and answers technically accurate and applicable to facility			jsm		100																														
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available			jsm		100																														
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401			jsm		100																														
4.	No more than 25 questions are duplicated from [practice exams, quizzes, and] the last two NRC licensing exams; enter the actual number of duplicated questions at right	NRC	Other	jsm		100																														
		12																																		
5.	[No (Less than 5 percent) question duplication from the license screening/audit exam (if independently written)]																																			
6.	Bank use meets limits (no more than 50 percent from the bank, at least 10 percent new, and the rest modified); enter the actual question distribution at right	Bank	Modified	New	jsm	100																														
		46	15	39																																
7.	Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehension/analysis level; enter the actual question distribution at right	Memory	C/A		jsm	100																														
		41	59																																	
8.	References/handouts provided do not give away answers			jsm		100																														
9.	Question distribution meets previously approved examination outline; deviations are justified			jsm		100																														
10.	Question psychometric quality and format meet ES, Appendix B, guidelines			jsm		100																														
11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet			jsm		100																														
<table border="0"> <tr> <td colspan="4">Printed Name / Signature</td> <td colspan="2">Date</td> </tr> <tr> <td>a. Author</td> <td>LARRY S. MELLEN/</td> <td colspan="2"></td> <td colspan="2">5/8/00</td> </tr> <tr> <td>b. Facility Reviewer(*)</td> <td>N/A</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>c. NRC Chief Examiner(*)</td> <td>RICHARD S. BALDWIN/</td> <td colspan="2"></td> <td colspan="2">5/12/00</td> </tr> <tr> <td>d. NRC Regional Supervisor(*)</td> <td>HAROLD O. CHRISTENSEN/</td> <td colspan="2"></td> <td colspan="2">5/15/00 6/22/00</td> </tr> </table>							Printed Name / Signature				Date		a. Author	LARRY S. MELLEN/			5/8/00		b. Facility Reviewer(*)	N/A					c. NRC Chief Examiner(*)	RICHARD S. BALDWIN/			5/12/00		d. NRC Regional Supervisor(*)	HAROLD O. CHRISTENSEN/			5/15/00 6/22/00	
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d. NRC Regional Supervisor(*)	HAROLD O. CHRISTENSEN/			5/15/00 6/22/00																																
<p>Note: * The facility reviewer's signature is not applicable for NRC-developed examinations; two independent NRC reviews are required.</p> <p># See special instructions (Section E.2.c) for Items 1, 4, 5, and 6.</p> <p>[ ] The items in brackets do not apply to NRC-prepared examinations.</p>																																				

Facility: BROWNS FERRY		Date of Exam: JUNE 30, 2000		Exam Level: RO		
Item Description				Initial		
				a	b*	c*
1.	Questions and answers technically accurate and applicable to facility			fsm		100
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available			fsm		100
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401			fsm		100
4.	No more than 25 questions are duplicated from [practice exams, quizzes, and] the last two NRC licensing exams; enter the actual number of duplicated questions at right	NRC	Other	fsm		100
		10				
5.	[No (Less than 5 percent) question duplication from the license screening/audit exam (if independently written)]					1
6.	Bank use meets limits (no more than 50 percent from the bank, at least 10 percent new, and the rest modified); enter the actual question distribution at right	Bank	Modified	New	fsm	100
		50	17	33		
7.	Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehension/analysis level; enter the actual question distribution at right	Memory	C/A		fsm	100
		41	59			
8.	References/handouts provided do not give away answers			fsm		100
9.	Question distribution meets previously approved examination outline; deviations are justified			fsm		100
10.	Question psychometric quality and format meet ES, Appendix B, guidelines			fsm		100
11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet			fsm		100

Printed Name / Signature		Date
a. Author	LARRY S. MELLEN/ <i>Larry S. Mellen</i>	5/8/00
b. Facility Reviewer(*)	N/A	
c. NRC Chief Examiner(*)	RICHARD S. BALDWIN/ <i>Richard S. Baldwin</i>	5/12/00
d. NRC Regional Supervisor(*)	HAROLD O. CHRISTENSEN/ <i>Harold O. Christensen</i>	5/15/00 4/22/01

Note: \* The facility reviewer's signature is not applicable for NRC-developed examinations; two independent NRC reviews are required.  
# See special instructions (Section E.2.c) for Items 1, 4, 5, and 6.  
[ ] The items in brackets do not apply to NRC-prepared examinations.

Facility: <u>Browns Ferry</u>		Date of Examination: <u>6/12-14/00</u> <u>6/23-27/00</u>		Operating Test Number: <u>1</u>	
1. GENERAL CRITERIA			Initials		
			a	b	c
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).		ASB		fsm
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.		ASB		fsm
c.	The operating test shall not duplicate items from the applicants' audit test(s) (see Section D.1.a).		NA ASB		N/A fsm
d.	Overlap with the written examination and between operating test categories is within acceptable limits.				fsm
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.		ASB		fsm
2. WALK-THROUGH (CATEGORY A & B) CRITERIA			--	--	--
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>- initial conditions</li> <li>- initiating cues</li> <li>- references and tools, including associated procedures</li> <li>- validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee</li> <li>- specific performance criteria that include: <ul style="list-style-type: none"> <li>- detailed expected actions with exact criteria and nomenclature</li> <li>- system response and other examiner cues</li> <li>- statements describing important observations to be made by the applicant</li> <li>- criteria for successful completion of the task</li> <li>- identification of critical steps and their associated performance standards</li> <li>- restrictions on the sequence of steps, if applicable</li> </ul> </li> </ul>		ASB		fsm
b.	The prescribed questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.		ASB		fsm
c.	Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.		NA ASB		N/A fsm
d.	At least 20 percent of the JPMs on each test are new or significantly modified.		ASB		fsm
3. SIMULATOR (CATEGORY C) CRITERIA			--	--	--
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.		ASB		fsm
<div style="display: flex; justify-content: space-between;"> <div> <p style="margin: 0;">Printed Name / Signature</p> <p style="margin: 0;">a. Author <u>RICHARD S. BALDWIN / Richard S. Baldwin</u></p> <p style="margin: 0;">b. Facility Reviewer(*) <u></u></p> <p style="margin: 0;">c. NRC Chief Examiner (*) <u>LARRY S. Mellow / Larry S. Mellow</u></p> <p style="margin: 0;">d. NRC Supervisor (*) <u>H. CHRISTAKOS / H. Christakos</u></p> </div> <div> <p style="margin: 0;">Date</p> <p style="margin: 0;"><u>5/12/00</u></p> <p style="margin: 0;"><u>5/12/00</u></p> <p style="margin: 0;"><u>5/15/00</u></p> </div> </div>					
(*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.					

Facility: BROWNS FERRY NUCLEAR PLANT		Date of Examination: 6/12-15, 27-29/00					
Item	Task Description	Initials					
		a	b*	c			
W R I T T E N	1. a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	FSM		MS			
	b. Assess whether the outline was systematically prepared and whether all knowledge and ability categories are appropriately sampled.	FSM		MS			
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	FSM		MS			
	d. Assess whether the repetition from previous examination outlines is excessive.	FSM		MS			
S I M	2. a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	MS		FSM			
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days.	MS		FSM			
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	MS		FSM			
W / T	3. a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks.	MS		FSM			
	b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301, (2) one task is conducted in a low-power or shutdown condition, (3) 40% of the tasks require the applicant to implement an alternate path procedure, (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and (5) the in-plant walk-through requires the applicant to enter the RCA.	MS		FSM			
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	MS		FSM			
	d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	MS		FSM			
G E N E R A L	4. a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.	MS		FSM			
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	MS		FSM			
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	MS		FSM			
	d. Check for duplication and overlap among exam sections.	MS		FSM			
	e. Check the entire exam for balance of coverage.	MS		FSM			
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	MS		FSM			
a. Author		L.S. Mellen (Written) / <u>FSM</u>		Printed Name / Signature	R.S. Baldwin (Op Test) / <u>R.S. Baldwin</u>	Date	5/16/00
b. Facility Reviewer(*)							
c. Chief Examiner		R.S. Baldwin (written) / <u>R.S. Baldwin</u>		L.S. Mellen (Op Test) / <u>FSM</u>		5/16/00	5/16/00
d. NRC Supervisor		H.O. Christensen / <u>H.O. Christensen</u>				5/16/00	5/16/00
(*) Not applicable for NRC-developed examinations.							

Facility: <u>Browns Ferry</u>		Date of Exam: <u>6/12/2010</u>		Scenario Numbers: <u>21314</u>		Operating Test No.: <u>1</u>	
QUALITATIVE ATTRIBUTES				Initials			
				a	b	c	
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.			<u>ROS</u>		<u>FSM</u>	
2.	The scenarios consist mostly of related events.			<u>ROS</u>		<u>FSM</u>	
3.	Each event description consists of <ul style="list-style-type: none"> <li>the point in the scenario when it is to be initiated</li> <li>the malfunction(s) that are entered to initiate the event</li> <li>the symptoms/cues that will be visible to the crew</li> <li>the expected operator actions (by shift position)</li> <li>the event termination point (if applicable)</li> </ul>			<u>ROS</u>		<u>FSM</u>	
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.			<u>ROS</u>		<u>FSM</u>	
5.	The events are valid with regard to physics and thermodynamics.			<u>ROS</u>		<u>FSM</u>	
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			<u>ROS</u>		<u>FSM</u>	
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.			<u>ROS</u>		<u>FSM</u>	
8.	The simulator modeling is not altered.			<u>ROS</u>		<u>FSM</u>	
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.						
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.			<u>ROS</u>		<u>FSM</u>	
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			<u>ROS</u>		<u>FSM</u>	
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).			<u>ROS</u>		<u>FSM</u>	
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			<u>ROS</u>		<u>FSM</u>	
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)				Actual Attributes	--	--	
1.	Total malfunctions (5-8)			<u>2 3 4</u> <u>5 5 5</u>	<u>ROS</u>	<u>FSM</u>	
2.	Malfunctions after EOP entry (1-2)			<u>6 14 13</u>	<u>ROS</u>	<u>FSM</u>	
3.	Abnormal events (2-4)			<u>3 13 13</u>	<u>ROS</u>	<u>FSM</u>	
4.	Major transients (1-2)			<u>1 1 1 1</u>	<u>ROS</u>	<u>FSM</u>	
5.	EOPs entered/requiring substantive actions (1-2)			<u>2 12 12</u>	<u>ROS</u>	<u>FSM</u>	
6.	EOP contingencies requiring substantive actions (0-2)			<u>2 12 2</u>	<u>ROS</u>	<u>FSM</u>	
7.	Critical tasks (2-3)			<u>2 14 14</u>	<u>ROS</u>	<u>FSM</u>	

HR  
5/16/06

## OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number							
			R1B		R2B		R4B		R3B	
RO	Reactivity	1			1		1		1	
	Normal	1			3		3		4	
	Instrument	2			4 A	4	2	5	3	6
	Component	2			2	5	6	4	2 5	4 A
	Major	1			6	6	7	7	7	7
R										
As RO	Reactivity	1			1					
	Normal	0			3					
	Instrument	1			4 A					
	Component	1			2					
	Major	1			6					
S										
As SRO	Reactivity	0					1			
	Normal	1					3			
	Instrument	1					2 5			
	Component	1					4 6			
	Major	1					7			
II123 II12 B II3										
SRO-U	Reactivity	0			1		1		1	
	Normal	1			3		3	3	4	
	Instrument	1			4 A		2 5	5	3 6	
	Component	1			2 5		4 6	4	2 5 A	
	Major	1			6		7	7	7	

Instructions: (1) Enter the operating test number and Form ES-D-1 event numbers for each evolution type.  
 (2) Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.4.d) but must be significant per Section C.2.a of Appendix D.

Author: RICHARD S. BALDWIN

Chief Examiner: RICHARD S. BALDWIN

Competencies	Applicant #1 SRO-U1(S/BOP)				Applicant #2 SRO-I1(RO/SRO)				Applicant #3 RO1(BOP/RO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms		2		4,5 .7		2		2,4,5 .6,7		2,3 5		2,6,7
Diagnose Events and Conditions		2		4,5 .7		2,4 6,		2,4,5 .6,7		3,5		2,6,7
Understand Plant and System Response		1		3,4 .7		1,2,		1,2,3 .4,5		3,5		1,2,6, 7
Comply With and Use Procedures (1)		1,2 6		3,5 .7		1,2 6		1,3,4 .5,6, 7		3,5 6		1,2,6, 7
Operate Control Boards (2)				3,4 .5, 7		1,2 4,6		NA		3, 4A, 5,6		1,2,6, 7
Communicate and Interact With the Crew		1,2, 3,4, 4A, 5,6		1,2 .3, 4,5 .6, 7		1,2, 3,4, 5,6		1,2,3 4,5, 6,7		1,2, 3,4 A,5, 6		1,2,3, 4,5,6, 7
Demonstrate Supervisory Ability (3)		1,2, 3,4, 5,6		NA		NA		1,2,3 4,5, 6,7		NA		NA
Comply With and Use Tech. Specs. (3)		4		NA		NA		1,2,4 .5,6, 7		NA		NA
Notes:  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

## Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: RICHARD S. BALDWIN  
 Chief Examiner: RICHARD S. BALDWIN

Competencies	Applicant #1 SRO-U2(S/BOP)				Applicant #2 SRO-I2(RO/SRO)				Applicant #3 RO2(BOP/RO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms		2		4,5 .7		2		2,4,5 .6,7		2,3 .5		2,6,7
Diagnose Events and Conditions		2		4,5 .7		2,4 .6		2,4,5 .6,7		3,5		2,6,7
Understand Plant and System Response		1		3,4 .7		1,2		1,2,3 .4,5		3,5		1,2,6 .7
Comply With and Use Procedures (1)		1,2 .6		3,5 .7		1,2 .6		1,3,4 .5,6,7		3,5 .6		1,2,6 .7
Operate Control Boards (2)				3,4 .5,7		1,2 .4,6		NA		3,4A .5,6		1,2,6 .7
Communicate and Interact With the Crew		1,2 .3,4,4A,5,6		1,2 .3,4,5,6,7		1,2 .3,4,5,6		1,2,3 .4,5,6,7		1,2 .3,4,4A,5,6		1,2,3 .4,5,6,7
Demonstrate Supervisory Ability (3)		1,2 .3,4,5,6		NA		NA		1,2,3 .4,5,6,7		NA		NA
Comply With and Use Tech. Specs. (3)		4		NA		NA		1,2,4 .5,6,7		NA		NA
Notes:  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

## Instructions:

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: RICHARD S. BALDWIN  
 Chief Examiner: RICHARD S. BALDWIN

Competencies	Applicant #1 SRO-U3(SRO)				Applicant #2 RO3(RO/BOP)				Applicant #3 RO4(BOP/RO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms		2	2,3,4 A,5,6, 7			2	2,3, 5,7			2,3, 5	2,3, 5,6, 7	
Diagnose Events and Conditions		2	2,3,4, 4A,5, 6,7			2,4, 6,	2,3, 5,7			3,5	2,3, 5,6, 7	
Understand Plant and System Response		1	2,3,4, 6,7			1,2,	4,6			3,5	2,3, 5,6, 7	
Comply With and Use Procedures (1)		1,2, 6	1,2,3, 4			1,2, 6	4,4 A			3,5, 6	1,2, 3,7	
Operate Control Boards (2)		NA	NA			1,2, 4,6	4,4 A,6			3, 4A, 5,6	1,2, 3,5, 7	
Communicate and Interact With the Crew		1,2, 3,4, 4A, 5,6	1,2,3, 4,4A, 5,6,7			1,2, 3,4, 5,6	1,2, 3,4, 4A, 5,6, 7			1,2, 3,4 A,5, 6	1,2, 3,4, 4A, 5,6, 7	
Demonstrate Supervisory Ability (3)		1,2, 3,4, 5,6	1,2,3, 4,4A, 5,6,7			NA	NA			NA	NA	
Comply With and Use Tech. Specs. (3)		4	2,5,6			NA	NA			NA	NA	
<b>Notes:</b>  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

**Instructions:**

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: RICHARD S. BALDWIN  
 Chief Examiner: RICHARD S. BALDWIN

FINAL

G:\Browns Ferry\Initial Examinations\Initial Exam 2000-301\ES-301-5 Transient Event Check List June 2000 (RSB).wpd

Competencies	Applicant #1 SURROGATE				Applicant #2 RO5(RO/BOP)				Applicant #3 RO6(BOP/RO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms		2	2,3,4 A,5,6, 7			2	2,3, 5,7			2,3, 5	2,3, 5,6, 7	
Diagnose Events and Conditions		2	2,3,4, 4A,5, 6,7			2,4, 6	2,3, 5,7			3,5	2,3, 5,6, 7	
Understand Plant and System Response		1	2,3,4, 6,7			1,2	4,6			3,5	2,3, 5,6, 7	
Comply With and Use Procedures (1)		1,2, 6	1,2,3, 4			1,2, 6	4,4 A			3,5, 6	1,2, 3,7	
Operate Control Boards (2)		NA	NA			1,2, 4,6	4,4 A,6			3, 4A, 5,6	1,2, 3,5, 7	
Communicate and Interact With the Crew		1,2, 3,4, 4A, 5,6	1,2,3, 4,4A, 5,6,7			1,2, 3,4, 5,6	1,2, 3,4, 4A, 5,6, 7			1,2, 3,4 A,5, 6	1,2, 3,4, 4A, 5,6, 7	
Demonstrate Supervisory Ability (3)		1,2, 3,4, 5,6	1,2,3, 4,4A, 5,6,7			NA	NA			NA	NA	
Comply With and Use Tech. Specs. (3)		4	2,5,6			NA	NA			NA	NA	
<b>Notes:</b>  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

**Instructions:**

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: RICHARD S. BALDWIN  
 Chief Examiner: RICHARD S. BALDWIN

FINAL

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Competencies	Applicant #1 SURROGATE				Applicant #2 RO7(RO/BOP)				Applicant #3 RO8(BOP/RO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms			2,3,4 A,5,6, 7	2,4 .5, 6,7			2,3, 5,6, 7	4,5,7			2,3, 5,7	2,6,7
Diagnose Events and Conditions			2,3,4, 4A,5, 6,7	2,4 .5, 6,7			2,3, 5,6, 7	4,5,7			2,3, 5,7	2,6,7
Understand Plant and System Response			2,3,4, 6,7	1,2 .3, 4,5			2,3, 5,6, 7	3,4,7			4,6	1,2,6, 7
Comply With and Use Procedures (1)			1,2,3, 4	1,3 .4, 5,6 .7			1,2, 3,7	3,5,7			4,4 A	1,2,6, 7
Operate Control Boards (2)			NA	NA			1,2, 3,5, 7	3,4,5 .7			4,4 A,6	1,2,6, 7
Communicate and Interact With the Crew			1,2,3, 4,4A, 5,6,7	1,2 .3, 4,5 .6, 7			1,2, 3,4, 4A, 5,6, 7	1,2,3 .4,5, 6,7			1,2, 3,4, 4A, 5,6, 7	1,2,3, 4,5,6, 7
Demonstrate Supervisory Ability (3)			1,2,3, 4,4A, 5,6,7	1,2 .3, 4,5 .6, 7			NA	NA			NA	NA
Comply With and Use Tech. Specs. (3)			2,5,6	1,2 .4, 5,6 .7			NA	NA			NA	NA
<b>Notes:</b>  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

**Instructions:**

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: RICHARD S. BALDWIN  
 Chief Examiner: RICHARD S. BALDWIN

Competencies	Applicant #1 SURROGATE				Applicant #2 RO9(RO/BOP)				Applicant #3 RO10(BOP/RO)			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms			2,3,4 A,5,6, 7	2,4 ,5, 6,7			2,3, 5,6, 7	4,5,7			2,3, 5,7	2,6,7
Diagnose Events and Conditions			2,3,4, 4A,5, 6,7	2,4 ,5, 6,7			2,3, 5,6, 7	4,5,7			2,3, 5,7	2,6,7
Understand Plant and System Response			2,3,4, 6,7	1,2 ,3, 4,5			2,3, 5,6, 7	3,4,7			4,6	1,2,6, 7
Comply With and Use Procedures (1)			1,2,3, 4	1,3 ,4, 5,6 ,7			1,2, 3,7	3,5,7			4,4 A	1,2,6, 7
Operate Control Boards (2)			NA	NA			1,2, 3,5, 7	3,4,5 ,7			4,4 A,6	1,2,6, 7
Communicate and Interact With the Crew			1,2,3, 4,4A, 5,6,7	1,2 ,3, 4,5 ,6, 7			1,2, 3,4, 4A, 5,6, 7	1,2,3 ,4,5, 6,7			1,2, 3,4, 4A, 5,6, 7	1,2,3, 4,5,6, 7
Demonstrate Supervisory Ability (3)			1,2,3, 4,4A, 5,6,7	1,2 ,3, 4,5 ,6, 7			NA	NA			NA	NA
Comply With and Use Tech. Specs. (3)			2,5,6	1,2 ,4, 5,6 ,7			NA	NA			NA	NA
<b>Notes:</b>  (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.												

**Instructions:**

Circle the applicant's license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Author: RICHARD S. BALDWIN  
 Chief Examiner: RICHARD S. BALDWIN

## Examination Security Agreement

Form ES-201-3

ES-201

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/12-6/26 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC. Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/12-6/26. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1. John M Pershall	H&T Lead Instructor	John Pershall	4-15-00	John Pershall	7-6-00	
2. Russell R. Eades	SOS Instructor	Russell R. Eades	5/19/00	Russell R. Eades	7/21/00	#1
3. Gerald Bradford	NO Instructor	Gerald Bradford	5/25/00	per Telecon	7/25/00	#1
4. James C. Hall	Instructor	James C. Hall	5/25/00	James C. Hall	7/25/00	
5. Rhonda L. Durham	Clerk	Rhonda L. Durham	5/25/00	Rhonda L. Durham	7-3-00	
6. Ronnie F. Hannah	VIA T Operator	Ronnie F. Hannah	5/26/00	Ronnie F. Hannah	7/2/00	
7. Van N. Miller	Simulator SVS	Van N. Miller	6/13/00	Van N. Miller	7/5/00	
8. Robert H. McDowen	SOS INSTR	Robert H. McDowen	6/16/00	Robert H. McDowen	7/12/00	
9. Pat Arundel	Simulator SVS	Pat Arundel	6/13/00	Pat Arundel	7/10/00	
10. MARVIN L. MEEK	SOS INSTRUCTOR	Marvin L. Meek	6/18/00	Marvin L. Meek	7-5-00	
11. Raymond C. Schaff	SAS Instructor	Raymond C. Schaff	6/16/00	Raymond C. Schaff	7/10/00	
12. Douglas G. Hakeneworth	INSTRUCTOR	Douglas G. Hakeneworth	6-12-00	Douglas G. Hakeneworth	7-5-00	
13. Thomas S. Albright	Simulator SVS Mgr.	Thomas S. Albright	6-13-00	Thomas S. Albright	7/5/00	
14. Randy Knight	Instructor	Randy Knight	6/13/00	Randy Knight	7/5/00	
15. DANIEL SNARE	INSTRUCTOR	Daniel Snare	6/13/00	Daniel Snare	7-15-00	
NOTES: Michael Love	SIM SVS	Michael Love	6/14/00	Michael Love	7-13-00	
			6/14/00	Michael Love	7/5/00	

NUREG-1021, Revision 8

note #1. Mr. Bradford has retired from TVA. Contacted Mr. Bradford per Telecon and he stated that he met the Post-Examination certification requirements, and authorize me to sign for

ES-201

## Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/12 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC. Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/12-16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
*	TEREY L. CHINN	Ops Training Manager	<i>Terey L. Chinn</i>	6/14/00	<i>Terey L. Chinn</i>	7/6/00
1.	B.W. Hargis	Est. Engineer	<i>B.W. Hargis</i>	6/14/00	<i>B.W. Hargis</i>	7/11/00
2.	MICHAEL MARTIN	OPS INST.	<i>Michael R. Martin</i>	6/21/00	<i>Michael R. Martin</i>	7/5/00
3.	BRUND CABALLERO	OPS TRNG INST	<i>Brund Caballero</i>	6/24/00	<i>Brund Caballero</i>	7/3/00
4.	MIKE NICHOLS	OPS TRNG INST	<i>Michael R. Nichols</i>	6-26-00	<i>Michael R. Nichols</i>	7-5-00
5.	J.D. COVINGTON	OPS TRNG INST	<i>James D. Covington</i>	6/26/00	<i>James D. Covington</i>	7/5/00
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

NOTES: \* Scenario #3 only

Facility: <u>Browns Ferry</u>		Date of Exam: <u>6/30/00</u>		Exam Level: <u>RO/SRO</u>	
Item Description	Initials				
	a	b	c		
1. Answer key changes and question deletions justified and documented	EL		MSB		
2. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	EL		MSB		
3. Grading for all borderline cases (80% +/- 2%) reviewed in detail	EL		MSB		
4. All other failing examinations checked to ensure that grades are justified	N/A		N/A		
5. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	EL		MSB		
Printed Name / Signature		Date			
a. Grader	<u>Edwin Lea / Edwin Lea</u>		<u>7/14/2000</u>		
b. Facility Reviewer(*)	_____		_____		
c. NRC Chief Examiner (*)	<u>RICHARD S. BALDWIN / Richard S. Baldwin</u>		<u>7/14/00</u>		
d. NRC Supervisor (*)	<u>H.O. CHRISTENSEN / H.O. Christensen</u>		<u>7/14/00</u>		
(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.					

Facility: <u>Browns Ferry</u>		Date of Exam: <u>6-30-00</u>		Exam Level: RO <u>(SRO)</u>	
Item Description		Initials			
		a	b	c	
1.	Answer key changes and question deletions justified and documented	<u>EL</u>		<u>RS</u>	
2.	Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	<u>EL</u>		<u>RS</u>	
3.	Grading for all borderline cases (80% +/- 2%) reviewed in detail	<u>EL</u>		<u>RS</u>	
4.	All other failing examinations checked to ensure that grades are justified	<u>N/A</u>		<u>N/A</u>	
5.	Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	<u>EL</u>		<u>RS</u>	
Printed Name / Signature		Date			
a. Grader	<u>Edwin Lea / Edwin Lea</u>	<u>7/14/2000</u>			
b. Facility Reviewer(*)	_____	_____			
c. NRC Chief Examiner (*)	<u>RICHARD S. BARNUM / Richard S. Barnum</u>	<u>7/14/00</u>			
d. NRC Supervisor (*)	<u>H. Ochtersen / H. Ochtersen</u>	<u>7/22/00</u>			
(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.					

Facility: Browns Ferry		Date of Exam: June 30, 2000										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	1	4	5	4				7	4			2	26
	2	1	4	2				2	5			3	17
	Tier Totals	5	9	6				9	9			5	43
2. Plant Systems	1	1	3	2	4	1	3	1	2	1	2	3	23
	2	2	1	2	0	0	2	3	0	2	1		13
	3	0	0	0	1	1	0	0	0	1	0	1	4
	Tier Totals	3	4	4	5	2	5	4	2	4	3	4	40
3. Generic Knowledge and Abilities					Cat 1		Cat 2		Cat 3		Cat 4		17
					5		3		3		6		
<p><b>Note:</b></p> <ol style="list-style-type: none"> <li>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).</li> <li>2. Actual point totals must match those specified in the table.</li> <li>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</li> <li>4. Systems/evolutions within each group are identified on the associated outline.</li> <li>5. The shaded areas are not applicable to the category/tier.</li> <li>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.</li> <li>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.</li> </ol>													

ES-401

**BWR SRO Examination Outline**  
**Emergency and Abnormal Plant Evolutions - Tier 1/Group 1**

Form ES-401-1

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295003 Partial or Complete Loss of AC Pwr / 6		02	06	01			Emergency Generators Containment Isolation AC Electrical Distribution	4.1/4.2 3.7/3.7 3.7/3.8	
295006 SCRAM / 1					06		Cause of Reactor Scram	3.5/3.8	
295007 High Reactor Pressure / 3		02					Reactor Power	3.8/3.8	
295009 Low Reactor Water Level / 2			01				Recirc Pump Runback	3.2/3.3	
295010 High Drywell Pressure / 5		02					Drywell/Suppression Chamber Differential Pressure	3.5/3.5	
295013 High Suppression Pool Temp. / 5				02			Suppression Pool Cooling	3.9/3.9	
295014 Inadvertent Reactivity Addition / 1				03		2.1.7	RMCS Evaluate Plant Performance	3.5/3.5 3.7/4.4	
295015 Incomplete SCRAM / 1		01					CRD Hydraulics	3.8/3.9	
295016 Control Room Abandonment / 7					06		Cooldown Rate	3.3/3.5	
295017 High Off-site Release Rate / 9				03			Ventilation System	3.4/3.4	
295023 Refueling Accidents Cooling Mode / 8				05	02		Fuel Transfer System Fuel Pool Level	2.8/3.5 3.4/3.7	
295024 High Drywell Pressure / 5	01						Drywell Integrity	4.1/4.2	
295025 High Reactor Pressure / 3				05			RCIC	3.7/3.7	
295026 Suppression Pool High Water Temp. / 5			04				SBLC Injection	3.7/4.1	
295027 High Containment Temperature / 5									
295030 Low Suppression Pool Water Level / 5	01						Drywell Combustible Limit	3.8/4.1	
295031 Reactor Low Water Level / 2		01	05	08			Reactor Water Level Indication Emergency Depressurization Alt Injection System	4.4/4.4 4.2/4.3 3.8/3.9	
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1						2.4.6	Knowledge of Symptom Based EOPs	3.1/4.0	
295038 High Off-site Release Rate / 9	02						Protection of General Public	4.2/4.4	
500000 High Containment Hydrogen Conc. / 5	01				03		Containment Integrity Drywell Combustible Limit	3.3/3.9 3.3/3.8	
K/A Category Totals:	4	5	4	7	4	2	Group Point Total:		26

<div>ES-401</div> <div>BWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2</div> <div>Form ES-401-1</div>									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					01		Power Flow Map	3.5/3.8	
295002 Loss of Main Condenser Vacuum / 3				06			Reactor/Pressure Turbine Regulating System	3.0/3.1	
295004 Partial or Total Loss of DC Pwr / 6		03					DC Bus Loads	3.3/3.3	
295005 Main Turbine Generator Trip / 3					05		Reactor Power	3.8/3.9	
295008 High Reactor Water Level / 2		06					RCIC	3.4/3.6	
295011 High Containment Temperature / 5									
295012 High Drywell Temperature / 5					01		Drywell Temperature	3.8/3.9	
295018 Partial or Total Loss of CCW / 8			01				Isolation of non-essential heat loads	2.9/3.2	
295019 Partial or Total Loss of Inst. Air / 8				03			IA Compressor Power Supply	3.0/3.0	
295020 Inadvertent Cont. Isolation / 5 & 7						2.4.4	Indications for EOP and AOP entry	4.0/4.3	
295021 Loss of Shutdown Cooling / 4		01					Reactor Water Temperature	3.6/3.7	
295022 Loss of CRD Pumps / 1									
295028 High Drywell Temperature / 5	01				03		Reactor Water Level Measurement Reactor Water Level	3.5/3.7 3.6/3.8	
295029 High Suppression Pool Water Level / 5		05					Containment/drywell Vacuum Breaker	3.1/3.3	
295032 High Secondary Containment Area Temperature / 5						2.4.4	Indications for EOP and AOP entry Conditions	4.0/4.3	
295033 High Secondary Containment Area Radiation Levels / 9						2.3.10	Reduce Excessive Radiation Levels	2.9/3.3	
295034 Secondary Containment Ventilation High Radiation / 9									
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5			03				Isolating Affected Systems	3.5/3.6	
600000 Plant Fire On Site / 8					15		Fire Watch	2.3/3.5	
K/A Category Point Totals:	1	4	2	2	5	3	Group Point Total:		17

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BWR SRO Examination Outline  
Plant Systems - Tier 2/Group 1

Form ES-401-1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
201005 RCIS														
202002 Recirculation Flow Control							05			09		Reactor Power Core Flow	3.6/3.6 3.2/3.3	
203000 RHR/LPCI: Injection Mode				06								NPSH	3.5/3.5	
206000 HPCI		01										System Valves	3.2/3.3	
207000 Isolation (Emergency) Condenser														
209001 LPCS				08								Automatic System Initiation	3.8/4.0	
209002 HPCS														
211000 SLC		02										Explosive Valves	3.1/3.2	
212000 RPS						05						RPS Sensor Inputs	3.5/3.8	
215004 Source Range Monitor								02				SRM INOP	3.4/3.7	
215005 APRM / LPRM						01						RPS	3.7/3.8	
216000 Nuclear Boiler Instrumentation											2.1.28	Purpose of Major Components	3.2/3.3	
217000 RCIC								19				High Suppression Pool Temperature	3.5/3.6	
218000 ADS		01										ADS' Logic	3.1/3.3	
223001 Primary CTMT and Auxiliaries														
223002 PCIS/Nuclear Steam Supply Shutoff			01									High Suppression Pool Temperature	3.7/3.7	
226001 RHR/LPCI: CTMT Spray Mode										03		Keepfill System	3.5/3.4	
239002 SRVs				03	04							SRV Siphon Prevention Tail Pipe Temperature Monitoring	3.1/3.3 3.3/3.5	
241000 Reactor/Turbine Pressure Regulator			02									Reactor Pressure	4.2/4.3	
259002 Reactor Water Level Control									06			RX Water Level Following Scram	3.0/3.0	
261000 SGTS						01						A.C. Distribution	2.9/3.0	
262001 AC Electrical Distribution	01			03							2.1.1	Emergency Generators Interlocks Conduct of Ops	3.8/4.3 3.1/3.4 3.7/3.8	
264000 EDGs											2.1.32	System Limits and Precautions	3.4/3.8	
290001 Secondary CTMT														
K/A Category Point Totals:	1	3	2	4	1	3	1	2	1	2	3	Group Point Total:		23

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BWR SRO Examination Outline  
Plant Systems - Tier 2/Group 2

Form ES-401-1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
201001 CRD Hydraulic			03									CRD Mechanism	3.1/3.2	
201002 RMCS														
201004 RSCS														
201006 RWM							02					Status of Control Rod Movement Blocks	3.4/3.5	
202001 Recirculation						01						Jet Pumps	3.5/3.7	
204000 RWCU									04			RWCU Interlocks and Trips	3.4/3.5	
205000 Shutdown Cooling						04						Reactor Water Level	3.6/3.6	
214000 RPIS														
215002 RBM														
215003 IRM	06									03		APRM SCRAM Signal IRM Range Switches	3.9/4.0 3.6/3.4	
219000 RHR/LPCI: Torus/Pool Cooling Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
234000 Fuel Handling Equipment									02			Interlock Operation	3.1/3.7	
239003 MSIV Leakage Control														
245000 Main Turbine Gen. and Auxiliaries														
259001 Reactor Feedwater							02					Feedwater Inlet Temperature	3.2/3.3	
262002 UPS (AC/DC)														
263000 DC Electrical Distribution														
271000 Offgas														
272000 Radiation Monitoring			04									Main Steam System	3.7/3.8	
286000 Fire Protection							05					System Lineups	3.2/3.2	
290003 Control Room HVAC	01											Radiation Monitors	3.4/3.5	
300000 Instrument Air		01										Instrument Air Compressor	2.8/2.8	
400000 Component Cooling Water														
K/A Category Point Totals:	2	1	2			2	3		2	1		Group Point Total:		13

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BWR SRO Examination Outline  
Plant Systems - Tier 2/Group 3

Form ES-401-1

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
201003 Control Rod and Drive Mechanism														
215001 Traversing In-core Probe				01							2.1.32	Primary Containment Isolation System Limits and Precautions	3.4/3.5 3.4/3.8	
233000 Fuel Pool Cooling and Cleanup									02			Pump Trips	2.6/2.6	
239001 Main and Reheat Steam														
256000 Reactor Condensate					10							Air Ejection Operation	2.8/2.8	
268000 Radwaste														
288000 Plant Ventilation														
290002 Reactor Vessel Internals														
K/A Category Point Totals:				1	1				1		1	Group Point Total:		4

## Plant-Specific Priorities

System / Topic	Recommended Replacement for...	Reason	Points

Plant-Specific Priority Total (limit 10):

Facility:		Date of Exam: June 30, 2000		Exam Level: SRO	
Category	K/A #	Topic	Imp.	Points	
Conduct of Operations	2.1.6	Supervise During Transients	2.1/4.3		
	2.1.10	Conditions and Limitations in License	2.7/3.9		
	2.1.26	Non-Nuclear safety Procedures	2.2/2.6		
	2.1.29	Valve Lineup	3.4/3.3		
	2.1.1	Knowledge of Operations	3.7/3.8		
	2.1.			5	
	Total				
Equipment Control	2.2.3	Unit Differences	3.1/3.3		
	2.2.13	Tagging and Clearance	3.6/3.8		
	2.2.32	RO Duties during Fuel Handling	3.5/3.3		
	2.2.				
	2.2.				
	2.2.				
	Total			3	
Radiation Control	2.3.11	Control Radiation Release	2.7/3.2		
	2.3.10	Reduce Rad Levels	2.9/3.3		
	2.3.9	Containment Purge	2.5/3.4		
	2.3.				
	2.3.				
	2.3.				
	Total			3	
Emergency Procedures/ Plan	2.4.1	EOP entry conditions	4.3/4.6		
	2.4.30	Event Reporting	2.2/3.6		
	2.4.44	EP Protective Actions	2.1/4.0		
	2.4.18	Specific Bases for EOP's	2.7/3.6		
	2.4.14	EOP Flow Charts	3.0/3.9		
	2.4.32	Loss of all Annunciators	3.3/3.5		
	Total			6	
Tier 3 Point Total (SRO)				/17	

Facility: Browns Ferry		Date of Exam: June 30, 2000										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	1	1	3	2				2	3			2	13
	2	1	4	5				3	4			2	19
	3	0	1	1				0	1			1	4
	Tier Totals	2	8	8				5	8			5	36
2. Plant Systems	1	2	3	4	3	1	2	3	3	2	3	2	28
	2	2	2	2	3	1	2	3	0	1	2	1	19
	3	0	0	0	1	0	0	0	0	2		1	4
	Tier Totals	4	5	6	7	2	4	6	3	5	5	4	51
3. Generic Knowledge and Abilities				Cat 1		Cat 2		Cat 3		Cat 4		13	
				3		4		3		3			
<p>Note: 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).</p> <p>2. Actual point totals must match those specified in the table.</p> <p>3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.</p> <p>4. Systems/evolutions within each group are identified on the associated outline.</p> <p>5. The shaded areas are not applicable to the category/tier.</p> <p>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.</p> <p>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.</p>													

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**BWR RO Examination Outline**  
**Emergency and Abnormal Plant Evolutions - Tier 1/Group 1**

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295005 Main Turbine Generator Trip / 3					05		Reactor Power	3.8/3.9	
295006 SCRAM / 1					06		Cause of Reactor Scram	3.5/3.8	
295007 High Reactor Pressure / 3		02					Reactor Power	3.8/3.8	
295009 Low Reactor Water Level / 2			01			2.1.31	Recirc Pump Runback Locate Controls and Indications	3.2/3.3 4.2/3.9	
295010 High Drywell Pressure / 5		02					Drywell/Suppression Chamber Differential Pressure	3.5/3.5	
295014 Inadvertent Reactivity Addition / 1				03			rmcs	3.5/3.5	
295015 Incomplete SCRAM / 1		01					CRD Hydraulics	3.8/3.9	
295024 High Drywell Pressure / 5	01						Drywell Integrity	4.1/4.2	
295025 High Reactor Pressure / 3				05			RCIC	3.7/3.7	
295031 Reactor Low Water Level / 2			05				Emergency Depressurization	4.2/4.3	
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1						2.4.6	Knowledge of Symptom Based EOPs	3.1/4.0	
500000 High Containment Hydrogen Conc. / 5					03		Drywell Combustible Limit	3.3/3.8	
K/A Category Totals:	1	3	2	2	3	2	Group Point Total:		13

<div>ES-401</div> <div>BWR RO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2</div> <div>Form ES-401-2</div>									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					02	2.4.11	Power Flow Map Abnormal Condition Procedures	3.5/3.8 3.4/3.6	
295002 Loss of Main Condenser Vacuum / 3				06			Reactor/Pressure Turbine Regulating System	3.0/3.1	
295003 Partial or Complete Loss of AC Pwr / 6		02	06				Emergency Generators Containment Isolation	4.1/4.2 3.7/3.7	
295004 Partial or Complete Loss of DC Pwr / 6		03					DC Bus Loads	3.3/3.3	
295008 High Reactor Water Level / 2		06					RCIC	3.4/3.6	
295011 High CTMT Temperature / 5									
295012 High Drywell Temperature / 5					01		Drywell Temperature	3.8/3.9	
295013 High Suppression Pool Temp. / 5				02			Suppression Pool Cooling	3.9/3.9	
295016 Control Room Abandonment / 7									
295017 High Off-site Release Rate / 9									
295018 Partial or Complete Loss of CCW / 8			01				Isolation of non-essential heat loads	2.9/3.2	
295019 Part. or Comp. Loss of Inst. Air / 8				03			IA Compressor Power Supply	3.0/3.0	
295020 Inadvertent Cont. Isolation / 5 & 7						2.4.4	Indications for EOP and AOP entry	4.0/4.3	
295022 Loss of CRD Pumps / 1					02		CRD System Status	3.3/3.4	
295026 High Suppression Pool Water Temp. / 5			04				SBLC Injection	3.7/4.1	
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5					03		Reactor Water Level	3.4/3.7	
295029 High Suppression Pool Water Level / 5		05					Containment/drywell Vacuum Breaker	3.1/3.3	
295030 Low Suppression Pool Water Level / 5	01						Steam Condensation	3.8/4.1	
295033 High Sec. Cont. Area Rad. Levels / 9									
295034 Sec. Cont. Ventilation High Rad. / 9			01				Isolating Secondary Containment Ventilation	3.8/4.1	
295038 High Off-site Release Rate / 9									
600000 Plant Fire On Site / 8			04				Abnormal Procedure for Plant Fire	2.8/3.4	
K/A Category Point Totals:	1	4	5	3	4	2	Group Point Total:		19

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BWR RO Examination Outline  
Emergency and Abnormal Plant Evolutions - Tier 1/Group 3

Form ES-401-2

E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Points
295021 Loss of Shutdown Cooling / 4		01					Reactor Water Temperature	3.6/3.7	
295023 Refueling Accidents / 8					02		Fuel Pool Level	3.4/3.7	
295032 High Secondary Containment Area Temperature / 5						2.4.4		4.0/4.3	
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5			03				Isolating Affected Systems	3.5/3.6	
K/A Category Point Totals:		1	1		1	1	Group Point Total:		4

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BWR RO Examination Outline  
Plant Systems - Tier 2/Group 1

Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
201001 CRD Hydraulic			03									CRD Mechanism	3.1/3.2	
201002 RMCS								04		09		Control Rod Block Core Flow	3.2/3.1 3.2/3.3	
201005 RCIS														
202002 Recirculation Flow Control			05									Recirculation Pump Speed	3.2/3.3	
203000 RHR/LPCI: Injection Mode				06								Core Flow	3.5/3.5	
206000 HPCI		01								01		System Valves Turbine Speed Controls	3.2/3.3 3.7/3.7	
207000 Isolation (Emerg.) Condenser														
209001 LPCS				08								Automatic System Initiation	3.8/4.0	
209002 HPCS														
211000 SLC		02							05			Explosive Valves Flow Indication	3.1/3.2 4.1/4.2	
212000 RPS						05						RPS Sensor Inputs	3.5/3.8	
215003 IRM	06									03		APRM SCRAM Signal IRM Range Switches	3.9/4.0 3.6/3.4	
215004 SRM														
215005 APRM / LPRM						01						RPS	3.7/3.8	
216000 Nuclear Boiler Instrumentation											2.1.28	Purpose of Major Components	3.2/3.3	
217000 RCIC								19				High Suppression Pool Temperature	3.5/3.6	
218000 ADS		01										High Suppression Pool Temperature	3.1/3.3	
223001 Primary CTMT and Auxiliaries	04						02					Drywell pressure Drywell Flo and Drain System	3.6/3.7 3.1/3.2	
223002 PCIS/Nuclear Steam Supply Shutoff			01				02					Reactor Water Level Valve Closures	3.7/3.7 3.7/3.7	
239002 SRVs				03	04							SRV Siphon Prevention Tail Pipe Temperature Monitoring	3.1/3.3 3.3/3.5	
241000 Reactor/Turbine Pressure Regulator			02									Reactor Pressure	4.2/4.3	
259001 Reactor Feedwater							02					Feedwater Inlet Temperature	3.2/3.3	
259002 Reactor Water Level Control									06			RX Water Level Following Scram	3.0/3.0	
261000 SGTS								13				High Sec Containment Vent Exh Radiation	3.4/3.7	
264000 EDGs											2.1.32	System Limits and Precautions	3.4/3.8	
K/A Category Point Totals:	2	3	4	3	1	2	3	3	2	3	2	Group Point Total:		28

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BWR RO Examination Outline  
Plant Systems - Tier 2/Group 2

Form ES-401-2

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
201003 Control Rod and Drive Mechanism				02								Detection of Uncoupled Rod	3.8/3.9	
201004 RSCS														
201006 RWM							02					Status of Control Rod Movement Blocks	3.4/3.5	
202001 Recirculation						01						Jet Pumps	3.5/3.7	
204000 RWCUC									04			RWCUC Interlocks and Trips	3.4/3.5	
205000 Shutdown Cooling						04						Reactor Water Level	3.6/3.6	
214000 RPIS														
215002 RBM														
219000 RHR/LPCI: Torus/Pool Cooling Mode										14		Overrides for Suppression Pool	3.7/3.5	
226001 RHR/LPCI: CTMT Spray Mode										03		Keepfill System	3.5/3.4	
230000 RHR/LPCI: Torus/Pool Spray Mode							03					Drywell Pressure	3.6/3.8	
239001 Main and Reheat Steam														
245000 Main Turbine Gen. and Auxiliaries				09								Turbine Control	3.1/3.2	
256000 Reactor Condensate					10							Air Ejection Operation	2.8/2.8	
262001 AC Electrical Distribution	01			03								Emergency Generators Transfer Interlocks	3.8/4.3 3.1/3.4	
262002 UPS (AC/DC)			01									Water Level Control	3.1/3.3	
263000 DC Electrical Distribution		01										Major DC Loads	3.1/3.4	
271000 Offgas											2.1.7	Evaluate Plant Performance	3.7/4.4	
272000 Radiation Monitoring			04									Main Steam System	3.7/3.8	
286000 Fire Protection							05					System Lineups	3.2/3.2	
290001 Secondary CTMT														
290003 Control Room HVAC	01											Radiation Monitors	3.4/3.5	
300000 Instrument Air		01										Instrument Air Compressor	2.8/2.8	
400000 Component Cooling Water														
K/A Category Point Totals:	2	2	2	3	1	2	3		1	2	1	Group Point Total:		19

ES-401		BWR RO Examination Outline Plant Systems - Tier 2/Group 3											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Points
215001 Traversing In-core Probe				01							2.1.32	Primary Containment Isolation System Limits and Precautions	3.4/3.5 3.4/3.8	
233000 Fuel Pool Cooling and Cleanup									02			Pump Trips	2.6/2.6	
234000 Fuel Handling Equipment														
239003 MSIV Leakage Control														
268000 Radwaste														
288000 Plant Ventilation									01			Isolation / Initiation Signals	3.8/3.8	
290002 Reactor Vessel Internals														
K/A Category Point Totals:				1					2		1	Group Point Total:		4
Plant-Specific Priorities														
System / Topic				Recommended Replacement for...				Reason				Points		
Plant-Specific Priority Total: (limit 10)														

Facility:		Date of Exam:	June 30, 2000	Exam Level: RO	
Category	K/A #	Topic		Imp.	Points
Conduct of Operations	2.1.20	Execute Procedure Steps		4.3/4.2	
	2.1.29	Valve Lineup		3.4/3.3	
	2.1.1	Knowledge of Operations		3.7/3.8	
	2.1.				
	2.1.				
	Total				3
Equipment Control	2.2.22	Limiting Conditions and Safety Limits		3.4/4.1	
	2.2.3	Unit Differences		3.1/3.3	
	2.2.13	Tagging and Clearance		3.6/3.8	
	2.2.30	RO Duties during Fuel Handling		3.5/3.3	
	2.2.				
	2.2.				
	Total				4
Radiation Control	2.3.1	10 CFR: 20		2.6/3.0	
	2.3.9	Containment Purge		2.5/3.4	
	2.3.10	Reduce Rad Levels		2.9/3.3	
	2.3.				
	2.3.				
	Total				3
Emergency Procedures/ Plan	2.4.49	Perform Without Reference to Procedures		4.0/4.0	
	2.4.14	EOP Flow Charts		3.0/3.9	
	2.4.32	Loss of all Annunciators		3.3/3.5	
	2.4.				
	2.4.				
	Total				3
Tier 3 Point Total (RO)					13