ES-201 **Examination Preparation Checklist** **Form ES-201-1**

Facility: **Browns Ferry Nuclear Plant** Date of Examination: **02/07/2011**

Developed by: Written - Facility ☒ NRC ☐ // Operating - Facility ☐ NRC ☐

Target Date*	Task Description (Reference)	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a and b)	rfa
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	rfa
-120	3. Facility contact briefed on security and other requirements (C.2.c)	rfa
-120	4. Corporate notification letter sent (C.2.d)	rfa
[-90]	[5. Reference material due (C.1.e; C.3.c; Attachment 3)]	rfa
{-75}	6. Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1's, ES-401-1/2, ES-401-3, and ES-401-4, as applicable (C.1.e and f; C.3.d)	rfa
{-70}	{7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)}	rfa
{-45}	8. Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, and any Form ES-201-3 updates), and reference materials due (C.1.e, f, g and h; C.3.d)	rfa
-30	9. Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202)	rfa
-14	10. Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202)	rfa
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	rfa
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	rfa
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	rfa
-7	14. Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 5; ES-202, C.2.e; ES-204)	rfa
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	rfa
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	rfa

Facility: BROWNS FERRY NPP Date of Examination: 2/7/2011

Item	Task Description	Initials a	Initials b*	Initials c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	DZ	KB	✓
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	DZ	KB	✓
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	DZ	KB	✓
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	DZ	KB	✓
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	DZ	KB	✓
	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, and ensure that 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 that scenarios will not be repeated on subsequent days.	DZ	KB	✓
	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.	DZ	KB	✓
3. W/T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	DZ	KB	✓
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations	DZ	KB	✓
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.	DZ	KB	✓
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	DZ	KB	✓
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	DZ	KB	✓
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	DZ	KB	✓
	d. Check for duplication and overlap among exam sections.	DZ	KB	✓
	e. Check the entire exam for balance of coverage.	DZ	KB	✓
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	DZ	KB	✓

	Printed Name/Signature	Date
a. Author	DANIEL K. ZIELINSKI / Daniel K. Zielinski	10/29/2010
b. Facility Reviewer (*)	Keith W. Bonefield / Keith W. Bonefield	10/29/2010
c. NRC Chief Examiner (#)	Rui Ribeiro /	10/3/10
d. NRC Supervisor	MALCOLM T. WIDMANN /	11/18/10

Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.
* Not applicable for NRC-prepared examination outlines

* WILL VERIFY DURING PREP wk

ILT 11-02

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 2/7-21/2011 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 (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). 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 2/7-21/2011 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.	Thomas Bradford	Unit Supervisor		9/9/10		2/22/11	
2.	RICKY GIVENS	Unit Supervisor		9-13-10		2-24-11	
3.	Nathan L Cooper	RO		9/13/10		2/24/11	
4.	Mark Meeboer	Unit Supervisor		9/13/10		2-24-11	
5.	Chris Winston	RO		9/16/10		3-1-11	
6.	James A Johnson	RO		9/16/10		2/23/11	
7.	DAVID THALMOBLE	RO		9/21/10		2/28/11	
8.	Ashley S. Fann	RO		9/17/10		2/24/11	
9.	JOHN W. RIDINGER	SRO		9/17/10		2/22/11	
10.	MARK JAMES	RO		9/21/10		2/28/11	
11.	B.J. MORRIS	RO		9/22/10		2/24/11	
12.	D.P.W	SRO		9/23/10		2/28/11	
13.	Steven W Russ	RO		9/23/10		2/22/2011	
14.	Michael A. Cooper	RO		10/1/2010		2/24/2011	
15.	MICHAEL S BROOKS	RO		10/1/2010		02/24/11	

NOTES:

ILT 11-02

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Brian Maze	UNIT SUPERVISOR		10/1/10 9a 10/11/10		2/23/11	
2.	TRON GILPIN	REACTOR OPERATOR		10/4/10		2/28/2011	
3.	Joseph Jeffries	Reactor Operator		10/8/10		2/22/11	
4.	Joe Bennett	UNIT SUPERVISOR		10/8/10		2/22/11	
5.	James Hall	Instructor		10/28/10		2/22/11	
6.	Ralph A Hoffman	Unit Supv		10/28/10		2/23/2011	
7.	Wesley R. Clark	unit operator		10/20/10		2/22/11	
8.	DANA L. BRANHAM	Unit Supervisor		10/22/10		2/22/11	
9.	DAVID A. MALINOWSKI	OPS TRAINING MANAGER		11/1/10		2/22/11	
10.	DONALD C. BINKLEY	OPS TRNG INSTRUCTOR		11/1/10		2/22/2011	
11.	Michael L NORMAN	COMPUTER ENGINEERING GROUP		11/5/10	SEE ATTACHED		
12.	MICAH T NASH	Shift Manager		1/4/11		2/18/11	
13.	ERIC H FREEMAN	REACTOR OPERATOR		1-17-11		2-22-11	
14.	David K Higgins	Reactor Operator		1-17-11		2-22-11	
15.	GARY A. HYDE	SRO INSTRUCTOR		1-18-11		2-22-11	

NOTES:

ILT 11-02

ES-201 | **Examination Security Agreement** | **Form ES-201-3**

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Brian K Parrish	Exam Author		5/6/10	SEE ATTACHED		
2.	D.M. Sweeney	Exam Author		5/6/10	SEE ATTACHED		
3.	Lynn H. Barker	Exam Author		6/22/10		2-22-11	
4.	DK Zielinski	Exam Author		6/28/10		2-18-2011	
5.	Patrick J Arundel	Sim Svcs		8/5/10		2-22-11	
6.	Daniel M Snare	Sim Svcs		8-5-10		2-22-11	
7.	Gary J Miller	Sim Svcs		8-5-10		2-22-11	
8.	Richard R Choate	Sim Svcs		8/5/10		2-22-11	corrected 2-22-11 REC 2/23/11
9.	Russell Joplin	Corp Exam Prog Mgr		8-5-10	SEE ATTACHED		
10.	William J Cox	Sim Svcs		8-5-10		2/24/11	
11.	Thomas J. Albright	Sim. Svs.		8/19/10		2/22/11	
12.	Ardie R Champion	Sim Sus.		8/19/10		2/22/11	
13.	Daniel P Newton	Sim Sus		8/19/10		2-22-11	
14.	Keith W Benefield	Unit Supervisor		9-2-10		2-22-11	
15.	Jordan Ruby	Instructor		9-9-10		2-18-11	

NOTES:

FINAL MODIFIED

Facility: Browns Ferry NPP Date of Examination: 2/7/2011

Examination Level: RO/SRO Operating Test Number: 1102

Administrative Topic (see Note)	Type Code *	Describe activity to be performed
Conduct of Operations RO A1a	N	2.1.7 2-SR-2 Drywell Floor and Equipment Drain Log Calculation
SRO A1a		2.1.7 2-SR-2 Drywell Floor and Equipment Drain Log Calculation with Technical Specification
Conduct of Operations RO/SRO A1b	P	2.1.36 Completion of SRM Operability surveillance
Equipment Control RO A2	N	2.2.41 Determination of Isolation Boundary for RFPT Seal Injection Pump 2B or 3B
SRO A2		2.2.37 Maintenance Rule Availability determination for EECW and RHRSW
Radiation Control RO/SRO A3	D	2.3.4 Radiation Exposure Limits under Emergency Conditions
Emergency Plan SRO A4	N	2.4.41 E-plan notification GE

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

(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)

(N)ew or (M)odified from bank (≥ 1)

(P)revious 2 exams (≤ 1; randomly selected)

(S)imulator

FINAL

Facility: Browns Ferry NPP Date of Examination: 2/7/2011

Exam Level: RO/SROI/SROU Operating Test No.: 1102

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	**Type Code***	**Safety Function**
a. CRD Pump Trip < 900 psig Reactor Pressure	**A, L, N, S**	**1**
b. RFPT Trip Recovery	L, N, S	2
c. Alternate RPV Pressure Control Drains	D, L, S	3
d. Restore RX and RF Zone Ventilation Following Isolation	**D, EN, S**	**5**
e. Energize 4 KV SD BDs A, C and D from Unit 3 DGs	A, M, S	6
f. Loss of Shutdown Cooling	**M, L, S**	**4**
g. CAD to Drywell Control Air	A, M, S	8
h. Bypassing Radiation Monitors on Work Station Touch Screen	N, S	9(RO only)
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Removal of RPS Scram Fuses	D, E	7
j. Stuck Open SRV	**A, E, N, R**	**3**
k. SSI Operator Manual Actions	**A, N, E**	**8**

@ **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.**

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 *(5)/(5)/(3)*
(C)ontrol room	
(D)irect from bank	≤ 9 *(4)/(3)/(1)*
(E)mergency or abnormal in-plant	≥ 1 *(3)/(3)/(2)*
(EN)gineered safety feature	- / (control room system) *(1)/(1)/(1)*
(L)ow-Power / Shutdown	≥ 1 *(4)/(4)/(2)*
(N)ew or (M)odified from bank including 1(A)	≥ 2 *(8)/(7)/4)*
(P)revious 2 exams	≤ 3 *(0)* (randomly selected)
(R)CA	≥ 1 *(1)/(1)/(1)*
(S)imulator	*(8)/(7)/(3)*

SROU in Bold

ES-301	Operating Test Quality Checklist	Form ES-301-3

Facility: **Browns Ferry** Date of Examination: **February 2011** Operating Test Number: **ILT 1102**

FINAL

		Initials		
	1. General Criteria	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).	DZ	JCB	✓
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	DZ	JCB	✓
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	DZ	JCB	✓
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	DZ	JCB	✓
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	DZ	JCB	✓
	2. Walk-Through Criteria	–	–	–
a.	Each JPM includes the following, as applicable: • initial conditions • initiating cues • references and tools, including associated procedures • reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee • operationally important specific performance criteria that include: - detailed expected actions with exact criteria and nomenclature - system response and other examiner cues - statements describing important observations to be made by the applicant - criteria for successful completion of the task - identification of critical steps and their associated performance standards - restrictions on the sequence of steps, if applicable	DZ	JCB	✓
b.	Ensure that any changes from the previously approved systems and administrative walk-through outlines (Forms ES-301-1 and 2) have not caused the test to deviate from any of the acceptance criteria (e.g., item distribution, bank use, repetition from the last 2 NRC examinations) specified on those forms and Form ES-201-2.	DZ	JCB	✓
	3. Simulator Criteria	–	–	–
The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.		DZ	JCB	✓

	Printed Name / Signature	Date
a. Author	DANIEL K. ZIELINSKI / Daniel K. Zielinski	1-31-2011
b. Facility Reviewer(*)	KEITH W BENFIELD / Keith W Benfield	1-31-2011
c. NRC Chief Examiner (#)	RANDAL F. WELLS / Randal F. Wells	2/2/11
d. NRC Supervisor	MALCOLM T. WIDMANN / Malcolm T. Widmann	02/02/11

NOTE: * The facility signature is not applicable for NRC-developed tests.
Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

ES-301 **Simulator Scenario Quality Checklist** **Form ES-301-4**

Facility: **Browns Ferry** Date of Exam: **February 2011** Scenario Numbers: A/B/C/D/F Operating Test No.: **ILT 1102**

	FINAL **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.	DZ	JW	W
2.	The scenarios consist mostly of related events.	DZ	JW	W
3.	Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)	DZ	JW	W
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.	DZ	JW	W
5.	The events are valid with regard to physics and thermodynamics.	DZ	JW	W
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	DZ	JW	W
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.	DZ	JW	W
8.	The simulator modeling is not altered.	DZ	JW	W
9.	The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	DZ	JW	W
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.5 of ES-301.	DZ	JW	W
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	DZ	JW	W
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).	DZ	JW	W
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	DZ	JW	W

	Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes	--	--	--
1.	Total malfunctions (5–8)	7/8/7/7/6	DZ	JW	W
2.	Malfunctions after EOP entry (1–2)	3/3/3/2/2	DZ	JW	W
3.	Abnormal events (2–4)	4/4/3/4/4	DZ	JW	W
4.	Major transients (1–2)	1/1/1/1/1	DZ	JW	W
5.	EOPs entered/requiring substantive actions (1–2)	3/3/3/4/2	DZ	JW	W
6.	EOP contingencies requiring substantive actions (0–2)	1/1/2/2/1	DZ	JW	W
7.	Critical tasks (2–3)	2/2/3/5/3	DZ	JW	W

FINAL

Facility: **Browns Ferry NPP** Date of Exam: February 7 - 18, 2011 Operating Test No.: ILT 1102

APPLICANT	EVENT TYPE	SCENARIOS																TOTAL	MINIMUM (*)		
		2 (B)			3 (C)			4 (D)			5 (F)										
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐	RX																				
SRO-I ☐	NOR	1									1						2			1
	I/C	3,4,5,6									3,4,5,6						8			2
SRO-U ☑ #1	MAJ	7									7						2			1
	TS	1,5									3,4,5						5			2
RO ☐	RX				2				2								2		1	
SRO-I ☑ #1	NOR				1												1		1	
	I/C				3,4,5,7				3,6								6		4	
SRO-U ☐	MAJ				6				7								2		2	
	TS				3,4												2		2	
RO ☑ #1	RX					2						2					2	1		
SRO-I ☐	NOR			1													1	1		
SRO-U ☐	I/C			4,5		3,5,7						3,5,6,9					9	4		
	MAJ			7		6						7					3	2		
	TS																			

FINAL

Facility: **Browns Ferry NPP** Date of Exam: February 7 - 18, **2011** Operating Test No.: ILT 1102

APPLICANT	EVENT TYPE	SCENARIOS																TOTAL	MINIMUM (*)		
		2 (B)			3 (C)			4 (D)			5 (F)										
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO	RX																				
SRO-I	NOR	1									1						2			1
	I/C	3,4,5,6									3,4,5,6						8			2
SRO-U ☑ #2	MAJ	7									7						2			1
	TS	1,5									3,4,5						5			2
RO	RX				2				2								2		1	
SRO-I ☑ #2	NOR				1												1		1	
	I/C				3,4,5,7				3,6								6		4	
SRO-U	MAJ				6				7								2		2	
	TS				3,4												2		2	
RO ☑ #2	RX		2														1	1		
SRO-I	NOR												1				1	1		
	I/C		3,6										4,5,8				5	4		
SRO-U	MAJ		7										7				2	2		
	TS																			

FINAL

Facility: **Browns Ferry NPP** Date of Exam: February 7 - 18, **2011** Operating Test No.: ILT 1102

APPLICANT	EVENT TYPE	SCENARIOS																TOTAL	MINIMUM (*)		
		2 (B)			3 (C)			4 (D)			5 (F)								R	I	U
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP				
RO	RX																				
SRO-I	NOR	1									1						2			1
	I/C	3,4,5,6									3,4,5,6						8			2
SRO-U ☑ #3	MAJ	7									7						2			1
	TS	1,5									3,4,5						5			2
RO	RX				2				2								2		1	
SRO-I ☑ #3	NOR				1												1		1	
	I/C				3,4,5,7				3,6								6		4	
SRO-U	MAJ				6				7								2		2	
	TS				3,4												2		2	
RO ☑ #3	RX											2					1	1		
SRO-I	NOR			1						1							2	1		
	I/C			4,5						4,5		3,5,6,9					8	4		
SRO-U	MAJ			7						7		7					3	2		
	TS																			

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Facility: **Browns Ferry NPP** Date of Exam: February 7 - 18, **2011** Operating Test No.: ILT 1102

APPLICANT	EVENT TYPE	SCENARIOS																TOTAL	MINIMUM (*)		
		2 (B)			3 (C)			4 (D)			5 (F)								R	I	U
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP					
RO ☑ #4	RX		2			2												2	1		
SRO-I ☐	NOR												1					1	1		
	I/C		3,6			3,5,7							4,5,8					8	4		
SRO-U ☐	MAJ		7			6							7					3	2		
	TS																				
RO ☑ #5	RX											2						1	1		
SRO-I ☐	NOR			1						1								2	1		
	I/C			4,5						4,5		3,5,6,9						8	4		
SRO-U ☐	MAJ			7						7		7						3	2		
	TS																				

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

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Facility: **Browns Fery NPP** Date of Exam: February 7 - 18, **2011** Operating Test No.: ILT 1102

APPLICANT	EVENT TYPE	SCENARIOS																TOTAL	MINIMUM (*)		
		2 (B)			3 (C)			4 (D)			5(F)								R	I	U
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP					
RO ☑ #6	RX		2															1	1		
SRO-I	NOR												1					1	1		
☐	I/C		3,6										4,5,8					5	4		
SRO-U ☐	MAJ		7										7					2	2		
	TS																				
☐ RO ☑ #7	RX					2												1	1		
SRO-I	NOR									1								1	1		
☐	I/C					3,5,7				4,5								5	4		
SRO-U ☐	MAJ					6				7								2	2		
	TS																				

1 Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2 Reactivity manipulations may be conducted under normal or controlled abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3 Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the

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Facility: **Browns Ferry** Date of Examination: **February 2011** Operating Test No.: **ILT 1102**

Competencies	APPLICANTS														
	RO					SRO-I					SRO-U				
	SCENARIO					SCENARIO					SCENARIO				
	A	B	C	D	F	A	B	C	D	F	A	B	C	D	F
Interpret/Diagnose Events and Conditions	3,4,6,7	1,3,5,6,7	3,4,5,6	3,4,5,6	3,4,5,6,7	3,4,6,7	1,3,5,6,7	3,4,5,6	3,4,5,6	3,4,5,6,7	3,4,6,7	1,3,5,6,7	3,4,5,6	3,4,5,6	3,4,5,6,7
Comply With and Use Procedures (1)	3,4,5,6,7	1,3,4,5,6	1,2,3,5	1,2,3,5,	1,4,5,6	3,4,5,6,7	1,3,4,5,6	1,2,3,5	1,2,3,5,	1,4,5,6	3,4,5,6,7	1,3,4,5,6	1,2,3,5	1,2,3,5,	1,4,5,6
Operate Control Boards (2)	1,2,3 4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3 4,5,6	1,2,4,5,6	1,2,3 4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3 4,5,6	1,2,4,5,6	1,2,3 4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3 4,5,6	1,2,4,5,6
Communicate and Interact	7	7	6	7	7	7	7	6	7	7	7	7	6	7	7
Demonstrate Supervisory Ability (3)						4,6,7,8,9	3,4,5,7,9	4,5,6,7	2,3,6,7	3,5,7,8	4,6,7,8,9	3,4,5,7,9	4,5,6,7	2,3,6,7	3,5,7,8
Comply With and Use Tech. Specs. (3)						4,6	1,5	3,4	3,4	3,4,5	4,6	1,5	3,4	3,4	3,4,5

Notes:
(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

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

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Facility:	Browns Ferry NPP	Date of Exam:	February 2011	ILT 1102

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	3	4	3	N/A			4	3	N/A		3	20	3	4	7
	2	1	2	1				1	1			1	7	1	2	3
	Tier Totals	4	6	4				5	4			4	27	4	6	10
2. Plant Systems	1	2	3	2	3	3	3	3	2	2	1	2	26	2	3	5
	2	1	1	1	1	2	1	1	1	1	1	1	12	0 1	2	3
	Tier Totals	3	4	3	4	5	4	4	3	3	2	3	38	3	5	8

3. Generic Knowledge and Abilities Categories	1	2	3	4	10	1	2	3	4	7
	3	3	2	2		2	2	2	1	

Notes:

1. Ensure that at least two topics from every K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions 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 (IR) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above. Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 RO							Form ES-401-1	
E/APE # / Name / Safety Function	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**G**	**K/A Topic(s)**	**IR**	**#**
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	x						**1.02** Power/flow distribution	3.3	1
295003 Partial or Complete Loss of AC / 6						x	**2.4.6** Knowledge symptom based EOP mitigation ..	3.7	2
295004 Partial or Total Loss of DC Pwr / 6				x			**1.03** A.C. electrical distribution	3.4	3
295005 Main Turbine Generator Trip / 3	x						**1.01** Pressure effects on reactor power	4.0	4
295006 SCRAM / 1				x			**1.05** Neutron monitoring system	4.2	5
295016 Control Room Abandonment / 7						x	**2.1.28** Knowledge of the purpose and function ...	4.1	6
295018 Partial or Total Loss of CCW / 8					x		**2.01** Component temperatures	3.3	7
295019 Partial or Total Loss of Inst. Air / 8			x				**3.03** Service air isolations: Plant-Specific	3.2	8
295021 Loss of Shutdown Cooling / 4		x					**2.01** Reactor water temperature	3.6	9
295023 Refueling Acc / 8				x			**1.03** Fuel handling equipment	3.3	10
295024 High Drywell Pressure / 5			x				**3.08** Containment spray: Plant-Specific	3.7	11
295025 High Reactor Pressure / 3				x			**1.04** HPCI: Plant-Specific	3.8	12
295026 Suppression Pool High Water Temp. / 5		x					**2.02** Suppression pool spray: Plant-Specific	3.6	13
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5	x						**1.01** Reactor water level measurement	3.5	14
295030 Low Suppression Pool Wtr Lvl / 5						x	**2.1.31** Ability to locate control room switches, ...	4.6	15
295031 Reactor Low Water Level / 2			x				**3.01** Automatic depressurization system actuation	3.9	16
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1					x		**2.06** Reactor pressure	4.0	17
295038 High Off-site Release Rate / 9		x					**2.10** Condenser air removal system	3.2	18
600000 Plant Fire On Site / 8					x		**2.13** Need for emergency plant shutdown	3.2	19
700000 Generator Voltage and Electric Grid Disturbances / 6		x					**2.07** Turbine! Generator control	3.6	20
K/A Category Totals:	3	4	3	4	3	3	**Group Point Total:**		20

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 RO							Form ES-401-1
E/APE # / Name / Safety Function	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**G**	**K/A Topic(s)**	**IR**	**#**
295002 Loss of Main Condenser Vac / 3	x						**1.03** Loss of heat sink	**3.6**	**21**
295007 High Reactor Pressure / 3									
295008 High Reactor Water Level / 2									
295009 Low Reactor Water Level / 2									
295010 High Drywell Pressure / 5									
295011 High Containment Temp / 5									
295012 High Drywell Temperature / 5									
295013 High Suppression Pool Temp. / 5									
295014 Inadvertent Reactivity Addition / 1						x	**2.4.50** Ability to verify system alarm setpoints ...	**4.2**	**22**
295015 Incomplete SCRAM / 1									
295017 High Off-site Release Rate / 9									
295020 Inadvertent Cont. Isolation / 5 & 7									
295022 Loss of CRD Pumps / 1				x			**1.01** CRD hydraulic system	**3.1**	**23**
295029 High Suppression Pool Wtr Lvl / 5		x					**2.02** HPCI: Plant-Specific	**3.4**	**24**
295032 High Secondary Containment Area Temperature / 5									
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9					x		**2.02** Cause of high radiation levels	**3.7**	**25**
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5			x				**3.01** Emergency depressurization	**2.6**	**26**
500000 High CTMT Hydrogen Conc. / 5		x					**2.09** Drywell nitrogen purge system	**3.0**	**27**
K/A Category Point Totals:	**1**	**2**	**1**	**1**	**1**	**1**	**Group Point Total:**		**7**

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 RO											Form ES-401-1		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode			x									3.04 Adequate core cooling	4.6	28
205000 Shutdown Cooling											x	2.2.22 Knowledge of limiting conditions for …	4.0	29
206000 HPCI									x			3.05 Reactor water level: BWR-2,3,4	4.3	30
209001 LPCS	x											1.07 D.C. electrical power	2.5	31
211000 SLC								x				2.07 Valve closures	2.9	32
212000 RPS										x		4.03 Provide manual select rod insertion: Plant-Specific.	3.9	33
215003 IRM		x										2.01 IRM channels/detectors	2.5	34
215004 Source Range Monitor					x							5.01 Detector operation	2.6	35
												5.03 Changing detector position	2.8	36
215005 APRM / LPRM									x			3.08 Control rod block status	3.7	37
217000 RCIC		x										2.02 RCIC initiation signals (logic)	2.8	38
												2.04 Gland seal compressor (vacuum pump)	2.6	39
218000 ADS											x	2.1.7 Ability to evaluate plant performance and …	4.4	40
223002 PCIS/Nuclear Steam Supply Shutoff				x								4.02 Testability	2.7	41
												4.05 Single failures will not impair the function …	2.9	42
239002 SRVs	x											1.01 Nuclear boiler	3.8	43
259002 Reactor Water Level Control							x					1.01 Reactor water level	3.8	44
261000 SGTS				x								4.05 Fission product gas removal	2.6	45
262001 AC Electrical Distribution			x									3.04 Uninterruptible power supply	3.1	46
262002 UPS (AC/DC)								x				2.02 Overvoltage	2.5	47
263000 DC Electrical Distribution						x						6.02 Battery ventilation	2.5	48
264000 EDGs					x							5.05 Paralleling A.C. power sources	3.4	49
300000 Instrument Air						x						6.07 Valves	2.5	50
												6.12 Breakers, relays and disconnects	2.9	51
400000 Component Cooling Water							x					1.01 CCW flow rate	2.8	52
												1.04 Surge Tank Level	2.8	53
K/A Category Point Totals:	2	3	2	3	3	3	3	2	2	1	2	Group Point Total:		26

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 RO												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic					x							5.05 Indications of pump runout: Plant-	2.7	54
201002 RMCS														
201003 Control Rod and Drive Mechanism	x											1.01 Control rod drive hydrauc system	3.2	55
201004 RSCS														
201005 RCIS														
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe				x								4.01 Primary containment isolation: Mark-I I	3.4	56
215002 RBM														
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode											x	2.4.31 Knowledge of annunciators alarms ...	4.2	57
223001 Primary CTMT and Aux.														
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode		x										2.02 Pumps	2.8	58
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment										x		4.02 Control rod drive system	3.4	59
239001 Main and Reheat Steam														
239003 MSIV Leakage Control														
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.														
256000 Reactor Condensate														
259001 Reactor Feedwater					x							5.03 Turbine operation: TDRFPs-Only	2.8	60
268000 Radwaste														
271000 Offgas			x									3.02 Off-site radioactive release rate	3.3	61
272000 Radiation Monitoring														
286000 Fire Protection														
288000 Plant Ventilation									x			3.01 Isolation/initiation signals	3.8	62
290001 Secondary CTMT							x					1.01 System lineups	3.1	63
290003 Control Room HVAC						x						6.01 Electrical power	2.7	65
290002 Reactor Vessel Internals								x				2.01 LOCA	3.7	64
K/A Category Point Totals:	1	1	1	1	2	1	1	1	1	1	1	Group Point Total:		12

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 SRO							Form ES-401-1	
E/APE # / Name / Safety Function	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**G**	**K/A Topic(s)**	**IR**	**#**
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4					x		**2.02** Neutron monitoring	**3.2**	**76**
295003 Partial or Complete Loss of AC / 6									
295004 Partial or Total Loss of DC Pwr / 6									
295005 Main Turbine Generator Trip / 3						x	**2.1.32** Ability to explain and apply all system limits …	**4.0**	**77**
295006 SCRAM / 1									
295016 Control Room Abandonment / 7						x	**2.1.7** Ability to evaluate plant performance and make …	**4.7**	**78**
295018 Partial or Total Loss of CCW / 8									
295019 Partial or Total Loss of Inst. Air / 8									
295021 Loss of Shutdown Cooling / 4						x	**2.4.4** Ability to recognize abnormal indications for …	**4.7**	**79**
295023 Refueling Acc / 8									
295024 High Drywell Pressure / 5					x		**2.08** Drywell radiation levels	**4.0**	**80**
295025 High Reactor Pressure / 3									
295026 Suppression Pool High Water Temp. / 5									
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5					x		**2.02** Reactor pressure	**3.9**	**81**
295030 Low Suppression Pool Wtr Lvl / 5									
295031 Reactor Low Water Level / 2									
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1									
295038 High Off-site Release Rate / 9						x	**2.4.9** Knowledge of low power! shutdown implications ...	**4.2**	**82**
600000 Plant Fire On Site / 8									
700000 Generator Voltage and Electric Disturbances / 6									
K/A Category Totals:					**3**	**4**	**Group Point Total:**		**7**

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 SRO							Form ES-401-1	
E/APE # / Name / Safety Function	**K 1**	**K 2**	**K 3**	**A 1**	**A 2**	**G**	**K/A Topic(s)**	**IR**	**#**
295002 Loss of Main Condenser Vac / 3									
295007 High Reactor Pressure / 3									
295008 High Reactor Water Level / 2									
295009 Low Reactor Water Level / 2									
295010 High Drywell Pressure / 5									
295011 High Containment Temp / 5									
295012 High Drywell Temperature / 5									
295013 High Suppression Pool Temp. / 5									
295014 Inadvertent Reactivity Addition / 1									
295015 Incomplete SCRAM / 1									
295017 High Off-site Release Rate / 9						x	2.2.44 Ability to interpret control room indications to …	4.4	83
295020 Inadvertent Cont. Isolation / 5 & 7									
295022 Loss of CRD Pumps / 1									
295029 High Suppression Pool Wtr Lvl / 5						x	2.4.47 Ability to diagnose and recognize trends in an …	4.2	84
295032 High Secondary Containment Area Temperature / 5					x		2.02 Equipment operability	3.5	85
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9									
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5									
500000 High CTMT Hydrogen Conc. / 5									
K/A Category Point Totals:					1	2	Group Point Total:		3

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 SRO												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode											x	2.2.4 (multi-unit) Ability to explain the variations in Control board layouts, systems …	3.6	86
205000 Shutdown Cooling														
206000 HPCI														
207000 Isolation (Emergency) Condenser														
209001 LPCS														
209002 HPCS														
211000 SLC														
212000 RPS														
215003 IRM														
215004 Source Range Monitor														
215005 APRM / LPRM														
217000 RCIC														
218000 ADS														
223002 PCIS/Nuclear Steam Supply Shutoff														
239002 SRVs														
259002 Reactor Water Level Control														
261000 SGTS								x				2.12 High fuel pool ventilation radiation: Plant-Specific.	3.4	88
262001 AC Electrical Distribution											x	2.4.41 Knowledge of the emergency action level thresholds and classifications	4.6	87
262002 UPS (AC/DC)														
263000 DC Electrical Distribution														
264000 EDGs								x				2.09 Loss of AC. power	4.1	89
300000 Instrument Air											x	2.2.36 Ability to analyze the effect of maintenance ...	4.2	90
400000 Component Cooling Water														
K/A Category Point Totals:								2			3	Group Point Total:		5

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 SRO												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
201001 CRD Hydraulic														
201002 RMCS														
201003 Control Rod and Drive Mechanism														
201004 RSCS														
201005 RCIS														
201006 RWM														
202001 Recirculation								x				2.13 Carryunder	2.8	91
202002 Recirculation Flow Control														
204000 RWCU														
214000 RPIS														
215001 Traversing In-core Probe														
215002 RBM														
216000 Nuclear Boiler Inst.											x	2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	92
219000 RHR/LPCI: Torus/Pool Cooling Mode														
223001 Primary CTMT and Aux.														
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment														
239001 Main and Reheat Steam														
239003 MSIV Leakage Control														
241000 Reactor/Turbine Pressure Regulator														
245000 Main Turbine Gen. / Aux.														
256000 Reactor Condensate														
259001 Reactor Feedwater														
268000 Radwaste														
271000 Offgas											x	2.2.40 Ability to apply technical specifications for a system.	4.7	93
272000 Radiation Monitoring														
286000 Fire Protection														
288000 Plant Ventilation														
290001 Secondary CTMT														
290003 Control Room HVAC														
290002 Reactor Vessel Internals														
K/A Category Point Totals:								1			2	Group Point Total:		3

Facility: Browns Ferry					Date of Exam: February 2011	
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.25	Ability to interpret reference materials such as graphs, monographs and tables which contain performance data.	3.9	66		
	2.1.27	Knowledge of system purpose and/or function.	3.9	67		
	2.1.28	Knowledge of the purpose and function of major system components and controls.	4.1	68		
	2.1.3	Knowledge of shift or short term relief turnover practices.			3.9	94
	2.1.4	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements…			3.8	95
	Subtotal			3		2
2. Equipment Control	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated …	4.6	69		
	2.2.39	Knowledge of less than one hour technical specification action statements for systems.	3.9	70		
	2.2.43	Knowledge of the process used to track inoperable alarms.	3.0	71		
	2.2.23	Ability to track Technical Specification limiting conditions for operations.			4.6	96
	2.2.44	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator …			4.4	97
	Subtotal			3		2
3. Radiation Control	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey …	2.9	73		
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation …	3.4	72		
	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions.			3.6	99
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry …			3.7	98
	Subtotal			2		2
4. Emergency Procedures / Plan	2.4.42	Knowledge of emergency response facilities.	2.6	74		
	2.4.47	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room …	4.2	75		
	2.4.22	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.			4.4	100
	Subtotal			2		1
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
RO 1/1	295031 EK3.02	Rejected K/A due to overlap and/or double jeopardy with 203000, replaced with EK3.01 Automatic depressurization system actuation
RO 2/1	215005 A3.01	Rejected K/A due to no significant relationship between four rod display and APRM/LPRM, replaced with A3.08 Control rod block status.
RO 2/1	217000 K2.03	Rejected due to overlap with 217000 K2.02, replaced with K2.04 Gland seal compressor.
RO 2/1	300000 K6.04	Rejected due to service air refusal valve is not applicable to Browns Ferry, replaced with K6.07 Valves.
RO 2/2	290003 K6.04	Rejected due to no relationship at Browns Ferry between Control HVAC and Fire protection, replaced with K6.01 Electrical power
SRO 2/2	204000 G2.4.34	Rejected due to unable to write an SRO Only question for RO actions outside Control Room in relation to RWCU. Replaced with 216000 G2.4.45, Nuclear Boiler Instrumentation: Ability to prioritize and interpret the significance of each annunciator or alarm.
SRO 2/1	259002 G2.4.41	Rejected due to no link between Reactor Water Level Control system and emergency action levels. Replaced with 262001 G2.4.41 AC Electrical Distribution: Knowledge of the emergency action level thresholds and classifications.

Tier / Group	Randomly Selected K/A	Reason for Rejection
RO 1/1	295031 EK3.02	Rejected K/A due to overlap and/or double jeopardy with 203000, replaced with EK3.01 Automatic depressurization system actuation
RO 2/1	215005 A3.01	Rejected K/A due to no significant relationship between four rod display and APRM/LPRM, replaced with A3.08 Control rod block status.
RO 2/1	217000 K2.03	Rejected due to overlap with 217000 K2.02, replaced with K2.04 Gland seal compressor.
RO 2/1	300000 K6.04	Rejected due to service air refusal valve is not applicable to Browns Ferry, replaced with K6.07 Valves.
RO 2/2	290003 K6.04	Rejected due to no relationship at Browns Ferry between Control HVAC and Fire protection, replaced with K6.01 Electrical power
SRO 2/2	204000 G2.4.34	Rejected due to unable to write an SRO Only question for RO actions outside Control Room in relation to RWCU. Replaced with 216000 G2.4.45, Nuclear Boiler Instrumentation: Ability to prioritize and interpret the significance of each annunciator or alarm.
SRO 2/1	259002 G2.4.41	Rejected due to no link between Reactor Water Level Control system and emergency action levels. Replaced with 262001 G2.4.41 AC Electrical Distribution: Knowledge of the emergency action level thresholds and classifications.

Facility: **Browns Ferry** | Date of Exam: **February 2011** | Exam Level: RO ☒ SRO ☒

FINAL MODIFIED

Item Description	Initial a	b*	c#
1. Questions and answers are technically accurate and applicable to the facility.	DZ	W	0
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	DZ	W	0
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401	DZ	W	0
4. The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office). *During Exam review in Atlanta added fifth RO question previous 2 Exams	*		0
5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: __ the audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or _x_ the licensee certifies that there is no duplication; or __ other (explain)	DZ	W	0
6. Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right. Bank: 38.7% / 16%; Modified: 20% / 32%; New: 41.3% / 52%	DZ	W	0
7. Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right. Memory: 41.3% / 36%; C/A: 58.7% / 64%	DZ	W	0
8. References/handouts provided do not give away answers or aid in the elimination of distractors.	DZ	W	0
9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.	DZ	W	0
10. Question psychometric quality and format meet the guidelines in ES Appendix B.	DZ	W	0
11. The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.	DZ	W	0

	Printed Name / Signature	Date
a. Author	DANIELK. ZIELINSKI /	2-15-2011
b. Facility Reviewer (*)	MICAH NASH /	2/15/2011
c. NRC Chief Examiner (#)	RONALD F. ARELLO /	2/16/11
d. NRC Regional Supervisor	MALCOLM T. WIDMANN /	02/17/11

Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations.
Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

Browns Ferry 2011-301

FINAL

Q#	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
   - ≅ The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
   - ≅ The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
   - ≅ The answer choices are a collection of unrelated true/false statements.
   - ≅ One or more distractors is not credible.
   - ≅ One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
4. Check the appropriate box if a job content error is identified:
   - ≅ The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
   - ≅ The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
   - ≅ The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
   - ≅ The question requires reverse logic or application compared to the job requirements.
5. Check questions that are sampled for conformance with the approved K/A and those that are designated SRO-only (K/A and license level mismatches are unacceptable).
6. Based on the reviewer=s judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
7. At a minimum, explain any AU@ ratings (e.g., how the Appendix B psychometric attributes are not being met).

RO/SRO Combined Question

Generic:

Generic 1 (WOOTF completes the statement below). Should be written like Q 88. (This should be standardized throughout the exam) The stems are riddled with inconsistencies.)

NP = Not Plausible
DV = Discriminatory Value
DLU = Direct Lookup

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
1	C	3										Y	N	S	295001AK1.02 No comment RFA 12/12/10
2	C	3										Y	N	S	295003G2.4.6 No comment RFA 12/12/10
3	C	3										Y	N	S	295004AA1.03 No comment RFA 12/12/10
4	C	3				X						Y	N	~~U~~ E S	2950005AK1.01 There are no low reactor pressure trips. Therefore, B is NP. If the bypass valves failed open, reactor pressure would lower to < 850 psig which will result in MSIV closure. With the MSIVs closing and the Mode Switch in Run, the Reactor will scram. Therefore, this distractor is plausible. Since no limits are placed on reactor pressure, the reactor failure to trip (as in C), is NP. Plausible in that if candidate considers only Main Turbine Trip actuation of RPS, this would be the correct answer since it is bypassed at this power level. This distractor was selected in validation. This Q is U since 2 NP distractors. RFA 12/13/10 If unacceptable need new K&A, requested prior to submittal but was denied. **Re-evaluated and determined to be an E question.** **Bulleted stem and made a two sentence question.** **RFA 1/25/11 Approved** **Post validation comments: removed the word direct, seemed to be confusing to the validators and added the word automatic.** **RFA 2/14/11 Approved**
5	M	2	X									Y	N	E S	295006AA1.05 Stem: consider the following format: Given the following: - Unit 2 is in Mode 2 - IRMs indicate 29.1 on range 3 - Reactor period is 90 seconds WOOTF….. ? RFA 12/13/10 Bulleted the stem **RFA 1/25/11 Approved**

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
6	M	2										Y	N	S	295016G2.1.28 No comment RFA 12/13/10
7	C	3				X						Y	N	U S	295018AA2.01 Without a flow parameter, D is NP If RWCU trip occurs due to isolation valve closing and the isolation valve closes due to high temperature, then one could argue a trip directly due to a high temp signal is also correct. This Q is U because of 2 potentially correct answers AND one NP distractor. RFA 12/13/10 Low flow condition will exist when isolation valves close, some systems do not directly trip off the isolation but the results of the isolation. Valves close no flow, low flow trip. Worked on wording of distractors, validators choice A and C. **Redrafted question to make a plausible two part question** **RFA 1/25/11 Approved**
8	M	2										Y	N	S	295109AK3.03 No comment RFA 12/13/10
9	C	3				X						Y	N	U S	295021AK2.01 Generic 1 Do you need to say IAW 3-AOI-74-1? It does not appear so. Why is 40 °F plausible in C and D? There are no delta Ts of 40 anywhere that I could find? C and D are potentially NP. This Q is U until resolved. RFA 12/13/10 Fixed generic 1. Same note that is used for correct answer identifies a delta T of 50 degrees Changed part B of all 4 distractors and used common delta t's of 50 and 75. **RFA 1/25/11 Approved**
10	M	2					X					Y	N	E S	295023AA1.03 Lower case the word "AND" in C to deemphasize and make the correct answer less obvious. In fact, the second part could be eliminated. This is an immediate action memory question not comprehensive. Change to M RFA 12/13/10 Changed to M and fixed the right answer as requested **RFA 1/25/11 Approved**

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
11	M	3										Y	N	S	295024EK3.03 No comment RFA 12/13/10
12	C	3										Y	N	S	295025EA1.04 No comment RFA 12/13/10
13	C	3	X			X						Y	N	E S	295026EK2.02 "NONE" is not a good distractor especially since the applicants know that this Q was written from an outline where "NONE" would not address the KA. I don't think this is true and I seriously doubt that a candidate would ever conclude not correct answer based on this. Consider changing it to a combination of RHR pumps. Stem 5^{tth} bullet: Does the word "mode" need to follow drywell spray? It does not sound right the way it is written. RFA 12/13/10 From 1006 exam 4 people missed and 2 chose A (none) also chosen on validation. Added word mode. Dkz 12/23 Added RHR Pump 2B and Removed NONE **RFA 1/25/11 Approved**
14	C	3				X						Y	N	E S	295028EK1.01 I do NOT see the plausibility of distractor A (200 degrees). Facility explain better or replace. RFA 12/13/10 Per caution 1 at a temperature of 200 degrees the min indicated level would be 20 inches a valid number in caution 1. Dkz 12/23 Retracted Comment, determined 200 degrees plausible. **RFA 1/25/11 Approved**
15	C	3										Y	N	S	295030G2.1.31 No comment RFA 12/13/10
16	C	3	X									Y	N	E S	295031K3.01 Stem: Generic 1 Rewrite as follows: "ADS will *automatically* initiate…" RFA 12/13/10 Fixed as requested **RFA 1/25/11 Approved**
17	C	3										Y	N	S	295037EA2.06 No comment RFA 12/13/10
18	C	3	X									Y	N	E	295038EK2.10 Stem: Make alarm/indication = alarms/indications.

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	RFA 12/13/10 Fixed as requested **RFA 1/25/11 Approved**
19	M	2					X					Y	N	~~E~~ S	600000AA2.13 I am not convinced that distractor A (no reactor scram is required) is plausible. Consider replacing it with Unit 1 and Unit 3 only. RFA 12/13/10 'A' was chosen during validation, but can change as requested. Some validators chose no scram required. **RFA 1/25/11 Approved**
20	C	3										Y	N	S	700000AK2.07 No comment RFA 12/13/10 530 kV system typo from post validation comments, changed to 500 kV RFA 2/14/11 Approved
21	C	3										Y	N	S	295002AK1.03 No comment RFA 12/13/10
22	C	3	X				X					Y	N	E S	295014G2.4.50 Distractor D is NP since the reactor is critical and the period will not change until the POAH is obtained. Stem: Change the SRM period to 10 seconds to make distractor B more plausible. Since B is NOT totally implausible, and E has been assigned. RFA 12/13/10 Reworked distractor D which is now A and changed period to 10 seconds. B was selected by multiple candidates. With LOD of 3, do we really need to change the SRM Period and move further away from validation. Stopping CR withdrawal was used for Short Reactor Period questions on Dresden 2007 #13 / Peach Bottom 07 #36 resulting in a SAT NRC Exam question. Reworked distractor D which is now A and changed period to 10 seconds. **RFA 1/25/11 Approved**
23	C	2				X						Y	N	~~U~~ E	295022AA1.01 It's common knowledge that with two CR out of position to scram the reactor. This Q has no discriminatory value. Suggest reducing the stem to one CR out of position. This Q is U because the Q has no DV.

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	RFA 12/13/10 Do not agree no DV, one rod is only one notch and would not be considered mis positioned, agree that common knowledge for drifting control rods. Requires a applicant to determine if one or two notches is drifting. Validators rated at greater than two due to this fact. Dkz 12/23 Similar approach on Duane Arnold 07 #25 / Quad Cities 09 #90 / Susquehanna 07 #43 were determined to have DV Added a new distractor C and added 38-31 is selected in stem. Deleted immediately from A. Question was changed to E, because only one distractor was determined to be non plausible. **RFA 1/25/11 Approved**
24	C	3	X				X					Y	N	E	295029EK2.02 Stem: Make Suppression Pool level 5 inches and add CST level 550 inches in order to increase DV. RFA 12/13/10 Added CST Level, level is in feet. **RFA 1/25/11 Approved**
25	C	3										Y	N	S	295034EA2.02 No comment RFA 12/13/10
26	M	2				X						Y	N	U E S	295036EK3.01 D is the most intuitively obvious choice. Re-write the Q to have two choices each, each having one right and one wrong answer. D will have both choices correct. The question as written has no DV. RFA 12/14/10 Disagree that it is LOD 1, two of eight validators missed this question, it provides DV. Worked on re write as requested. Average LOD as rated by operations was 2.7 Contingency drafted at end of question Two validators chose distractor B, question was determined to be valid with minor editorial changes. **RFA 1/25/11 Approved**
27	M	2					X					Y	N	E S	500000EK2.09 I do not believe that D is a valid distractor. However,, I will reconsider after the final validation if this Q has a high miss frequency. Consider replacing distractor D. RFA 12/14/10 Final validation 2 operators missed one choose D. 4 total misses in validation, multiple distractors were chosen. Question accepted SAT as is. **RFA 1/25/11 Approved**

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
28	C	3										Y	N	S	203000K3.04 No comment RFA 12/14/10
29	M	2				X						Y	N	U S	205000G2.2.22 90 degrees is NP. Change 90 degrees (A and C) to 100 degrees per hour and B and D to 100 degrees in any one hour. They are distinctly different. This Q is U because of two NP distractors. RFA 12/14/10 Changed as requested Disagree with changing. Moves us further from validation and the distractors are plausible. 90 degrees was selected by multiple validators. This distractor was determined to be plausible for allowed cooldown rates on BFN 0801. Not the same question but it is similar enough that distractor would have similar level of plausibility. It has been selected on both actual exams and previous validations. The fact that BFN also has an Admin target of 80 degrees leads some candidates to believe 90 is the TS number. The distinction of whether this TS SR reads "in one hour" versus "per hour" may be minutia. Contingency drafted at end of question, Accepted Contingency question **RFA 1/25/11 Approved** **Added the** word "period" after "any one hour" to choices 'B and D' to be consistent with TS. RFA 2/14/11 Approved
30	C	3										Y	N	S	206000A3.05 No comment RFA 12/14/10
31	C	3					X					Y	N	E S	209001K1.07 Distractor A is NP. It's not feasible to think that with a loss of 250 VDC RMOV BD 2A that everything will work. Replace A. RFA 12/14/10 Two of the validators chose A, this question was high miss on validation with a LOD of >3. Additionally, this question is a Modified version of VY 2007 #6 which contained this same distractor. Contingency drafted Due to high miss frequency on distractor A, comment removed. **RFA 1/25/11 Approved**
32	C	3					X					Y	N	E	211000A2.07 Under the circumstances, distractor D is NP. The first two bullets indicate that that there is a problem with at least

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	one squib valve. Replace distractor D. RFA 12/14/10 Bank 0801 #33 / To elaborate further on the plausibility, if a TIP squib has detonated, it is indicated by Squib Monitor lights illuminated. These systems having similar squib valves produce opposite indication when the squib valve actuates. Contingency Drafted Changed distractor B to neither and simplified the language in both the stem and distractors. **RFA 1/25/11 Approved**
33	C	3	X									Y	N	E S	212000A4.03 Generic 1 RFA 12/14/10 Fixed Generic 1 **RFA 1/25/11 Approved**
34	M	2										Y	N	S	215003K12.01 No comment RFA 12/14/10
35	M	2										Y	N	S	215004K5.01 No comment
36	C	3										Y	N	S	215004K5.03 No comment RFA 12/15/10
37	M	2					X					Y	N	E S	215005A3.08 Under these conditions, distractor C is NP. This one will be immediately eliminated. This is basic knowledge level. Replace C. RFA 12/15/10 Question was high miss during validation with 3 operators choosing C. Based on validation, C was chosen three times **RFA 1/25/11 Approved**
38	M	1				X						Y	N	U S	217000K2.02 Ask a two part Q to increase level of difficulty. Suggest loss of power to relay logic or EGM Control Box (Unit difference) As written this is a basic go / no go Q with a low level of difficulty. RFA 12/15/10 K&A of 2.8, low value K&A, but the question is not LOD 1 for an initial applicant, logic power and EGM power is different three RCIC systems and HPCI systems

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															successful during validation with a rating of 2.4 LOD. Question rewrite attached for review THIS APPROACH TO K2 System K/A is wide spread. Examples: 10 Bruns 07 #2/ BRuns 08 #4/ Bruns 08 #32 / #35/ Bruns 10 #16 / #30 / Columbia #52 / Crystal River 07 #24 / Dresden 07 #47 / DAEC 07 #34 / Hatch 09 #18 nearly identical / peach bottom 08 #6 / peach bottom 08 #27 / RBS 07 #30 / RBS 07 #49 / #61 / RBS 08 #31 / VY 09 #3 Contingency Drafted **Verify Contingent Question is correct** **Verified** **RFA 1/25/11 Approved**
39	M	2				X						Y	N	U S	217000K2.04 This Q is too similar to Q 37. Increase the level of difficulty by doing the same as on Q 37. RFA 12/15/10 NRC develops outline, K&A of 2.6, low value K&A, but the question is not LOD 1 for an initial applicant, three RCIC systems and HPCI systems. successful during validation with a rating of 2.8 LOD Same comment as above Contingency Drafted Due to straight memory, level of difficulty moved from 1 to 2. Question Sat as originally written. **RFA 1/25/11 Approved**
40	C	3					X					Y	N	E S	218000G2.1.7 "No action is required" is not a good distractor especially since the applicants know that this Q was written from an outline where "NONE" would not address the KA. Consider changing it to a combination question. RFA 12/15/10 Question was modified from 1006 exam where no action required was correct answer. One operator chose A during validation. Contingency Drafted Due to miss frequency of distractor A, question accepted with minor modification to distractor D. **RFA 1/25/11 Approved**
41	M	2	X									Y	N	E S	223002K4.02 Generic 1. Consider rewriting as follows: A trip of BOTH division 1 (A,C) Reactor Water Cleanup Suction Isolation Valves low level ..... This simplifies the Q. RFA 12/15/10

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															Reworked as requested **RFA 1/25/11 Approved**
42	C	3										Y	N	S	223002K4.05 No comment RFA 12/18/10 Changed 3 X low to Low-Low-Low reactor water level due to post validation comments. RFA 2/14/11 Approved
43	M	2										Y	N	S	2390002K1.01 No comment RFA 12/18/10
44	C	3	X									Y	N	E S	259002A1.05 Generic 1 RFA 12/18/10 Added below **RFA 1/25/11 Approved**
45	M	2				X						Y	N	U	261000K4.05 Generic 1 Distractors A and B are NP because the 70% is relative humidity . Suggest changing 70% to 95% based on ref OPL171.018, Para 7.a. The carbon beds are designed to remove at least 95% of iodine in the form of methyl iodine and 99.9% of elemental iodine. This Q is U because of two NP distractors. RFA 12/18/10 Two misses on validation. Do not agree that 70% is not plausible, 70 is a common number associated with hvac trains and a less than competent operator may choose this number. Is knowing the difference between 95% and 99.9% not Minutia.. **Reworked question as requested, need to evaluate validation data.** **Contingent on miss rate for validation and validation comments** Replaced question developed in Atlanta due to poor revalidation performance RFA Approved 2/14/11
46	M	2	X									Y	N	E S	262001K3.04 Generic 1 You do not need to say "Based on the above plant conditions…" This is implied. Suggestion: WOOTF completes the statement below?

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															The Unit Preferred Inverter... _____ RFA 12/18/10 Reworked as requested **RFA 1/25/11 Approved**
47	M	2	X									Y	N	E S	262002A2.02 Generic 1 RFA 12/18/10 Added below **RFA 1/25/11 Approved**
48	M	1				X						Y	N	U S	263000K6.02 B is such an obvious correct answer that the other choices are NP. Suggestion: Make this Q a multipart such that one correct answer is in three choices, 1. AA (Correct answer 2. AB 3. BA 4. BB This Q is U because there is no DV. RFA 12/18/10 Used on NRC 0707 with one miss, LOD is not 1, request enhancement, question reworked as requested New Question from 0810 NRC Exam **RFA 1/25/11 Approved**
49	C	3										Y	N	S	264000K5.05 No comment RFA 12/18/10
50	C	3					X					Y	N	E S	300000K6.07 B is NP. With this failure, the normal pressure band will immediately be deselected. Replace distractor B. RFA 12/18/10 B was chosen in Validation along with D, believe B to be plausible Contingency Drafted Change distractor and correct answer to match OI setpoints. **RFA 1/25/11 Approved**
51	M	2	X									Y	N	E	300000K6.12 Generic 1: Delete the "describe" phrase. It is not needed. To increase plausibility for A and B, add that voltage was restored in 3 seconds since this is only true for G

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	compressor. RFA 12/03/10 Fixed the generic comment, restore voltage in 3 seconds was already there. **RFA 1/25/11 Approved**
52	C	3										Y	N	S	400000A1.01 RFA 12/03/10
53	M	2	X									Y	N	E S	400000A1.04 Generic 1 RFA 12/03/10 Fixed **RFA 1/25/11 Approved**
54	C	3	X			X						Y	N	U S	201002K5.05 Generic 1 Stem: Do not state that the CRD pump is operating at pump runout. Provide adequate indications for the applicant to determine that himself. This will lend plausibility of A and C. This Q is U until this Q is modified RFA 12/03/10 Fixed generic 1, eliminated pump runout. Contingency Drafted Eliminated Pump runout from the stem. **RFA 1/25/11 Approved**
55	M	2	X				X					Y	N	E S	201003K1.01 Stem: On the WOOTF statement, Stop after " .... Set of actions to be taken." The words "difficult to withdraw ..." are implied. If HCU lines were vented then it is also implied that air is NOT the problem. Therefore, delete "and the problem is ...." This will lend credibility to distractor A. RFA 12/03/10 Fixed as requested **RFA 1/25/11 Approved**
56	M	2	X									Y	N	E S	215001K4.01 Generic 1 RFA 12/03/10 Fixed as requested **RFA 1/25/11 Approved**
57	C	3										Y	N	S	219000G2.4.31 RFA 12/03/10
58															230000K2.02

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
	C	3	X									Y	N	E S	Generic 1 RFA 12/03/10 Fixed as requested **RFA 1/25/11 Approved**
59	M	2	X			X						Y	N	U S	234000A4.02 If the rod block occurs when the refuel platform is driven near the core, D could be correct if the refuel platform starts moving toward the core and it is near. This must be resolved. The distractors need to be tightened up. This Q is U until resolved with the facility. Potentially two correct answers. RFA 12/03/10 Added the word Immediately to Distractor D **RFA 1/25/11 Approved**
60	M	2					X					Y	N	E	259001K5.03 When would D be true? D is potentially a NP distractor. Facility justify plausibility (when would the RFPT ramp up AND lock at the high speed stop?) RFA 12/03/10 Reworked distractor D. Question needs additional work section 8.10 is not correct should be section 8.9. Section 8.10 changed to 8.9. **RFA 1/25/11 Approved**
61	C	3	X									Y	N	E S	271000K3.02 Generic 1 RFA 12/03/10 Fixed as requested **RFA 1/26/11 Approved**
62	C	3					X					Y	N	E S	288000A3.01 Generic 1 Distractor D is NP because if you substitute in the words, It reads funny. Consider revising. RFA 12/03/10 Fixed generic 1, do not agree that D reads funny why wouldn't it read funny for the other NOT's Bank 0707. D selected by 3 0707 validators. Retracted non plausible D comment, due to validation results **RFA 1/26/11 Approved**
63	C	3	X			X						Y	N	U E	290001A1.01 Grammar error. The stem should read: On U1 SBGT, control switch 1HS-65-18A on panel 1-9-25 has been placed in the PTL position. Is there any equipment that will start if a switch is in PTL?

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	If not then distractors A and D may not be plausible. This Q is U until resolved. Facility re-evaluate. RFA 12/03/10 D distractor was chosen in validation, This component will start with the control switch in PTL Contingency Drafted(not used) Fixed grammar , confirmed that distractor A and D are plausible, SBGT A switch 1-hs-65-18A, in pull to lock, will start. **RFA 1/26/11 Approved**
64	C	3	X			X						Y	N	U E S	290002A2.01 Generic 1 2/3 core height is such a common number and is associated with 215 inches. 180 inches is just NP in distractors A and B. U because 2 distractors NP RFA 12/09/10 Do not agree -215" is common number, -180" was chosen in validation, 2/3 core height is well known but seldom is a number associated with 2/3 core height. Numbers that they deal with daily during simulator workups is TAF -162, -180 inches for ED, and -200 for steam cooling . dkz 12/27. -180" was selected by multiple validators. The 2/3 core height bypass switch for drywell sprays uses -183 as its setpoint . A and B selected in validation by a number of validators due to -180 inches being a common number for BFN. Both distractors determined to be plausible A and B. **RFA 1/26/11 Approved** **Split part 1 and part 2 for ease of reading.** **RFA approved 2/14/11**
65	M	2					X					Y	N	E S	290003K6.01 Please explain why A, B and D are plausible. Why would these choices be chosen? This Q is E until explained. 3B and A should be in two of the other distractors RFA 12/09/10 A and B selected in validation Contingency made to address comments. Contingency used, Strengthened plausibility argument. Validators chose two of the questionable non plausible distractors **RFA 1/26/11 Approved**
66															G2.1.25

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
	C	3	X									Y	N	E S	Generic 1 RFA 12/09/10 Fixed generic 1 **RFA 1/26/11 Approved**
67	M	2					X					Y	N	E S	G2.1.27 Distractor D is NP. Consider using the design basis for RHR or another core cooling system. Replace D. RFA 12/09/10 Fixed distractor D to RHR design bases as requested D selected in validation. Non-plausible distractors chosen during validation, contingency question not used. **RFA 1/26/11 Approved**
68	M	2										Y	N	S	G2.1.28 RFA 12/09/10
69	M	2	X									Y	N	E S	G2.2.2 For the WOOTF statement, all you need to say is "generic 1" Single notch is specified in the second part of the stem. RFA 12/09/10 Believe fixed, not sure I understand the problem Redesigned and simplified the stem. **RFA 1/26/11 Approved**
70	M	2	X									Y	N	E S	G2.2.39 Generic 1 RFA 12/09/10 Fixed Redesigned and simplified the stem. **RFA 1/26/11 Approved**
71	M	2										Y	N	S	G2.4.,43 RFA 12/09/10
72	C	2					X					Y	N	E S	G2.3.13 Increase the elevation and the room temperature to make distractors B and D more plausible. RFA 12/09/10 R1 drafted to address comment Increased elevation and room temperature per NRC recommendation. **RFA 1/26/11 Approved**
73	M	2	X									Y	N		G2.3.5 Generic 1

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														E S	RFA 12/09/10 Fixed **RFA 1/26/11 Approved**
74	M	1				X						Y	N	U S	G2.4.42 Make this a two part question for the TSC and the OSC. This question, as written, has no DV because of the common knowledge associated with activation of the TSC This Q is U because there is no DV RFA 12/09/10 This question was missed by 3 validators. It was also determined to have DV on Quad Cities 2009 #75. OPS validators rated LOD average 2.6 / OPS Reviewer rated LOD at 3 Contingency Drafted. Changed UE to SAE, because UE non-plausible for activation of TSC. **RFA 1/26/11 Approved** **Added the words "lowest classification" and split the distractors into two separate columns due to validation comments.** **RFA 2/14/11 Approved**
75	C	3	X									Y	N	E S	G2.4.47 Generic 1 RFA 12/09/10 Fixed **RFA 1/26/11 Approved**
SRO ONLY Response to SRO in "SRO Responses" file															
76	C	3	X				X					Y	Y	E S	295001AA2.02 Generic 1 C can be argued as correct because of the way the TS says completion time is 24 hrs. If they do it in 12 hours, then that's even better then what TS require. RFA 11/25/10 Fixed, Question re-phrased to say "within a MAXIMUM of" to eliminate potential subset. **RFA 1/26/11 Approved**
77	C	3	X			X						Y	Y	E S	295005G2.1.32 Generic 1 Explain why RPV Pressure SL is plausible in distractors B and D. A. Add ***Reactor core*** MCPR B. Add ***Reactor coolant system*** RPV Pressure RFA 11/25/10 See Discussion Two validators chose RPV Pressure non plausible

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															distractor, chose B and D are plausible **RFA 1/26/11 Approved**
78	C	3	X			X						Y	Y	U S	295016G2.1.7 Generic 1 With Ref provided, A and B part 2 (Alert) are NP because it is a DLU. Once the applicant is on the reference page, there is no discernment. A and B are plausible only without the reference. Stem: The first fill in the blank sentence should read "based on the SRV status, reactor power is is currently between _____." The stem of the question does not provide the unit's initial status which is needed to make the SAE declaration. What mode was the plant initially in? Now? "A" can be argued correct because the stem of the question doesn't have enough info to suggest control not established. This Q is U until resolved. RFA 11/25/10 Contingency Accepted contingency question and Redrafted Stem and deleted provided reference. **RFA 1/26/11 Approved** Added the word "Twenty" to correct a typo identified during validation. RFA 2/14/11 approved
79	C	3	X									Y	Y	E S	295021G2.4.4 Generic 1 Choices A and C: restate Emergency action level is exceeded. How much of the EAL classification document will be provided to the applicant? RFA 11/25/10 Fixed. Applicable EPIP Section 1 Changed distractor B and D to SAE. Changed exceeded to met. Modified stem to delete mode 4 and changed to a temperature of 180. Even though Mode 4 has been exceeded, still in alert because curve 1.5-S is satisfied because unit 1 remains in the safe region below 90 psig. **RFA 1/26/11 Approved**
80	C	3					X					N Y	N Y	U S	295024EA2.08 Suppression chamber (SC) pressure is 54 psig. Technically D is the correct answer since the SC pressure has not exceeded 55psig The stem or the D distractor must be modified OR change the answer to D

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															RO's are required to know the overall mitigation strategy for high containment pressure, (i.e. when and how the containment can be vented with extremely high pressures and the fact that the torus is preferred because of the scrubbing effect. How is the KA being met? (Knowing the DW is 2500 R/hr does not affect the venting strategy) In order to make the procedure selection (10cfr55.43.b5) make each choice a procedure number and a title (only). Furthermore, B is NP since nothing in the stem suggest RPV pressure. This Q is U because it is NOT SRO only and because the KA is not met. .RFA 11/25/10 Contingency K/A satisfied, Venting irrespective of Rad Levels was added in contingency question. SRO only because we now have a release where we did not before. **RFA 1/26/11 Approved**
81	C	3	X									Y	~~N~~ Y	~~U~~ E S	295028EA2.02 Generic 1 The first fil in the blank statement provides a cue. You are telling the applicant that ED is required. RO's know that C-2 is called ED. Rework the question to test the SRO's knowledge of what pressure is required without telling them that ED is required. This Q is U because both parts can be answered with RO knowledge of the title of C-2. RFA 11/25/10 See Discussion Removed the wording Emergency Depressurization from the Stem. This question is SRO Only because part one is SRO Only. Therefore this question is downgraded to E due to minor stem changes. **RFA 1/26/11 Approved**
82	C	3	X									Y	Y	E S	295038G2.4.9 The WOOTF statement is written correctly here. Nothing above the WOOTF statement is need to answer the Q. RFA 11/25/10 See discussion Removed Main Steam Line alarm and changed to 3X normal, and cleaned up the stem. **RFA 1/26/11 Approved**
83	C	3	X									Y	Y	E	295017G2.2.44 Generic 1 The 4th bullet provides the applicants with the information that a GE dose limit is being exceeded. The Q needs to

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	be reworked to provide dose values and readings and let the applicant know if the threshold for ED is reached. RFA 11/25/10 Contingency accepted **RFA 1/26/11 Approved**
84	C	3	X									Y	N Y	U S	295029G2.4.47 Stem: Change "inch" to "inches" Generic 1 RO knowledge can be used to answer both parts of this Q. Guidance/piping configuration for pumping the torus to RW is something the RO's perform routinely. The RO's know that the normal method for lowering torus level is to use RHR. This involves a simple mathematic calc of how many gal per inch the torus is. RFA 11/25/10 Contingency question accepted with minor editorial corrections. **RFA 1/26/11 Approved**
85	C	3	X			X						Y	Y	E S	295032EA2.02 The statement "steam line leak resulted in degraded performance of a loop 1 Core Spray room cooler" doesn't necessarily mean the room cooler is inoperable (partial or no correct answer). Providing references causes this Q to be a DLU. RFA 11/25/10 See discussion Contingency question accepted, changed earliest to latest in stem. **RFA 1/26/11 Approved**
86	C	3	X									Y	~~N~~ Y	~~U~~ E S	203000G2.2.4 Generic 1 The choices A and C are NP since the stem starts in the EOP An RO knows what procedures are used to perform jumpers in the EOP network. Please show an example when the OI directs jumpers in the EOP network. RFA 11/25/10 See discussion Deleted IAW EOI-Appendix 7C from the stem. Since it was proven that OI jumpers are used in the EOPs, defeating low pressure interlocks on RHR injection valves, this question was downgraded to an E. **RFA 1/26/11 Approved**
87	C	3				X						Y	Y	U	262001G2.4.41 I am NOT convinced that the 30 min in distractors B and D are plausible based solely on a the applicant erroneously

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
														S	adding the 15 min segments together. (Based on distractor analysis for B) This Q is U until resolved with facility. RFA 11/25/10 Contingency question accepted, with changing the correct answer to A. By changing the stem to make the highest classification an ALERT. **RFA 1/26/11 Approved** **Added "Unit 3" to 1130 event due to post exam validation comments.** **RFA 2/14/11 Approved**
88	C	3				X						Y	Y	U E S	261000A2.12 The WOOTF statement is written correctly. The second fill in the blank statement provides teaching to the applicants. Just ask the applicant if a 4 hr report to the NRC is required or not required IAW SPP-3.5 (no references provided) C and D are NP because one would not say "…. TS does NOT require a 4 hour report to the NRC in accordance with SPP-3.5…" Furthermore, the applicant will not believe it is a 1 hr report because RO applicants are required to know 1 hr TS. The Q is U because 2 distractors are NP. RFA 11/25/1 Question was modified with minor wording added to increase distractor plausibility, therefore this question was downgraded to E. **RFA 1/26/11 Approved** **Changed distractor and stem to read "A ____hour report to the NRC is required when shutdown is commenced. Changed the choices for part 2 to "four" and "one.** **RFA 2/14/11 approved**
89	C	3	X									Y	Y	U S	264000A2.09 Stem: Delete "Based on the above conditions." This is implied. Generic 1 Each alarm needs to listed exactly as on the panel (see Q 92). A and C are NP because of the way the grammar is used (i.e. the DG will start only. This sounds wrong even if the applicant doesn't know the logic. This Q is U because this Q can be answered solely based on knowledge of plant electrical distribution logic and the plant parametersd which lead to AOP entry. RFA 11/25/10 Contingency question 1 accepted, complete rewrite.

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															RFA 1/26/11 Approved
90	C	3	X									~~U~~ Y	Y	~~U~~ E S	300000G2.2.36 Generic 1 The KA states "degraded power sources." This Q is written around the control air system. I fail to see the connection. This Q is U until the KA is resolved with the facility. This Q test P&L's # 3.B in 3-OI-32A. Typically P&Ls are RO knowledge. C and D are NP because none of the other LCO action statements are 25% power. Why are references NOT provided to the SRO applicants? RFA 11/25/10 The P&L deals with application of Required Actions (Section 3) in accordance with rules of application requirements (Section 1) which is clearly a function unique to the SRO position. No reference because information is provided in a P and L. Control Air is the same as instrument air so KA satisfied **RFA 1/26/11 Approved**
91	C	3	X			X						Y	~~N~~ Y	~~U~~ E S	202001A2.13 Stem: Change "channel" to channels" The second part is a 1 hr action which is also RO knowledge. The Q does NOT meet SRO only criteria 1. The stem should read "The bases for the setpoint is to " (instead of the RPS function). Look at the wording on TS bases page 3.3-18 A and B are NP because there is no TS concern with protecting the accuracy of reactor level instrumentation. Accuracy is affected by DW temperature. This Q is U until resolved with the facility, RFA 11/25/10 Downgrade to E due to minor one word change SRO only because first part is SRO only. A and B are now plausible because we added core dp and level instruments. Stem clean up as requested. **RFA 1/26/11 Approved**
92	C	3				X						Y	Y	~~U~~ E S	216000G2.4.45 This Q is U because A and C are NP because none of the stem condition include activity values or radiation values. RFA 11/25/10 This question was modified to add Drywell Radiation High alarm Only to the stem. Due to minor wording change only this question was downgraded to E. **RFA 1/26/11 Approved**

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	U/E/S	Explanation
															Changed "Drywell Radiation High alarm" in stem due to post validation comment identified that changed the correct answer. Changed to "Dose equivalent Iodine-131 sample results indicate 16 µci/gm". RFA 2/14/11 Approved
93	C	3				X						Y	Y	~~U~~ S	271000G2.2.41 I fail to see the plausibility of 0600 as stated in A.2 and C.2. This is 1 hour BEFORE the error was discovered and two hours after the error was made. Therefore A and C are NP. This Q is U until resolved. RFA 11/25/10 Distractors A and C were deemed plausible due to validation. Therefore this question was reclassified as SAT. **RFA 1/26/11 Approved**
94	C	3				X						Y	Y	~~U~~ E S	271000G2.2.41 I do not believe for a single moment that an SRO applicant will consider NOT walking down the boards. This Q is U until it is heavily discussed with the utility. Distractors B and D are NP. RFA 11/25/10 Downgrade to E due to minor one word change Changed first SRO to Shift Manager, which changed the correct answer to B, which increased the plausibility. Editorial changes made to stem. **RFA 1/26/11 Approved**
95	C	3	X			X						Y	Y	~~U~~ E S	G2.1.4 Generic 1 The stem refers non licensed operators. Yet the stem is asking a requirement for licensed operators. The Q appears ambiguous. This Q is U because C and D are NP due to the way the first fill in the blank statement is constructed. Need to test the applicant's knowledge of whether or not an allowance exist to start the 40 hr break in without being current in license requal training. RFA 11/25/10 OPDP-10 addresses license and non licensed operators. Changing C and D to "after standing" now tests the applicants' knowledge of the 40 hour break in. Due to minor wording change to increase plausibility this question was downgraded to E. **RFA 1/26/11 Approved**
96	C	3	X									Y	Y	E	G2.2.23 Generic 1 Remove the second bullet. This is teaching.

Q#/	1. LOK (C/A)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
														S	RFA 11/25/10 Editorial changes made to stem. **RFA 1/27/11 Approved**
97	C	3										Y	Y	S	G2.2.44 RFA 11/25/10 Changed RPV pressure to 875 psig and decreased RPV level to (-)150 inches in the stem to increase plausibility of distractors and to ensure only one correct answer. RFA 2/14/11 Approved
98	C	3				X						Y	Y	~~U~~ S	G2.3.12 This Q is U because A and B are NP because of the way the first fill in the blank is constructed. Rework the Q to test the SRO applicant's knowledge of the minimum required approval to perform an initial DW entry at power IAW 1-GDI-200-2 RFA 11/25/10 Subsequent review and discussion Chief Examiner found the question acceptable. **RFA 1/27/11 Approved**
99	C	3				X						Y	Y	~~U~~ E S	G2.3.7 This Q is U because A and D are NP because of the way the first fill in the blank is constructed. Rework the Q to test the SRO applicant's knowledge of whether or not the RADPRO Supervisor can authorize short term deviation of RWP without revising the RWP. No is NP. Change the second part of the A and B to "is still required." RFA 11/25/10 Editorial changes made to stem. Subsequent review and discussion Chief Examiner found the question acceptable. **RFA 1/27/11 Approved**
100	C	3										Y	Y	S	G2.4.22 RFA 11/25/10

14 (9/5) U's
50 (34/16) E's
36 (32/4) S's

ES-403, Rev. 9 | **Written Examination Grading Quality Checklist** | Form ES-403-1

Facility: Browns Ferry	Date of Exam: February 18, 2011	Exam Level: **RO/SRO**	
		Initials	
Item Description	a	b	c
1. Clean answer sheets copied before grading	rfa	N/A	rsb
2. Answer key changes and question deletions justified and documented	rfa	N/A	rsb
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	rfa	N/A	rsb
4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail	rfa	N/A	rsb
5. All other failing examinations checked to ensure that grades are justified	rfa	N/A	rsb
6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	rfa	N/A	rsb

	Printed Name/Signature	Date
a. Grader/Reviewer	Ronald F. Aiello/	3/16/11
b. Facility Reviewer(*)	N/A	N/A
c. NRC Chief Examiner (*)	Richard S. Baldwin/ (since R. Aiello was the grader)	3/16/2011
d. NRC Supervisor (*)	Malcolm T. Widmann/	03/22/11

(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.