Facility: Oconee 2011-302 Date of Examination: 10/17/2011

Examinations Developed by: (Facility) NRC

Written / Operating Test Written / Operating Test

Target Date*	Task Description (Reference)	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a and b)	4/11/2011
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	4/11/2011
-120	3. Facility contact briefed on security and other requirements (C.2.c)	4/11/2011
-120	4. Corporate notification letter sent (C.2.d)	
[-90]	[5. Reference material due (C.1.e; C.3.c; Attachment 2)]	8/03/2011
{-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)	8/03/2011
{-70}	{7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)}	8/08/2011
{-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 reference materials due (C.1.e, f, g and h; C.3.d)	8/23/2011
-30	9. Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202)	09/16/2011
-14	10. Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202)	10/03/2011
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	10/03/2011
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	10/03/2011
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	10/10/2011
-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 4; ES-202, C.2.e; ES-204)	10/10/2011
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	10/10/2011
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	10/10/2011

* Target dates are generally based on facility-prepared examinations and are keyed to the examination date identified in the corporate notification letter. They are for planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.
[Applies only] {Does not apply} to examinations prepared by the NRC.

Facility: **OCONEE** Date of Examination: **10/17/11**

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.			
	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.			
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.			
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.			
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.			
	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.			
	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.			
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.			
	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			
	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.			
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.			
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.			
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.			
	d. Check for duplication and overlap among exam sections.			
	e. Check the entire exam for balance of coverage.			
	f. Assess whether the exam fits the appropriate job level (RO or SRO).			

	Printed Name/Signature	Date
a. Author	Gabriel WASHBURN / [signature]	10-4-11
b. Facility Reviewer (*)	John R Steely / [signature]	10-4-11
c. NRC Chief Examiner (#)	Gerard W. Laska / [signature]	10/5/2011
d. NRC Supervisor	Malcolm T. Widmann / [signature]	10/06/11

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

WRITTEN EXAM SAMPLE PLAN (OUTLINE) ONLY

ES-201 **Examination Outline Quality Checklist** **Form ES-201-2**

Facility: OCONEE Date of Examination: OCTOBER 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.	M	N/A	&
	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.	M	N/A	&
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	M	N/A	&
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	M	N/A	&
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.			
	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.			
	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.			
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.	N	A	
	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			
	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.			
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	M	N/A	&
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	M	N/A	&
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	M	N/A	&
	d. Check for duplication and overlap among exam sections.	N/A	N/A	N/A
	e. Check the entire exam for balance of coverage.	M	N/A	&
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	M	N/A	&

	Printed Name/Signature	Date
a. Author	MICHAEL MEEKS / Michael Meeks	04/18/2011
b. Facility Reviewer (*)		
c. NRC Chief Examiner (#)	GERARD W. LASKA / NRA	4/27/2011
d. NRC Supervisor	M. Widmann by Telecon	4/27/2011

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

Oconee 2011 - 302

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 10-17-11 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 10-17-11. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	John L. Collins Jr.	Shift Operations Manager	[signature]	10-5-11	JOHN L. COLLINS JR	11/2/11	BY PHONE [initials]
2.	Thomas Flint Baldwin	Operations Shift Manager	[signature]	10-5-11	[signature]	10-26-11	
3.	SAM LARK	ILT SUPERVISOR	[signature]	10-5-11	[signature]	10-26-11	
4.	Randall A. Yarbrough	ILT Instructor	[signature]	10/13/11	[signature]	10/31/11	
5.	Michael K. Smith	SRO ILT Instructor	[signature]	10/16/11	[signature]	10/28/11	
6.	Fred Williams	ILT Instructor	[signature]	10-16-11	[signature]	10-30-11	
7.	THEODORE A COE	ILT INSTRUCTOR	[signature]	10-17-11	TED COE BY PHONE	11-02-11	[initials]
8.	J Ed Burchfield Jr.	OPS Superintendent	[signature]	10-17-11	[signature]	10-26-11	
9.	John K Suptela	COE	[signature]	10/25/11	S. Suptela per phone / C.P.L.	10-31-11	
10.	Kenneth Scharf	Instructor	[signature]	10/26/11	[signature]	10/27/11	
11.	~~Patrick G~~ SL						
12.	~~MIKE TATEM~~	~~SRO~~	~~[signature]~~	~~[illegible]~~			
13.							
14.							
15.							

NOTES:

NOV 3 2011

1. Pre-Examination

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2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	William C Rostron	Simulator Support		7/18/11		10/27/11	
2.	Darrell Hensley	Fleet Reviewer		7/20/11	D. Hensley per phone C.P.	11-1-11	
3.	Eric P. Madsen	Fleet Review		7/20/11	E. Madsen per phone C.P.	11-1-11	
4.	Chris McDuffie	RO		7/22/11		10/28/11	
5.	Robert M. Helms	SRO		7/22/11		10/28/11	
6.	Jeremy Galloway	SRO		7/23/11		10-27-11	
7.	PAUL MARSHALL	SRO		7/26/11		10/27/11	
8.	CARL SEYMOUR	RO		7/27/11		10-31-11	
9.	Aaron Swanson	RO		7/27/11		10/27/11	
10.	Shane Johnson	RO		7-28-11		11-2-11	
11.	Clark Fletcher	Fleet Reviewer		8-17-11	C. Fletcher per phone C.P.	10-31-11	
12.	Wiley Killette	Fleet Reviewer		8/17/11	W. Killette per phone C.P.	11-1-11	
13.	DIANE PERRY	OTC ADMIN SPEC		08/17/11		27/OCT/2011	
14.	Lisa Abernathy	OTC ADM SPEC		8/17/11		10/27/11	
15.							

NOTES:

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 10-17-11 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

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1.	Clifford P Witherspoon	Exam Team		4-27-11		10-26-11
2.	Gabriel WASHBURN	Exam Team		4-27-11		10-26-11
3.	Kenneth Canitz	Exam Team		4-27-11		11-1-11
4.	Rick Robinson	OPS		4-27-11		10-26-11
5.	PAUL STOVALL	COE		5-10-11		10-26-11
6.	JOAN SUTTERA	COE		5-24-11	J. Sutphin per phone	C.P.W. 10-31-11
7.	TAM VAN VO	Sim support		6-1-11		10-31-11
8.	JAMES M. BYKO	OPS SENIOR SPECIALIST		6-1-11		10-27-11
9.	Robert L Manning	OPS		6-20-11		10-27-11
10.	KEITH P WELLNER	Sim Supv. Eng		7/22/11		10-31-11
11.	Jeff G. Pottmeyer	Sim Senior Eng.		7/11/11		10-27-11
12.	Joey Woolbright	Sim Support		7/11/11		10-31-11
13.	Louis Nguyen	TRAINING SUPERVISOR		7/13/11		10/27/11
14.	John R Stanley	Ops Trg Manager		7/13/11		10/31/11
15.	Stephen S. Bowen	OPS TRNG Instructor		7/14/11		10-27-11

NOTES:

* By Phone

1. Pre-Examination

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2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Stan Pressley	SRO		8-20-11		11/1/11	
2.	Scot Hawkesworth	IRO		8/24/11		10/28/11	
3.	Bob Hyatt	RO		8-24-11		10-28-11	
4.	Phillip H. Gass	Contractor		9/7/2011		10/26/11	
5.	Gary W. Miller	RO		9-9-11		11/1/11	
6.	Tanner J. Brewer	RO		9-20-11		10/28/11	
7.	Michael S. Tatz	SRO		9-20-11		11/1/11	
8.	R.B. Poole	SRO		9-26-11		10/28/11	
9.	D. K. George	RO		9-26-11		10/29/11	
10.	Robert S Shaw	RO		9-26-11		10/30/11	
11.	Tracy Roland	SRO		9-27-11		10-30-11	
12.	Mike Quarles	RP		9-29-11		10-27-11	
13.	Patrick Godsby	RO		10-4-11		10-26-11	
14.	Betsy Santos-Lozada	RO		10-4-11		10-27-11	
15.	Harold L. Fenton	SRO		10-4-11		10-24-11	

NOTES:

Facility: **Oconee**		Date of Examination: **10/17/11**
Examination Level: RO [X] SRO [ ]		Operating Test Number: **1**
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations Gen 2.1.7 (4.4/4.7)	**M, R**	Admin-131, **Perform Manual RCS Leakage Calculation** (RO Only) (18 min)
Conduct of Operations Gen 2.1.45 (3.9/4.2)	**M, R**	Admin-117, **Perform a Power Imbalance Verification** (RO Only) (35 min)
Equipment Control Gen 2.2.12 (3.7/4.1)	**M, R**	Admin-237, **Perform SG Downcomer Temperature Surveillance** (Both) (18 min)
Radiological Control Gen 2.3.4 (3.2/3.7)	**M, R**	Admin-330, **Calculate the Maximum Permissible Stay Time** (Both) (10 min)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria:	(C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)	

Facility: **Oconee**		Date of Examination: **10/17/11**
Examination Level: RO ☐ SRO [X]		Operating Test Number: **1**
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations Gen 2.1.7 (4.4/4.7)	**M, R**	Admin-130, **Perform manual RCS Leakage Calculation and TS determination** (SRO Only) (18 min)
Conduct of Operations Gen 2.1.45 (3.9/4.2)	**M, R**	Admin-140, **Perform a Power Imbalance Verification and Determine any Associated TS Requirements** (SRO Only) (35 min)
Equipment Control Gen 2.2.12 (3.7/4.1)	**M, R**	Admin-237, **Perform SG Downcomer Temperature Surveillance** (Both) (18 min)
Radiological Control Gen 2.3.4 (3.2/3.7)	**M, R**	Admin-330, **Calculate the Maximum Permissible Stay Time** (Both) (10 min)
Emergency Plan Gen 2.4.38 (2.4/4.4)	**M, R**	Admin-430, **Determine Emergency Classification and Protective Action Recommendations (Complete Emergency Notification Form)** (SRO Only) (20 min)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria:	(C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)	

Facility: **Oconee**	Date of Examination: **October, 2011**
Exam Level: **RO** [X] SRO-I [ ] SRO-U [ ]	Operating Test No.: **1**

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. **CRO-111, Withdrawal of Safety Rod Gp 1 to 50%** OP/1/A/1105/019 Encl. 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: 001 G2.2.2 (4.6/4.1)] (10 min)	N, A, S. L	1
b. **CRO-207, Pressure makeup to CFT** Enclosure 4.7 of OP/1/A/1104/01 [KA: 006 A1.13 (3.5/3.7)] (10 min)	D, S	2
c. **CRO-302, Perform 1RC-66 Stroke Test** PT/**1**/A/0201/004 (1RC-66 Stroke Test) [KA: 010 A4.03 (4.0/3.8)] (10 min)	D, A, S, L	3
d. **CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)** EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
e. **CRO-407, Establish EFDW Flow Through Startup Valves** EOP, Encl. 5.27 (Alternate Methods for Controlling EFDW Flow) [KA: APE-054 AA2.04 (4.2/4.3)] (15 min)	D, A, S, E L	4S
f. **CRO-503, Perform Encl 5.35 (Cont. Isolation)** EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, S, L	5
g. **CRO-603, Perform a Manual Start of Keowee Hydro Unit 1** OP/0/A/1106/019, Encl 4.3 (KHU-1 Manual Startup) [KA: 062 A4.07 (3.1*/3.1*)] (15 min)	D, S	6
h. **CRO-901, Place RB Purge in Operation** OP/1/A/1102/014, Enclosure 4.1 [KA: 029 A2.03 (2.7/3.1)] (10 min)	D, L, S	8

In-Plant Systems[@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. **NLO-427, Reset an Emergency Feedwater Pump Turbine** OP/1, 2, 3/A/1106/06 [KA: 061 A2.04 (3.4/3.8)] (12 min)	M, A, E	4S
j. **NLO-710, Placing RB Hydrogen Analyzers in Service** EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3) (15 min)	D, R, E	3
k. **NLO-604, Restore chiller operation following a loss of power** AP/11 Encl 5.2 (Restoring Loads Outside the Control Room) [KA: 056 AA1.08 (2.5*/2.5)] (15 min)	N, E	6

@ 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 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **Oconee**	Date of Examination: **October, 2011**
Exam Level: **RO** [X] SRO-I [ ] SRO-U [ ]	Operating Test No.: **1**

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. **CRO-108, Align Emergency Boration During an ATWS** EOP Rule 1 (ATWS/Unanticipated Nuclear Power Production) [KA: BW/E13 EA1.1 (3.4/3.2)] (5 min)	D, A, S, P	1
	b. **CRO-207, Pressure makeup to CFT** Enclosure 4.7 of OP/1/A/1104/01 [KA: 006 A1.13 (3.5/3.7)] (10 min)	D, S	2
	c. **CRO-302, Perform 1RC-66 Stroke Test** PT/1/A/0201/004 (1RC-66 Stroke Test) [KA: 010 A4.03 (4.0/3.8)] (10 min)	D, A, S, L	3
	d. **CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)** EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
	e. **CRO-407, Establish EFDW Flow Through Startup Valves** EOP, Encl. 5.27 (Alternate Methods for Controlling EFDW Flow) [KA: APE-054 AA2.04 (4.2/4.3)] (15 min)	D, A, S, E L	4S
	f. **CRO-503, Perform Encl 5.35 (Cont. Isolation)** EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, S, L	5
	g. **CRO-603, Perform a Manual Start of Keowee Hydro Unit 1** OP/0/A/1106/019, Encl 4.3 (KHU-1 Manual Startup) [KA: 062 A4.07 (3.1*/3.1*)] (15 min)	D, S	6
	h. **CRO-901, Place RB Purge in Operation** OP/1/A/1102/014, Enclosure 4.1 [KA: 029 A2.03 (2.7/3.1)] (10 min)	D, L, S	8

* JPM Replaced due to a ~~EXAM~~ security Issue. Issue affected only this Applicant.

Licensee PIP # O-11-12337

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. **NLO-427, Reset an Emergency Feedwater Pump Turbine** OP/1, 2, 3/A/1106/06 [KA: 061 A2.04 (3.4/3.8)] (12 min)	M, A, E	4S
j. **NLO-710, Placing RB Hydrogen Analyzers in Service** EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3) (15 min)	D, R, E	3
k. **NLO-604, Restore chiller operation following a loss of power** AP/11 Encl 5.2 (Restoring Loads Outside the Control Room) [KA: 056 AA1.08 (2.5*/2.5)] (15 min)	N, E	6

@ 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 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **Oconee**	Date of Examination: **October, 2011**
Exam Level: **RO** ☐ SRO-I ☒ SRO-U ☐	Operating Test No.: **1**

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. **CRO-111, Withdrawal of Safety Rod Gp 1 to 50%** OP/1/A/1105/019 Encl. 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: 001 G2.2.2 (4.6/4.1)] (10 min)	N, A, S. L	1
b. **CRO-207, Pressure makeup to CFT** Enclosure 4.7 of OP/1/A/1104/01 [KA: 006 A1.13 (3.5/3.7)} (10 min)	D, S	2
c. **CRO-302, Perform 1RC-66 Stroke Test** PT/1/A/0201/004 (1RC-66 Stroke Test) [KA: 010 A4.03 (4.0/3.8)] (10 min)	D, A, S, L	3
d. **CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)** EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
e. **CRO-407, Establish EFDW Flow Through Startup Valves** EOP, Encl. 5.27 (Alternate Methods for Controlling EFDW Flow) [KA: APE-054 AA2.04 (4.2/4.3)] (15 min)	D, A, S, E, L	4S
f. **CRO-503, Perform Encl 5.35 (Cont. Isolation)** EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, S, L	5
g. **CRO-603, Perform a Manual Start of Keowee Hydro Unit 1** OP/0/A/1106/019, Encl 4.3 (KHU-1 Manual Startup) [KA: 062 A4.07 (3.1*/3.1*)] (15 min)	D, S	6
h. N/A		

In-Plant Systems[@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. **NLO-427, Reset an Emergency Feedwater Pump Turbine** OP/1, 2, 3/A/1106/06 [KA: 061 A2.04 (3.4/3.8)] (12 min)	M, A, E	4S
j. **NLO-710, Placing RB Hydrogen Analyzers in Service** EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3) (15 min)	D, R, E	3
k. **NLO-604, Restore chiller operation following a loss of power** AP/11 Encl 5.2 (Restoring Loads Outside the Control Room) [KA: 056 AA1.08 (2.5*/2.5)] (15 min)	N, E	6

@ 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 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **Oconee**	Date of Examination: **October, 2011**
Exam Level: **RO** ☐ SRO-I ☐ SRO-U ☒	Operating Test No.: **1**

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. **CRO-111, Withdrawal of Safety Rod Gp 1 to 50%** OP/1/A/1105/019 Encl. 4.3 (Withdrawal of Safety Rod Group 1 to 50%) [KA: 001 G2.2.2 (4.6/4.1)] (10min)	N, A, S. L	1
b. **N/A**		
c. **N/A**		
d. **CRO-405, Align ECCS Suction from Emergency Sump (1LP-21 Fails to close)** EOP Encl. 5.12 (ECCS Suction Swap to RBES) [KA: BW/E08 EA1.1 (4.0/3.7)] (15 min)	D, A, S, L E, EN	4P
e. **N/A**		
f. **CRO-503, Perform Encl 5.35 (Cont. Isolation)** EOP Encl Perform Encl 5.35 (Cont. Isolation) [KA: 103 G2.1.23 (4.3/4.4)] (12 min)	N, S, L	5
g. **N/A**		
h. **N/A**		

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. **N/A**		
j. **NLO-710, Placing RB Hydrogen Analyzers in Service** EOP Encl 5.2 [KA: 028 A4.03 (3.1/3.3) (15 min)	D, R, E	3
k. **NLO-604, Restore chiller operation following a loss of power** AP/11 Encl 5.2 (Restoring Loads Outside the Control Room) [KA: 056 AA1.08 (2.5*/2.5)] (15 min)	N, E	6

@ 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 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **Oconee** Date of Examination: **10-17-2011** Operating Test Number: **1**

	1. General Criteria	Initials a	b*	c#
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).			
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.			
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)			
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.			
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.			
	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			
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.			
	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.			

		Printed Name / Signature	Date
a.	Author	Gabriel WASHBURN /	10-4-11
b.	Facility Reviewer(*)	John R. Steely /	10-4-11
c.	NRC Chief Examiner (#)	Gerard W. Lasica /	10/5/2011
d.	NRC Supervisor	Marcus T. Widmann /	10/06/11

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: **OCONEE** Date of Exam: **10/17/11** Scenario Numbers: 1 / 2 / 3 / 4 Operating Test No.: **1**

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.			
2. The scenarios consist mostly of related events.			
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)			
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.			
5. The events are valid with regard to physics and thermodynamics.			
6. Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			
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.			
8. The simulator modeling is not altered.			
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.			
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.			
11. All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			
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).			
13. The level of difficulty is appropriate to support licensing decisions for each crew position.			

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

Facility: **Oconee** Date of Exam: **10-17-11** Operating Test No.: **1**

APPLICANT	EVENT TYPE	Scenarios 1 CREW POSITION SRO	1 ATC	1 BOP	2 SRO	2 ATC	2 BOP	3 SRO	3 ATC	3 BOP	4 SRO	4 ATC	4 BOP	TOTAL	MINIMUM(*) R	I	U
RO X SRO-I ☐ SRO-U ☐	RX		5												1	1	0
	NOR											1			1	1	1
	I/C		4 7			4 6 7			1 4 5			4 6			4	4	2
	MAJ		8 9			8			6 7			7 8			2	2	1
	TS														0	2	2
RO X SRO-I ☐ SRO-U ☐	RX														1	1	0
	NOR			1			1								1	1	1
	I/C			2 3			3 5			2 3 4			2 3 5		4	4	2
	MAJ			8 9			8			6 7			7 8		2	2	1
	TS														0	2	2
RO ☐ SRO-I ☐ SRO-U X	RX	5													1	1	0
	NOR	1			1						1				1	1	1
	I/C	2 3 4 7			3 4 5 6 7			1 2 3 4 5			2 3 4 5 6				4	4	2
	MAJ	8 9			8			6 7			7 8				2	2	1
	TS	3 5 6			2 5			1 4			2 3 5				0	2	2

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.

ES-301 **Competencies Checklist** **Form ES-301-6**

Facility: **Oconee** Date of Examination: **10-17-2011** Operating Test No.: **1**

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

FINAL

ES-401, Rev. 9E **PWR Examination Outline** **Form ES-401-2**

Facility: **Oconee 2011-302 October 2011**

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	3	3	N/A			3	3	N/A		3	18	3	3	6
	2	2	2	1				1	2			1	9	2	2	4
	Tier Totals	5	5	4				4	5			4	27	5	5	10
2. Plant Systems	1	3	3	2	2	3	2	3	2	3	3	2	28	2	3	5
	2	1	0	1	1	1	1	1	1	1	1	1	10	1 1	1	3
	Tier Totals	4	4	3	3	2	4	4	4	4	2	4	38	4	4	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3 4	7
		3			3			2			2			2	2	1 2	

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

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

3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, 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.

e. 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.

8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2. 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	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (**RO** / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1					X		**007EA2.06 Ability to determine or interpret the following as they apply to a reactor trip:** Occurrence of a reactor trip	4.3/4.5	
000008 Pressurizer Vapor Space Accident / 3		X					**008AK2.02 Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following:** sensors and detectors	2.7/2.7	
000009 Small Break LOCA / 3									
000011 Large Break LOCA / 3 (SRO)					X		**011EA2.01 Ability to determine or interpret the following as they apply to a Large Break LOCA:** Actions to be taken based on RCS temperature and pressure-saturated and superheat	4.2/4.7	
000015/17 RCP Malfunctions / 4		X					**015AK2.08 Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following:** CCWS	2.6/2.6	
000022 Loss of Rx Coolant Makeup / 2					X		022AA2.01 **Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup:** whether charging line leak exists	3.4/3.3	
000022 Loss of Rx Coolant Makeup / 2 (SRO)					X		**022AA2.04 Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup:** How long pressurizer level can be maintained within limits	2.9/3.8	
000025 Loss of RHR System / 4		X					**025AK2.03 Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following: service water or closed cooling water pumps**	2.7/2.7	
000025 Loss of RHR System / 4 (SRO)						X	**025G2.4.35 Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects**	3.8/4.0	
000026 Loss of Component Cooling Water / 8				X			**026AA1.01 Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water:** CCW temperature indications	3.1/3.1	
000027 Pressurizer Pressure Control System Malfunction / 3						X	**027AG2.2.3 Knowledge of the design, procedural and operational differences between units**	3.8/3.9	

000027 Pressurizer Pressure Control System Malfunction / 3 (SRO)						X	**027AG2.2.22 Knowledge of limiing conditions for operations and safety limits**	4.0/4.7	
000029 ATWS / 1				X			**029EA1.13 Ability to operate and monitor the following as they apply to a ATWS:** manual trip of main turbine	4.1/3.9	
000038 Steam Gen. Tube Rupture / 3 (SRO)						X	**038EG2.1.20 Ability to execute procedure steps**	4.6/4.6	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4			X				**BE05EK3.4 Knowledge of the reasons for the following responses as they apply to the (Excessive Heat Transfer)** RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.	3.8/3.8	
000054 (CE/E06) Loss of Main Feedwater / 4			X				**054AK3.04 Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW):** Actions contained in EOPs for loss of MFW	4.4/4.6	
000055 Station Blackout / 6				X			**055EA1.01 Ability to operate and monitor the following as they apply to a Station Blackout:** Incore thermocouple temperatures	3.7/3.9	
000056 Loss of Off-site Power / 6	X						**056AK1.03 Knowledge of the operational implications of the following concepts as they apply to Loss of Offsite Power:** Definition of subcooling: use of seam tables to determine it	3.1/3.4	
000057 Loss of Vital AC Inst. Bus / 6						X	**057AG2.4.46 Ability to verify that the alarms are consistent with the plant conditions**	4.2/4.2	
000057 Loss of Vital AC Inst. Bus / 6 (SRO)					X		**057AA2.20 Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus:** Interlocks in effect on loss of ac vital electrical instrument bus that must be bypassed to restore normal equipment operation	3.6/3.9	
000058 Loss of DC Power / 6					X		**058AA2.02 Ability to determine and interpret the following as they apply to the Loss of DC Power:** 125V dc bus voltage, low/critical low, alarm	3.3/3.6	
000062 Loss of Nuclear Svc Water / 4			X				**062AK3.01 Knowledge of the reasons for the following responses as they apply to the loss of Nuclear Service Water:** the conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers.	3.2/3.5	

000065 Loss of Instrument Air / 8						X	**065AG2.4.6 Knowledge of symptom based EOP mitigation strategies**	3.7/4.7	
000077 Generator Voltage and Electric Grid Disturbances / 6	X						**077AK1.02 Knowledge of the operational implications of the following concepts as they apply to Generator Voltage and Electric Grid Disturbances:** Over-excitation	3.3/3.4	
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc. / 4									
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	X						**BE04EK1.3 Knowledge of the operational implications of the following concepts as they apply to the (Inadequate Heat Transfer):** Annunciators and conditions indicating signals, and remedial actions associated with the (Inadequate Heat Transfer).	4.0/4.0	
W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4									
WE11; Loss of Emergency Coolant Recirculation									
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18
SRO K/A Category Totals:					3	3	Group Point Total:		6

ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)						Form ES-401-2		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1						X	**001AG2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm**	4.1/4.3	
000003 Dropped Control Rod / 1(SRO)						X	**003AG2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions**	4.0/4.6	
000005 Inoperable/Stuck Control Rod / 1(SRO)					X		005AA2.01 **Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod:** Stuck or inoperable rod from in-core and ex-core NIS, in-core or loop temperature measurements	3.3/4.1	
000024 Emergency Boration / 1					X		024AA2.06 **Ability to determine and interpret the following as they apply to the Emergency Boration:** when boron dilution is taking place.	3.6/3.7	
000028 Pressurizer Level Malfunction / 2									
000032 Loss of Source Range NI / 7									
000033 Loss of Intermediate Range NI / 7				X			033AA1.02 **Ability to operate and / or monitor the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation:** Level trip bypass	3.0/3.1	
000036 (BW/A08) Fuel Handling Accident / 8		X					**036AK2.01 Knowledge of the interrelations between the Fuel Handling Incidents and the following:** Fuel handling equipment	2.9/3.5	
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4(SRO)						X	**051AG2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.**	4.2/4.4	
000059 Accidental Liquid RadWaste Rel. / 9									
000061 ARM System Alarms / 7					X		061AA2.04 **Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms:** Whether an alarm channel is functioning properly	3.1/3.5	

000067 Plant Fire On-site / 8			X				**067AK3.04 Knowledge of the reasons for the following responses as they apply to the Plant Fire on Site: Actions contained in EOP for plant fire on site. (AOP action accepted).**	3.3/4.1	
000068 (BW/A06) Control Room Evac. / 8									
000069 (W/E14) Loss of CTMT Integrity / 5									
000074 (W/E06&E07) Inad. Core Cooling / 4									
000076 High Reactor Coolant Activity / 9									
W/EO1 & E02 Rediagnosis & SI Termination / 3									
W/E13 Steam Generator Over-pressure / 4									
W/E15 Containment Flooding / 5									
W/E16 High Containment Radiation / 9									
BW/A01 Plant Runback /									
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4		X					BA04AK2.1 **Knowledge of the interrelations between the (Turbine Trip) and the following:** Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.5/3.3	
BW/A05 Emergency Diesel Actuation / 6 (SRO)					X		BA05AA2.2 **Ability to determine and interpret the following as they apply to the (Emergency Diesel Actuation)** Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.5/3.8	
BW/A07 Flooding / 8	X						BA07AK1.2 **Knowledge of the operational implications of the following concepts as (Flooding)** Normal, abnormal and emergency operating procedures associated with (Flooding).	3.3/3.7	
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4	X						BE08EK1.1 **Knowledge of the operational implications of the following concepts as they apply to the (LOCA Cooldown)** Components, capacity, and function of emergency systems.	3.5/3.8	
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4									
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4									
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:	2	2	1	1	2	1	Group Point Total:		9
K/A Category Point Totals: (SRO)					2	2	Group Point Total:		4

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-2		
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	#
003 Reactor Coolant Pump			X									003K3.03 **Knowledge of the effect that a loss or malfunction of the RCPS will have on the following:** Feedwater and emergency feedwater	2.8/3.1	
004 Chemical and Volume Control									X			004A3.01 **Ability to monitor automatic operation of the CVCS, including:** water and boron inventory	3.5/3.7	
004 Chemical and Volume Control										X		004A4.04 **Ability to manually operate and/or monitor in the control room:** calculation of boron concentration changes	3.2/3.6	
005 Residual Heat Removal											X	005G2.4.9 **Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies**	3.8/4.2	
006 Emergency Core Cooling									X			006A3.06 **Ability to monitor automatic operation of the ECCS, including:** Valve lineups	3.9/4.2	
006 Emergency Core Cooling		X										**006K2.04 Knowledge of bus power supplies to the following:** ESFAS-operated valves	3.6/3.8	
007 Pressurizer Relief/Quench Tank					X							**007K5.02 Knowledge of the operational implications of the following concepts as they apply to PRTS:** Method of forming a steam bubble in the PZR	3.1/3.4	
008 Component Cooling Water		X										008K2.02 **Knowledge of bus power supplies to the following:** CCW pump, including emergency backup	3.0/3.2	
010 Pressurizer Pressure Control					X							010K5.01 **Knowledge of the operational implications of the following concepts as they apply to the PZR PCS:** Determination of condition of fluid in PZR, using steam tables	3.5/4.0	

010 Pressurizer Pressure Control						X						**010K6.01 Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS:** Pressure Detection systems	2.7/3.1	
012 Reactor Protection								X				**012A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Loss of instrument power	3.6/3.9	
012 Reactor Protection	X											**012K1.06 Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems:** T/G	3.1/3.1	
013 Engineered Safety Features Actuation		X										**013K2.01 Knowledge of bus power supplies to the following:** ESFAS/safeguards equipment control	3.6/3.8	
013 Engineered Safety Features Actuation					X							**013K5.02 Knowledge of the operational implications of the following concepts as they apply to the ESFAS:** Safety system logic and reliability	2.9/3.3	
013 Engineered Safety Features Actuation (SRO)											X	**013G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.**	3.2/4.2	
022 Containment Cooling	X											**022K1.01 Knowledge of the physical connections and/or cause-effect relationships between the CCS and the following systems:** SWS/cooling system	3.5/3.7	
022 Containment Cooling (SRO)											X	**022G2.4.31 Knowledge of annunciator alarms, indications or response procedures.**	4.2/4.1	
025 Ice Condenser														
026 Containment Spray									X			**026A3.01 Ability to monitor automatic operation of the CSS, including:** Pump starts and correct MOV positioning	3.5/3.5	
026 Containment Spray (SRO)											X	**026G2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.**	4.2/4.2	

039 Main and Reheat Steam							X				**039A1.10 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MRSS controls including:** Air ejector PRM	2.9/3.0	
059 Main Feedwater			X								**059K3.02 Knowledge of the effect that a loss or malfunction of the MFW will have on the following:** AFW system	3.6/3.7	
059 Main Feedwater (SRO)								X			**059A2.11 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Failure of feedwater Control system	3.0/3.3	
061 Auxiliary/Emergency Feedwater						X					**061K6.02 Knowledge of the effect of a loss or malfunction of the following will have on the AFW components:** pumps	2.6/2.7	
062 AC Electrical Distribution							X				**062A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including:** significance of D/G load limits (May use Hydro Units or SSF)	3.4/3.8	
062 AC Electrical Distribution				X							**062K4.10 Knowledge of ac distribution system design feature(s)and/or interlock(s) which provide for the following:** Uninterruptable ac power sources	3.1/3.5	
063 DC Electrical Distribution									X		**063A4.03 Ability to manually operate and/or monitor in the control room:** Battery discharge rate	3.0/3.1	
064 Emergency Diesel Generator								X			**064A2.09 Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Synchronization of the ED/G with other electric power supplies. (Use of Hydro unit acceptable)	3.1/3.3	

073 Process Radiation Monitoring				X							**073K4.02 Knowledge of PRM system design feature(s) and/or interlock(s) which provide for the following:** Letdown isolation on high-RCS activity	3.3/3.9	
076 Service Water									X		**076A4.02 Ability to manually operate and/or monitor in the control room:** SWS Valves	2.6/2.6	
076 Service Water	X										**076K1.20 Knowledge of the physical connections and/or cause- effect relationships between the SWS and the following systems:** AFW	3.4/3.4	
078 Instrument Air										X	**078G2.1.32 Ability to explain and apply system limits and precautions.**	3.8/4.0	
103 Containment							X				**103A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including:** Containment pressure, temperature, and humidity	3.7/4.1	
103 Containment (SRO)								X			**103A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the containment system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations** Containment evacuation (including recognition of the alarm)	3.5/3.6	
K/A Category Point Totals:	3	3	2	2	3	2	3	2	3	3	2	Group Point Total:	28
K/A Category Point Totals: **(SRO)**								2			3	Group Point Total:	5

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)											Form ES-401-2		
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	#
001 Control Rod Drive						X						**001K6.02 Knowledge of the effect of a loss or malfunction on the following CRDS components:** Purpose and operation of sensors feeding into the CRDS	2.8/3.3	
002 Reactor Coolant				X								**002K4.07 Knowledge of RCS design feature(s) and/or interlock(s) which provide for the following:** Contraction and expansion during heatup and cooldown	3.1/3.5	
011 Pressurizer Level Control														
014 Rod Position Indication														
015 Nuclear Instrumentation							X					**015A1.07 Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the NIS controls including:** Changes in boron concentration	3.3/3.4	
016 Non-nuclear Instrumentation (SRO)											X	**016G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.**	4.4/4.7	
016 Non-nuclear Instrumentation			X									**016K3.06 Knowledge of the effect that a loss or malfunction of the NNIS will have on the following:** AFW system	3.5/3.7	
017 In-core Temperature Monitor														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge										X		**029A4.04 Ability to manually operate and/or monitor in the control room:** Containment evacuation signal	3.5/3.6	
033 Spent Fuel Pool Cooling											X	**033G2.1.20 Ability to execute procedure steps**	4.6/4.6	
034 Fuel Handling Equipment (SRO)					X							**034K4.01 Knowledge of design feature(s) and/or interlock(s) which provide for the following:** Fuel protection from binding and dropping	2.6/3.4	

035 Steam Generator													
041 Steam Dump/Turbine Bypass Control													
045 Main Turbine Generator													
055 Condenser Air Removal													
056 Condensate								X				**056A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those mal-functions or operations:** Loss of condensate pumps	2.6/2.8	
068 Liquid Radwaste													
071 Waste Gas Disposal (SRO)								X				**071A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:** Use of waste gas release monitors, radiation, gas flow rate, and totalizer	3.3/3.6	
071 Waste Gas Disposal					X							**071K5.04 Knowledge of the operational implication of the following concepts as they apply to the Waste Gas Disposal System:** Relationship of hydrogen/oxygen concentrations to flammability	2.5/3.1	
072 Area Radiation Monitoring									X			**072A3.01 Ability to monitor automatic operation of the ARM system, including:** Changes in ventilation alignment	2.9/3.1	
075 Circulating Water													
079 Station Air	X											079K1.01 **Knowledge of the physical connections and/or cause-effect relationships between the SAS and the following systems:** IAS	3.0/3.1	
086 Fire Protection													
K/A Category Point Totals:	1	0	1	1	1	1	1	1	1	1	1	Group Point Total:		10
K/A Category Point Totals: (SRO)					1			1			1	Group Point Total:		3

Facility:	Watts Bar	Date of Exam:	8/23/2010 2010-301

Category	K/A #	Topic	RO		SRO-Only	
			IR	Q#	IR	Q#
1. Conduct of Operations	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1		3.1	
	2.1.27	Knowledge of system purpose and/or function.	3.9		4.0	
	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.	2.9		3.9	
	2.1.1	Knowledge of conduct of operations requirements.			4.2	
	2.1.41	Knowledge of the refueling process.			3.7	
	Subtotal		3		2	
2. Equipment Control	2.2.12	Knowledge of surveillance procedures.	3.7		4.1	
	2.2.13	Knowledge of tagging and clearance procedures.	4.1		4.3	
	2.2.36	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	3.1		4.2	
	2.2.17	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.			3.8	
	2.2.37	Ability to determine operability and/or availability of safety related equipment.			4.6	
	Subtotal		3		2	
3. Radiation Control	2.3.5	Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9		2.9	
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.4		3.8	
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.			2.9	
	Subtotal		2		1	
4. Emergency Procedures / Plan	2.4.16	Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.	3.5		4.4	
	2.4.49	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6		4.4	
	2.4.18	Knowledge of the specific bases for EOPs.			4.0	
	2.4.28	Knowledge of procedures relating to a security event (non-safeguards information)			4.1	
	Subtotal		2		2	
Tier 3 Point Total			10		7	

Tier / Group	Randomly Selected KA	Reason for Rejection
1 / 1	APE062 AK3.01	Q(15) Chief examiner said that use of LPSW to KHR cooler valves would be acceptable however LPSW-4&5 are manually operated valves from CR therefore changed KA. Randomly selected KA APE062 AK3.03.
1 / 2	APE024 AA2.06	Q(20) Cannot write a discriminating question on this KA regarding boron dilution during Emergency boration. Changed KA. Randomly selected KA APE024 AA2.01.
1 / 2	APE033 AA1.02	Q(21) ONS does not have a "level trip bypass" associated with the Wide Range NI's. Changed KA to 1.03 and agreed a power supply question will meet intent. Randomly selected KA APE033 AA1.03.
2 / 1	SYS039 A1.10	Q(44) There are no MS controls directly controlled by RIA-40. Changed KA.Randomly selected SYS039 A1.05.
2 / 1	SYS063 A4.03	Q(49) ONS does not have the capability to monitor battery discharge rate from the control room. Changed second part of KA to A4.01
2 / 1	SYS073 K4.02	Q(51) We do not have auto letdown isolation on high activity.Changed KA. Randomly selected SYS073 K4.01.
2 / 2	SYS072 A3.01	Q(64) ONS does not have auto ventilation system response to Area monitors. Changed KA. Randomly selected KA SYS086 A3.01
1 / 1	APE025 2.4.35	Q(78) KA is systems based and cannot write a discriminating SRO level question to it. Randomly selected APE025 G2.4.37
1 / 1	APE057 AA2.20	Q(81) At ONS there are no interlocks to bypass when restoring power to a vital bus. Randomly selected APE057 AA2.19
1 / 2	APE003 2.4.21	Q(82) ONS does not incorporate use of the Critical Safety Functions. Randomly selected APE003 G2.4.21
2 / 1	SYS026 2.4.47	Q(88) Cannot write a discriminating question at the SRO level for this KA. Randomly selected SYS026 G2.2.40.

ES-401 **Written Examination Quality Checklist** **Form ES-401-6**

Facility: Oconee Nuclear Station Date of Exam: 10/26/2011 Exam Level: RO ☑ SRO ☑

	Item Description	Initial a	b*	c*
1.	Questions and answers are technically accurate and applicable to the facility.			
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.			
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401			
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).	N/A	N/A	
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 __ the licensee certifies that there is no duplication; or __ other (explain)			
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: 7 / 2 — Modified: 3 / 1 — New: 65 / 22		
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: 35 / 10 — C/A: 40 / 15		
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.			
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.			
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.			
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.			

	Printed Name / Signature	Date
a. Author	Clifford P. Witherspoon	10-11-11
b. Facility Reviewer (*)	John K. Steele	10-11-11
c. NRC Chief Examiner (#)	GERARD M. LASKA	10/11/2011
d. NRC Regional Supervisor	BRUNO CABALLERO	10/11/11

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.

Q#	1. LOK (F/H)	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

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.
   - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
   - 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)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

Q#	1. LOK (F/H)	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
76	H	2				X								E	**011EA2.01** Question appears to match the K/A. Distractor D does not appear to be plausible. If CETC's were increasing, why would you go to the LOCA CD tab? Need to find another distractor for D This is SAMG space. **NEW Changed distractor D as requested. SAT . 9/22/2011**
77	H	2											X	U/E	**022AA2.04** Questions kind of matches K/A. Has a SRO aspect to it, but not sure if the K/A is matched at the SRO level. Will get another examiner to review. 2ND examiner agreed the K/A is not being tested at the SRO level. **NEW** **Also would like another K/A Discussed the point of question being answered by RO knowledge. Will continue to find an additional distractor to ensure SRO knowledge is required to answer question, or change question. 9/22/2011.** **Changed part of distractors SAT. 10/29/2011**

Q#	1. LOK (F/H)	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
78	H	1				X						X		U	**025G2.4.37** Do not believe this matches the K/A. It does contain a loss of DHR, but it appears that OMP-18 is not a part of the emergency plan. The K/A must deal with the emergency plan. (I understand the title deals with emergency events, but that is not the emergency plan). Who can determine the emergency classification can be downgraded etc. Distractors B and D are not plausible. Nowhere in the industry are STA's allowed to direct plant operations. **Second Examiner reviewed this question and had the same conclusions.** **NEW** **Will write a new question to test DHR specifiecs** **New Question SAT 10/29/2011**
79	F	1											X	U	**027G2.2.22** Question appears to match the K/A. As written the question is not SRO only. Knowing that two pressurizer safety valves must be operable is above the line in T.S. (RO knowledge). The reasons (basis) in distractors B and D are not plausible. The safeties do not lift until greater than 2400 psig, so how could they ensure HPI flow is ever created? With A and C being the only plausible basis, no SRO knowledge is being tested. **NEW** **Will continue to work on Question.** **Question SAT 10/29/2011**

Q#	1. LOK (F/H)	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
80	H	2				X								E	**038G2.1.20** Question appears to match the K/A. Question appears to have an SRO aspect to it. However, distractors A and C reasons are not plausible for the constructed question. With the conditions stated in stem (RCS at 550°F) and cooling down to either 525°F or 450°F no technical specification limit could be exceeded. (cooldown rate 100°F/hour. An operator could perform this cooldown and would not exceed the TS limit. Therefore it is not plausible. **NEW** **Replaced distractors, now SAT 9/22/2011**
81	H	2												S	**057AA2.19** Question appears to match K/A. Question appears to be SRO only. SAT **NEW**
82	H	2				X								U	**003G2.4.20** Question appears to match the K/A. (AOP allowed for note/caution, not covered in EOPs) Question does have an SRO aspect to it. Distractor B and D do not appear to be plausible. (B) When performing a startup (turbine not online) OP/1/1102/001 would be used, so why would an operator select 1102/004 to continue the startup? (D) Why would you trip the reactor at this power, when if at 100% power, with one dropped rod, the reactor is not tripped? Need to either change this to a two by two, or develop new distractors. **NEW** **Made some changes as requested. Still some work to do. SAT 10/29/2011**

Q#	1. LOK (F/H)	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
83	H	1				X							X	U	**005AA2.01** Question kind of matches the K/A. (assuming the dropped rod is inoperable). As written does not appear to be SRO only. This question can be answered using only RO knowledge. Observing the NI indication and determining that a control rod has dropped is RO knowledge. Knowing that brittle fracture of the reactor vessel only occurs from stresses involved with a rapid cooldown and high RCS pressure is GFES knowledge. Using this knowledge the only plausible answer is B. With brittle fracture a result in distractors A and C, these are not plausible. **NEW Gerry Attempt to find another distractor. May want another K/A. Changed second part of distractors. SAT 10/29/2011**
84	H		2											U	**051AG2.2.44** Question appears to match the K/A. Does not appear to be SRO only. The first part of the question (operation of the controls from the control room for TBV's) is RO system knowledge. TS 3.7.4 states (above the line) that two ADV flowpaths must be available (one from each generator) This is RO knowledge. I understand that you are asking what is the basis for a tube rupture event, but it is the same requirements for other accidents, there is nothing different than normal plant TS operability. Therefore this is not SRO only knowledge. **NEW** **Made changes to question. Appears to be acceptable. 9/22/2011**

Q#	1. LOK (F/H)	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
85	F	2												S	**BWA05AA2.2** Question appears to match the K/A. Question appears to have backwards logic (NOT operable) could we use the term inoperable? For Example: Only ACB 3 inoperable. If ACB 3 is closed, can it be inoperable? Otherwise SAT **NEW**
86	F	2											?	U	**013G2.2.25** Question appears to meet the K/A. Question may be SRO only (still need to determine) After reviewing the TS basis (3.5.2) and the wording in the question I am not sure that there is a correct answer. The basis is very confusing. One place it states: ***However, for cold leg breaks located on the discharge of the reactor coolant pumps, some HPI injection will be lost out the break; for this case, two HPI trains are required.*** Later it states: Thus, three HPI pumps must be OPERABLE to ensure adequate cooling in response to the design basis RCP discharge small break LOCA. ***Additionally, in the event one HPI train fails to automatically actuate due to a single failure (e.g., failure of HPI pump "C" or HP-26), operator actions from the Control Room are required to cross-connect the HPI discharge headers within 10 minutes in*** order to provide HPI flow through a second HPI train (Ref. 6). The question asks for the minimum **requirements** in accordance with TS 3.5.2 and the answers all state must be capable of… What exactly are we asking. I think an applicant could appeal this question and state any answer on the page could be considered correct. Will Discuss.

Q#	1. LOK (F/H)	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 correct answer is also worded different than the other distractors. **NEW** **Replaced Question. SAT 9/22/2011**
87	F	2										X		U	**022G2.4.31** Question does not meet the K/A. This is a question on the Reactor Building Spray System, the K/A asks for the Reactor Building Cooling System. 026 is the system designator for Reactor Building spray. The portion of the TS (3.6.5) that is referred to is the spray portion, not the cooling portion. The lesson plan is also the Reactor Building Spray lesson plan. Need to write a question on the reactor building cooling system. **MOD** **Replaced Question. SAT 9/22/2011**
88	H	2	X											S	**026G2.2.40** Question appears to match the K/A. Appears to have an SRO aspect to it. In the given conditions you state the unit is in mode 3, and in the stem you state again the unit is mode 3. Why state it two times? Just state in the stem: 1) the MINIMIUM Containment cooling equipment required to be OPERABLE in accordance with TS… Otherwise SAT. **NEW**

Q#	1. LOK (F/H)	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
89	H	2											X	U	**059A2.11** Question appears to match the K/A. Does not appear to be SRO only. Although the AFIS safety function is in TS basis, it is also a RO objective in the Feedwater Power point CF-FDW-ISS.ppt (R34) and it specifically gives this example on slide number 29. Also objective16 in the Feedwater System lesson plan (page 27 of 38.) Need to find something that is SRO only. **NEW** **Rewrote question with a new second part SAT. 9/22/2011**
90	H	2	X											E	**103A2.04** Question appears to match the K/A. Appears to be SRO only. May need to adjust wording in the stem. Either one of these procedures could be directed first. Why should 009 be directed first? (Because it contains the actions to mitigate the event?) Can we try to get this into the stem? Otherwise the question is okay. **NEW** **Made changes to stem as requested. SAT. 9/22/2011**
91	H	2	X											S	**016G2.1.7** Question appears to match the K/A. Appears to be SRO only. Do we need to put a time frame in the questions to ensure that D is not correct? (or state that this condition was just discovered?) What temperature is considered operable? Is one of these temperatures close to being operable? Otherwise SAT.

Q#	1. LOK (F/H)	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
92	F	2												E	**034K4.01** Question appears to match the K/A. Appears to be SRO only. The names in the procedure are different than in the question. The procedure calls it the Fuel Overload (TS-1), and should use Fuel Hoist up/down (TS-2). **New** **Made changes as requested. SAT 9/22/2011**
93	H	2												E	**071A2.02** Question appears to match K/A. Appears to be SRO only. I do not think a reference is appropriate for this question it makes it a direct look up. Suggest distractors and answers as follows: a. Release must be immediately terminated. b. Release may continue with two independent samples taken and immediately analyzed. c. Release may continue with discharge flow rate being estimated immediately. d. Release may continue for one hour with no additional actions. **NEW** **Replaced Question. SAT 9/22/2011**
94	F	2					X							E	**G2.1.1** Question appears to match the K/A. Appears to be SRO only. Need to discuss distractors to ensure they are not correct. The way I read the procedure one control room SRO could turnover his oversight responsibilities and serve as any of the distractors. Will Discuss. **NEW** **Changed stem to make distractors B,C, and D incorrect. SAT 9/22/2011**

Q#	1. LOK (F/H)	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
95	F	2											X	E	**G2.1.41** Question appears to match the K/A. Do not believe it is SRO only. I realize it was on a previous NRC exam, but knowing the spent fuel cooling system is not designed to cool the core while it is still in the vessel, and with the information above the line in TS 3.9.4 (LPI pump can be secured for ≤ 1 hour, and the TS limit of ≥ 21.34 feet answer B would be selected using only RO (system knowledge, and TS knowledge above the line). Need to either add something strictly from basis, or write a different question. **BANK 2009 NRC Rewrote Question SAT. Will still looking at end of distractors A and B, . 9/22/2011**
96	F	2												S	**G2.2.17** Question appears to match the K/A. Appears to be SRO only SAT. **NEW**
97	H	2												S	**G2.2.37** Question appears to match the K/A. Appears to be SRO only SAT. **NEW**
98	F	2												E	**G2.3.4** Question appears to match the K/A. Appears to be SRO only. Suggest changing A and C part 2 to 10. Without EDLs in effect could an individual be allowed 25R as in distractor C? **BANK 2009 NRC** **Made changes to several distractors. SAT 9/22/2011**

Q#	1. LOK (F/H)	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
99	H	2												S	**G2.4.18** Question appears to match the K/A. Appears to be SRO only SAT. **NEW**
100	H	2					X							E	**G2.4.28** Question appears to match the K/A. Appears to be SRO only. Need to make sure of the correct answers (not using judgment of the ED). Need to discuss if this is a direct look-up. Will have another examiner review. **NEW** **Made changes to stem. SAT 9/22/2011**

8 Sats, 8 Unsats, and 9 Enhancements

Q#	1. LOK (F/H)	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

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.
   - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
   - 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)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

Q#	1. LOK (F/H)	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	H	2												S	**007EA2.06** Question appears to match the K/A. SAT **NEW**
2	H	2												S	**008AK2.02** Question kind of matches the K/A. **2010A NRC Exam**
3	H	2		X		X								E	**015AK2.08** Question appears to match the K/A. On Unit 1 would HP-21 (and does it have a noun name?) need to be manually closed? If so, distractors A and C should state 2HP-21 should be manually closed. Second part of distractors should be the same: enter AP/16 and …Enter AP14 and … **NEW** **Made changes as requested. SAT 9/22/2011**
4	H	2												S	**022AA2.01** Question appears to match the K/A. SAT **NEW**
5	F	2												S	**025AK2.03** Question appears to match K/A. SAT **NEW**
6	F	2	X											E	**026AA1.01** Question kind of matches K/A as discussed previously. Is there an OAC point/alarm that would warn the operator that CC was lost. If it were lost what would be the first component affected? I know you did a lot of work on this question, but it really just asking for the letdown isolation setpoint. Will discuss. **NEW** **Made changes question SAT 9/22/2011**

Q#	1. LOK (F/H)	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
7	F	2												S	**027G2.2.3** Question appears to match K/A. Need to add a fourth bullet stating: RCS pressure continues to lower. Then SAT **NEW**
8	H	2												E	**029EA1.13** Question appears to match the K/A. Reword distractors: a. Trip BOTH the RCP's and the Main Turbine. b. Trip the RCP's only c. Trip the main turbine only d. Do not trip either the RCPs, or Main Turbine. Less words. **NEW** **Made changes as suggested. SAT 9/22/2011**

Q#	1. LOK (F/H)	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
9	H	2				X								E	**BW05EK3.4** Question appears to match the K/A. Some cuing in distractors. Reword second part of distractors to read: a. To limit RCS pressure increase. b. To limit RCS pressure increase. c. To maintain subsequent RCS cooldown within TS limits d. To maintain subsequent RCS cooldown within TS limits Not sure the Pressurizer level numbers are adequate. Rule 5 states: Pressurizer level increasing. It also states to throttle HPI and set the setpoint to control at > 100". The first part of the question asks for the LOWER pressurizer level that will allow HPI to be throttled IAW rule 5. It appears that you are stating 24" is the level on indications that means pressurizer level is on scale? Where is this written? Need to Discuss. **NEW** **Made change to stem. SAT 9/22/2011**
10	H	2												S	**054AK3.04** Question appears to match K/A. SAT **NEW**

Q#	1. LOK (F/H)	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	H	2	X											E	**055EA1.01** Question kind of matches the K/A. How long will it take natural circulation to develop? If it take a certain amount of time to develop we should place a time less than that in the stem, and remove prior to natural circ flow. Have you run this on the simulator to verify? Correct answer has the second part of the answer out of line with the other answers. Will discuss. **BANK 2009 NRC Question 12** **Made some changes to stem and distractors. SAT 9/22/2011**
12	H	2												S	**056AK1.03** Question kind of matches the K/A. Because Oconee procedures require enclosures to be used to determine if plant is subcooled, saturated, or superheated, question will be allowed to satisfy the K/A. (Enclosure 5.18 is based on steam tables). SAT **NEW**
13	H	2												S	**057G2.4.46** Question appears to match the K/A.SAT **NEW**
14	H	2												S	**058AA2.02** Question appears to match the K/A. SAT **MOD 2008 RO NRC Retake Exam**
15	H	2				X								E	**062AK3.03** Question kind of matches K/A, as discussed. Second part of distractor B should read: SSF-ASW suction source is CCW and ALL CCW pumps will be secured. Distractor C reason does not seem to be plausible. Need to find another reason. Distractor D remove the: due to water in turbine

Q#	1. LOK (F/H)	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
															building. (Not needed). **NEW Made changes as requested. SAT 9/22/2011**
16	F	2	X											E	**065AG2.4.6** Question appears to match the K/A. Suggest stem to read: WOOTF describes the action(s) required IAW AP/22 for the current conditions? **NEW Made changes as requested. SAT 9/22/2011**
17	H	2												S	**077AK1.02** Question appears to match the K/A. SAT **NEW**
18	H	2												S	**BW04EK1.3** Question appears to match the K/A. SAT **NEW**
19	H	2												S	**001AG2.4.45** Question appears to match K/A, as discussed. What action would be taken in each case? I.E. continuous rod withdrawal, place diamond in manual etc. Will discuss **NEW SAT 9/22/2011**
20	H	2	X	?										E	**024AA2.01** Question appears to match the K/A. Suggest stem state: WOOTF action is directed next in accordance with Rule 1? Does the picture have to include the valves, this could be cuing. The picture states HP-26 bypass and HP-27 bypass, but they are not listed in the procedure like this. Will discuss **NEW**

Q#	1. LOK (F/H)	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
															Made changes as requested. SAT 9/22/2011
21	F	2												S	**033AA1.03** Question meets the K/A as discussed. SAT **NEW**
22	F	2												S	**036AK2.01** Question appears to meet the K/A. SAT **BANK 2010A NRC Exam**
23	F	1												S	**061AA2.04** Question appears to meet the K/A. SAT Not very discriminating. **NEW**
24	H	2			X									E	**067AK3.04** Question appears to match the K/A. Suggest using a pressure of 2355 psig it is listed several times in AP/25. **NEW** **Made changes as requested. SAT 9/22/2011**
25	F	2												E	**BW04AK2.1** Question kind of matches the K/A. Not very discriminating. Not a comprehension level question as labeled. Need to make it a little more discriminating. **NEW** **Made changes as requested. SAT 9/22/2011**

Q#	1. LOK (F/H)	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
26	F	2												E	**BW07AK1.2** Question appears to match the K/A. Need to swap distractors C and D (Highest to lowest) then SAT **NEW** **Made changes as requested. SAT 9/22/2011**
27	H	2				X						X		U	**BW08EK1.1** Not sure the question meets the K/A. The K/A is looking for components/capacity/ and function of "Emergency Systems." Need to explain how the post LOCA Boron/Dilute flowpath and Alternate Boron/Dilute flowpaths fit this. Also has a subset issue even though you have the **most complete** list in the stem, should still have only after A, B, and C. **NEW; Upon Further discussion allowed the question with the addition of ONLY to the distractors. Will look at removing most complete. SAT . 9/22/2011**
28	H	2												S	**003K3.03** Question appears to match the K/A, as long as CT-5 providing auxiliaries means no RCPs are running. This was a change from the bank question which stated all RCP's were off. Otherwise SAT **BANK**
29	F	2				X								E	**004A3.01** Question appears to match the K/A. Do not believe that distractor D is plausible. (40 % level is required for HPI NPSH) Not very discriminating. Maybe try a 2 x2 with two of the times and something else that happens, or reasons. **NEW** **Made changes as requested. SAT 9/22/2011**

Q#	1. LOK (F/H)	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		
30	H	1										X		U	**004A4.04** Question does not really meet the K/A. The K/A requires a calculation of a change in boron concentration. This question does not require this. Additionally, one could look at the concentrations in the BHUTs and knowing that the LDST has 31gal/inch determine that 465 gallons are required. With the RCS boron concentration at 625 realize that the larger number needs to be from the borated tank. (One tank at 925 and the other essentially at zero). Making A the only answer that could be correct. Need to develop a question that requires change in acid concentration. **NEW** **Replaced question with question that tests a boron change. SAT 9/22/2011**
31	H	2										X		U	**005G2.4.9** Question does not appear to match the K/A. Although the question does have the plant in a shutdown condition with LPI in service as DHR, the procedure entry and initial actions are the same as they would be if the plant was at 100% and the same leak was in progress. Need to develop a question that tests a LOCA or loss of DHR mitigation strategies. The K/A is RHR system and the question should have something to do with RHR. **NEW** **Rewrote question to match K/A. SAT . 9/22/2011**

Q#	1. LOK (F/H)	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
32	H	2	X			X								E	**006A3.06** Question appears to match the K/A. As written, I am not sure that there is a correct answer. ES-1 and 2 will actuate about 1600 psig. With the plant at 20% and a SBLOCA occurring an ES 1 and 2 actuation will occur prior to the ES 3 and 4 actuations that occur at 550 psig. (1HP-24 will get a open signal prior to 1210. Need to reword the stem. WOOTF contains valves that would have received an ES open signal prior to 1210. HP-5 in distractor A is not plausible. **NEW** **Made changes as requested. SAT 9/22/2011**
33	F	2												S	**006K2.04** Question appears to match the K/A. SAT **NEW**
34	F	2												S	**007K5.02** Question appears to match the K/A. Listed as modified, but in reality it is a bank question. SAT **BANK 2010A NRC Exam**
35	H	2												S	**008K2.02** Question appears to match the K/A. SAT Refresh my memory, does 1XO and 1XP also get repowered after the lockout? **BANK 2008 NRC Retest Exam**
36	H	2												S	**010K5.01** Question appears to match the K/A. SAT **NEW**
37	F	2												S	**010K6.01** Question appears to match the K/A. SAT **NEW**

Q#	1. LOK (F/H)	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
38	H	2												S	**012A2.02** Question appears to match the K/A. Do not like using the word preferred, however, it is stated like this in the procedure. Why do they need a reference? If the reference is the complete enclosure then this is a direct lookup otherwise SAT **NEW No Reference SAT 9/22/2011**
39	H	2												S	**012K1.06** Question appears to match the K/A. Does the reactor runback, or does ICS runback reduce reactor power? If so, the first two distractors should state, ICS will automatically runback the reactor to 20% power and stabilize. Will discuss, otherwise SAT **NEW**
40	F	2												S	**013K2.01** Question appears to match the K/A. SAT **NEW**
41	H	2												S	**013K5.02** Question appears to match the K/A. SAT **NEW**
42	F	2				X								E	**022K1.01** Question appears to match the K/A. Distractor A as written is not plausible. (Which switch in off?) Need to specify a particular switch. Such as 1B RBCU control switch on panel XXX. Distractor C needs to specify a damper. Will Discuss. **NEW** **Made changes as requested. SAT 9/22/2011**

Q#	1. LOK (F/H)	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
43	F	2										X		E	**026A3.01** Question partially matches the K/A, it does not test MOV positioning. Also the distractor analysis refers to ES-5 and 6, it should be ES 7&8. Attempt to write a question with the correct valve positions. **NEW** **Made changes as requested. SAT 9/22/2011**
44	H	2				X								E	**039A1.05** Question appears to match the K/A. Why does the stem state a feed water transient occurred? Would this have an effect on what has happened? Three of the responses refer to Turbine header pressure setpoint knob, which tends to lessen the plausibility of A. May need to change this, will discuss. **NEW** **Made changes as requested. SAT 9/22/2011**
45	H	2												S	**059K3.02** Question appears to match the K/A. SAT **NEW**
46	H	2												S	**061K6.02** Question appears to match the K/A. Under current conditions, RCS pressure 2310 psig, can we state and stable? This would lend more credibility to A. Otherwise SAT **NEW**
47	H	2												E	**062A1.01** If CT-4 is being supplied by the Keowee units, then the K/A match is acceptable. Not Sure of providing the whole Enclosure 5.1A (all 5 pages). Do not have a problem with providing page 5 of 5. Will Discuss. **NEW** **Made changes as requested. Only page 5 of 5**

Q#	1. LOK (F/H)	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
															will be used. SAT 9/22/2011
48	H	2												S	**062K4.10** Question appears to match the K/A. SAT **BANK 2007 NRC Exam**
49	F	2										X		U	**063A4.03** Question does not appear to match the K/A. There is no mention of battery discharge rate as required by the K/A. I realize this was a previous NRC exam question, however it was for a different K/A. Need to write a question that discussed battery discharge rate (monitoring from the control room. **BANK 2009 NRC Exam** **Change K/A to 063A4.01 Replacement SAT**
50	H	2				X								E	**064A2.09** Question appears to match the K/A as discussed, the D/G and Keowee units serve the same purpose. A 2 and C 2 are pretty weak as distractors. Can we come up with something else? **NEW Made changes as requested. SAT 9/22/2011**
51	F	2												S	**073K4.01** Question appears to match the K/A. SAT **NEW**
52	H	2												S	**076A4.02** Question appears to match the K/A. SAT **NEW**

Q#	1. LOK (F/H)	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
53	F	1												S	**076K1.20** Question appears to match the K/A. Not very discriminating.SAT **NEW**
54	F	2				X								U	**078G2.1.32** Question appears to match the K/A. Distractor D does not make sense. The precaution and limitation you have reference states delta T should be between 90 and 100°F above the air entering the air compressor (Sullair), but from the way distractor D is worded I would never pick it. A and B do not appear to be plausible. 425°F is pretty high, so I would have guessed this to be correct. **NEW** **Rewrote question. Now SAT 9/22/2011**
55	F	2				X								E	**103A1.**01 Question kind of matches the K/A. Change distractor A to read One RBS train and Three RBCUs. **NEW** **Made changes as requested. SAT 9/22/2011**
56	F	2				X						x		E	**001K6.02** Question kind of matches K/A, although it is really asking about the Rod Position Indication system. Will get another examiner to verify. Distractor C does not appear to be plausible. Will discuss. **NEW** **After further discussion question did not meet K/A. Will write new question. 9/22/2011**

Q#	1. LOK (F/H)	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
57	F	2					X					x		E	**002K4.07** Question kind of matches the K/A, although it is really asking about the HPI system. Will get another examiner to verify. As written distractor D is also correct, 1HP-14 will return to normal at < 55". **NEW** **Allowed question as written. Changed part of stem. Made changes as requested. SAT 9/22/2011**
58	H	2										X		U	**015A1.07** Question does not match the K/A. In discussion prior to writing questions the exam writer and examiner discussed the use of neutron error to match the K/A. This question has not mention of neutron error. The question is really a rod control/shutdown margin question. If an inadvertent dilution occurred (changing the boron concentration) when would the first protective feature (based on power) take place? This should have some input from Nis. Need to rewrite question. **NEW** **Rewrote question SAT 9/22/2011**
59	H	2				X								E	**016K3.06** Question appears to match the K/A. Distractor A is not plausible. Is this failure plausible? How can it happen (Operationally valid)? Does I&C perform maintenance on these indicators? **NEW** **Made changes as requested. SAT 9/22/2011**
60	F	2												S	**029A4.04** Question appears to match the K/A. SAT **NEW**

Q#	1. LOK (F/H)	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
61	F	2												E	**033G2.1.20** Question appears to match the K/A. Change 2) to state the setpoint for the low level interlock trip of the SFP cooling pumps. Then change B2 and D2 to -3.5 feet. Highest with a – number is confusing. **NEW** **Made changes as requested. SAT 9/22/2011**
62	H	2												E	**056A2.04** Question appears to match the K/A. If this happened in the plant, what would happen with no operator actions? Recommend placing the current conditions in the initial conditions, and adding another time with the other information. Given the following conditions: Time: 1200 Reactor power 80% and stable 1A and 1B CBP running 1A CBP trips Feedwater suction pressure drops to approximately 225 psig Time :1202 Suction pressure 230 psig and slowly increasing WOOTF describes the: 1) Runback rate inserted by ICS 2) Procedure required at time1202 **NEW** **Made changes as requested. SAT 9/22/2011**

Q#	1. LOK (F/H)	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
63	F	2				X								E	**071K5.04** Question appears to match the K/A. Distractors C and D are not plausible. CO2 is not plausible to add to WGDT. **NEW** **Made changes as requested. SAT 9/22/2011**
64	F	2				X								E	**086A3.01** Question appears to match the K/A. D does not appear to be plausible. **NEW** **Made changes as requested. SAT 9/22/2011**
65	F	2												S	**079K1.01** Question appears to match the K/A. SAT **BANK 2010A NRC EXAM**
66	F	2					X							E	**G2.1.4 Question appears to match the K/A. Change distractor C, remove starting and use stopping only, and in D remove starting and use stopping only.** **Modified BANK 2009B NRC Exam** **Made changes as requested. SAT 9/22/2011**
67	F	2												S	**G2.1.27 Question kind of matches the K/A. SAT** **NEW**
68	F	2												E	**G2.1.5** Question appears to match the K/A. First part of distractors does not appear to be plausible, if the RO cannot leave the horseshoe area he could not go to the SSF. Need to find something else for these distractors. I also believe this to be a memory level question **NEW Made changes as requested. SAT**

Q#	1. LOK (F/H)	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
															9/22/2011
69	F	2				X								E	**G2.2.12** Question appears to match the K/A. Do not believe that distractor A is plausible. Need to find another distractor for A. **NEW Made changes as requested. SAT 9/22/2011**
70	F	2				X								E	**G2.2.13** Question appears to match the K/A. Question has a subset issue. A, C and D are all red tags. If C or D was correct, A would also be correct. Need to fix subset issue. **NEW** **Made changes as requested. SAT 9/22/2011**
71	F	2												S	**G2.2.36** Question kind of matches K/A. In this question the power source is tagged out, not degraded. SAT **NEW**
72	F	1												S	**G2.3.5** Question kind of matches K/A. SAT (not very discriminating) **NEW**
73	F	2												S	**G2.3.13** Question appears to meet the K/A. SAT **NEW**

Q#	1. LOK (F/H)	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
74	H	2												S	**G2.4.16** Question appear to meet the K/A. SAT **NEW**
75	H	2												E	**2.4.49** Question appears to match K/A. In distractor A, it state go to Rule 1, would it not be better to state Perform Rule 1? In distractor B, should the action be to open 1HP24 and 1HP25? Will discuss. **NEW** **Made changes as requested. SAT 9/22/2011**

36 Sats, 7 Unsats, and 32 Enhancements

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

Facility: Oconee Nuclear Plant	Date of Exam: 10/26/2011	Exam Level: **RO/SRO**

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

	Printed Name/Signature	Date
a. Grader	MARK J. RICHES / Mark J. Riches	11-15-11
b. Facility Reviewer(*)	N/A	
c. NRC Chief Examiner (*)	GERARD W. LASKS / Gerard W. Lasks	11/15/2011
d. NRC Supervisor (*)	Michael A. Junge / MAJ	11/16/11

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