

Facility: <u>Sequoyah</u>		Date of Examination: <u>January 2009</u>
Examinations Developed by: <u>Facility</u>		NRC
<u>Written</u> / <u>Operating Test</u>		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)	RSB
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	RSB
-120	3. Facility contact briefed on security and other requirements (C.2.c)	RSB
-120	4. Corporate notification letter sent (C.2.d)	RSB
[-90]	[5. Reference material due (C.1.e; C.3.c; Attachment 2)]	RSB
{-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)	RSB
{-70}	{7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)}	RSB
{-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)	RSB
-30	9. Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202)	RSB
-14	10. Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202)	RSB
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	RSB
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	RSB
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	RSB
-7	14. Final applications reviewed; 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)	RSB
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	RSB
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	RSB

* 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.

FINAL

FINAL

ES-201

Examination Outline Quality Checklist

Form ES-201-2

Facility: Sequoyah 1 & 2		Date of Examination: 1/20/2009		
Item	Task Description	Initials		
		a	b*	c#
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	mc	CP	msb
	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.	mc	CP	msb
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	mc	CP	msb
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	mc	CP	msb
2. S I M U L A T O R	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.	mc	CP	msb
	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.	mc	CP	msb
	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.	mc	CP	msb
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.	mc	CP	msb
	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	mc	CP	msb
	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.	mc	CP	msb
4. G E N E R A L	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	mc	CP	msb
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	mc	CP	msb
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	mc	CP	msb
	d. Check for duplication and overlap among exam sections.	mc	CP	msb
	e. Check the entire exam for balance of coverage.	mc	CP	msb
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	mc	CP	msb
<p>a. Author <u>John B. Roden / [Signature]</u> Printed Name/Signature</p> <p>b. Facility Reviewer (*) <u>Bradley D Picchiotino / [Signature]</u></p> <p>c. NRC Chief Examiner (#) <u>RICHARD S. BALOW / [Signature]</u></p> <p>d. NRC Supervisor <u>MALCOLM T. WIDMANN / [Signature]</u></p>		<p>Date</p> <p>1/17/09</p> <p>1/12/09</p> <p>1/14/09</p> <p>01/14/09</p>		
<p>Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines</p>				

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 1/26-2/06/09 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 _____. 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 B. RODEN	INSTRUCTOR/EXAM DEVELOPER	<i>John B. Roden</i>	5/1/08			
2.	Thomas E. Wooley	Instructor/Developer	<i>Thomas E. Wooley</i>	6/27/08			
3.	DAVID A. PORTER	OPS PROCEDURES	<i>David A. Porter</i>	9/17/08			
4.	Steven R. Taylor	Instructor/Developer	<i>Steven R. Taylor</i>	9/23/08			
5.	Darrell Hensley	Reviewer/Peer	<i>Darrell Hensley</i>	9/25/08			
6.	James P. Knight	Simulator Engineer	<i>James P. Knight</i>	9/25/08			
7.	Mike Berchert	SEMF/simulator	<i>Mike Berchert</i>	9/25/08			
8.	Dale Kaulitz	simulator engineer	<i>Dale Kaulitz</i>	9/30/08			
9.	Darrel W. Anderson	UC/RO	<i>Darrel W. Anderson</i>	10/2/08			
10.	William D. Link	UC/RO	<i>William D. Link</i>	10/20/08			
11.	Ryan Radcl	UC	<i>Ryan Radcl</i>	10/21/08			
12.	James N. Silver	James N. Silver UC/RO	<i>James N. Silver</i>	10/21/08			
13.	Julius D. Whitworth	Julius D. Whitworth UC/SRO	<i>Julius D. Whitworth</i>	10/21/08			
14.	Timothy E. Pritchard	Simulator Services Manager	<i>Timothy E. Pritchard</i>	10/23/08			
15.	Gregory D. Puchner	TRNG MANAGER	<i>Gregory D. Puchner</i>	10/27/08			

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2. Post-Examination

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PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1. JOHN B. RODEN	INSTRUCTOR/EXAM DEVELOPER	<i>John B. Roden</i>	5/1/08	<i>John B. Roden</i>	2/5/09
2. Thomas E. Woolley	Instructor/Developer	<i>Thomas E. Woolley</i>	6/27/08		
3. DAVID A. PORTER	OPS PROCEDURES	<i>David A. Porter</i>	9/17/08		2/5/09
4. Steven R. Taylor	Instructor/Developer	<i>Steven R. Taylor</i>	9/23/08	<i>Steven R. Taylor</i>	2/5/09
5. Darrell Hensley	Reviewer/Peer	<i>Darrell Hensley</i>	9/25/08		
6. James P. Knight	Simulator Engineer	<i>James P. Knight</i>	9/25/08	<i>James P. Knight</i>	2/6/09
7. Mike Bercher	SEMF/simulator	<i>Mike Bercher</i>	9/25/08	<i>Mike Bercher</i>	2/5/09
8. Dale Kaulitz	simulator engineer	<i>Dale Kaulitz</i>	9/30/08	<i>Dale Kaulitz</i>	2/3/09
9. Darrell Robinson	UO/RO	<i>Darrell Robinson</i>	10/20/08	<i>Darrell Robinson</i>	2/9/09
10. William D LINK	UO/RO	<i>William D Link</i>	10/20/08	<i>William D Link</i>	2-6-09
11. Ryan Kadel	UO	<i>Ryan Kadel</i>	10/21/08	<i>Ryan Kadel</i>	2/5/09
12. James N. Silver	James N Silver UO/RO	<i>James N Silver</i>	10/21/08	<i>James N Silver</i>	2/6/09
13. Julius D. Whitworth	Julius D Whitworth US/SRO	<i>Julius D Whitworth</i>	10/21/08	<i>Julius D Whitworth</i>	2/5/09
14. Timothy F. Pritchard	Simulator Services Manager	<i>Timothy F. Pritchard</i>	10/21/08	<i>Timothy F. Pritchard</i>	2/5/09
15. Bradley D. Pichon	TRAINING MANAGER	<i>Bradley D. Pichon</i>	10/29/08	<i>Bradley D. Pichon</i>	2/5/09

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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 1/26-2/4/09 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 B. RODEN	INSTRUCTOR/Exam Developer	<i>John B. Roden</i>	5/1/08	<i>John B. Roden</i>	2/5/09
2. THOMAS E. WOOTEN	Instructor/Developer	<i>T. Wooten</i>	6/27/08	<i>T. Wooten</i>	2/5/09
3. DAVID A. PORTER	OPS PROCEDURES	<i>David A. Porter</i>	9/17/08	<i>David A. Porter</i>	2/5/09
4. STEVEN E. TAYLOR	Instructor/Developer	<i>Steven E. Taylor</i>	9/26/08	<i>Steven E. Taylor</i>	2/5/09
5. DARRELL HENSKY	Reviewer/Peer	<i>Darrell Hensky</i>	11/25/08	<i>Darrell Hensky</i>	2/5/09
6. JAMES D. KNIGHT	Simulator Engineer	<i>James D. Knight</i>	9/25/08	<i>James D. Knight</i>	2/5/09
7. MIKE BARCHET	SEMF/simulator	<i>Mike Barchet</i>	9/25/08	<i>Mike Barchet</i>	2/5/09
8. DAVID KAULITZ	simulator engineer	<i>David Kaulitz</i>	9/26/08	<i>David Kaulitz</i>	2/5/09
9. DANIELA DRESON	UO/RO	<i>Dan Dreson</i>	10/20/08	<i>Dan Dreson</i>	
10. WILHELM D. LOUK	UO/RO	<i>Wilhelm D. Louk</i>	10/20/08	<i>Wilhelm D. Louk</i>	
11. RYAN KEDZ	UO	<i>Ryan Kedz</i>	10/21/08	<i>Ryan Kedz</i>	2/5/09
12. JAMES N. JILKA	James N. Jilka UO/RO	<i>James N. Jilka</i>	10/21/08	<i>James N. Jilka</i>	
13. JAMES D. HUBBARD	James D. Hubbard UO/SRO	<i>James D. Hubbard</i>	10/21/08	<i>James D. Hubbard</i>	2/5/09
14. THOMAS E. WOOTEN	Simulator Section Manager	<i>Thomas E. Wooten</i>	10/20/08	<i>Thomas E. Wooten</i>	2/5/09
15. CATHY D. KENNEDY	TRAINING MANAGER	<i>Cathy D. Kennedy</i>	10/29/08	<i>Cathy D. Kennedy</i>	2/5/09

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 1/28-2/06/09 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.

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PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1. JOHN B. RODEN	Instructor/Exam Developer	<i>John B. Roden</i>	3/1/08	<i>John B. Roden</i>	2/5/09
2. Thomas E. Wootley	Instructor/Developer	<i>Thomas E. Wootley</i>	6/21/08		
3. DAVID A. PORTER	OPS PROCEDURES	<i>David A. Porter</i>	9/17/08		2/5/09
4. Steven R. Taylor	Instructor/Developer	<i>Steven R. Taylor</i>	9/22/08	<i>Steven R. Taylor</i>	2/5/09
5. Darrell Hensley	Reviewer/Peer	<i>Darrell Hensley</i>	9/25/08	<i>Darrell Hensley</i>	2/6/09
6. James D. Knight	Simulator Engineer	<i>James D. Knight</i>	9/25/08	<i>James D. Knight</i>	2/6/09
7. Mike Berchert	SIEM/ Simulator	<i>Mike Berchert</i>	9/25/08	<i>Mike Berchert</i>	2/5/09
8. Dale Kaultz	simulator engineer	<i>Dale Kaultz</i>	9/25/08	<i>Dale Kaultz</i>	2/5/09
9. Donald Johnson	VO/RO	<i>Donald Johnson</i>	10/29/08		
10. William D Link	VO/RO	<i>William D Link</i>	10/20/08	<i>William D Link</i>	2-6-09
11. Ryan Redel	VO	<i>Ryan Redel</i>	10/21/08	<i>Ryan Redel</i>	2/5/09
12. James N. Silva	James N. Silva VO/RO	<i>James N. Silva</i>	10/21/08	<i>James N. Silva</i>	2/6/09
13. James D. Whitworth	Simulator US/SRO	<i>James D. Whitworth</i>	10/21/08	<i>James D. Whitworth</i>	2/5/09
14. Timothy E. Pritchard	Simulator Senior Manager	<i>Timothy E. Pritchard</i>	10/21/08	<i>Timothy E. Pritchard</i>	2/5/09
15. Gregory D. Pritchard	TRNG MANAGER	<i>Gregory D. Pritchard</i>	10/29/08	<i>Gregory D. Pritchard</i>	2/5/09

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PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1. George Vickery	NA Manager / Review	<i>George Vickery</i>	10-30-08			
2. D.J. EPPERSON	US/SRO	<i>D.J. EPPERSON</i>	10-30-08	<i>D.J. EPPERSON</i>	2-6-09	
3. Jimmy D. Thomas	RO	<i>Jimmy D. Thomas</i>	11-3-08	<i>Jimmy D. Thomas</i>	2-6-09	
4. Ryan W. Radcl	RO	<i>Ryan W. Radcl</i>	11-3-08	<i>Ryan W. Radcl</i>	2/5/09	
5. Michael D. McDaniel	uo/RO	<i>Michael D. McDaniel</i>	11/3/08	<i>Michael D. McDaniel</i>	2/5/09	
6. R. CREECH	RO	<i>R. CREECH</i>	11/3/08	<i>R. CREECH</i>	2/6/09	
7. D. WADE	US/SRO	<i>D. WADE</i>	11/3/08	<i>D. WADE</i>	2/5/09	
8. C. Fields	US/SRO/STA	<i>C. Fields</i>	11-20-08	<i>C. Fields</i>	02-6-09	
9. MIKE BRUBAKER	SHIFT MANAGER	<i>MIKE BRUBAKER</i>	11-21-08	<i>MIKE BRUBAKER</i>	2-6-09	
10. Van Ford	Ops Superintendent	<i>Van Ford</i>	11-21-08	<i>Van Ford</i>	2-6-09	
11. Chris Brooks	RO	<i>Chris Brooks</i>	12-8-08	<i>Chris Brooks</i>	2/9/09	
12. Roger Brown	RO	<i>Roger Brown</i>	1-5-09	<i>Roger Brown</i>	2-6-09	
13. William L. Chandler	SRO	<i>William L. Chandler</i>	1-5-09	<i>William L. Chandler</i>	2/6/09	
14. Martin J. Greengard	SRO	<i>Martin J. Greengard</i>	1-7-09	<i>Martin J. Greengard</i>	2/6/09	
15. AMY WOOD	SLD	<i>Amy Wood</i>	1-7-09	<i>Amy Wood</i>	2/6/09	

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1.	JK Wilkes	Ops Support Supt.	<i>[Signature]</i>	1/8/09	<i>[Signature]</i>	2/5/09
2.	Chris R. Church	Plant Manager	<i>[Signature]</i>	1/15/09	<i>[Signature]</i>	9 Feb 09
3.	DG Selph	Simulator Instructor	<i>[Signature]</i>	1/28/09	<i>[Signature]</i>	2/5/09
4.	A.F. Roddy	Sim Inst	<i>[Signature]</i>	1-20-09	<i>[Signature]</i>	2/5/09
5.	J.R. Cassidy	Ops Instructor	<i>[Signature]</i>	1-21-09	<i>[Signature]</i>	2/5/09
6.	Thomas Jones	Ops Instructor	<i>[Signature]</i>	2-4-09	<i>[Signature]</i>	2/5/09
7.	Michael Chambers	Ops Instructor	<i>[Signature]</i>	2/1/09	<i>[Signature]</i>	2/5/09
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NOTES:

FINAL

ES-301

Administrative Topics Outline

Form ES-301-1

Facility: <u>Sequoyah 1 & 2</u>		Date of Examination: <u>1/2009</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>NRC</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. 2.9* / 3.9 JPM: Evaluate Overtime Requirements
Conduct of Operations	D, R	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. 4.3 / 4.4 JPM: Calculate Manual Makeup to the Volume Control Tank (JPM 005)
Equipment Control	N, S	2.2.12 Knowledge of surveillance procedures. 3.7 / 4.1 JPM: Perform Monthly Shift Log 0-SI-OPS-000-003.M
Radiation Control	M, R	2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. 3.5 / 3.6 JPM: 2A RHR Heat Exchanger Radiological Work Permit and Survey Map Usage (JPM 180)
Emergency Procedures/Plan		N/A
<p>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.</p>		
<p>* 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)</p>		

FINAL

RO Admin JPM Summary

- A1a Determine when conditions exist that requires approval to exceed work hour restrictions.
Modified JPM
- A1b Perform calculation of the correct amount of water and boric acid required to manually raise the level in the VCT. Bank JPM
- A2 Perform a portion of Monthly Shift Log surveillance instruction 1-SI-OPS-000-003.M and recognize inoperable instruments. New JPM
- A3 Using a survey map and radiological work permit, determine conditions in the room and the required dose monitoring and protective clothing required while inside the room.
Modified JPM
- A4 Not Applicable

FINAL

ES-301

Administrative Topics Outline

Form ES-301-1

Facility: <u>Sequoyah 1 & 2</u>		Date of Examination: <u>1/2009</u>
Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/>		Operating Test Number: <u>NRC</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. 2.9* / 3.9 JPM: Evaluate Overtime Requirements
Conduct of Operations	D, R	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. 4.3 / 4.4 JPM: Calculate Manual Makeup to the Volume Control Tank. (JPM 005)
Equipment Control	N, S	2.2.12 Knowledge of surveillance procedures. 3.7 / 4.1 JPM: Perform Monthly Shift Log 0-SI-OPS-000-003.M
Radiation Control	N, R	2.3.11 Ability to Approve Release Permits. 3.8 / 4.3 JPM: Approval of a Waste Gas Decay Tank Release.
Emergency Procedures/Plan	M, S	2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. 2.4 / 4.4 JPM: Classify the Event per the REP (High RCS Activity, Primary System Leakage Outside Containment). (JPM #018 modified)
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)		

FINAL

SRO Admin JPM Summary

- A1a Determine when conditions exist that requires approval to exceed work hour restrictions. Modified JPM.
- A1b Perform calculation to manually raise the level in the VCT. Bank JPM
- A2 Perform a portion of Monthly Shift Log surveillance instruction 1-SI-OPS-000-003.M and recognize inoperable instruments. New JPM
- A3 Determine requirements for releasing a Waste Gas Decay Tank including hold-up time requirements, approval required in outside normal release hours, requirements with radiation monitor out of service and requirement if monitor is not repaired in identified ODCM time. New JPM
- A4 Evaluate plant conditions for E-Plan entry, classification, and required notifications in accordance with Radiological Emergency Plan procedures. Bank JPM #18.

FINAL

ES-301

Control Room/In-Plant Systems Outline

Form ES-301-2

Facility: <u>Sequoyah 1 & 2</u>	Date of Examination: <u>1/2009</u>	
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	Operating Test No.: <u>NRC</u>	
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. 001 Control Rod Drive System (A2.11 4.4/4.7) Perform 0-SI-OPS-085-011.0	N, A, S	1
b. 003 Reactor Coolant Pump System (A2.03 2.7/3.1) Start #1 RCP in Mode 3 (182-AP)	D, A, L, S	4P
c. E02 SI Termination (EA1.1 4.0/3.9) Terminate SI and Re-establish Charging Flow (JPM 027)	M, A, S	3
d. 040 Steam Line Rupture (AA2.01 4.2/4.7) Faulted SG Isolation with MSIV Stuck Open (JPM 058-AP2)	M, A, S	4S
e. 028 Hydrogen Recombiner and Purge Control System (A4.03 3.1/3.3) Place 1B H2 Analyzer in Service	D, S	5
f. 008 Component Cooling Water System (A3.02 3.2/3.2) Swap Thermal Barrier Booster Pumps (JPM 073)	D, S	8
g. 015 Nuclear Instrumentation System (A4.02 3.9/3.9) Reinstate Source Range Detectors (JPM 119-AP)	D, A, L, S	7
h. 064 Emergency Diesel Generators (A1.08 3.1/3.4) Perform D/G Load Test on 1B-B D/G (JPM 077)	D, S	6
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. 004 Chemical and Volume Control System (A2.14 3.8/3.9) Perform Boration of RCS from Outside MCR (JPM 006)	D, E, R	1
j. 062 Loss of Nuclear Service Water (AK3.03 4.0/4.2) Installation of Temporary Cooling (HPFP) to CCP 1A-A or 1B-B Oil Coolers	D, E, R	4S
k. 064 Emergency Diesel Generators (K1.05 3.4/3.9) Align Starting Air for Service on 2A-A D/G (JPM 023-2)	D	6
<p>[@] All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		

FINAL

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

JPM Summary

- A. The rod exercise surveillance instruction will be performed for 2 banks of control rods. During the second bank movement, the rod will be moving without a demand and result in a trip of the reactor being required. New alternate path JPM
- B. With the plant in Mode 3 and the other RCPs already running, RCP #1 will be placed in service. After starting RCP #1 will experience high stator winding temperatures which will require the pump to be stopped. Bank alternate path low power JPM.
- C. With the shutdown boards being powered from the diesel generator, the steps to terminate ECCS flow and to re-establish charging flow in accordance with ES-1.1, SI Termination will be required. JPM will require using procedure RNOs to lock out a charging pump and to address the failure of the normal charging valve to open. Bank modified alternate path JPM.
- D. Response to a faulted SG with a stuck open MSIV will require completing steps to identify and isolate the faulted SG in accordance with E-2, Faulted Steam Generator Isolation. Bank modified alternate path JPM.
- E. 1B Hydrogen analyzer will be restored to service following maintenance in accordance with the system operating instruction. Bank JPM
- F. Swapping thermal barrier booster pumps will require starting the 1A-A pump and securing the 1B-B pump in accordance with 1-SO-70-1, Component Cooling Water System "A" Train. Bank JPM.
- G. A failed Intermediate Range channel will require manually reinstating Source Range detectors following a reactor trip in accordance with ES-0.1, Reactor Trip Response. Bank alternate path JPM.
- H. An operability test of D/G 1B-B will require manually starting and loading the D/G in accordance with 1-SI-OPS-082-007.B, Electrical Power System Diesel Generator 1B-B. Bank JPM.
- I. Evacuation of the Main Control Room will require manually boration the RCS using the emergency boration valve in accordance with AOP-C.04, Control Room Inaccessibility. Bank JPM.
- J. The locations, connections, and alignment required to establish temporary cooling to CCP-1A-A in accordance with AOP-M.01 due to a loss of ERCW. Bank JPM
- K. Completion of maintenance work on the 2A-A D/G starting air system will require aligning the system for service in accordance with 0-SO-82-7, Diesel Generator 2A-A Support Systems. Bank JPM.

Facility: <u>Sequoyah 1 & 2</u>		Date of Examination: <u>1/2009</u>	
Exam Level: RO <input type="checkbox"/>	SRO-I <input checked="" type="checkbox"/>	SRO-U <input type="checkbox"/>	Operating Test No.: <u>NRC</u>
Control Room Systems [@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title	Type Code*	Safety Function	
a. 001 Control Rod Drive System (A2.11 4.4/4.7) Perform 0-SI-OPS-085-011.0	N, A, S	1	
b. 003 Reactor Coolant Pump System (A2.03 2.7/3.1) Start #1 RCP in Mode 3 (182-AP)	D, A, L, S	4P	
c. E02 SI Termination (EA1.1 4.0/3.9) Terminate SI and Re-establish Charging Flow (JPM 027)	M, A, S	3	
d. 040 Steam Line Rupture (AA2.01 4.2/4.7) Faulted SG Isolation with MSIV Stuck Open (JPM 058-AP2)	M, A, S	4S	
e. 028 Hydrogen Recombiner and Purge Control System (A4.03 3.1/3.3) Place 1B H2 Analyzer in Service	D, S	5	
f. 008 Component Cooling Water System (A3.02 3.2/3.2) Swap Thermal Barrier Booster Pumps (JPM 073)	D, S	8	
g. 015 Nuclear Instrumentation System (A4.02 3.9/3.9) Reinstate Source Range Detectors (JPM 119-AP)	D, A, L, S	7	
h.			
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i. 004 Chemical and Volume Control System (A2.14 3.8/3.9) Perform Boration of RCS from Outside MCR (JPM 006)	D, E, R	1	
j. 062 Loss of Nuclear Service Water (AK3.03 4.0/4.2) Installation of Temporary Cooling (HPFP) to CCP 1A-A or 1B-B Oil Coolers	D, E, R	4S	
k. 064 Emergency Diesel Generators (K1.05 3.4/3.9) Align Starting Air for Service on 2A-A D/G (JPM 023-2)	D	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.			

FINAL

* 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	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	$\geq 1 / \geq 1 / \geq 1$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)
(R)CA	$\geq 1 / \geq 1 / \geq 1$
(S)imulator	

JPM Summary

- A. The rod exercise surveillance instruction will be performed for 2 banks of control rods. During the second bank movement, the rod will be moving without a demand and result in a trip of the reactor being required. New alternate path JPM
- B. With the plant in Mode 3 and the other RCPs already running, RCP #1 will be placed in service. After starting RCP #1 will experience high stator winding temperatures which will require the pump to be stopped. Bank alternate path low power JPM.
- C. With the shutdown boards being powered from the diesel generator, the steps to terminate ECCS flow and to re-establish charging flow in accordance with ES-1.1, SI Termination will be required. JPM will require using procedure RNOs to lock out a charging pump and to address the failure of the normal charging valve to open. Bank modified alternate path JPM.
- D. Response to a faulted SG with a stuck open MSIV will require completing steps to identify and isolate the faulted SG in accordance with E-2, Faulted Steam Generator Isolation. Bank modified alternate path JPM.
- E. 1B Hydrogen analyzer will be restored to service following maintenance in accordance with the system operating instruction. Bank JPM
- F. Swapping thermal barrier booster pumps will require starting the 1A-A pump and securing the 1B-B pump in accordance with 1-SO-70-1, Component Cooling Water System "A" Train. Bank JPM.
- G. A failed Intermediate Range channel will require manually reinstating Source Range detectors following a reactor trip in accordance with ES-0.1, Reactor Trip Response. Bank alternate path JPM.
- H. NOT USED
- I. Evacuation of the Main Control Room will require manually boration the RCS using the emergency boration valve in accordance with AOP-C.04, Control Room Inaccessibility. Bank JPM.
- J. The locations, connections, and alignment required to establish temporary cooling to CCP-1A-A in accordance with AOP-M.01 due to a loss of ERCW. Bank JPM
- K. Completion of maintenance work on the 2A-A D/G starting air system will require aligning the system for service in accordance with 0-SO-82-7, Diesel Generator 2A-A Support Systems. Bank JPM.

Facility: : Sequoyah 1 & 2		Date of Examination: 1/20/09	Operating Test Number:			
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).		JBR	BL	PSB	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.		JBR	BL	PSB	
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)		JBR	BL	PSB	
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.		JBR	BL	PSB	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.		JBR	BL	PSB	
2. Walk-Through Criteria			--	--	--	
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 		JBR	BL	PSB	
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.		JBR	BL	PSB	
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.				JBR	BL	PSB
		Printed Name / Signature	Date			
a.	Author	John B Roden / <u>John B Roden</u>	1/12/09			
b.	Facility Reviewer(*)	Bradley D Picchiottino / <u>Bradley D Picchiottino</u>	1/12/09			
c.	NRC Chief Examiner (#)	RICHARD S. BALDWIN / <u>Richard S. Baldwin</u>	1/14/09			
d.	NRC Supervisor	MALCOLM T. WIDMANN / <u>Malcolm T. Widmann</u>	01/14/09			
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.						

FINAL

ES-301

Simulator Scenario Quality Checklist

Form ES-301-4

Facility: Sequoyah 1 & 2		Date of Exam: 1/20/09		Scenario Numbers: 1 / 2 / 3 / 4		Operating Test No.:		
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.	JK	CP	MS				
2.	The scenarios consist mostly of related events.	JK	CP	MS				
3.	Each event description consists of <ul style="list-style-type: none"> 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) 	JK	CP	MS				
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.	JK	CP	MS				
5.	The events are valid with regard to physics and thermodynamics.	JK	CP	MS				
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	JK	CP	MS				
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.	JK	CP	MS				
8.	The simulator modeling is not altered.	JK	CP	MS				
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.	JK	CP	MS				
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.	JK	CP	MS				
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	JK	CP	MS				
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).	JK	CP	MS				
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	JK	CP	MS				
Target Quantitative Attributes (Per Scenario; See Section D.5.d)						Actual Attributes		
1.	Total malfunctions (5-8)	7 / 7 / 8 / 8		JK	CP	MS		
2.	Malfunctions after EOP entry (1-2)	2 / 2 / 2 / 2		JK	CP	MS		
3.	Abnormal events (2-4)	3 / 2 / 4 / 3		JK	CP	MS		
4.	Major transients (1-2)	1 / 1 / 1 / 1		JK	CP	MS		
5.	EOPs entered/requiring substantive actions (1-2)	2 / 2 / 2 / 1		JK	CP	MS		
6.	EOP contingencies requiring substantive actions (0-2)	1 / 1 / 2 / 0		JK	CP	MS		
7.	Critical tasks (2-3)	2 / 2 / 3 / 2		JK	CP	MS		

Facility:		Sequoyah 1 & 2									Date of Exam:			1/26/2009			Operating Test No.:			NRC		
A P P L I C A N T	E V E N T T Y P E	Scenarios																				
		1			2			3			4 SPARE			T O T A L	M I N I M U M (*)							
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION											
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U					
SROI-1	RX					1									1	1	1	0				
	NOR	1							7						2	1	1	1				
	I/C	2,3, 5,7, 8,9				2,3, 6			3,4, 5,6, 9, 10						15	4	4	2				
	MAJ	6				5			8						3	2	2	1				
	TS	2,3							1,2						4	0	2	2				
SROI-2	RX								7						1	1	1	0				
	NOR				1										1	1	1	1				
	I/C			5	2,3, 4,6, 7,8				4,6, 9, 10						11	4	4	2				
	MAJ				5				8						2	2	2	1				
	TS				2,4										2	0	2	2				
RO-1	RX		1												1	1	1	0				
	NOR		2				1			7					3	1	1	1				
	I/C		2,3, 7,9				4,7, 8			3,5					9	4	4	2				
	MAJ		6				5			8					3	2	2	1				
	TS														0	0	2	2				

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Facility:		Sequoyah 1 & 2									Date of Exam:			1/26/2009			Operating Test No.:			NRC		
A P P L I C A N T	E V E N T T Y P E	Scenarios																				
		1			2			3			4 SPARE			T O T A L	M I N I M U M (*)							
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION											
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					R	I	U		
SROI-3	RX					1									1	1	1	1	0			
	NOR	1								7					2	1	1	1	1			
	I/C	2,3, 5,7, 8,9				2,3, 6				3,4, 5,6 9, 10					15	4	4	4	2			
	MAJ	6				5				8					3	2	2	2	1			
	TS	2,3								1,2					4	0	2	2	2			
SROI-4	RX									7					1	1	1	1	0			
	NOR				1										1	1	1	1	1			
	I/C			5	2,3, 4,6, 7,8					4,6, 9, 10					11	4	4	4	2			
	MAJ				5					8					2	2	2	2	1			
	TS				2,4										2	0	2	2	2			
RO-2	RX		1												1	1	1	1	0			
	NOR		2					1			7				3	1	1	1	1			
	I/C		2,3, 7,9					4,7, 8			3,5				9	4	4	4	2			
	MAJ		6					5			8				3	2	2	2	1			
	TS														0	0	2	2	2			

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Facility:		Sequoyah 1 & 2		Date of Exam:		1/26/2009		Operating Test No.:		NRC								
A P P L I C A N T	E V E N T T Y P E	Scenarios																
		1			2			3			4 SPARE			T O T A L	M I N I M U M (*)			
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U	
SROI-5	RX					1									1	1	1	0
	NOR	1													1	1	1	1
	I/C	2,3, 5,7, 8,9				2,3, 6									9	4	4	2
	MAJ	6				5									2	2	2	1
	TS	2,3													2	0	2	2
RO-3	RX		1												1	1	1	0
	NOR		2				1								2	1	1	1
	I/C		2,3, 7,9				4,7, 8								7	4	4	2
	MAJ		6				5								2	2	2	1
	TS														0	0	2	2

FINAL

Facility:		Sequoyah 1 & 2		Date of Exam:		1/26/2009		Operating Test No.:		NRC							
A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			2			3			4 SPARE		T O T A L	M I N I M U M (*)			
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C		B O P	R	I	U
N/A	RX										1			1	1	0	
	NOR										1		1		1	1	1
	I/C									2,3, 4,6, 9, 10	3,4	2,6, 9, 10		4	4	2	
	MAJ									7	7	7		2	2	1	
	TS									2,3				0	2	2	

Instructions:

- 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.
- 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.
- 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.

This matrix assumes that Scenario 4 is used as the spare. If scenario 4 is used in combination with any other scenario, the minimum requirements are still met for each applicant.

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ES-301

Competencies Checklist

Form ES-301-6

Facility: Sequoyah 1 & 2		Date of Examination: 01/26/09				Operating Test No.:										
Competencies	APPLICANTS															
	RO <input type="checkbox"/>				RO ATC <input checked="" type="checkbox"/>				RO B&P <input checked="" type="checkbox"/>				RO <input type="checkbox"/>			
	SRO-I <input checked="" type="checkbox"/>				SRO-I <input type="checkbox"/>				SRO-I <input type="checkbox"/>				SRO-I <input type="checkbox"/>			
	SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	2-9	2-8	1-6, 8,9, 10	2-10	2,3, 6,7,9	2,3,5, 6	2,4,6, 8-10	3,4,9	4-8	4,5, 7,8	1,3,5	2,5, 6, 10				
Comply With and Use Procedures (1)	ALL	1,2,4, 5,8	2-8, 10	1-3, 5-7,9, 10	1-3, 6,7,9	1-3, 5,6,8	4,6-8, 10	1, 3-5	1,4, 5,7,8	1,4, 5,7, 8	1,3, 5,7	1,2, 5, 6,7, 10				
Operate Control Boards (2)	N/A	N/A	N/A	N/A	1-4, 7,9	1-4, 6	4, 6-10	1,3,4	1,5, 7,8	1,4, 5,7	3,5, 7,8	1,6, 7, 10				
Communicate and Interact	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL				
Demonstrate Supervisory Ability (3)	ALL	ALL	ALL	ALL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Comply With and Use Tech. Specs. (3)	2,3	2,4	1,2,6	2,3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
<p>Notes:</p> <p>(1) Includes Technical Specification compliance for an RO.</p> <p>(2) Optional for an SRO-U.</p> <p>(3) Only applicable to SROs.</p>																

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. 9

PWR Examination Outline

Form ES-401-2

Facility:		Date of Exam:																
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	1	2	N/A			2	1	N/A			1	9	2	2	4	
	Tier Totals	5	4	5	N/A			5	4	N/A			4	27	5	5	10	
2. Plant Systems	1	3	3	3	2	3	2	3	2	3	2	2	28	3	2	5		
	2	1	1	1	1	1	1	1	0	1	1	1	10	2	1	3		
	Tier Totals	4	4	4	3	4	3	4	2	4	3	3	38	5	3	8		
3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1	2	3	4	7
				3		2		2		3				1	2	2	2	

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.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. *The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note # 1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
007EK2.03	Reactor Trip - Stabilization - Recovery / 1	3.5	3.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reactor trip status panel				
				Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)										
008AG2.4.45	Pressurizer Vapor Space Accident / 3	4.1	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to prioritize and interpret the significance of each annunciator or alarm.
				This is a Generic, no stem statement is associated.										
009EA2.10	Small Break LOCA / 3	3.1	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Airborne activity
				Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
015AA2.08	RCP Malfunctions / 4	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	When to secure RCPs on high bearing temperature
				Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
022AK1.02	Loss of Rx Coolant Makeup / 2	2.7	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relationship of charging flow to pressure differential between charging and RCS
				Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)										
025AG2.2.36	Loss of RHR System / 4	3.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
				This is a Generic, no stem statement is associated.										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
026AA2.03	Loss of Component Cooling Water / 8	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition
				Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
029EG2.1.31	ATWS / 1	4.6	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
				This is a Generic, no stem statement is associated.										
040AK1.06	Steam Line Rupture - Excessive Heat Transfer / 4	3.7	3.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	High-energy steam line break considerations
				Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)										
054AK1.02	Loss of Main Feedwater / 4	3.6	4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effects of feedwater introduction on dry S/G
				Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)										
055EK2.04	Station Blackout / 6			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pumps
				Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)										
056AA1.11	Loss of Off-site Power / 6	3.7	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HPI system
				Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)										

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
057AK3.01	Loss of Vital AC Inst. Bus / 6	4.1	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions contained in EOP for loss of vital ac electrical instrument bus
				Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)										
058AA1.01	Loss of DC Power / 6	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross-tie of the affected dc bus with the alternate supply
				Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)										
062AK3.04	Loss of Nuclear Svc Water / 4	3.5	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effect on the nuclear service water discharge flow header of a loss of CCW
				Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)										
065AK3.04	Loss of Instrument Air / 8	3	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cross-over to backup air supplies
				Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)										
077AA1.03	Generator Voltage and Electric Grid Disturbances / 6	3.8	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Voltatge regulator controls
				Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)										
WE11EK2.1	Loss of Emergency Coolant Recirc. / 4	3.6	3.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.
				Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
001AK3.02	Continuous Rod Withdrawal / 1	3.2	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tech-Spec limits on rod operability
				Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)										
005AA1.01	Inoperable/Stuck Control Rod / 1	3.6	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CRDS
				Ability to operate and / or monitor the following as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)										
024AA2.01	Emergency Boration / 1	3.8	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Whether boron flow and/or MOVs are malfunctioning from plant conditions
				Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
036AK3.01	Fuel Handling Accident / 8	3.1	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Different inputs that will cause a reactor building evacuation
				Knowledge of the reasons for the following responses as they apply to (ABNORMAL PLANT EVOLUTION):(CFR: 41.5 / 41.10 / 45.6 / 45.13)										
059AK1.02	Accidental Liquid RadWaste Rel. / 9	2.6	3.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Biological effects on humans of various types of radiation, exposure levels that are acceptable for nuclear power plant personnel and the units used for radiation-intensity measurements and for radiation exposure levels
				Knowledge of the operational implications of the following concepts as they apply to the (ABNORMAL PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)										
067AG2.1.31	Plant Fire On-site / 9 8	4.6	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
				This is a Generic, no stem statement is associated.										

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
WE08EA1.1	RCS Overcooling - PTS / 4	3.8	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.
				Ability to operate and / or monitor the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.7 / 45.5 / 45.6)										
WE10EK1.1	Natural Circ. With Seam Void/ 4	3.3	3.6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components, capacity, and function of emergency systems.
				Knowledge of the operational implications of the following concepts as they apply to the EMERGENCY PLANT EVOLUTION):(CFR: 41.8 to 41.10 / 45.3)										
WE14EK2.1	Loss of CTMT Integrity / 5	3.4	3.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.
				Knowledge of the interrelations between (EMERGENCY PLANT EVOLUTION) and the following:(CFR: 41.7 / 45.7 / 45.8)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
003A1.04	Reactor Coolant Pump	2.6	2.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCP oil reservoir levels
				Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)										
003K4.02	Reactor Coolant Pump	2.5	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Prevention of cold water accidents or transients
				Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)										
004A3.16	Chemical and Volume Control	3.8	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Interpretation of emergency borate valve position indicating lights
				Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)										
005K6.03	Residual Heat Removal	2.5	2.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RHR heat exchanger
				Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)										
006A3.06	Emergency Core Cooling	3.9	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Valve lineups
				Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)										
007A2.05	Pressurizer Relief/Quench Tank	3.2	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exceeding PRT high-pressure limits
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
008A3.04	Component Cooling Water	2.9	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Requirements on and for the CCWS for different conditions of the power plant
				Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)										
008K1.04	Component Cooling Water	3.3	3.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS, in order to determine source(s) of RCS leakage into the CCWS
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)										
010A2.01	Pressurizer Pressure Control	3.3	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heater failures
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										
012K2.01	Reactor Protection	3.3	3.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RPS channels, components and interconnections
				Knowledge of electrical power supplies to the following:(CFR: 41.7)										
013G2.4.46	Engineered Safety Features Actuation	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to verify that the alarms are consistent with the plant conditions.
				This is a Generic, no stem statement is associated.										
022K4.03	Containment Cooling	3.6	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic containment isolation
				Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
025K5.02	Ice Condenser	2.6	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heat transfer
Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)														
025K6.01	Ice Condenser	3.4	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Upper and lower doors of the ice condenser
Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)														
026K2.01	Containment Spray	3.4	3.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment spray pumps
Knowledge of electrical power supplies to the following:(CFR: 41.7)														
026K3.02	Containment Spray	4.2	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recirculation spray system
Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)														
039K5.05	Main and Reheat Steam	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bases for RCS cooldown limits
Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)														
059K3.04	Main Feedwater	3.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS
Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)														
061K3.01	Auxiliary/Emergency Feedwater	4.4	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS
Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)														

KA	NAME / SAFETY FUNCTION:	IR		K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G													TOPIC:			
		RO	SRO																	
061K5.03	Auxiliary/Emergency Feedwater	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pump head effects when control valve is shut
Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)																				
062K1.02	AC Electrical Distribution	4.1	4.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED/G
Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)																				
063G2.4.8	DC Electrical Distribution	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.
This is a Generic, no stem statement is associated.																				
064A1.02	Emergency Diesel Generator	2.5	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fuel consumption rate with load							
Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)																				
064K1.04	Emergency Diesel Generator	3.6	3.9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DC distribution system
Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)																				
073A4.02	Process Radiation Monitoring	3.7	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Radiation monitoring system control panel
Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)																				
076A4.01	Service Water	2.9	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SWS pumps
Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)																				

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:	
		RO	SRO												
078K2.02	Instrument Air	3.3	3.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency air compressor				
Knowledge of electrical power supplies to the following:(CFR: 41.7)															
103A1.01	Containment	3.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment pressure, temperature and humidity
Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)															

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
011K1.02	Pressurizer Level Control	3.7	3.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCS
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)										
014K5.02	Rod Position Indication	2.8	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RPIS independent of demand position
				Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)										
015K3.04	Nuclear Instrumentation	3.4	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ICS.
				Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)										
016K4.01	Non-nuclear Instrumentation	2.8	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reading of NNIS channel values outside control room
				Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)										
017A3.02	In-core Temperature Monitor	3.4	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Measurement of in-core thermocouple temperatures at panel outside control room
				Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)										
027K2.01	Containment Iodine Removal	3.1	3.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fans
				Knowledge of electrical power supplies to the following:(CFR: 41.7)										
035K6.02	Steam Generator	3.1	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Secondary PORV
				Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
041A1.02	Steam Dump/Turbine Bypass Control	3.1	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Steam pressure
				Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)										
045G2.1.25	Main Turbine Generator	3.9	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to interpret reference materials such as graphs, monographs and tables which contain performance data.
				This is a Generic, no stem statement is associated.										
071A4.16	Waste Gas Disposal	2.5	2.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Waste gas decay tank shifts
				Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.1.14	Conduct of operations	3.1	3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trip, mode changes, etc.								
G2.1.3	Conduct of operations	3.7	3.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of shift or short term relief turnover practices.								
G2.1.37	Conduct of operations	4.3	4.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of procedures, guidelines or limitations associated with reactivity management								
G2.2.13	Equipment Control	4.1	4.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of tagging and clearance procedures.								
G2.2.37	Equipment Control	3.6	4.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to determine operability and/or availability of safety related equipment								
G2.3.11	Radiation Control	3.8	4.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to control radiation releases.								
G2.3.4	Radiation Control	3.2	3.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation exposure limits under normal and emergency conditions								

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.4.13	Emergency Procedures/Plans	4.0	4.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of crew roles and responsibilities during EOP usage.								
G2.4.23	Emergency Procedures/Plans	3.4	4.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.								
G2.4.38	Emergency Procedures/Plans	2.4	4.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator.								

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
008AG2.4.2	Pressurizer Vapor Space Accident / 3	4.5	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
				This is a Generic, no stem statement is associated.										
009EA2.37	Small Break LOCA / 3	4.2	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Existence of adequate natural circulation
				Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
011EA2.14	Large Break LOCA / 3	3.6	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Actions to be taken if limits for PTS are violated
				Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
015AA2.01	RCP Malfunctions / 4	3	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cause of RCP failure
				Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
022AG2.1.28	Loss of Rx Coolant Makeup / 2	4.1	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the purpose and function of major system components and controls.
				This is a Generic, no stem statement is associated.										
077AG2.4.45	Generator Voltage and Electric Grid Disturbances / 6	4.1	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to prioritize and interpret the significance of each annunciator or alarm.
				This is a Generic, no stem statement is associated.										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
068AG2.4.47	Control Room Evac. / 8	4.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.
				This is a Generic, no stem statement is associated.										
076AA2.04	High Reactor Coolant Activity / 9	2.6	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Process effluent radiation chart recorder
				Ability to determine and interpret the following as they apply to ABNORMAL PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										
we01EG2.4.1	Rediagnosis / 3	4.0	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of abnormal condition procedures.
				This is a Generic, no stem statement is associated.										
WE16EA2.1	High Containment Radiation / 9	2.9	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Facility conditions and selection of appropriate procedures during abnormal and emergency operations.
				Ability to determine and interpret the following as they apply to (EMERGENCY PLANT EVOLUTION):(CFR: 41.10 / 43.5 / 45.13)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
003A2.03	Reactor Coolant Pump	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Problems associated with RCP motors, including faulty motors and current, winding and bearing temperature problems
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										
026G2.4.20	Containment Spray	3.8	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of operational implications of EOP warnings, cautions and notes.
				This is a Generic, no stem statement is associated.										
039A2.01	Main and Reheat Steam	3.1	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flow paths of steam during a LOCA
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										
062G2.4.18	AC Electrical Distribution	3.3	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the specific bases for EOPs.
				This is a Generic, no stem statement is associated.										
076A2.02	Service Water	2.7	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Service water header pressure
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
055G2.4.49	Condenser Air Removal	4.6	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
				This is a Generic, no stem statement is associated.										
071A2.05	Waste Gas Disposal	2.5	2.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power failure to the ARM and PRM Systems
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										
072A2.02	Area Radiation Monitoring	2.8	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detector failure
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)										

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
G2.1.25	Conduct of operations	3.9	4.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to interpret reference materials such as graphs, monographs and tables which contain performance data.								
G2.2.21	Equipment Control	2.9	4.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of pre- and post-maintenance operability requirements.								
G2.2.6	Equipment Control	3.0	3.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for making changes to procedures								
G2.3.13	Radiation Control	3.4	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiological safety procedures pertaining to licensed operator duties								
G2.3.14	Radiation Control	3.4	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities								
G2.4.27	Emergency Procedures/Plans	3.4	3.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of "fire in the plant" procedures.								
G2.4.28	Emergency Procedures/Plans	3.2	4.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of procedures relating to emergency response to sabotage.								

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Outline Development Methodology

Outlines for the Sequoyah Nuclear Plant - Reactor and Senior Reactor Operator Initial Examinations- 05000327/2009301 and 05000328/2009301 written examinations were developed by the NRC.

FINAL

ES-401

Written Examination Quality Checklist

Form ES-401-6

Facility: Sequoyah 1 & 2		Date of Exam: 1/2009		Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>		
Item Description	Initial					
	a	b*	c#			
1. Questions and answers are technically accurate and applicable to the facility.	PRC	BP	MS			
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	PRC	BP	MS			
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401	PRC	BP	MS			
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).			MS			
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)	PRC	BP	MS			
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	Modified	New	PRC	BP	MS
	23 / 1	21 / 8	31 / 16			
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		C/A	PRC	BP	MS
	40 / 40		60 / 60			
8. References/handouts provided do not give away answers or aid in the elimination of distractors.	PRC	BP	MS			
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.	PRC	BP	MS			
10. Question psychometric quality and format meet the guidelines in ES Appendix B.	PRC	BP	MS			
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.	PRC	BP	MS			
		Printed Name / Signature		Date		
a. Author	John B. Roden / <u>John B. Roden</u>		1/12/09			
b. Facility Reviewer (*)	Bradley D. Picchiottino / <u>Bradley D. Picchiottino</u>		1/12/09			
c. NRC Chief Examiner (#)	Richard S. Balawin / <u>Richard S. Balawin</u>		1/14/09			
d. NRC Regional Supervisor	Malcolm F. Widmann / <u>Malcolm F. Widmann</u>		2/18/09			
<p>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.</p>						

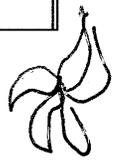
FINAL

~~lots~~
SEQUOYAH INITIAL DRAFT EARLY REVIEW

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. U/E/S	7. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
RO QUESTIONS																
Do NOT change order of the actual examination from the order in which these questions appear here!																
1	H	3													S	007EK2.03, New KA matches What does "stead" mean on page OPT200ANN Rev 3, page 30 of 131, reference provided? Should that read as steady?



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	Backward	Q=K/A	SRO Only		
															<p>In this situation are these the ONLY alarms that come in associated with the Steam Generators? What is the logic for Rx Trip associated with them? <i>NO, SEVERAL ALARMS & ALARMS</i></p> <p>Otherwise appears ok. <i>Added " " LxP best out"</i></p>
2	H	2-3												E	<p>008AG2.4.45, NEW KA matches</p> <p>The stem of the question, is worded very awkwardly. IT seems that we are trying to ask what is the NEXT annunciator that would come in, that would identify that an additional event occurred. This seems a better fit. Discuss!</p> <p>Distractor B is not plausible. The information in the stem, does not lead anyone to believe anything has gone wrong with the ROD control System, so why would anyone choose this. The indications are for pressure of RCS, PRT and pressurizer level. Why would this be considered a good answer. <u>This needs to be changed.</u></p> <p>Why in distractors A and B (not plausible) the entire window used as was in distractors C and D. Add that additional information to A that is necessary, ie. TS-68-309. Currently distractor B has no additional info necessary, since it represents the window now.</p> <p>Distractor D is not entirely correct, in that, there is NO space between the 5 and the D/E on the annunciator window.</p>
3	F	2-3												E	<p>009EA2.10, Bank KA matches</p> <p>Change stem of question to read, In accordance with AOP-R.05, "RCS Leak and Leak Source</p>

See.

OK

OK See

OK See 2/16/08

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	Backward	Q=K/A	SRO Only		
															<p>Identification,"</p> <p>Which one of the following....</p> <p>This will make the reader identify what procedure he/she is using to begin with.</p> <p>Otherwise appears ok</p>
4	F	2												E	<p>015AA2.08, Modified Bank</p> <p>Same comment as question 3, place the procedure in front of the actual question.</p> <p>In accordance with (IAW) AOP-R.04, "Reactor Coolant Pump Malfunction,"</p> <p>Which one of the following.....</p> <p>States it's a modified question, however the answer is the same , the question was made easier.</p> <p>Change distractor C to 220 deg F, Plausible because 220 psid is also an alarm. Can be confused.</p> <p>Change distractor B to 200</p> <p>Very low level fundamental question, almost a 1.</p>
5	H	3												E	<p>022AK1.02, Modified Bank</p> <p>KA matches</p> <p>Add parenthesis around noun name of EA-62-5 in initial conditions, and 2-FCV-62-89 in stem.</p> <p>Also add to the column titles in the first column, IF 2-FCV... Second column, charging flow to the Regen heat exchanger WILL...</p>

*sed
OK 12/16*

OK sed

sed ok

OK 12/16

OK sed

OK

sed again

4/6 k out if - add Throttle

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	Backward	Q=K/A	SRO Only		
															Otherwise appears ok
6	H	3													<p>025AG2.2.36, NEW</p> <p>KA matches</p> <p>E As described above, bring to the front of the stem, IF RHR pump 1B-B trips when a start is attempted, WOOTF (Which one of the following) identifies.....</p> <p>Otherwise appears ok</p>
7	H	3													<p>026AA2.03, Bank Modified</p> <p>KA matches</p> <p>S Meets modification criteria.</p> <p>Appears ok.</p>
8	H	3													<p>029EG2.1.31, New</p> <p>KA matches</p> <p>Disagree with analysis of distractors A and B, in that, why would anyone assume from the information provided that an SI had occurred? Need to understand why this was considered plausible. Discuss.</p> <p>Need to either add information in stem that would make the applicant think this is plausible. Or, replace those 2 distractors.</p>
9	F	2-3													<p>040AK1.06, Bank</p> <p>KA matches</p> <p>The 440 gpm can be removed from each of the distractors because it is common, and place in the stem.</p> <p>IS there another AFW flow that could be used in A and B? IF so, that would make them more plausible.</p> <p>WHEN would the Faulted SG be fed if it is know to be faulted? Would this not disqualify distractors A and B from being plausible? Discuss.</p>

12/16
 Del
 OK

✓

Del stem,
 to add in A
 to allow SI
 to be visible.

Added BBD required for AFWs event

OK w/ Δ 12/16.

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	Backward	Q=K/A	SRO Only			
																Even though this was used before, does not make it correct if distractors are no plausible. Discuss with licensee.
10	H	2-3												U	<p>054AK1.02, Bank KA matches</p> <p>Distractor A does not seem plausible, could you use information concerning the potential DP /rate MSL signal causing a MSIV isolation? Do you or DID you have this rate trip.</p> <p>In the stem, change establish to re-establish feed water.</p> <p>Even though this question was used in Summer in 06, this does not meet the new requirements for distractors C and D to be plausible. These don't make sense to me as being plausible. What in the stem would cause someone to believe that a RED path was occurring? Maybe if TC temperatures were increasing. If they are stable with Bleed and Feed why would it go RED?</p> <p>D is more plausible than C.</p> <p>Discuss with licensee.</p>	<p>SSD - getting to Hot/Log target</p> <p>7550 hot/Log</p> <p>OK as Det 12/16</p>
11	F	2-3												S	<p>055ek2.04, NEW KA matches</p> <p>Does any of the other distractors have an A-AUTO position? If NOT, then they my not be plausible.</p> <p>Appears ok</p>	<p>all have A-Auto - and y to PTL</p> <p>12/16</p>
12	H	3												S	<p>056AA1.11, Bank KA matches</p>	

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	Backward	Q=K/A	SRO Only		
															Appear ok
13	H	3												S	57Ak3.01, Modified KA matches Appears ok
14	F	3				X								E	058AA1.01, Bank KA matches Disagree with Distractor D analysis, how can the operator make the mistake of evaluating this as a 1 vice a 2 when the TS information provided only identifies a 2 hour time frame. This does not make sense. Distractor D needs to be changed.
15	H	3												E	062AD3.03, NEW, KA Put parenthesis around noun name for AOP-M.01. It seems that the reason in the answer is not correct. The reason is that the UNIT will have a faster heat up rate and is more time critical. The reason needs to be changed to reflect this. Otherwise appears ok
16	F	3												E	065AK3.04, NEW KA Change the stem to add WOOTF is the reason... Otherwise appears ok.
17	H	2-3												S	077AA1.03, MODIFIED KA matches Appears ok
18	H	3												E	WE11EK2.1, BANK KA Does the applicant have to assume that BOTH Spray pumps are running in the current condition? IT seems so, however, the stem does not state

no longer

✓ OK

*2 Fed 3/4
1 Fed 1/2*

OK w/ Δ

12/16 / OK w/ Δ

*OK w/ Δ
12/16*

Spelled Mission → Del to

✓ added

5 12/17/08



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	Backward	Q=K/A		
														<p>this. Maybe it is necessary to have that in the initial conditions in order to fully describe the plant conditions prior to step 8.</p> <p>Are the operators expected to know from memory the table listed in Step 8?</p> <p>Be very clear in each distractor to identify that you are starting or stopping a containment spray pump, don't say start or stop one pump. This appears in distractor B and D.</p> <p>Change distractor B to stop both pumps when less than 8%. This makes the stopping the pumps correct, but not to continue to run them.</p>
19	H	2-3											S	<p>001AK3.01, New</p> <p>KA matches</p> <p>Appears ok</p>
20	F	2											S	<p>005AA1.01, Bank</p> <p>KA matches</p> <p>Appears ok</p> <p>Can not imagine anyone getting this incorrect. Not very discriminating.</p>
21	H	2-3											S	<p>024AA2.01, New</p> <p>KA matches</p> <p>Since FCV-62-138 appears in all distractors it can be taken out and placed above the distractors. It can be written</p> <p>FCV-62-138 ...</p> <ul style="list-style-type: none"> a. stopped opening... b. stopped opening... c. should be... d. should be... <p>Otherwise appears ok</p>
22	F	2-3											E	<p>036AK3.01, Modified</p>

- needs pump level in stem
- make the stem more clear

~~no reference - need to know this~~
removed pump level totally
12/17/08

Yes they are

added

✓

✓

✓

OK w/d



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	Backward	Q=K/A	SRO Only			
22																<p>KA matches</p> <p>In distractors B and D, it would seem that it would be better to state that it was ONLY required to notify the Refueling SRO and NOT say that the announcement is NOT required. Discuss. Kind of awkward to say it this way.</p> <p>Also the procedure states the Fuel Handling Supervisor, not the Refueling SRO, does it matter? Ask licensee.</p> <p>Otherwise appears ok.</p>
																<p>give set point - alarm calc -> what also should be ready</p> <p>12/17/08 Dec to add the ipr alarm The app. has to calculate the CR if would be..!</p>
23	F	3														<p>059AK1.02, Modified</p> <p>S KA matches</p> <p>Appears ok.</p>
24	F	2-3														<p>067AG2.1.31, Modified</p> <p>S KA matches</p> <p>Appears ok</p>
25	H	3														<p>WE08EA1.1, Bank</p> <p>KA matches <i>now Loop 3. ✓</i></p> <p>Question was modified such that loop 2 was changed to loop 1, but this allowed the same answer, at least change this to loop 3 or 4 to have a different valve that opens.</p> <p>As for distractors A and B, what system has an automatic valve operation, that would open a valve and then require manual operation to close the valve. Are there any valves in the plant that has this type of feature? -IF NOT I don't believe this is plausible. This needs to be changed.</p> <p><i>12/16/08 OK</i> <i>12/9/12 OK</i> <i>not clear</i> <i>(S)</i></p>
26	F	2-3														<p>WE10EK1.1, Modified</p> <p>KA matches</p> <p>Not sure but, it appears that distractor could be correct. If you look at EPM-3-ES-0.4, ERG Basis, it states that "...Only allowing the pressurizer to fill to a maximum of 90% (starting at a level above the top of the heaters). This will ensure continued pressurizer pressure control."</p> <p><i>OK as Dec</i> <i>U?</i> <i>40</i></p>

OK and is!

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	Backward	Q=K/A	SRO Only		
															Distractor C states "Facilitates pressure control by ensuring the PZR is maintained at saturation conditions." This is close to the above. Take a look and see if it is truly incorrect. Could have 2 answers. Discuss with licensee.
27	F	3												S	WE14EK2.1, Bank KA matches ✓ Appears to be ok, need licensee to help with the logic diagram, it seems that the hand written valves are different than the answer. HELP! <i>OK Del JLV #5 by mistake</i>
28	F	3												E/S	003A1.04, New KA matches The stem asks for 2 actions, however, each distractor provides 3. The stem needs to be changed. For example, 1. Pump pocket sump level down and 2. Monitor pocket sump level for significant change in rate of rise, and, 3. Request Electricians to determine if the oil level is high or low. How can you pump it down if the electricians state the sump is low? Is this a fair question to require operators to know ARI steps from memory? Discuss with licensee. IF they believe it is ok, then will agree with question as is. I realize this is recall of actions of the ARI but want to make sure the licensee wants this.
29	H													E	003K4.02, New KA matches Distractor A needs to be changed to remove everything after the comma and swap with "and can be started in current plant conditions." Do this change in distractor C also.

Yes could have 2 ans

OK w/A

They said it's OK.

OK w/A

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	Backward	Q=K/A	SRO Only			
																The second parts of B and D should be the same, B states " and a steam bubble, and D states "but a steam bubble," make them the same. If changes accepted, will be ok <i>OK w/ Δ.</i>
30	H	3												S	004A3.11, Modified KA matches ✓ Appears ok	
31	H	3												S	005K6.03, Bank KA matches ✓ Appears ok	
32	F	3												E	006A3.06, Modified KA matches <i>M-6 panel AppR.</i> I don't understand the analysis for the answer in this question. Need licensee to explain. Otherwise appears ok	
33	H	2-3												S	007A2.05, Bank KA matches Appears ok	
34	H	3												E S	008A3.04, Modified KA matches <i>12/16/08 ok</i> It is not necessary to have in the stem that the blackout loads sequencing back on. It can be stated that DG 1A-A starts and loads normally. This information is considered teaching and is not necessary. Otherwise appears ok	
35	H	3												S	008K1.04, New KA matches	

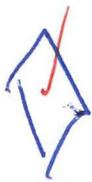
OK

✓ Δ OK

*NO
Ann.#?*

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	Backward	Q=K/A	SRO Only			
																Appears ok
36	H	2														<p><i>Replace the question!</i></p> <p><i>OK w/ sed replace</i></p> <p>U 010A2.01, New KA does not match! Do not understand what procedure is being used when the answer is to leave the controller in auto and basically don't do anything. Discuss with licensee. The stem is indented on the second and third sentences. Remove the indent. Need to replace entire question. <i>Replace - new questions.</i></p>
37	H	3														<p>S 012K2.01, Bank KA matches ✓ Appears ok</p>
38	H	3														<p>E 013G2.4.46, Modified KA Add parenthesis around the noun name of FR-S.1. Otherwise appears ok.</p> <p><i>" 4 done.</i></p>
39	F	2-3														<p>S 022K4.03, Bank KA matches Appears ok</p>
40	F	2														<p>S 025K5.02, New KA matches Appears ok</p>
41	F	3														<p>S 025K6.01, New KA matches</p>

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	Backward	Q=K/A	SRO Only		
															Appears ok
42	H	3												S	026K2.01, Modified KA matches Appears ok
43	H	3												S	026K3.02, Modified KA matches Appears ok
44	H	3												S	039K5.05, New KA matches Appears ok
45	H	2-3	<p><i>Δ from Initial to Just observable effect</i></p> <p><i>- put answer in column format.</i></p> <p><i>VALIDATE ON SIMULATOR.</i></p> <p><i>Tied for procedure! OK w/ Δ 12/17</i></p>											E	<p>059K3.04, Bank KA</p> <p>In the stem, should isolates be plural like it is or singular? <i>fix effect</i> ✓ <i>OK</i></p> <p>Is it necessary to identify the time that "Initial" considers. This has been a problem in the past, and sometimes we need a time frame. Discuss with licensee to see if this is necessary.</p> <p>To make it more interesting, we could change from indicated level to actual level. Discuss! <i>NOT required</i> ✓ <i>OK</i></p> <p>Otherwise appears ok</p>
46	H	2-3												E	<p>061K3.01, Bank KA matches</p> <p>Distractor D does not appear to be plausible. Just because other plants are susceptible to this, does not mean that it matters to an operator at SQN. Discuss why this is credible at SQN with licensee. <i>replace</i></p> <p>Each distractor has a primary concern but it also has a basis for that concern. Do we have to change the stem to include this as well? I think we do! Discuss. <i>did added and why!</i></p>
47	H	2-3												S	061K5.03, Bank



Boled Not

*replace
did added
and why!*

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	Backward	Q=K/A	SRO Only			
																KA matches Appears ok
48	F	2-3	Remark "only" in stem			ans. B			NO DIS Necessary				12/16	E S	OK	062K1.02, Modified, KA matches The amount load carried by the DG in the stem is 4.6, this is below the 2 hour requirement. Not sure why then, 2 hours is the limit. Discuss Otherwise appears ok
49	H	2-3					fixed						12/16	E S	OK	063G2.4.8, New KA matches ✓ Continuous performance of AOP-P0.2 is common to all distractors, can bring up to the top and remove from each of the distractors. Discuss with licensee. 063G2.4.8, New Continued Appears ok
50	H	2-3												S		064A1.02, New KA matches ✓ Appears ok
51	H	3												S		064K1.04, Bank ✓ KA matches ✓ Appears ok
52	H	3											12/11/02	E S		073A4.02, New KA matches ✓ In the stem, add parenthesis around the noun names for the rad monitor and the hand switch. The text provided identifies that Pulled out is also a position, on 0-SO-90-2 p 18 of 27. Does the work position need to be added to distractors A and

47. answer fixed spelling

OK basis
NO necessary

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	Backward	Q=K/A	SRO Only			
																B, C and D? Ask licensee. ✓ Otherwise appears ok
53	H	3														076A4.01, Modified KA Add to the stem in accordance with 0-SO-67-1, to ensure we are all on the same page. <i>Added</i> Looking at distractors B and D, it seems that we could say "Do not move" or reposition switch 0-XS-67-286. <i>Dgd</i> Discuss with licensee.
54	H	3														078K202, New, KA matches The stem does not reflect what is being answered in each distractor. You are not asking the status of the power supplies but which if any air compressor has power. This needs to be fixed. Discuss with licensee to ensure this is correct
55	F H	2 3														103A1.01, Modified KA matches <i>1.0 KA -</i> Disagree with plausibility of 2.81, why would applicants mix this up? Explain? <i>ADPS -</i> Use parenthesis around noun name of the valves being addressed. Why would any one believe a valve that gets an automatic closure signal would also get an automatic open signal, do other isolation valves in the plant work this way? Discuss <i>Did NOT answer - Del</i>
56	H	3														011K1.02, Modified KA matches Appears ok
57	F	3														014K5.02, Modified KA matches

OK as per

the question

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	Backward	Q=K/A	SRO Only			
																Appears ok
58	F	2-3													S	015K3.04, New KA matches Appears ok
59	F	3													S	016K4.01. New KA matches Appears ok, would like licensee to explain. ✓
60	H	3													S	017A3.01, New KA matches Appears ok
61	F	3													S	027K2.01, New KA matches Appear ok
62	H	2-3													S	035K6.02, Bank KA matches Appears ok
63	<u>H</u> F	2-3													S	041A1.02, Modified KA In the stem, teaching concerning the Steam dumps in the pressure control mode. Remove words "set to automatically control RCS Tavg at the no load setpoint." Is this not true when its in that mode? Are these words necessary? Discuss. Disagree with higher cog. More of a fundamental, its really window dressing that is covering up the knowledge of just knowing what no load steam pressure is. Ok as fundamental knowledge

Remove Steam Mode

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	Backward	Q=K/A	SRO Only		
64	H	3												S	045G2.1.25m, Modified KA matches Appears ok
65	H	3												E S	071A4.16, New <i>ack 11 → 9.</i> KA matches How about changing all distractors to remove the value of 135 or 100 psig respectively. If we underline the words prior or past the setpoint, then the individuals need to know from memory what it was. Discuss with licensee. With requested change, appears ok
66	F	2												S	G2.1.14, New, KA matches Appears ok,
67	F	2-3											12/16	E S	G.2.1.3, Modified KA In stem, put parenthesis around noun name of OPDP-1. <i>fixed</i> Appear ok
68	F	2											12/16	S	G2.1.37, New KA matches Add parenthesis around noun name ✓ Appears ok
69	F	2-3												E S	G2.2.13, Bank KA Add parenthesis around noun name for the valve. ✓ Add to the stem, what valve you are asking about vice "the valve" and add the procedure that you are expected to do it in accordance with. Each distractor that identifies air isolation, it is done differently, A just does the valve in the open position, D de pressurizes it, B does something

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	Backward	Q=K/A	SRO Only			
																differently. I think these need to be the same. Discuss With changes appears ok
70	H	3												S	G2.2.37, New KA matches Appears ok	
71	F	3												S	G2.3.11, Bank KA matches Appears ok	
72	H	3												S	G2.3.4, Bank KA TYPO in EPIP-15 Rev 9, page 7 EXCEEL, vice Exceed Appears ok	
73	F													S	G2.4.13, New KA matches Add parenthesis to noun names in stem. Appears to be ok	
74	H	3												S	G2.4.23, Bank KA matches Add Noun name parenthesis's Appears ok	
75	F													S	G2.4.39, New, KA Distractor C, how does the CRO get back into the MCR if he does not swipe? Does this make sense, and therefore is it plausible? Need to add to the stem that IAW EPIP-8. ✓ OK 2/10	

OK as is -

OK as is -

Del OK

*Del 1.1 -> 1.0 Based on
me to get the - 14/2000 to 9/2000 via 1/2000
mk*

✓ OK 2/10

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	Backward	Q=K/A	SRO Only				
															Discuss with licensee.		
SRO ONLY QUESTION																	
76	H	3											X	S	008AG 2.4.2, New Question. Not sure this is SRO ONLY, is it a requirement that ROs know the FOLD out page requirements by heart? Ask Licensee. <i>OK AS.</i> Otherwise it appears to be ok. <i>not required to know!</i>		
77	H	3												E S	009EA2.37, Modified Bank Question appears to be ok. The question analysis for the answer uses ES 1-1, but the question covers ES 1-2? The analysis needs to be changed. <i>✓sch</i> Change the stem to read "transition that will be directed" vice "transition. that will be made" <i>should be</i> <i>OK.</i> Also, add parenthesis around the noun names for each procedure in each answer.		
78	H	3	<i>△ to provide answer w. curve 1. — will need to check new curve</i>												011EA2.14, New The way this question is written makes the transition back to step in effect. This is really not SRO knowledge. The question should have a RHR flow of less than 300 gpm. And then this could be used. Change the stem to the A RHR pump flow is 200 gpm, have pressure higher or a reason for the pump to be at a reduced flow. But with the pump not running I believe this is RO knowledge. KA seems to be a stretch. Discuss with licensee.	<i>good fix - 12/17</i>	<i>N/A not good suggestion!</i>
79	H	3												S	015AA2.01, New, KA matches Appears to be ok.		



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	Backward	Q=K/A	SRO Only			
80	H	3														<p>022AG2.1.28, Bank Modified.</p> <p>Add to the stem, the initial procedure the plant would have been in before this occurred. <i>SAW (60-13 No Cool bell/domin)</i></p> <p>Is it necessary to state what the temperature of the exit thermocouples were at the beginning of this event?</p>
81	H	3														<p>077AG2.4.5, New</p> <p>Does not seem to match the KA, how does the question allow the SRO prioritize and interpret annunciators? <i>ALARMS to be prioritized</i></p> <p>Should Kv be KV all caps. <i>Yes.</i></p> <p>Appears to be added info in the 3rd bullet that's teaching, "Main voltage to spike upward" most likely is NOT necessary. This can be removed. Ask the licensee if this is ok to do so. <i>OK remark</i></p> <p>The second Annunciator listed has only one ' and not " as that item starts with a double parenthesis. <i>✓</i></p> <p>kV after 161 should this be all caps, ie KV <i>✓</i></p> <p>is the information concerning the PCB remaining closed something you would expect an SRO would know from Memory? This seems to be something that they would have to look up in a reference. <i>Yes BKR to open</i></p> <p><i>Should know carrier sign of current</i></p> <p>The answer does not make sense, is it true that the Load Dispatcher determines OPERABILITY? <i>NO he does not.</i></p>
82	H	2														<p>068AG2.4.7, New,</p> <p>This question does not appear to meet the KA and it does not seem to be SRO ONLY.</p> <p>The question is based on a basic knowledge that on a MCR evacuation EOPS are NOT followed. That eliminates A and B.</p>

Δ Δ OK

12/16/08

not required

Remark required additional

OK w/ change

12/16/08

re write the question!

12/16

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	Backward	Q=K/A	SRO Only			
																Is the tense for instruments in both C and D. should this be instrument or instruments? <i>rewrite - 0</i>
83	M	2													U	076AA2.04, Bank Modified, KA listed on the exam item is not the KA, listed KA is AA2.02 not AA2.04. AA2.04 does not match this question. <i>Should be 2.02.</i> Parts of the basis could be added to make this question more challenging. For example, the 2 hour requirement small fraction of Part 100, and use this with Part 20 to make it more challenging. This is a SRO question but not written very well, <i>12/17/07 was del by me OK</i>
84	H	2-3													S	W/E01 EG 2.4.11, New KA matches, ✓ Appears to be ok.
85	H	3													S	W/E16 EA2.1, Modified Bank KA matches ✓ Appears to be ok,
86	H	3													S	003A2.03, NEW, ✓ KA matches; Appears to be ok.
87	H	3													E	026G2.4.20, New KA matches, The way the stem is written, it does not seem like the first part of answers <i>12/17 del OK</i>



*(S) OF 2.02 (S) NOT
A (u)*

(S) K/A OK

rewrite - 0

*12/17/07
was del
by me OK*

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	Backward	Q=K/A	SRO Only			
																<p>C and D is worded correctly. Is it possible to re write those two answers to look like it does in A and B. "Due to implementing ECA 1.3 the pump will be restarted...."</p> <p>Otherwise it appears to be ok</p>
88	H	3														<p>039A2.01, New,</p> <p>In the initial conditions, how can the pressure rise and cause a Safety Injection, but the pressure it went and stabilized at 2.4 psi. Does the SI start at 1.54? I am not sure of this number, have to ask. ✓</p> <p>Is it necessary in the stem to state that MSIVs are open? It seems like it is teaching, and should not be listed. Ask licensee. I don't believe that this is necessary and would like to have it deleted. ✓</p> <p>Distractor B, the word exist should be plural "exists." ✓</p> <p>In the bulleted item, when determining if... there is two spaces there.</p> <p>Re write the answers C and D to state that the auto signal should NOT have initiated, rather than would NOT have been initiated.</p>
89	H	3														<p>062G2.4.18, Modified Bank</p> <p>KA matches</p> <p>Why are the procedure names in each distractor not in parenthesis, this needs to be done. ✓</p> <p>Why was the bullet stating that there are NO other RED paths present? This was not in the other question and I don't believe it is necessary. If it is not stated then it should not be assumed that it happened. Remove this, discuss with licensee.</p> <p>Currently distractor B would be discounted because there are no other higher RED paths, this would not be considered when taking the test. This can be re written to say Remain in H-1 to recover and establish a heat sink with the TD-AFW pump.</p>

12/17/08

S

~~BJD: Zed~~

OK as Zed

Removed

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	Backward	Q=K/A	SRO Only				
																In distractor D, this does not seem plausible because well, does FRH.1 restore power? I don't have a copy of this, will need to ask licensee if H.1 does restore power.	
90	H	3														076A2.02 Bank KA matches S Is it expected that the SROs should know each section of the procedure and what it is? <i>YES IT'S OK.</i> Appears to be ok	
91	F	3														055G2.4.3, New <i>Del Stem -</i> KA matches E The working of the stem and the distractors is awkward. One distractor you <u>use is used</u> , and another is <u>but is used</u> , how about making them the same. Otherwise it appears to be ok	
92	F	2-3	<i>Removed "planned" in stem.</i>														071A2.05, Modified Bank <i>used to instrument maintenance also</i> U In distractors C and D, it states there is an alarm, for manual termination to take place. WHY would any one determine that this is a reasonable answer? Is there a system that works this way? Ask Licensee. If not then distractors C and D are not plausible.
93	F	2-3														072A2.02, Modified Bank <i>GOOD</i> U It does not seem like the KA matches, why is it believed that procedures are used to correct this action. It seems that the answer is that you don't have to do something. Discuss with licensee. 12/17 Can we use ONLY Train A is initiated? Would that be a reasonable distractor? Why do we only have B train? Did not have info with me to determine why B is the correct train. Not so sure that this is a fundamental question. It seems that there is more than just memory in order to answer this.	

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	Backward	Q=K/A		
94	H													<p>G2.1.25, NEW</p> <p>Reference use ok</p> <p>KA matches.</p> <p>This question, while you have to calculate something, it sure is not hard, all you have to do is plot those two points and see where it falls on the graph.</p> <p>IT seems that an RO would be required to know the basis for the points on that curve also, and when is the worst case. This does not appear to be an SRO ONLY question. Will discuss with BC and Licensee.</p>
95	F	2	Replacement OK. Post maintenance test											<p>G2.2.21, New,</p> <p>In the stem, the Work Order(WO), missing a space.</p> <p>Why would any one decide that the Work week manager would be a person to sign this off?? WHY? Disagree with it being plausible.</p>
96	F	2	- Quality related procedure											<p>G2.2.6, Modified Bank,</p> <p>Add the word procedure in front of 1-SO-64-1, ✓</p> <p>U/E</p> <p>What makes this an SRO ONLY question? Does the RO have to understand this process also?</p> <p>Discuss with licensee to determine why this is considered SRO ONLY.</p>
97	F		Replaced question w/ new question.											<p>G2.3.13, New</p> <p>Question is ok but is NOT SRO ONLY. GOOD replacement @ 12/17/08</p>
98	H F													<p>G2.3.14, Modified Bank</p> <p>KA matches,</p> <p>The question is not actually what I would call Higher Cog, this is really</p>



OK AS IS
12/17/08

(S)

- Quality related procedure

OK AS IS

(S)

GOOD replacement @ 12/17/08

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	Backward	Q=K/A	SRO Only		
															<p>recalling 2 trivial facts from two procedures, if you don't know that information, I don't believe you could figure out the answer. That being said, this question will be allowed as a memory level question.</p> <p>During the review, did not have the entire procedure to verify if 23 psi pressurization was in the procedure.</p> <p>Accepted as a fundamental question. Will discuss with licensee during Dec 16-19 meeting.</p>
99	F													E	<p>G2.4.27, New KA Matches</p> <p>In the stem of the question, underline the word minimum, this needs to be done to prevent the applicants from NOT reading this, like I did.</p> <p>In formatting this question, indent the (1) and (2) in the stem to offset it from the actual distractors. Right now it is hard to read. I think this may help.</p> <p>I think this question needs to be tightened up in order to prevent someone from arguing that distractor C is also a correct answer. I say this because there really is no feel for the time frame that this is taking place. Discuss with licensee if disagrees.</p> <p>During review did not have AOP N.08, what does step 19 state, as NOTE in AOP-N.01 identifies. Does this matter? OK</p> <p>Otherwise appears to be ok, if made more clear.</p>
100	F													U	<p>G.2.4.28, New, KA matches,</p> <p>This question does not appear to be an SRO only question. The part that individuals need to be in line of site, should have been covered in training for all operators and would be expected to be known by the RO's.</p> <p>The way the distractors B and D are worded, it would imply that 2 plant personnel of some type were sent. It does not imply that 2 were sent. IT would seem that distractors A and C would have to be looked at to determine IF 2 operators were sent. But that does not really say either, it just states that one has to be qualified. All the distractors need to be</p>

Yes OK Dec to F

Added 10 min in stem.

*OK AS IS
Dec all others*

(S)

OK

Facility: Sequoyah		Date of Exam: 02/04/2009		Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>	
Item Description	Initials				
	a	b	c		
1. Clean answer sheets copied before grading	MJR	N/A	RSB		
2. Answer key changes and question deletions justified and documented	MJR	N/A	RSB		
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	MJR	N/A	RSB		
4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail	MJR	N/A	RSB		
5. All other failing examinations checked to ensure that grades are justified	MJR	N/A	RSB		
6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	MJR	N/A	RSB		
Printed Name/Signature		Date			
a. Grader	Mark J. Riches / <u>Mark J. Riches</u>	02/13/2009			
b. Facility Reviewer(*)	N / A				
c. NRC Chief Examiner (*)	Richard S. Baldwin / <u>Richard S. Baldwin</u>	02/13/09			
d. NRC Supervisor (*)	Malcolm T. Widmann / _____				
(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.					