

Facility: Sequoyah NuclearDate of Examination: 3/7/16Developed by: Written: Facility ☐ NRC ☐ // Operating: Facility ☐ NRC ☐

Target Date*	Task Description (Reference)	Chief Examiner's Initials
-180	Examination administration date confirmed (C.1.a; C.2.a and b)	<i>PGE</i>
-150	NRC examiners and facility contact assigned (C.1.d; C.2.e)	<i>PGE</i>
-150	Facility contact briefed on security and other requirements (C.2.c)	<i>PGE</i>
-150	Corporate notification letter sent (C.2.d)	<i>PGE</i>
[-120]	Reference material due (C.1.e; C.3.c; Attachment 3)	<i>PGE</i>
{-90}	Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	<i>PGE</i>
{-85}	Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	<i>PGE</i>
{-60}	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, ES-401N-6, and any Form ES-201-2, ES-201-3, ES-301-1, or ES-301-2 updates), and reference materials due (C.1.e, f, g and h; C.3.d)	<i>PGE</i>
-45	Written exam and operating test reviews completed. (C.3.f)	<i>PGE</i>
-30	Preliminary license applications (NRC Form 398's) due (C.1.i; C.2.g; ES-202)	<i>PGE</i>
-21	Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	<i>PGE</i>
-21	Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	<i>PGE</i>
-14	Final license applications due and Form ES-201-4 prepared (C.1.i; C.2.i; ES-202)	<i>PGE</i>
-14	Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	<i>PGE</i>
-7	Facility licensee management queried regarding the licensee's views on the examination. (C.2.j)	<i>PGE</i>
-7	Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 5; ES-202, C.2.e; ES-204)	<i>PGE</i>
-7	Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	<i>PGE</i>
-7	Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	<i>PGE</i>

\* Target dates are generally based on facility-prepared examinations and are keyed to the examination date identified in the corporate notification letter. They are for planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.

[Applies only] {Does not apply} to examinations prepared by the NRC.

Facility: Sequoyah Nuclear Station 1 & 2		Date of Examination: 03/07/2016		
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.	NA	NA	AK
	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.	NA	NA	AK
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	NA	NA	AK
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	NA	NA	AK
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.	AK	15	AK
	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.	AK	15	AK
	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.	AK	15	AK
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.	AK	15	AK
	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	AK	15	AK
	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.	AK	15	AK
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.	AK	15	AK
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	AK	15	AK
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	AK	15	AK
	d. Check for duplication and overlap among exam sections.	AK	15	AK
	e. Check the entire exam for balance of coverage.	AK	15	AK
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	AK	15	AK
a. Author: Michael Buckner / <i>Michael Buckner</i> b. Facility Reviewer (*): Francis Schulte III / <i>Francis Schulte III</i> c. NRC Chief Examiner (#): Philip G. Carpenter / <i>Philip G. Carpenter</i> d. NRC Supervisor: Gerald J. McCay / <i>Gerald J. McCay</i>		Date: 2/24/16 2/24/16 2/25/16 3/3/2016		
Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines				

Sequeyoh 2016-3A

Page 1 of 2

ES-201

Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 03/07/2016 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 03/07/2016. 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. Michael Buckner	Exam Writer / Project Manager	Michael Buckner	04/04/15		
2. MAX HIME	EXAM WRITER		4/9/15		
3. Owen B Trivolo	Exam Developer	Owen B Trivolo	4/13/2015		
4. Francis Skulte	Facility Rep	Francis Skulte	5/18/15		
5. Russell Joplin	CORP EXAM PM	RJ	9/24/15		
6. TIM GABOSCH	WATS BARE EXAM DEVELOPER	Tim Gabosch	10/6/15		
7. ROBERT DRANSIC	OPS VARIATOR	Robert Dransic	10/14/15		
8. Joey Montero	Unit Operator	Joey Montero	10-20-15		
9. Derek Jones	Unit Operator	Derek Jones	10-23-15		
10. Jacques Olivier	Senior Reactor Operator / Exam Validation	Jacques Olivier	10-28-15		
11. James P. Knight	Simulator Eng.	James P. Knight	11-2-15		
12. Ted Yang	Simulator Eng.	Ted Yang	11-2-15		
13. Austin Morris	Info Rep - Records	Austin Morris	11-2-15		
14. Kesterbrook, Dennis	Lead Instructor	Dennis Kesterbrook	11-2-15		
15. Mark Whitfield	SM/SBO/STA	Mark Whitfield	11/2/15		










NOTES:

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2. Post-Examination

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PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1. Robert S. Morey	Unit Supervisor		11/12/15		
2. Ryan Brown	Unit Operator		11/22/15		
3. BTGier	U.D.		11/27/15		
4. Kevin M. Michael	Shift Manager		12/15/15		
5. JAMIE DECAMBRA	UNIT SUPERVISOR		12/16/15		
6. Bryan Reitzel	U.D.		12/15/15		
7. Casey Pfeiffer	Unit Supervisor		12/21/15		
8. ANDRE SHIPLEY	RO		12/23/15		
9. Jeremy Legman	RO		12/23/15		
10.					
11.					
12.					
13.					
14.					
15.					

NOTES:

Facility: Sequoyah Nuclear Station 1 & 2Date of Examination: 3/7/2016Exam Level: RO ☒ SRO ☐Operating Test No: 2016-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R, N	Determine compliance with fatigue management and work hour limits. G 2.1.2 (3.0/4.0)
Conduct of Operations	R, N	Calculate required amount and time for emergency boration in preparation for cool down. G 2.1 .25 (2.8)
Equipment Control	R, N	Evaluate valve stroke testing results. G 2.2.12 (3.0)
Radiation Control	N/A	Not examined
Emergency Procedures/Plan	R, N	Complete a state notification form and complete an initial state notification. G 2.4.25
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

**A.1.a**

The examinee is given the case where two operators are required to be called out for work. The examinee evaluate the work history between five different operators and will determine operator 3 may assume the shift in Unit 1 which is the operating unit and Operator 2 may assume the shift in Unit 2 which is the outage unit. This JPM is a common JPM with the SRO examinees.

**A.1.b**

The examinee is given the case where Unit 1 is making preparations for an Emergency Boration while in MODE 3 and an RCS cool down to 350 degrees. The examinee will determine by looking up from a chart that 6280 gallons from the Boric Acid Tank and calculate a minimum boration time of 125.6 minutes is required for emergency boration prior to initiating the cool down to 350 degrees.

**A.2**

The examinee will complete and review data from a Section XI Valve Surveillance and determine the following:

- three valves are within the acceptable range.
- two valves are in the alert range.
- one valve is in the required action range.

The examinee will determine the valves not in the acceptable range require subsequent valve strokes. The examinee will determine the valve in the required action range is INOPERABLE.

**A.3**

Not examined.

**A.4**

While acting as the Site Communicator and given data for a plant emergency, the examinee will interpret the data and complete the EPIP-3 ALERT Appendix A ALERT INITIAL NOTIFICATION FORM within 15 minutes and perform a State of Tennessee Notification within the following 15 minutes.

Facility: Sequoyah Nuclear Station 1 & 2Date of Examination: 3/7/2016Exam Level: RO ☐ SRO ☒Operating Test No: 2016-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R, N	Determine compliance with fatigue management and work hour limits. G 2.1.2 (3.0/4.0)
Conduct of Operations	R, N	Evaluate and approve a disabled alarm checklist. G 2.1.1 (3.8)
Equipment Control	R, N	Evaluate a proposed clearance for the 1B Condensate Demineralizer Booster Pump. G 2.2.13 (3.8)
Radiation Control	R, M	Perform required administrative actions after a Radiation Monitor is removed from service. G 2.3.11 (3.2)
Emergency Procedures/Plan	R, M	Classify the Event using the EPIP-1 and complete a TVA INITIAL NOTIFICATION. 2.4.41 (4.6)

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

\* Type Codes & Criteria:

- (C)ontrol room, (S)imulator, or Class(R)oom
- (D)irect from bank ( $\leq 3$  for ROs;  $\leq 4$  for SROs & RO retakes)
- (N)ew or (M)odified from bank ( $\geq 1$ )
- (P)revious 2 exams ( $\leq 1$ ; randomly selected)

#### **A.1.a**

The examinee is given the case where two operators are required to be called out for work. The examinee evaluate the work history between five different operators and will determine operator 3 may assume the shift in Unit 1 which is the operating unit and Operator 2 may assume the shift in Unit 2 which is the outage unit. This JPM is a common JPM with the RO examinees.

#### **A.1.b**

The examinee will evaluate a completed OPDP-4-1 - Disabled Alarm Checklist, will identify three embedded errors and determine the correct entries for the embedded errors. The examinee will determine the following correct solutions for the embedded errors:

- the source for the annunciator panel XA-55-1A window C-1 is a multi point input and needs to have leads removed to maintain monitoring availability of the other inputs to the SER.
- determines a 50.59 review must be performed prior to disabling alarm.
- determines a technical evaluation must be performed.

#### **A.2**

The examinee evaluates the proposed clearance for the 1B Condensate Demineralizer Booster Pump and discovers the following four embedded errors:

- No vent or drain path is provided to establish conditions for work.
- The pump hand switch is tagged instead of the pump motor breaker.
- The discharge valve for the 1B Condensate Booster Pump is tagged instead of the 1B Condensate Demineralizer Booster Pump.
- The suction valve for the 1B Condensate Demineralizer Booster Pump is tagged locally at the MOV instead of the breaker for the MOV.

#### **A.3**

The examinee evaluates a work package and determines LCO 3.3.7 condition a must be entered and RM-90-125 is required to be blocked prior to removing RM-90-125 from service. The examinee subsequently determines the isolation relay for 0-RE-90-125 must be removed prior to unblocking 0-RE-90-125.

#### **A.4**

During a dual unit event, the examinee will evaluate plant conditions and classifies the event as a SITE AREA EMERGENCY based on EAL 3.1 within 15 minutes and the examinee completes a TVA Initial Notification for Site Area Emergency form with no errors on items noted with an \* within the subsequent 15 minutes.



Facility: Sequoyah Nuclear Station 1 & 2		Date of Examination: <u>3/7/2016</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No: <u>2016-301</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. Withdraw Shutdown Banks. 001 A2.11 (4.4/4.7)	L, M, S	1
b. Remove excess letdown from service. 004 A4.06 (3.6/3.1)	D, S	2
c. Align ECCS & CS Pumps to the Containment Sump with a Failure of a Containment Sump Valve. EPE 011 EA1.11 (4.2/4.2)	A, EN, L, M, S	3
d. Establish Once Through Cooling by Initiating RCS Bleed and Feed with a Failure of a PORV and Blow Down Steam Generators. EPE E05 EA 2.2 (3.7/4.3)	A, L, M, S	4P
e. Secure a Main Feed Pump with a Failure of a Main Feed Regulating Valve. 059 A4.10 (3.9/3.8)	A, N, S	4S
f. Perform Post Trip Equipment Checks with a Failure of Slave Relays and EGTS Fans to Start. 103 A4.01 (4.5/4.8)	M, S	5
g. Perform D/G Load Test on 1A-A D/G with a Subsequent High Crankcase Pressure Alarm. 064 A4.01 (4.0/4.3)	A, D, S	6
h. Shift Thermal Barrier Booster Pumps with a Subsequent Leak in the Component Cooling Water System. APE 026 AA1.05 (3.1/3.1)	A, L, N, S	8
In-Plant Systems* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Control SG Atmospheric Dump Valves from the Aux CR. APE.068 AA1.01 (4.3/4.5)	E, M	4S
j. Restore a 125 V Vital Battery Charger I During a Station Blackout. EPE 055 EA1.06 (4.1/4.5)	E, N	6
k. Re-establish Nonessential AND Essential Control Air to Containment. 004 A2.11 (3.6/4.2)	D, E, R	2
<p>* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all five SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for RO / SRO-I / SRO-U	
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(EN)gineered safety feature	$\geq 1 / \geq 1 / \geq 1$ (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		

- a. During a reactor startup, the examinee will select and withdraw Shutdown Bank A Control Rods to the fully withdrawn (225 to 231) steps position.
- b. With Normal letdown restored, you have been directed to remove excess letdown from service.
- c. With a LOCA in progress, the examinee will stop Containment Spray pumps, and complete the alignment for Charging Pump and Safety Injection pump for sump recirculation using ES-1.3 TRANSFER TO RHR CONTAINMENT. While aligning the ECCS pumps, the Containment Sump Valve Isolation FCV-74-3 fails to close. The examinee will use the alternate path to manually close the RHR Pump Suction from RWST FCV-63-1, while maintaining RHR pump flow.
- d. With a Loss of Secondary Heat Sink, RCS Bleed and Feed required in progress, the examinee will start the A Safety Injection pump. The examinee will use the alternate path to open Reactor Vessel Head Vent valves to establish once through cooling. The examinee will subsequently open the A Train Essential Raw Cooling Water valves and depressurize at least one of the intact Steam Generators.
- e. With an AOP-C.03 RAPID SHUTDOWN OR LOAD REDUCTION in progress, the examinee will start to shutdown the B Main Feed Pump. When the shutdown the B Main Feed Pump commences a fault in the #2 SG Feed Regulating valve will occur. The examinee will use the alternate path and take manual control of the #2 SG Feed Regulating valve using the Immediate Operator Actions of AOP-S.01 MAIN FEEDWATER MALFUNCTIONS.
- f. Following a plant accident, the examinee will initiate performance of EA-0-1, EQUIPMENT CHECKS FOLLOWING ESF ACTUATION and manually start at least one Emergency Gas Treatment System fan. Subsequently the examinee will use the alternate path and transition to EA-65-1, EGTS OPERATION to re-align dampers which failed to re-position due to a slave relay failure.
- g. While performing a D/G Operability Test using 1-SI-OPS-082-007.A, the examinee will parallel the 1 A-A Diesel Generator to the 1A-A 6.9 kv Shutdown Board. Subsequently, a high crankcase temperature condition occurs. The examinee will transition to the alarm response and use the alternate path and emergency stop within 3 minutes of the receipt of the alarm.
- h. While shifting Thermal Barrier Booster pumps, a leak in the Component Cooling Water system occurs inside the containment. The examinee will transition to the alarm response and ultimately to AOP-M.03 Loss Of Component Cooling Water and use the alternate path to isolate the RCP oil coolers and trip the Reactor Coolant Pumps.
- i. While the main control room is abandoned using AOP-C.04, SHUTDOWN FROM AUXILIARY CONTROL ROOM, the examinee will initiate a cool down of all Steam Generators from the Auxiliary Control Room.
- j. While recovering from a Station Blackout the examinee will align 125 V Vital Battery Charger I from the normal power supply and place the charger in service.
- k. While recovering from a Containment Isolation, both trains of Essential Control Air isolation valves and the Non-essential Control Air isolation valves are opened supplying air to containment.

Facility: Sequoyah Nuclear Station 1 &amp; 2

Date of Examination: 3/7/2016Exam Level: RO ☐ SRO-I ☒ SRO-U ☐Operating Test No: 2016-301

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. Withdraw Shutdown Banks. 001 A2.11 (4.4/4.7)	L, M, S	1
b. Not Examined	N/A	N/A
c. Align ECCS & CS Pumps to the Containment Sump. EPE 011 EA1.11 (4.2/4.2)	A, EN, L, M, S	3
d. Establish Once Through Cooling by Initiating RCS Bleed and Feed. EPE E05 EA 2.2 (3.7/4.3)	A, L, M, S	4P
e. Secure a Main Feed Pump. 059 A4.10 (3.9/3.8)	A, N, S	4S
f. Perform Post Trip Equipment Checks. 103 A4.01 (4.5/4.8)	M, S	5
g. Perform D/G Load Test on 1A-A D/G. 064 A4.01 (4.0/4.3)	A, D, S	6
h. Respond to a Leak in the Component Cooling Water System. APE 026 AA1.05 (3.1/3.1)	A, L, N, S	8

In-Plant Systems\* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. Control SG Atmospheric Dump Valves from the Aux CR. 2.1.20 (4.6/4.6)	E, M	4S
j. Restore 125 V Vital Battery Charger I During a Station Blackout. EPE 055 EA1.06 (4.1/4.5)	E, N	6
k. Re-establish Nonessential AND Essential Control Air to Containment. APE 065 AA1.03 (2.9/3.1)	D, E, R	8

\* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all five SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	$\geq 1 / \geq 1 / \geq 1$ (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	

Facility: Sequoyah Nuclear Station 1 &amp; 2

Date of Examination: 3/7/2016Exam Level: RO ☐ SRO-I ☐ SRO-U ☒Operating Test No: 2016-301

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. Not Examined	N/A	N/A
b. Not Examined	N/A	N/A
c. Align ECCS & CS Pumps to the Containment Sump. EPE 011 EA1.11 (4.2/4.2)	A,EN,L,M,S	3
d. Not Examined	N/A	N/A
e. Secure a Main Feed Pump. 059 A4.10 (3.9/3.8)	A,N,S	4S
f. Perform Post Trip Equipment Checks. 103 A4.01 (4.5/4.8)	M, S	5
g. Not Examined	N/A	N/A
h. Not Examined	N/A	N/A

In-Plant Systems\* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. Not Examined	N/A	N/A
j. Restore 125 V Vital Battery Charger I During a Station Blackout. EPE 055 EA1.06 (4.1/4.5)	E, N	6
k. Re-establish Nonessential AND Essential Control Air to Containment. APE 065 AA1.03 (2.9/3.1)	D, E, R	8

\* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all five SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$
(EN)gineered safety feature	$\geq 1 / \geq 1 / \geq 1$ (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	



Facility: Sequoyah Nuclear Plant 1 & 2		Date of Examination: 3/7/2016		Operating Test Number: 2016-301	
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).	203	15	AK	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	203	15	AK	
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	203	15	AK	
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	203	15	AK	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	203	15	AK	
2. Walk-Through Criteria		--	--	--	
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>initial conditions</li> <li>initiating cues</li> <li>references and tools, including associated procedures</li> <li>reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee</li> <li>operationally important specific performance criteria that include: <ul style="list-style-type: none"> <li>detailed expected actions with exact criteria and nomenclature</li> <li>system response and other examiner cues</li> <li>statements describing important observations to be made by the applicant</li> <li>criteria for successful completion of the task</li> <li>identification of critical steps and their associated performance standards</li> <li>restrictions on the sequence of steps, if applicable</li> </ul> </li> </ul>	203	15	AK	
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.	203	15	AK	
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.		203	15	AK	
Printed Name / Signature		Date			
a.	Author Michael Buckner / <i>Michael Buckner</i>	2/24/16			
b.	Facility Reviewer(*) Francis Schulte III / <i>Francis Schulte III</i>	2/24/16			
c.	NRC Chief Examiner (#) <i>Philly G. Capen</i> / <i>Philly G. Capen</i>	2/29/16			
d.	NRC Supervisor <i>Gerald J. McCoy</i> / <i>Gerald J. McCoy</i>	3/3/2016			
<p>NOTE: * The facility signature is not applicable for NRC-developed tests.</p> <p># Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.</p>					

Facility: Sequoyah Nuclear Plant 1&2 Date of Exam: 3/07/2016 Scenario Numbers: 3 / 4 / Operating Test No.: 2016-301				
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.	RB	JS	AK
2.	The scenarios consist mostly of related events.	RB	JS	AK
3.	Each event description consists of <ul style="list-style-type: none"> <li>the point in the scenario when it is to be initiated</li> <li>the malfunction(s) or conditions that are entered to initiate the event</li> <li>the symptoms/cues that will be visible to the crew</li> <li>the expected operator actions (by shift position)</li> <li>the event termination point (if applicable)</li> </ul>	RB	JS	AK
4.	The events are valid with regard to physics and thermodynamics.	RB	JS	AK
5.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	RB	JS	AK
6.	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.	RB	JS	AK
7.	The simulator modeling is not altered.	RB	JS	AK
8.	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.	RB	JS	AK
9.	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.	RB	JS	AK
10.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	RB	JS	AK
11.	The scenario set provides the opportunity for each applicant to be evaluated in each of the applicable rating factors. (Competency Rating factors as described on forms ES-303-1 and ES-303-3.)	RB	JS	AK
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).	RB	JS	AK
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	RB	JS	AK
Target Quantitative Attributes (Per Scenario; See Section D.5.d)		Actual Attributes	--	--
1.	Malfunctions after EOP entry (1-2)	2 / 2 /	RB	JS
2.	Abnormal events (2-4)	4 / 4 /	RB	JS
3.	Major transients (1-2)	2 / 1 /	RB	JS
4.	EOPs entered/requiring substantive actions (1-2)	2 / 2 /	RB	JS
5.	EOP contingencies requiring substantive actions (0-2)	1 / 1 /	RB	JS
6.	EOP based Critical tasks (2-3)	2 / 3 /	RB	JS
NOTE: <ul style="list-style-type: none"> <li>* The facility signature is not applicable for NRC-developed tests.</li> <li># Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.</li> </ul>				

Facility: Sequoyah Nuclear Plant 1 &amp; 2

Date of Exam: 3/7/2016

Operating Test No.: 2016-301

A P P L I C A N T	E V E N T  T Y P E	Scenarios													T O T A L	M I N I M U M (*)		
		3			4													
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		S	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														
<input checked="" type="checkbox"/> RC <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> X	RX					1								1	1	1	0	
	NOR	5												1	1	1	1	
		3				2,3								6	4	4	2	
	MAJ	7				7								2	2	2	1	
		1,3												2	0	2	2	
<input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> X <input type="checkbox"/> SF			5											1	1	1	0	
	NOR					1								1	1	1	1	
	I/C		1,4			2,3,4 5								6	4	4	2	
			6			7								2	2	2	1	
						2,3								2	0	2	2	
<input type="checkbox"/> SRO-U <input checked="" type="checkbox"/> X <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX													0	1	1	0	
	NOR	5				1								2	1	1	1	
	I/C	1,2,3 4				2,3,4 5								8	4	4	2	
	MAJ	7				7								2	2	2	1	
	TS	1,3				2,3								4	0	2	2	
<input checked="" type="checkbox"/> RO <input checked="" type="checkbox"/> X <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U	RX		1											1	1	1	0	
	NOR						1							1	1	1	1	
	I/C		2,3				4,5,8							5	4	4	2	
	MAJ		7				7							2	2	2	1	
	TS													0	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 (SRO-I) 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 SRO-I *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 one-for-one 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.
- For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: Sequoyah Nuclear Plant 1 &amp; 2 Date of Exam: 3/7/2016 Operating Test No.: 2016-301

Competencies	APPLICANTS															
	RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input checked="" type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	3	4		1	3	4		1	3	4		1	2	3	4
Interpret/Diagnose Events and Conditions	2.4, 5.6, 7.9, 10	1-7	2.4, 5.6, 7.8		2-10	1-7	2.4, 5.6, 7.8		2-10	1-7	2.4, 5.6, 7.8					
Comply With and Use Procedures (1)	1.2, 3.4, 5.6, 8.9, 10	1-7	1-8		1-10	1-7	1-8		1-10	1-7	1-8					
Operate Control Boards (2)	1.2, 3.4, 5.6, 8.9, 10	1-7	1-8		1.2, 3.4, 5.6, 8.9, 10	1-7	1-8									
Communicate and Interact	1-10	1-7	1-8		1-10	1-7	1-8		1-10	1-7	1-8					
Demonstrate Supervisory Ability (3)					1-10	1-7	1-8		1-10	1-7	1-8					
Comply With and Use Tech. Specs. (3)					5.7	1.3	2.3		5.7	1.3	2.3					

Notes:

(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

**Instructions:**

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Competency Rating factors as described on forms ES-303-1 and ES-303-3.)



Facility: Sequoyah														Date of Exam: March, 2016				
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				3	3				3	18	3	3	6	
	2	2	1	2				1	1				2	9	2	2	4	
	Tier Totals	5	4	5				4	4				5	27	5	5	10	
2. Plant Systems	1	2	3	3	3	3	3	2	2	3	2	2	28	2	3	5		
	2	1	1	1	1	1	1	1	1	0	1	1	10	1	-	2		
	Tier Totals	3	4	4	4	4	4	3	3	3	3	3	38	3	5	8		
3. Generic Knowledge and Abilities Categories					1		2		3		4		10	1	2	3	4	7
					2		2		3		3			1	2	2	2	

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

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  $\pm 1$  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 with justification; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.

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

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

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

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

8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (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 a category 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.

G\* Generic K/As

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A2	G*	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1		X				X	007EK2.03; Knowledge of the interrelations between a reactor trip and the following: Reactor trip status panel.  007EG2.4.6; Knowledge of EOP mitigation strategies.	3.5  4.7	
000008 Pressurizer Vapor Space Accident / 3						X	008AG2.4.14; Knowledge of general guidelines for EOP usage.	4.5	
000009 Small Break LOCA / 3		X					009EK2.03; Knowledge of the interrelations between the small break LOCA and the following: S/Gs.	3.0	
000011 Large Break LOCA / 3					X		011EA2.06; Ability to determine or interpret the following as they apply to a Large Break LOCA: That fan is in slow speed and dampers are in accident mode during LOCA.	4.0	
000015/17 RCP Malfunctions / 4			X				015AK3.03; Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Sequence of events for manually tripping reactor and RCP as a result of an RCP malfunction.	3.7	
000022 Loss of Rx Coolant Makeup / 2						X	022AG2.2.4; (multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.	3.6	
000025 Loss of RHR System / 4	X						025AK1.01; Knowledge of the operational implications of the following concepts as they apply to Loss of Residual Heat Removal System: Loss of RHRS during all modes of operation.	3.9	
000026 Loss of Component Cooling Water / 8					X		026AA2.01; Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: Location of a leak in the CCWS.	2.9	
000027 Pressurizer Pressure Control System Malfunction / 3						X	027AG2.1.7; Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	
000029 ATWS / 1		X					029EK2.06; Knowledge of the interrelations between the following and an ATWS: Breakers, relays, and disconnects.	2.9	
000038 Steam Gen. Tube Rupture / 3						X	038EG2.1.23; Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4					X		040AA2.04; Ability to determine and interpret the following as they apply to the Steam Line Rupture: Conditions requiring ESFAS initiation.	4.7	
000054 (CE/E06) Loss of Main Feedwater / 4				X			054AA1.04; Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFV): HPI, under total feedwater loss conditions.	4.4	
000055 Station Blackout / 6				X			055EA1.07; Ability to operate and monitor the following as they apply to a Station Blackout: Restoration of power from offsite.	4.3	
000056 Loss of Off-site Power / 6					X		056AA2.56; Ability to determine and interpret the following as they apply to the Loss of Offsite Power: RCS T-ave.	3.7	
000057 Loss of Vital AC Inst. Bus / 6					X		057AA2.08; Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: Reactor power digital display and remote flux meter.	3.4	

000058 Loss of DC Power / 6				X			058AA1.02; Ability to operate and / or monitor the following as they apply to the Loss of DC Power: Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector.	3.1	
000062 Loss of Nuclear Svc Water / 4						X	062AG2.4.47; Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	4.2	
000065 Loss of Instrument Air / 8					X		065AA2.07; Ability to determine and interpret the following as they apply to the Loss of Instrument Air: Whether backup nitrogen supply is controlling valve position.	2.8	
W/E04 LOCA Outside Containment / 3	X						WE04EK1.2; Knowledge of the operational implications of the following concepts as they apply to the (LOCA Outside Containment): Normal, abnormal and emergency operating procedures associated with (LOCA Outside Containment).	3.5	
W/E11 Loss of Emergency Coolant Recirc. / 4			X				WE11EK3.2; Knowledge of the reasons for the following responses as they apply to the (Loss of Emergency Coolant Recirculation): Normal, abnormal and emergency operating procedures associated with (Loss of Emergency Coolant Recirculation).	3.5	
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	X						WE05EK1.1; Knowledge of the operational implications of the following concepts as they apply to the (Loss of Secondary Heat Sink): Components, capacity, and function of emergency systems.	3.8	
000077 Generator Voltage and Electric Grid Disturbances / 6			X				077AK3.01; Knowledge of the reasons for the following responses as they apply to Generator Voltage and Electric Grid Disturbances: Reactor and turbine trip criteria.	3.9	
K/A Category Totals:	3	3	3	3	3/3	3/3	Group Point Total:	18/6	



W/E16 High Containment Radiation / 9					X		WE16EA2.1; Ability to determine and interpret the following as they apply to the (High Containment Radiation): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	3.3	
BW/A01 Plant Runback / 1									
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4									
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4						X	WE10EG2.4.20; Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4			X				WE08EK3.4; Knowledge of the reasons for the following responses as they apply to the (Pressurized Thermal Shock): RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facility's license and amendments are not violated.	3.4	
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:	2	1	2	1	1/2	2/2	Group Point Total:		9/4

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)										Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G*	K/A Topic(s)	IR	#
003 Reactor Coolant Pump								X			X	003G2.2.36; Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.  003A2.04; Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effects of fluctuation of VCT pressure on RCP seal injection flow.	3.1  2.8	
004 Chemical and Volume Control						X						004K6.27; Knowledge of the effect of a loss or malfunction on the following CVCS components: Purpose of RHR relief and isolation valves.  004K5.09; Knowledge of the operational implications of the following concepts as they apply to the CVCS: Thermal shock: high component stress due to rapid temperature change.	3.4  3.7	
005 Residual Heat Removal					X							005K5.05; Knowledge of the operational implications of the following concepts as they apply the RHRs: Plant response during "solid plant": pressure change due to the relative incompressibility of water.	2.7	
006 Emergency Core Cooling								X				006A2.05; Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Improper amperage to the pump motor.  006K6.18; Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Subcooling margin indicators.	3.4  3.6	
007 Pressurizer Relief/Quench Tank					X							007K5.02; Knowledge of the operational implications of the following concepts as they apply to PRTS: Method of forming a steam bubble in the PZR.	3.1	
008 Component Cooling Water									X			008A3.08; Ability to monitor automatic operation of the CCWS, Including: Automatic actions associated with the CCWS that occur as a result of a safety injection signal.	3.6	
010 Pressurizer Pressure Control		X										010K2.01; Knowledge of bus power supplies to the following: PZR heaters.  010G2.1.32; Ability to explain and apply system limits and precautions.	3.0  4.0	



012 Reactor Protection	X																	012K1.05; Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: ESFAS.	3.8	
																		012A2.04; Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Erratic power supply operation.	3.1	
013 Engineered Safety Features Actuation																		013A4.01; Ability to manually operate and/or monitor in the control room: ESFAS-initiated equipment which fails to actuate.	4.5	
																		013K3.03; Knowledge of the effect that a loss or malfunction of the ESFAS will have on the following: Fuel.	4.4	
022 Containment Cooling																		022K4.05; Knowledge of CCS design feature(s) and/or interlock(s) which provide for the following: Containment cooling after LOCA destroys ventilation ducts.	2.6	
																		022K3.02; Knowledge of the effect that a loss or malfunction of the CCS will have on the following: Containment instrumentation readings.	2.9	
025 Ice Condenser																		025K4.02; Knowledge of ice condenser system design feature(s) and/or interlock(s) which provide for the following: System control.	2.8	
026 Containment Spray																		026A1.04; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CSS controls including: Containment humidity.	3.1	
039 Main and Reheat Steam	X																	039K1.05; Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: T/G.	2.5	
																		039K4.02; Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following: Utilization of T-ave. program control when steam dumping through atmospheric relief/dump valves, including T-ave. limits.	3.1	
059 Main Feedwater																		059G2.1.32; Ability to explain and apply system limits and precautions.	3.8	
																		059G2.1.43; Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.	4.3	

061 Auxiliary/Emergency Feedwater			X											061K3.01; Knowledge of the effect that a loss or malfunction of the AFW will have on the following: RCS.	4.4	
						X								061K6.01; Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners.	2.5	
062 AC Electrical Distribution									X					062A3.04; Ability to monitor automatic operation of the ac distribution system, including: Operation of inverter (e.g., precharging synchronizing light, static transfer).	2.7	
												X		062G2.2.38; Knowledge of conditions and limitations in the facility license.	4.5	
063 DC Electrical Distribution										X				063A4.01; Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses.	2.8	
064 Emergency Diesel Generator			X											064K2.02; Knowledge of bus power supplies to the following: Fuel oil pumps.	2.8	
073 Process Radiation Monitoring							X							073A1.01; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including: Radiation levels.	3.2	
076 Service Water								X						076A2.01; Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS.	3.5	
078 Instrument Air			X											078K2.02; Knowledge of bus power supplies to the following: Emergency air compressor.	3.3	
103 Containment										X				103A3.01; Ability to monitor automatic operation of the containment system, including: Containment isolation.	3.9	
K/A Category Point Totals:		2	3	3	3	3	3	2	2/2	3	2	2/3	Group Point Total:		28/5	





056 Condensate									X				056A2.04; Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps.	2.6	
068 Liquid Radwaste															
071 Waste Gas Disposal															
072 Area Radiation Monitoring											X		072A3.01; Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment.	2.9	
075 Circulating Water															
079 Station Air				X									079K4.01; Knowledge of SAS design feature(s) and/or interlock(s) which provide for the following: Cross-connect with IAS.	2.9	
086 Fire Protection															
K/A Category Point Totals:	1	1	1	1	1	1	1	1/1	0	1	1/2		Group Point Total:		10/3

Facility: Sequoyah			Date of Exam: March, 2016			
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.28	Knowledge of the purpose and function of major system components and controls.	4.1			
	2.1.42	Knowledge of new and spent fuel movement procedures.	2.5			
	2.1.30	Ability to locate and operate components, including local controls.			4.0	
	Subtotal			2		1
2. Equipment Control	2.2.39	Knowledge of $\leq$ to one hour Technical Specification action statements for systems.	3.9			
	2.2.43	Knowledge of the process used to track inoperable alarms.	3.0			
	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	
	2.2.14	Knowledge of the process for controlling equipment configuration or status.			4.3	
	Subtotal			2		2
3. Radiation Control	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2			
	2.3.11	Ability to control radiation releases.	3.8			
	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2			
	2.3.6	Ability to approve release permits.			3.8	
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.			3.8	
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.26	Knowledge of facility protection requirements, including fire brigade and portable fire-fighting equipment usage.	3.1			
	2.4.29	Knowledge of the emergency plan.	3.1			
	2.4.46	Ability to verify that the alarms are consistent with the plant conditions.	4.2			
	2.4.14	Knowledge of general guidelines for EOP usage.			4.5	
	2.4.19	Knowledge of EOP layout, symbols, and icons.			4.1	
	Subtotal			3		2
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	022G2.4.14	Overselected. Replaced by 08AG2.4.14.
1/1	WE12EK2.2	Overselected. Replaced by 029EK2.06.
1/1	057AA2.08	No real digital indicators are in the MCR and the PS at the HSD panel is considered minutia. Rejected and randomly reselected 057AA2.20.
1/2	005AK1.06	Overselected. Replaced by 028AK1.01.
1/2	024AG2.1.3	Unable to write an operationally valid question. Rejected and randomly reselected 024AG2.1.31.
1/2	051AA2.02	Overselected. Replaced by 037AA2.12.
1/2	060AK2.01	Too similar to 061AA1.01. Rejected and randomly reselected 068AA1.12..
1/2	061AA1.01	Due to plant design, this K/A overlaps with 072A3.01. Rejected and randomly reselected 069AK2.03.
1/2	61AA2.02	Overselected. Replaced by WE16EA2.1.
2/1	003A2.04	Due to plant design unable to write an operationally valid question. Rejected and randomly reselected 003A2.05.
2/1	003K6.01	Overselected. Replaced by 061K6.01.
2/1	005K5.09	Overselected. Replaced by 004K5.09.
2/1	062K3.01	Overselected. Replaced by 022K3.02.
2/1	078K4.01	Inadvertently left out system 25. This K/A was randomly chosen.
2/1	078G2.1.27	Unable to write to SRO level. Replaced by 059G2.1.43.
2/2	015G2.4.1	Unable to write to SRO level. Replaced by 014G2.1.45.
2/2	068A3.01	Equipment not used. Replaced with 072A3.01.
1/2	051AG2.4.9	Unable to write an operationally valid question. Replaced with 051AG2.1.34.

2/2	007K5.02	Not direct connection to the PRT when drawing a PZR bubble. Rejected and randomly reselected 072A3.01.
2/2	022K4.05	Not a design feature with Ice Condenser containments. Rejected and randomly reselected 025K5.01.
2/2	026A.104	Not a design feature with Ice Condenser containments. Rejected and randomly reselected 026.K4.07.
2/2	034G2.4.30	Notifying off-site agencies is not an RO task. Rejected and randomly reselected 034G2.4.31.
3	G2.4.26	Not an RO task at SQN. Unable to write a valid question. Rejected and randomly reselected G2.4.21.
1/1	07EG2.4.6	Unable to write SRO level question. Replaced with 07G2.2.37.
3	G2.1.42	Unable to write RO level for fuel movement K/A. Swapped with G2.1.30 (below).
3	G2.1.30	Unable to write SRO level question. Swapped with G2.1.42 (above).
3	G2.3.13	Too similar to G2.3.12. Replaced with G2.3.15.
T1/G1	008AG2.4.14	Not SRO level. Changed with 008AG2.4.31.
T1/G1	011EA2.06	Plant design does not have multiple speeds. Changed with 011EA2.01
T1/G2	032AA2.09	Not per plant design. Plant does not use BF <sub>3</sub> instruments anymore. Changed with WE15EA2.1.
T2/G2	026A1.04	Not a design feature with Ice Condenser containments. Changed with 026K4.07.

T1/G1	007EG2.2.37	Unable to write question at SRO level. Replaced with 007EG2.2.44.
T1/G1	056AA2.56	Unable to write question at SRO level. Replaced with 056AA2.44.
T2/G1	039K1.05	Unable to write an operationally valid question. Replaced with 039K1.01.
T2/G2	016G2.2.44	Unable to write an operationally valid question. Replaced with 034G.2.4.31.
T2/G2	041K6.09	Unable to write an operationally valid question. Replaced with 041K6.02.
T3	2.2.14	Unable to write question at SRO level. Replaced with 2.2.37.

Facility: Sequoyah Nuclear Station Units 1 & 2		Date of Exam: 03/07/2016		Exam Level: RO X	SRO X																															
Item Description				Initial																																
				a	b*	c*																														
1.	Questions and answers are technically accurate and applicable to the facility			JSB	JS	JSK																														
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.			JSB	JS	JSK																														
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401			JSB	JS	JSK																														
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).					JSK																														
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input type="checkbox"/> the audit exam was systematically and randomly developed; or <input type="checkbox"/> the audit exam was completed before the license exam was started; or <input type="checkbox"/> the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain)			JSB	JS	JSK																														
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	JSB	JS	JSK																													
		55 / 10	1 / 1	19 / 14																																
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		JSB	JS	JSK																													
		35 / 5	40 / 20																																	
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.			JSB	JS	JSK																														
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			JSB	JS	JSK																														
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.			JSB	JS	JSK																														
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			JSB	JS	JSK																														
<table border="0"> <tr> <td></td> <td colspan="4">Printed Name / Signature</td> <td>Date</td> </tr> <tr> <td>a. Author</td> <td colspan="4">Michael Buckner / <u>Michael Buckner</u></td> <td>3/1/16</td> </tr> <tr> <td>b. Facility Reviewer (*)</td> <td colspan="4">Francis Schulte III / <u>Francis Schulte III</u></td> <td>3/1/16</td> </tr> <tr> <td>c. NRC Chief Examiner (#)</td> <td colspan="4">Philip G. Capchett / <u>Philip G. Capchett</u></td> <td>3/2/16</td> </tr> <tr> <td>d. NRC Regional Supervisor</td> <td colspan="4">Gerald J. Hefley / <u>Gerald J. Hefley</u></td> <td>3/3/2016</td> </tr> </table>								Printed Name / Signature				Date	a. Author	Michael Buckner / <u>Michael Buckner</u>				3/1/16	b. Facility Reviewer (*)	Francis Schulte III / <u>Francis Schulte III</u>				3/1/16	c. NRC Chief Examiner (#)	Philip G. Capchett / <u>Philip G. Capchett</u>				3/2/16	d. NRC Regional Supervisor	Gerald J. Hefley / <u>Gerald J. Hefley</u>				3/3/2016
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Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required																																				

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6.	7.	8.  Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q= K/A				SRO Only
1															E S	007 Reactor Trip - Stabilization EK2.03 Knowledge of the interrelations between a reactor trip and the following: Reactor trip status panel  2/19 Looks OK. Maybe add the current Rx level is at a value "below the Rx trip setpoint". Added "the crew has completed the immediate actions". 3/2/16 Remove "as a result of an inadvertent Train "A" Feedwater Isolation Signal" from the 1 <sup>st</sup> bullet. Unnecessary and leading information.
2						X									U S	009 Small Break LOCA EK 2.03 Knowledge of the interrelations between the small break LOCA and the following: S/Gs.  Choice C & D not very plausible. Who believes that during a DBLOCA that no core uncover occurs? 2/19 Change C(2) to 700 degrees.
3						X									E S	015 RCP Malfunctions AK3.03 Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Sequence of events for manually tripping reactor and RCP as a result of an RCP malfunction.  A & D distractor does not appear very plausible. Why would you only stop one RCP and not all RCPs for SG inventory control? 2/19 After on-site discussion, agree with plausibility analysis. Removed the 2 <sup>nd</sup> bullet, not needed.
4												X			U S	022 Loss of Reactor Coolant Makeup AG2.2.4 (multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.  Low LOD for 1 <sup>st</sup> half and does not meet the KA. 2/19 Meets the KA. Misread, U2 is aligned, not U1.
5															E S	025 Loss of Residual Heat Removal (RHRS) AK1.01 Knowledge of the operational implications of the following concepts as they apply to Loss of Residual Heat Removal System: Loss of RHRS during all modes of operation.  Need to add "minimum" to the time question; otherwise, D is also correct. 2/19 Changes made as noted.
6															E S	026 Loss of Component Cooling Water (CCWS) AA2.01 Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: Location of a leak in the CCWS.  "SUPPLY" is spelled out on the annunciator window. 2/19/16 Changes made as noted.
7															E S	027 Pressurizer Pressure Control System (PZR PCS) Malfunction AG2.1.7 Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation.  WHICH should only have the W capitalized. Add the word "master" to A&B to define which controller you are talking about.
8															E S	029 Anticipated Transient Without Scram (ATWS) EK2.06 Knowledge of the interrelations between the and the following an ATWS: Breakers, relays, and disconnects.  This is stated as a modified question, need to see bank question to get credit for "modified".  Can the B Rx Trip brkr be closed at the same time as the bypass brkr? If not, you don't need it in the stem. Also, does this knowledge overlap with SRO question 76? Verified it did not overlap. Also clarified this as a bank question vs. modified.
9															E S	054 Loss of Main Feedwater (MFW) AA1.04 Ability to operate and/or monitor the following as they apply to the Loss of Main Feedwater (MFW): HPI, under total feedwater loss conditions.  Plausibility states at step 3 go to step 17, should be step 4 and step 18 is bleed & feed step. Changes made as noted.



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/NU/E/S	7. B/M/NU/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=K/A	SRO Only			
10						X								E S	055 Loss of Offsite and Onsite Power (Station Blackout) EA1.07 Ability to operate and monitor the following as they apply to a Station Blackout: Restoration of power from offsite  Replace "is/are" with "will". Made changes as noted.
11														E S	057 Loss of Vital AC Instrument Bus AA2.20 Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: Interlocks in effect on loss of Vital AC Instrument Bus that must be bypassed to restore normal equipment operation.  Wrong nomenclature. Instrument Board is written as 1-1 vice 1-l. Plausibility statement does not discuss the bypass valves. Changes made as noted.
12														E S	058 Loss of DC Power AA1.02 Ability to operate and/or monitor the following as they apply to the Loss of DC Power: Static inverter dc input breaker, frequency meter, ac output breaker, and ground fault detector.  D plausibility? Is there a transformer where this occurs? 2/19/16 After discussion, agreed a novice operator may not know the transfer possibilities associated with static transfer switch.
13											X			U E S	062 Loss of Nuclear Service Water AG2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.  What control room reference material is used to answer this question? In stem, information at ERCW is in normal alignment is a stated but unnecessary. Added the diagnostics section as a reference for the question.
14														E S	065 Loss of Instrument Air AA2.07 Ability to determine and interpret the following as they apply to Loss of Loss of Instrument Air: Whether backup air supply is controlling valve position.  Appears to test different knowledge area than question 11. Is there any need for the stem statements? Looks like the question stands by itself. 2/19/16 Changes made as noted.
15														E S	W/E04 LOCA Outside Containment EK1.2 Knowledge of the operational implications of the following concepts as they apply to LOCA Outside Containment: Normal, abnormal, and emergency operating procedures associated with (LOCA Outside Containment).  Deleted bullet "Actions being taken to isolate leak"- validator comment was this implied operators were physically performing actions (which made D a correct answer); Changed "Ensure" to "Verify" to match wording in procedure.  2/29/16 Verified changes made.
16														S	W/E11 Loss of Emergency Coolant Recirculation EK3.2 Knowledge of the reasons for the following responses as they apply to the (Loss of Emergency Coolant Recirculation): Normal, abnormal and emergency operating procedures associated with (Loss of Emergency Coolant Recirculation).  Looks OK.
17														E S	W/E05 Loss of Secondary Heat Sink EK1.1 Knowledge of the operational implications of the following concepts as they apply to the (Loss of Secondary Heat Sink): Components, capacity, and function of emergency systems.  Revise answers to SGs 1 & 2 or SGs 3 & 4. 2/19/16 Agreed question is SAT as is.
18						X								E S	077 Generator Voltage and Electric Grid Disturbances AK3.01 Knowledge of the reasons for the following responses as they apply to Generator Voltage and Electric Grid Disturbances: Reactor and turbine trip criteria  What procedure do you have where a limit is based on not exceeding a TS limit? Procedures usually have limits that prevent exceeding a TS limit. Plausibility of A? Since the EDG is in standby and not connected to bus, seems not plausible that low grid voltage would affect EDG frequency concerns. Also, "Unit1" needs a space between the two for consistency. 2/19/16 Demonstrated other procedures with TS limit given as limiting condition. Distractor A changed to remove EDG and replace with S/D board to improve plausibility.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6.	7.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=K/A	SRO Only	B/M/N/U	E/S	
19															<p>E 024 Emergency Boration AG2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.</p> <p>S Is there an alarm associated with the thermal OL choice? If so, someone would reason that since this alarm is not given then it is not plausible. In stem, should 1-HS-62-138A in the last condition be 1-FCV-62-138A, and in the stem should it also read 1-FCV-62-138A? 2/19/16 No alarm comes in, both lights would be out. HS nomenclature is correct.</p>
20		1				X									<p>U 028 Pressurizer (PZR) Level Control Malfunction AK1.01 Knowledge of the operational implications of the following concepts as they apply to Pressurizer Level Control Malfunction: PZR reference leak abnormalities.</p> <p>E Three different questions, is this needed to meet the K/A? Seems two questions should be enough for plausibility and K/A match. Also, noun name for 1-LI-68-320 not given. LOD=1, GFES question? This needs to be modified to ask something site unique. I answered this using GFES knowledge and nothing else. If you made it a non-controlling reference leg input, the LOD&gt;1.</p> <p>S 2/19/16 Created different question with only two level instruments and a non-controlling channel has a leak.</p>
21						X									<p>E 036 Fuel Handling Accidents AK1.02 Knowledge of operational implications of the following concepts as they apply to Fuel Handling Accidents: SDM</p> <p>S C not very plausible without a high rad condition in containment. Can a high rad alarm be added in the stem to make this more plausible? Modified distractor C to add "enter M.04" to improve plausibility and rearrange wording on A for psychometrics.</p>
22															<p>S 037 Steam Generator (S/G) Tube Leak AK1.02 Knowledge of the operational implications of the following concepts as they apply to Steam Generator Tube Leak: Leak rate vs. pressure drop</p> <p>Looks OK.</p>
23						X									<p>U 069 Loss of Containment Integrity AK2.03 Knowledge of the interrelationships between the Loss of Containment Integrity and the following: Personnel Access hatch and emergency access hatch.</p> <p>E With all the capitalization in the choices, the ONLYs are hard to see. Is it necessary to capitalize TS titles? B &amp; C plausibility? Why would anyone think that 3.6.1 doesn't apply? You tell them in the stem that containment leakage rate is exceeded? You also tell them that both the inner &amp; outer air lock doors are open? You don't explain why someone would assume that 3.6.2 does not apply. Change stem to cold shutdown conditions?</p> <p>S 2/19/16 Revised question so that now no TS condition applies and bolded logical connectors in distractors.</p>
24															<p>S 068 Control Room Evacuation AA1.12 Ability to operate and/or monitor the following as they apply to the Control Room Evacuation: Auxiliary shutdown panel controls and indicators</p> <p>Looks OK.</p>
25															<p>E 076 High Reactor Coolant Activity AK3.06 Knowledge of the reasons for the following responses as they apply to High Reactor Coolant Activity: Actions contained in EOP for high reactor coolant activity</p> <p>S Naïve examiner would choose lowest value. Change 2<sup>nd</sup> choice to 0.1uCi/gm (I-131 value). 2/19/16 Agreed with examiner's logic as to why choices as written are valid.</p>
26						X									<p>E W/E10 Natural Circulation with a Steam Void in the Vessel with/without RVLIS EK 1.1 Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation with Steam Void in Vessel with/without RVLIS): Components, capacity, and function of emergency systems.</p> <p>S The procedure states: "assists in cooling upper head". Change to reflect same terminology. "D" plausibility? Where are these words in any discussion of collapsing voids in the Rx head? 2/19/16 Changes made as noted. Also changed distractor D to increase plausibility.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6.	7.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=SRO	K/A Only	B/M/NU	E/S	
27														S	<p>W/E08 Pressurized Thermal Shock</p> <p>EK3.4 Knowledge of the reasons for the following responses as they apply to the (Pressurized Thermal Shock): RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.</p> <p>How is establish normal charging "reducing injection flow"? Assumes applicant knows that SI has been secured at this point? Need to add information about securing SI in the stem?</p> <p>2/19/16 Reducing injection flow by throttling thru charging flow control vs. full CCPIT flow. Securing SI is part of establishing charging flow. Question is SAT as written.</p>
28											X			U S	<p>003 Reactor Coolant Pump</p> <p>G2.2.36 Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.</p> <p>Doesn't meet the KA. Where is the LCO connection?</p> <p>2/22/16 Formatting. Periods missing from 1<sup>st</sup> 3 bulleted items. Spell out PRG. Change 1<sup>st</sup> answer to say LCO met, no action(s) required.</p> <p>Changed "C" distractor to restore loop to OPERABLE status within 1 hour. Previous distractor of restoring pump to operation would have actually caused the LCO to be MET and was therefore a correct answer.</p>
29														E S	<p>004 Chemical and Volume Control System (CVCS)</p> <p>K6.27 Knowledge of the effect of a loss or malfunction on the following CVCS components: Purpose of RHR relief and isolation valves.</p> <p>Need noun names for FCV-74-1 and 2 added to stem. B Plausibility? How does securing RHR letdown flow improve RCP seal water temperature?</p> <p>2/22/16 New KA selected. K1.01</p> <p>Change to Mode 4, 310 degrees is not a Mode 3 condition. Change 2<sup>nd</sup> question to remove GFES component. Ask about whose permission from the procedure is required.</p> <p>2/19/16 Changed to Mode 5 and removed RCP pump identifier (#1), not needed. Licensee identified valid criteria for 2<sup>nd</sup> question to be left as is.</p>
30						X								E S	<p>004 Chemical and Volume Control System (CVCS)</p> <p>K5.09 Knowledge of the operational implications of the following concepts as they apply to the CVCS: Thermal Shock: high component stress due to rapid temperature change.</p> <p>Not sure about the plausibility of D. I think everyone knows that the main spray is more efficient by definition over aux spray.</p> <p>2/19/16 Remove "so rapid" from D distractor to improve plausibility.</p>
31														E S	<p>005 Residual Heat Removal System (RHRS)</p> <p>K5.05 Knowledge of the operational implications of the following concepts as they apply to the RHRS: Plant response during "solid plant:" pressure change due to the relative incompressibility of water.</p> <p>Is picture needed to answer question or to demonstrate that the letdown pressure control valve fails open? Is this something the student should know based on conditions in the stem? A plausibility? How does inventory change if you are in solid plant ops?</p> <p>2/19/16 Agreed to leave the picture in but remove the valve figure showing the air isolation failure symbol from view.</p>
32P														E S	<p>006 Emergency Core Cooling System (ECCS)</p> <p>A2.05 Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Improper amperage to the pump.</p> <p>Choice B(2) doesn't make since. If everything is OK, why would you check the lineup? Also, who is directing? The procedure or the SRO? Not sure if D(2) is plausible as a lineup issue. Novice operator who thought that C(2) was true and that D(2) was also a lineup relationship, they would not pick D(2) because it's the same choice but related to just one lineup problem.</p> <p>2/19/16 Added "in accordance with ES-0.5" to the stem question to clarify procedure usage. Also added "ensure SI pump recirc valves FCV-1-63-3, FCV-1-63-4, and 1-63-175 are closed" to improve B distractor plausibility.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws					5. Other	6.	7.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=SROB/M/NU/E/S				
33															E	006 Emergency Core Cooling System (ECCS) K6.18 Knowledge of the effect of a loss or malfunction on the following will have on the ECCS: Subcooling margin indicators  S Is there a reason to include "(Subcooling margin equals zero)"? 2/19/16 Needed to clarify between "0" subcooling and minimum required subcooling (40 degrees F) being lost.
34															E	007 Pressurizer Relief Tank / Quench Tank System (PRTS) A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: Maintaining quench tank water level within limits.  S Is mode 1 statement needed? If not, shorten question to "IAW 1-SO-65-1, WOOF..." 2/19/16 Made changes as noted.
35															S	008 Component Cooling Water System (CCWS) A3.08 Ability to monitor automatic operation of the CCWS, including: Automatic actions associated with the CCWS that occur as a result of a safety injection signal.  Looks OK.
36															S	010 Pressurizer Pressure Control System (PZR PCS) K2.01 Knowledge of bus power supplies to the following: PZR heaters Reviewed SAT.
37															S	012 Reactor Protection System (RPS) K1.05 Knowledge of the physical connections and/or cause effect relationships between the RPS and the following: ESFAS 2/19/16 Moved "Rx trip & SI" to the stem. Added word "Containment" to "Containment Isolation Phase..." in answer choices.
38															E	013 Engineered Safety Features Actuation (ESFAS) A4.01 Ability to manually operate and/or monitor in the control room: ESFAS-initiated equipment which fails to actuate.  S Stem missing noun name for FCV-63-1. Is "when an event occurred" needed? 2/19/16 Yes, needs to be in the question stem. 41% sump level not needed, removed. Added sump level alarm instead.
39															E	013 Engineered Safety Features Actuation K3.03 Knowledge of the effect that a loss or malfunction of the ESFAS will have on the following: Containment  S 2/19/16 Changed C&D to "auto close" to make more operationally valid.
40P															S	025 Ice Condenser System K5.01 Knowledge of operational implications of the following concepts as they apply to the ice condenser system: Relationships between pressure and temperature. SAT
41															E	022 Containment Cooling System K3.02 Knowledge of the effect that a loss or malfunction of the CCS will have on the following: Containment instrumentation readings.  S First half of question is GFES related. Overall question has a LOD>1 and is a valid KA; therefore, acceptable.
42															E	025 Ice Condenser system K4.02 Knowledge of ice condenser system design feature(s) and/or interlock(s) which provide for the following: System control D plausibility. This would bypass containment isolation.  S 2/19/16 Changed distractor D to a relief valve.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N/U/E/S	7. B/M/N/U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=K/A	SRO Only			
43				X											<p>026 Containment Spray System (CSS) K4.07 Knowledge of the CSS design feature(s) and/or interlock(s) which provide for the following: Adequate level in containment sump for suction (interlock)</p> <p>Overlap with Q38. Same knowledge tested. All levels on Q43 are less than the levels given in Q38. Would could therefore determine that it is likely that level criteria is met to be open for Q38. 2/19/16 Different valves in Q38 then in this question. Removed the word "electrical" from before INTERLOCK. Deleted "IAW ES-1.3" from start of question to make it more technically accurate.</p>
44P											X				<p>039 Main and Reheat Steam System (MRSS) K1.06 Knowledge of the physical connections and/or cause-effect relationships between Main Steam/Reheat Steam system and the following: T/G Condenser Steam Dump</p> <p>Doesn't require knowledge of the KA to answer. GFES LOD=1 KA subsequently rejected.</p> <p>2/1/16 New KA selected: 039K1.01 Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: S/G. SAT</p>
45															<p>039 Main and Reheat Steam System (MRSS) K4.02 Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following: Utilization of Tave program control when steam dumping through atmospheric relief/dump valves, including Tave limits.</p> <p>Do you need to give the no load Tave value in the stem of the question? Shouldn't the applicants know this value? 2/19/16 Removed no load Tave. Also added 1005 psig bullet in the stem.</p>
46P															<p>059 Main Feedwater (MFW) G 2.1.32 Ability to explain and apply system limits and precautions.</p> <p>Will need to verify this is a P&amp;L as stated from the procedure. Since second part of the question discusses a MFWP trip, implies that there is a trip so seems students may be directed to select "will" for first part of question. Is "if the "B" MFWP does trip" needed to make the question correct? 2/19/16 Removed "if B MFP trips from part2" and added "not pumping forward" to stem to clarify current status of MFP.</p>
47															<p>061 Auxiliary/Emergency Feedwater System (AFW) K3.01 Knowledge of the effect that a loss or malfunction of the AFW will have on the following: RCS</p> <p>D plausibility. D is not a plant system. Wording of C compared to the others. Should start out with potential loss of PZR PORVs and safety valves.... 2/19/16 Slight wording changes to question and distractors to meet the above intent. 3/2/16 Add "IAW FRH-H.1"</p>
48															<p>061 Auxiliary / Emergency Feedwater (AFW) System K6.01 Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners. SAT</p>
49				X											<p>062 AC Electrical Distribution A3.04 Ability to monitor automatic operation of the AC distribution system, including: Operation of inverter (e.g. precharging synchronizing light, static transfer).</p> <p>Overlap w/ Q12? Same component but different knowledge.</p>
50															<p>063 D.C Electrical Distribution A4.01 Ability to manually operate and/or monitor in the control room: Major breakers and control power fuses</p> <p>Does knowing the plant is at 100% add anything to the question? If not, remove. 2/19/16 Changes made as noted.</p>
51															<p>064 Emergency Diesel Generator (EDG) K2.02 Knowledge of the bus power supplies to the following: Fuel oil pumps.</p> <p>Is the "Unit 1 in Mode 3" information required? 2/19/16 Not needed, removed.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws					5. Other		6. B/M/N/U/E/S	7. E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only				
52						X											E S 073 A1.01 Process Radiation Monitoring (PRM) System ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including: Radiation levels  Not sure how plausible the "rapidly" increasing count rate portion is? 2/19/16 Modified to remove "rapidly" from distractor B to improve plausibility.
53																	S 076 Service Water System (SWS) A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the SWS, and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunction or operations: Loss of SWS.  Reviewed SAT.
54																	S 078 Instrument Air System (IAS) K2.02 Knowledge of the bus power supplies to the following: Emergency air compressor.  Reviewed SAT.
55																	S 103 Containment System A3.01 Ability to monitor automatic operation of the containment system, including: Containment isolation.  Reviewed SAT.
56																	E S 002 Reactor Coolant System (RCS) K3.03 Knowledge of the effect that a loss or malfunction of the RCS will have on the following: Containment  Choice A is a subset of B. A PZR Safety valve failed open is a LOCA. It may be referenced as a steam space LOCA, but is a Small Break LOCA. All of the other choices are specific locations.  2/19/16 Changed distractor B to a cold leg break. Reformatted, choice B now choice A.
57																	E S 015 Nuclear Instrumentation System K2.01 Knowledge of bus power supplies to the following: NIS channels, components, and interconnections  Choice plausibility statement has all choices as "incorrect". 2/19/16 Corrected plausibility statements.
58																	E S 017 In-Core Temperature Monitoring System (ITM) K1.01 Knowledge of the physical connections and/or cause effect relationships between ITM and the following systems: Plant computer  2 <sup>nd</sup> column setup for choice selection needs to be aligned. Also, should the lower scale for all 4 choices start with 200 °F? 2/19/16 Corrected column placement. Following discussion for lower temp criteria, no other changes required.
59																	E S 028 Hydrogen Recombiner and Purge Control System (HRPS) A1.02 Ability to predict and/or monitor changes in parameter (to prevent exceeding design limits) associated with operating the HRPS controls including: Containment pressure  Most plants have removed their H2 recombiners. Check against the procedure to verify this sequence makes any since. 2/19/16 Removed unnecessary wording from choice C& D.
60																	E S 034 Fuel Handling G2.4.31 Knowledge of annunciator alarms, indications, or response procedures.  Shouldn't the rad monitor be identified by noun name? 2/19/16 It is, prior to the detector.
61																	S 041 Steam Dump/Turbine Bypass Control (SDS) K6.03 Knowledge of the effect that a loss or malfunction on the following will have on the Steam Dump/ Turbine Bypass Control System: Controller and positioners, including ICS, S/G, and CRDS.  Reviewed. SAT

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/NU/E/S	7.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
62														S	045 Main Turbine Generator (MTG) K5.23 Knowledge of the operational implications of the following concepts as they apply to the MT/G system: Relationship between rod control and RCS boron concentration during T/G load increases.  1 <sup>st</sup> half question LOD=1. 2/19/16 Agreed overall level of question is >1. SAT
63														S	056 Condensate System A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps  Reviewed. SAT
64														E S	072 Area Radiation Monitoring (ARM) system A3.01 Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment.  How is C plausible? If the dampers close, why would the fans keep running? 2/19/16 Changed distractor C to A-train.
65														S	079 Station Air System K4.01 Knowledge of SAS design feature(s) and/or interlock(s) which provide for the following: Cross-connect with IAS.  Reviewed. SAT
66														S	G 2.1 Conduct of Operations G 2.1.28 Knowledge of the purpose and function of major system components and controls.  Reviewed. SAT
67														S	G2.1.30 Ability to locate and operate components, including local controls.  Reviewed. SAT
68P														E S	G 2.2.39 Knowledge of < one hour Technical Specification action statements for systems.  Editorial, spell out SL first time then use abbreviation. SL repeated in 2 <sup>nd</sup> question unnecessarily.
69														E S	2.2.43 Knowledge of the process used to track inoperable alarms.  2 <sup>nd</sup> question implies that the 1 <sup>st</sup> condition is true. Do all nuisance alarms have to be disabled? If so, change the 2 <sup>nd</sup> question to just ask about disabled alarms. 2/19/16 Changed 2 <sup>nd</sup> question to "ANY".
70												X		U E S	G 2.3.4 Radiation Control Knowledge of radiation exposure limits under normal or emergency conditions.  This appears to be SRO Only. Typically SED non-delegateable ED authority is SRO Only.  2/22/16 New question written. Add "IAW procedure # and title" to the 3 <sup>rd</sup> sentence in the stem of the question. Remove ", at a minimum". Change "Plant Manager" to "Shift Manager".
71														E S	G 2.3.11 Ability to control radiation releases.  Low LOD. Why would someone not pick number II to begin with? Therefore A not plausible. 2/19/16 Changed distractor A to "II ONLY" to increase plausibility. Add word "directly" to question to be more technically accurate.
72														E S	G 2.3 Radiation control 2.3.12 Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.  Period on 1 <sup>st</sup> column of choice A has a space before it. Simple logic would get you to the correct decision point. Low LOD. 2/19/16 Changes made as noted. Question level is >1. SAT

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N/U/E/S	7.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=K/A	SRO Only			
73														S	G 2.4.21 Emergency Procedures / Plan Knowledge of the parameters and logic used to assess the status of safety functions including such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.  Reviewed. SAT
74														E S	G 2.4 Emergency Procedures /Plan 2.4.29 Knowledge of the emergency plan.  Possibly make into a 1X4 question. Need two additional locations. Seems most people confuse Alert or SAE for TSC activation. 2/19/16 There are not 2 other questions to make into a 1X4. Changed second part to Alert & SAE to improve plausibility.
75														E S	G2.4.46 Ability to verify that the alarms are consistent with the plant conditions.  Overlaps with Q6? 2/19/16 Does not overlap with Q6. Q6 is a steam leak, this is a valve leak in a different system. Add flow rate to 4 <sup>th</sup> bullet, "CCS flow thru the 1A-A RHR heat exchanger is 1000 gpm" to ensure there is still room to increase flow thru the HX.
76												X		U  U  S	007 Reactor Trip EG 2.2.37 Ability to determine operability and/or availability of safety related equipment. Doesn't hit the KA at the SRO level? Also, to prevent this from being considered a direct lookup, the reference was removed when given during the 2013 WBN exam.  2/22/16 New KA selected. EG2.2.44. Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.  New question doesn't meet the KA. The stem states you are in FR-C.1. The KA is for Rx trip. The licensee will rewrite to address Rx trip procedure transition to another procedure. 2/26/16 New question written to meet the KA.
77														E  S	008 Pressurizer Vapor Space Accident AG 2.4.31 Knowledge of annunciator alarms, indications or response procedures.  Typo on TS-68-331, this also comes off 1-M5A-E2. Typo on choice C(2), missing day. Change "indicates discharge" to LED display is illuminated or something that is an indication vs telling them the condition. AOP entry is RO knowledge. Check procedure flow path to verify. Also verify not used as an event in a scenario. No correct answer given: Motherhood completion time states: <i>Must remain inoperable or not within limits after the first inoperability is resolved.</i> (It's not resolved!) 2/19/16 Upon review onsite the NOTE overrides the motherhood statement.
78														S	011 Large Break LOCA EA2.01 Ability to determine or interpret the following as they apply to a Large Break LOCA: Actions to be taken, based on RCS temperature and pressure saturated and superheated.  Looks OK on first review. Verify not an overlap with another question.
79P														E  S	038 Steam Generator Tube Rupture (SGTR) EG2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation.  Doesn't step 10.b of E-3 send you ECA-3.1SGTR & LOCA procedure even if prior to step 23? Why is "Ruptured" capitalized in the stem, 4th bullet? 2/19/16 Changes made as noted. Also added "Prior to terminating Safety Injection" to preclude challenge based on fact that after step 32 monitoring of Loop Toold is reinitiated.
80														S	040 Steam Line Rupture AA2.04 Ability to determine and interpret the following as they apply to the Steam Line Rupture: Conditions requiring ESFAS initiation.  2/19/16 SAT



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N/U/E/S	7. B/M/N/U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=K/A	SRO Only			
81												X			<p>056 Loss of Offsite Power. AA2.45 Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Indicators to assess the status of ESF breakers (tripped/ not-tripped) and validity of alarms (false/ not-false). 2<sup>nd</sup> response is the SRO level. It doesn't meet the KA at the SRO level.</p> <p>E 2/22/16 New KA selected. AA2.44 S Question selection is required because AOP-P.06 entry is met but must know that LOOP procedure is overriding. Correct alarm panel nomenclature and verify alarm panel nomenclature. It does not agree with AR panel title. Site verified Alarm Panel nomenclature is correct.</p>
82															<p>E 005 Inoperable/Stuck Rod S AG2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.</p> <p>Where does it state the Rx is tripped with a trip breaker closed? FR-S.1 defines &lt;4% as "subcritical". Change to ask this? 2/19/16 Discussed with licensee onsite. Site defines "flux dropping" as criteria for FR-S.1.</p>
83															<p>S WE15 Containment Flooding EA2.1 Ability to determine and interpret the following as they apply to the (Containment Flooding): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.</p> <p>Looks OK.</p>
84						X									<p>E 051 Loss of Condenser Vacuum S AG2.1.34 Knowledge of primary and secondary chemistry limits.</p> <p>"A" not plausible. RO knowledge. Add "to maximum" to make choice B more plausible. 2/19/16 A changed to "continue power increase" and added "to maximum" as noted above.</p>
85															<p>E WE16 High Containment Radiation S EA2.1 Ability to determine and interpret the following as they apply to the (High Containment Radiation): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.</p> <p>Which is misspelled in WOOF Otherwise looks OK. 2/19/16 Verified corrected.</p>
86P						X						X			<p>E 003 Reactor Coolant Pump System (RCPS) S A2.05 Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Effects of VCT pressure on RCP seal leakoff flows.</p> <p>How does procedure selection exist? If all the statements in the first part of each answer corresponds correct to the 2<sup>nd</sup> part then no procedure selection knowledge is involved. Is choice A RO knowledge? Immediate trip criteria. A-A is the most efficient LCCU fan, change lineup so that A-A is the one to start for choice D. Would the lower VCT pressure on affect one RCP or all RCPs? Why Mode 3? 2/1/16 Question revised. Mode 3? Also the compartment fan info removed. Is this needed to make choice C.2 &amp; D.2 plausible? Change to add seal injection flow as an option. 2/19/16 Question revised into to 2X2 with 2 procedures and 2 actions and included seal injection flow as an option. Reduced the given seal injection flow to less than 9 gpm. This value is the upper limit for seal flow, therefore the applicants would try this first. Suggest a value of 7.5 or 8 gpm.</p>
87P															<p>E 010 Pressurizer Pressure Control G2.1.32 Ability to explain and apply system limits and precautions. S In the plant conditions, is "the PZR pressure control system fails to maintain RCS pressure" needed to ask the question. Seems unnecessary. 2/19/16 Changes made as noted above.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6.	7.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial Link	Minutiae	#/units	Backward	Q=SRO	K/A Only	B/M/N	U/E/S	
88															<p>E 012 Reactor Protection System (RPS) A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Erratic power supply operation.</p> <p>E Erratically misspelled. Need to discuss LOD on this one. With page 3.3.1 page 19 given, isn't this a direct lookup? Only Q is given as a possible answer for the table, not C. Can the question be given without the table and if so is it operationally valid?</p> <p>S 2/19/16 Table still given. Deleted choice A, added new choice D. Added conditions for TS condition C. Moved correct answer to B. Change reference plant to U1 so that references can be reduced.</p>
89															<p>E 059 Main Feedwater System (MFW) G2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.</p> <p>S Get rid of ICS point info, not necessary. 2/19/16 Verified change made.</p>
90															<p>E 062 A.C. Electrical Distribution G 2.2.38 Knowledge on conditions and limitations in the facility license.</p> <p>S Plausibility statement for the correct answer states condition "J" is the correct response. There is no "J" condition statement. Appears other condition references in other statements are incorrect also. Since the question stem states the 1B-B EDG will not be Operable for 7 days, later in the question stem the possibility of restoring the 1B-B EDG should not be in the question. Should only ask how long they have to restore the 2A-A EDG. 2/19/16 Removed "return 1B-B EDG" corrected distractor analysis for TS conditions.</p>
91P						X									<p>U 001 Control Rod Drive System (CRDS) G 2.4.6 Knowledge of EOP mitigation strategies.</p> <p>E B choice not plausible. Why would you pull a bank out to match if given choice to insert to match? If this is immediate trip criteria then this is RO knowledge. This condition meets two different trip criteria (&gt; 50 inches for any rod and also because it's a GP D rod; step 1a and step 1b). Possibly change so that a trip is NOT required.</p> <p>S 2/1/16 Need to change verb in the stem, Bank D rods "were" all at 184 steps, to "are" at... Otherwise you are cueing the answer. Why not change to second answer choice to "control bank D ONLY"? 2/19/16 Changed the question, used guidance from the AOP. Reviewed onsite, SAT.</p>
92											X				<p>U 011 Pressurizer Level Control A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Loss of PZR Level.</p> <p>E No match to the KA. Need to state how LT failed and then use procedure to correct or control. LT-68-339 noun name needs to be added.</p> <p>S 2/19/16 Licensee made the changes noted above. The TS meets the criteria for "use of procedure" to correct in the KA statement.</p>
93															<p>E 014 Rod Position Indication G 2.1.45 Ability to identify and interpret diverse indications to validate the response of another indication.</p> <p>S Why don't you use "CBD" in the 3<sup>rd</sup> bullet? Remove U1 for choice A(2), not needed. 2/19/16 Add EOL to stem to clarify plant condition.</p>
94												X			<p>U G 2.1.42 Conduct of Operations Knowledge of new and spent fuel movement procedures.</p> <p>S Seems like this would be RO knowledge of the SF pool layout. Listed as an objective in the power point and student handout. Also, question does not require the SRO to select a course of action to address the issue, only to identify that there is an issue. 2/19/16 Reviewed onsite. This is an SRO only function at SQ. Previously approved on 2013 NRC exam.</p>
95															<p>E G 2.2 Equipment Control 2.2.5 Knowledge of the process for making design or operating changes to the facility.</p> <p>S 2/19/16 Change "C" distractor from PM to SM to increase plausibility.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6.	7.	8.  Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward	Q=K/A				SRO Only
96						X									E   S	G 2.2.14 Knowledge of the process for controlling equipment configuration or status.  Missing "is" from the 2 <sup>nd</sup> bullet in stem. Why would anyone think that only a 50.59 review required if the SI already has the disabled alarms addressed? Maybe state the alarm will be out for 40 days.  2/22/16 New KA selected. G2.2.37 Fix supporting documentation. This is Q96 not Q92. Also, delete 072 ARM from KA title.
97															E  S	G 2.3.6 Ability to approve release permits.  "D" should read the same as "C". Is the release limit of 7E-06 expected knowledge? If so, change the stem to remove "the limit". Changes made as noted. Limit is expected knowledge so it remains in the stem.
98						X									U  E  S	G2.3.15 Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.  Reference is Rev. 51, the reference in the folder is Rev. 52. Need to follow up all questions to verify references are correct revision level. This is a LOD=1 direct lookup with EPIP-1 given as handout. Also, not sure how "A" is plausible. How would this detector represent an RCS leak in containment? Change A to "Shield Bldg Vent Monitor"? 2/19/16 Changed "A" distractor. EPIP-1 has been removed so no a direct lookup.
99P															E   S	WE01 EG2.4.11 (Wrong KA) Will replace with correct KA question. Rediagnosis: Knowledge of abnormal condition procedures.  G 2.4.14 Knowledge of general guidelines for EOP usage. Revise question to remove "loop back". This is not terminology referenced in EPM-4. Therefore not a true statement. 2/19/16 Verified 1 <sup>st</sup> half question reworded to ask for proper procedure useage.
100															E  S	G 2.4.23 Knowledge of the bases for prioritizing emergency implementation during emergency operations.  Formatting issue: Period missing at end of 8 <sup>th</sup> bullet. Remove "step 31" from choice C. This would not be expected from memory. 2/19/16 Verified changes made.





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. Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
7. 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?
8. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

Facility: <b>Sequoyah Station Unit 1&amp;2</b> Date of Exam: <b>03/23/2016</b> Exam Level: <b>RO X</b> <b>SRO X</b>			
Item Description	Initials		
	a	b	c
1. Clean answer sheets copied before grading	AKB	TS	AKC
2. Answer key changes and question deletions justified and documented	N/A	N/A	AKC
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	AKB	TS	AKC
4. Grading for all borderline cases (80 $\pm$ 2% overall and 70 or 80, as applicable, $\pm$ 4% on the SRO-only) reviewed in detail	N/A	N/A	AKC
5. All other failing examinations checked to ensure that grades are justified	N/A	N/A	AKC
6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	AKB	TS	AKC

Printed Name/Signature		Date
a. Grader	Michael Buckner 	03/28/16
b. Facility Reviewer(*)	Francis Schulte III / 	3/28/16
c. NRC Chief Examiner (*)	Philip G. Capelant / 	4/8/16
d. NRC Supervisor (*)	GERALD McCoy / 	7/18/2016

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