

Facility: NORTH ANNA Date of Examination: June/July 2016

Developed by: Written: Facility  NRC  // Operating Facility  NRC

Target Date*	Task Description (Reference)	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a and b) <u>12-1-15</u>	<u>TBL</u>
-150	2. NRC examiners and facility contact assigned (C.1.d; C.2.e) <u>12-1-15</u>	<u>TBL</u>
-150	3. Facility contact briefed on security and other requirements (C.2.c) <u>12-1-15</u>	<u>TBL</u>
-150	4. Corporate notification letter sent (C.2.d) <u>12-21-15</u>	<u>TBL</u>
[-120]	5. Reference material due (C.1.e; C.3.c; Attachment 3) <u>1-28-16</u>	<u>TBL</u>
{-90}	6. Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1, ES-401-1/2, ES-401N-1/2, ES-401-3, ES-401N-3, ES-401-4, and ES-401N-4, as applicable (C.1.e and f; C.3.d) <u>3-7-16</u>	<u>TBL</u>
{-85}	7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e) <u>3-25-16</u>	<u>TBL</u>
{-60}	8. Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, 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) <u>4-18-16</u>	<u>TBL</u>
-45	9. Written exam and operating test reviews completed. (C.3.f) <u>6-16-16</u>	<u>TBL</u>
-30	10. Preliminary license applications (NRC Form 398's) due (C.1.i; C.2.g; ES-202) <u>5-20-16</u>	<u>TBL</u>
-21	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	<u>TBL</u>
-21	12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	<u>TBL</u>
-14	13. Final license applications due and Form ES-201-4 prepared (C.1.i; C.2.i; ES-202) <u>6-6-16</u>	<u>TBL</u>
-14	14. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h) <u>6-16-16</u>	<u>TBL</u>
-7	15. Facility licensee management queried regarding the licensee's views on the examination. (C.2.j) <u>6-16-16</u>	<u>TBL</u>
-7	16. 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) <u>5-26-16</u>	<u>TBL</u>
-7	17. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k) <u>5-26-16</u>	<u>TBL</u>
-7	18. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	<u>TBL</u>

\* 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: North Anna Power Station		Date of Examination: 6/20/2016		
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 or ES-401N.	RF	N/A	BBK
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 or ES-401N and whether all K/A categories are appropriately sampled.	RF	N/A	BBK
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	RF	N/A	BBK
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	RF	N/A	BBK
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.	RF	LS	BBK
	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.	RF	LS	BBK
	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.	RF	LS	BBK
3. W A L K  T H R O U G H	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.	RF	LS	BBK
	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	RF	LS	BBK
	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.	RF	LS	BBK
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.	RF	LS	BBK
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	RF	LS	BBK
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	RF	LS	BBK
	d. Check for duplication and overlap among exam sections.	RF	LS	BBK
	e. Check the entire exam for balance of coverage.	RF	LS	BBK
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	RF	LS	BBK
a. Author	Printed Name/Signature		Date	
b. Facility Reviewer (*)	Randall Garrett / <i>RRG</i>		6/7/16	
c. NRC Chief Examiner (#)	Lee Baron / <i>Lee C. Baron</i>		6/7/16	
d. NRC Supervisor	BRUNO CABALLERO / <i>Bruno Caballero</i>		6-14-16	
	Eugene Kuthrie / <i>E. Kuthrie</i>		6/16/16	
Note:	# Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines.			

*Rec'd  
6/10/16*

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16-6/27/16 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 6/20/16-6/27/16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1. RANDALL GARRETT	Exam Author	<i>[Signature]</i>	6/1/15	<i>[Signature]</i>	7/1/16	
2. Denise Tibbitts	Scenarios development	<i>[Signature]</i>	7/1/15	<i>[Signature]</i>	7/19/16	
3. Steve Crawford	Access to room for PE	<i>[Signature]</i>	7/1/15	<i>[Signature]</i>	7/12/16	
4. John Litch	SECURITY INSTRUCTOR	<i>[Signature]</i>	7/17/15	<i>[Signature]</i>	7/1/16	
5. LPO Darrin	Supervisor, NCC-FJ	<i>[Signature]</i>	7/14/15	<i>[Signature]</i>	8/11/16	
6. John Kernisky	Exam Author	<i>[Signature]</i>	9/29/15	<i>[Signature]</i>	7/17/16	
7. DOUG SPERS	SFO	<i>[Signature]</i>	12-2-15	<i>[Signature]</i>	7-13-16	
8. Robert Carvill	SAC	<i>[Signature]</i>	1/13/16	<i>[Signature]</i>	7/13/16	
9. Jason Yingling	NO	<i>[Signature]</i>	1/17/16	<i>[Signature]</i>	7/21/16	
10. Timothy Morris	FO	<i>[Signature]</i>	1/19/16	<i>[Signature]</i>	7/13/16	
11. MIKE BRIMMO	SNO	<i>[Signature]</i>	1/19/16	<i>[Signature]</i>	7/1/16	
12. KAREN H LF	Sim support	<i>[Signature]</i>	07/09/16	<i>[Signature]</i>	7/17/16	
13. KENETH W. KERR	Sim support	<i>[Signature]</i>	2/10/16	<i>[Signature]</i>	7/1/16	
14. Kevin L. Divins	Approved Sim support	<i>[Signature]</i>	2/1/16	<i>[Signature]</i>	7/1/16	
15. SHARON KERR	Sim support	<i>[Signature]</i>	2/1/16	<i>[Signature]</i>	7/1/16	

NOTES:

**1. Pre-Examination**

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/22/16 - 6/27/16 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 6/22/16 - 6/27/16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1. Andrew Trask	RO		2/12/16		7/13/16	
2. JOHN M. LEWIS	SRO		2/16/16		7/14/16	
3. Paul D. Trent	SRO		2/22/14		7/13/16	
4. Matt Dawson	RO		2/22/16		7/13/16	
5. Todd Fulton	Instructor		2/23/16		7/12/16	
6. Bills Stambert	Trainer		2/25/16		7/17/16	
7. SHAWN MURPHY	SRO		3/23/16		7/15/16	
8. JACOB DIENERICHS	RO		3-23-16		7-11-16	
9. WILLIAM SPIER	RO		3-23-16		7/10/16	
10. Res Robinson	Trans Admin		3-24-16		7-27-16	
11. Brian Thompson	Trans Admin		5-31-16		7/7/16	
12. Ryan Thompson	Trans Admin		6-2-16		7/12/16	
13. Ryan Thompson	RO		6/2/16		7/12/16	
14. Rich Smith	SRO		6/2/16		7/10/16	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16-6/27/16 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 6/20/16-6/27/16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1. Andy Plunkky	RO	[Signature]	6/27/16	[Signature]	7/14/16	
2. JOHN SWARTZ	MRD OPS	[Signature]	6/27/16	[Signature]	7/14/16	
3. Mike Nichols	SRD	[Signature]	6/20/16	[Signature]	7/14/16	
4. Brian Smith	ASST OPS MGR	[Signature]	6/20/16	[Signature]	7/14/16	
5. John Thompson	OPS SUPERVISOR	[Signature]	6/21/16	[Signature]	7/14/16	
6. JOHN PETERSON	SUPERVISOR OF SHIRT OPS	[Signature]	6/21/16	[Signature]	7/12/16	
7. BENTHAMU CHANG	OPS INSTRUCTOR	[Signature]	6/23/16	[Signature]	7/14/16	
8. [Signature]	[Signature]	[Signature]				
9.						
10.						
11.						
12.						
13.						
14.						
15.						

NOTES:

Pg 3 of 3

Facility: <b>North Anna Power Station</b>		Date of Examination: <u>6/20/2016</u>
Examination Level: <b>Combined</b>		Operating Test Number: <u>1</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N,R 2.1.4 2.1.5	Determine active License status and determine T.S. time requirement if any <b>(SRO Only) (SRO 3.8)</b>
Conduct of Operations	N,R 2.1.25	Determine active License status <b>(RO Only) (RO 3.9)</b>
Conduct of Operations	M,R 2.1.7	Determine Quadrant Power Tilt Ratio by hand calculation (1-PT-23) and determine maximum allowable power level based on the calculation <b>(SRO Only) (RO 4.4 / SRO 4.7)</b>
Conduct of Operations	M,R 2.1.7	Determine Quadrant Power Tilt Ratio by hand calculation (1-PT-23) <b>(RO Only) (RO 4.4 / SRO 4.7)</b>
Equipment Control	M,R 2.2.44	Calculate shutdown margin with 2 inoperable control rods (1-PT-10.1) <b>(ALL) (RO 4.2 / SRO 4.4)</b>
Radiation Control	M,R 2.3.7	Select appropriate Radiation Work Permit and calculate stay time <b>(ALL) (RO 3.5 / SRO 3.6)</b>
Emergency Procedures/Plan	M,R 2.4.44	Determine Protective Action Request and update requirement (EPIP-1.06) <b>(SRO Only) (SRO 4.4)</b>
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)		

Rec'd  
6/20/16

Facility: <u>North Anna Power Station</u>		Date of Examination: <u>6/20/2016</u>	
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input checked="" type="checkbox"/>		Operating Test No.: <u>1</u>	
Control Room Systems: 8 for RO; 7 for SRO-I; 2 or 3 for SRO-U			
System / JPM Title (KA)		Type Code*	Safety Function
a. Verify safety injection flow (1-E-0). (ALL) 011EA1.13 (4.1/4.2) Alt Path: Boron injection tank MOVs will not open		A,D,E,EN,L, S	3
b. Align AFW to supply all 3 SGs using the HCV header (1-AP-22.4) 061A2.04 (3.4/3.8) (RO and SRO-I)		D,E,L,S	4(Sec)
c. Respond to a loss of reactor coolant pump seal cooling (1-AP-33.2) (ALL) 015AA1.07 (3.5/3.4) Alt Path: Seal return valve fails to close		A,D,E,S	4(pri)
d. Add Nitrogen to the SI accumulator (RO and SRO-I) 006A4.07 (4.4/4.4)		D,E,S	2
e. Respond to voltage regulator failure. (1-AP-26) (RO and SRO-I) 077AA1.03 (3.8/3.7) Alt Path: Voltage does not respond requiring unit trip		A,E,S	6
f. Adjust Power Range NIs. (1-PT-24.1) (ALL) 015A1.01 (3.5/3.8) Alt Path: Rods step in when placed back in auto		A,M,E,S	7
g. Respond to CW flooding in the turbine building (0-AP-39.1) (RO and SRO-I) 075A2.03 (2.5/2.7) Alt Path: CW pumps fail to trip		A,E,S	8
h. Place Waste Gas Decay Tank on bleed. (RO) 071A4.27 (3.0/2.7)		N,S	9
In-Plant Systems (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i. Perform operator actions in the Turbine building in response to loss of all AC power IAW 2-ECA-0.0 att. 3 – Turbine Building Operations (RO and SRO-I) 055EA1.04 (3.5/3.9)		D,E,L	6
j. Start up Control Rod M/G sets IAW 1-OP-58.1 (ALL) 001A4.08 (3.7/3.4)		D,L	1
k. Shift process vent system blowers IAW 0-OP-23.3 (ALL) 071A1.06 (2.5/2.8)		D,R	9
* 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	≤ 9 / ≤ 8 / ≤ 4		
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1		
(EN)gineered safety feature	≥ 1 / ≥ 1 / ≥ 1 (control room system)		
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1		
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1		
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)		
(R)CA	≥ 1 / ≥ 1 / ≥ 1		
(S)imulator			

*Rec'd  
6/10/16*

Facility: North Anna Power Station		Date of Examination: 6/20/2016		Operating Test Number: 1	
1. General Criteria			Initials		
			a	b*	c#
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	NT	LS	TBM	
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	NT	LS	TBM	
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	NT	LS	TBM	
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	NT	LS	TBM	
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	NT	LS	TBM	
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>	NT	LS	TBM	
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.	NT	LS	TBM	
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.		NT	LS	TBM	
	Printed Name / Signature	Date			
a.	Author <u>Randall Garrett / [Signature]</u>	<u>6/7/16</u>			
b.	Facility Reviewer(*) <u>Lee Baron / [Signature]</u>	<u>6/7/16</u>			
c.	NRC Chief Examiner (#) <u>BRUNO CABALLERO / Bruno Caballero</u>	<u>6-14-16</u>			
d.	NRC Supervisor <u>Eugene Conthorn / [Signature]</u>	<u>6/16/16</u>			
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.					

Rec'd  
6/20/16



Facility: North Anna Power Station		Date of Exam: 6/20/16		Scenario Numbers: 1/2/4/ 5		Operating Test No.: 1	
QUALITATIVE ATTRIBUTES		Initials					
		a	b*	c#			
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	NJ	LS	BM			
2.	The scenarios consist mostly of related events.	NJ	LS	BM			
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>	NJ	LS	BM			
4.	The events are valid with regard to physics and thermodynamics.	NJ	LS	BM			
5.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	NJ	LS	BM			
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.	NJ	LS	BM			
7.	The simulator modeling is not altered.	NJ	LS	BM			
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.	NJ	LS	BM			
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.	NJ	LS	BM			
10.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	NJ	LS	BM			
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.)	NJ	LS	BM			
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).	NJ	LS	BM			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	NJ	LS	BM			
<b>Target Quantitative Attributes (Per Scenario; See Section D.5.d)</b>		<b>Actual Attributes</b>		-	-	-	
		<b>1 / 2 / 4 / 5</b>					
1.	Malfunctions after EOP entry (1-2)	2 / 4 / 3 / 4	NJ	LS	BM		
2.	Abnormal events (2-4)	6 / 6 / 4 / 5	NJ	LS	BM		
3.	Major transients (1-2)	1 / 1 / 1 / 1	NJ	LS	BM		
4.	EOPs entered/requiring substantive actions (1-2)	1 / 2 / 1 / 1	NJ	LS	BM		
5.	EOP contingencies requiring substantive actions (0-2)	0 / 1 / 1 / 0	NJ	LS	BM		
6.	<b>EOP</b> based Critical tasks (2-3)	5 / 6 / 2 / 4	NJ	LS	BM		
NOTE:	* The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.						

Rec'd  
6/10/16

Facility: North Anna Power Station			Date of Exam: 6/20/16 – 7/1/16			Operating Test No.:1												
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 (*)			
		1			2			4			5 (Spare)							
		CREW P O S I T I O N			CREW P O S I T I O N			CREW P O S I T I O N			CREW P O S I T I O N							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					
												R	I	U				
RO X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX		6a			3a				1			1			1	1	0
	NOR															1	1	1
	I/C		1,3,5			2, 3b 4 8,10				2,5, 8			2,5 8,9 10			4	4	2
	MAJ		7			7				7			7			2	2	1
RO X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX															1	1	0
	NOR			6a			3a, 4a				1,5a			1		1	1	1
	I/C			2,4, 8,9			1,5 8,9, 10 11				4,6, 9			1a,4, 8,10		4	4	2
	MAJ			7			7				7			7		2	2	1
RO <input type="checkbox"/> SRO-I X SRO-U <input type="checkbox"/>	RX	6a				3a				1				1				
	NOR					4a				5a						1	1	1
	I/C	1,2,3 4,5 8,9				1,2 3b,4 5,8,9 10,11				2,4,5 6 8,9				1a,2, 4,5 8,9, 10		4	4	2
	MAJ	7				7				7				7		2	2	1
	TS	2,4,5				4,6				3,5				3,5		0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U X	RX	6a				3a				1				1				
	NOR					4a				2a,5a						1	1	1
	I/C	1,2,3 4,5 8,9				1,2 3b,4 5,8,9 10,11				2,4,5 6 8,9				1a,2, 4,5 8,9, 10		4	4	2
	MAJ	7				7				7				7		2	2	1
	TS	2,4,5				4,6				3,5				3,5		0	2	2

*Neil  
6/30/16*

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (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.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (\*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. 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.

MSJ  
6/10/16

Facility: North Anna Power Station			Date of Exam: 6/21/2016			Operating Test No.: 1											
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 (*)		
		1			2			4			5						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
												R	I	U			
RO  Carr	RX							1								1	1
	NOR					3a, 4a							2	1	1	1	
	I/C					1,5 8,9, 10 11		2,5, 8					9	4	4	2	
	MAJ					7		7					2	2	2	1	
RO  Wilson	RX		6a										1	1	1	0	
	NOR									1,5a			2	1	1	1	
	I/C		1,3,5							4,6, 9			6	4	4	2	
	MAJ		7							7			2	2	2	1	
RO  Brown	RX					3a							1	1	1	0	
	NOR			6a									1	1	1	1	
	I/C			2,4, 8,9		2, 3b 4 8,10							9	4	4	2	
	MAJ			7		7							2	2	2	1	

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (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.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (\*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. 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.

*Handwritten signature and date: 6/20/16*

Facility: North Anna Power Station

Date of Exam: 6/21/2016

Operating Test No.: 1

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 (*)		
		1			2			4			5						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P		R	I	U
SRO-I Bugas	RX	6a						1					2	1	1	0	
	NOR					3a, 4a							2	1	1	1	
	I/C	1,2,3 4,5 8,9				1,5 8,9 10 11		2,5, 8					16	4	4	2	
	MAJ	7				7		7					3	2	2	1	
	TS	2,4,5											3	0	2	2	
SRO-I Taylor	RX		6a		3a								2	1	1	0	
	NOR				4a				1,5a				3	1	1	1	
	I/C		1,3,5		1,2 3b,4 5,8,9 10,11				4,6, 9				15	4	4	2	
	MAJ		7		7				7				3	2	2	1	
	TS				4,6								2	0	2	2	
SRO-I Osborn	RX				3a			1					2	1	1	0	
	NOR			6a				5a					2	1	1	1	
	I/C			2,4, 8,9	2, 3b 4 8,10			2,4,5 6 8,9					15	4	4	2	
	MAJ			7	7			7					3	2	2	1	
	TS							3,5					2	0	2	2	
SRO-I Grover	RX	6a						1					2	1	1	0	
	NOR												0	1	1	1	
	I/C	1,2,3 4,5 8,9						2,5, 8					10	4	4	2	
	MAJ	7						7					2	2	2	1	
	TS	2,4,5											3	0	2	2	

*Rec'd  
6/20/16*

Facility: North Anna Power Station

Date of Exam: 6/21/2016

Operating Test No.: 1

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 (*)		
		1			2			4			5							
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					
												R	I	U				
Weather-holtz	SRO-U	RX	6a												1	1	1	0
		NOR					3a, 4a								2	1	1	1
		I/C	1,2,3 4,5 8,9				1,5 8,9 10 11								13	4	4	2
		MAJ	7				7								2	2	2	1
		TS	2,4,5												3	0	2	2
	Webner	SRO-U	RX		6a		3a									2	1	1
		NOR				4a									1	1	1	1
		I/C		1,3,5		1,2 3b,4 5,8,9 10,11									12	4	4	2
		MAJ		7		7									2	2	2	1
		TS				4,6									2	0	2	2
Baltor	SRO-U	RX							1						1	1	1	0
		NOR			6a				5a						2	1	1	1
		I/C			2,4, 8,9				2,4,5 6 8,9						10	4	4	2
		MAJ			7				7						2	2	2	1
		TS							3,5						2	0	2	2
Thomas	SRO-U	RX				3a									1	1	1	0
		NOR				4a					1,5a				3	1	1	1
		I/C				1,2 3b,4 5,8,9 10,11					4,6, 9				12	4	4	2
		MAJ				7					7				2	2	2	1
		TS				4,6									2	0	2	2

*Rec'd  
6/10/16*

Facility: North Anna Power Station

Date of Exam: 6/21/2016

Operating Test No.: 1

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 (*)		
		1			2			4			5						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
													R	I	U		
SRO-U	RX					3a			1					2	1	1	0
Ferrell	NOR								5a					1	1	1	1
	I/C					2, 3b 4 8,10			2,4,5 6 8,9					11	4	4	2
	MAJ					7			7					2	2	2	1
	TS								3,5					2	0	2	2

*Need  
6/20/16*

Facility: North Anna Power Station      Date of Exam: 6/20/16 – 7/1/16      Operating Test No.:1												
Competencies	APPLICANTS											
	RO SRO-I as RO				BOP				SRO-I SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	4	5	1	2	4	5	1	2	4	5
Interpret/Diagnose Events and Conditions	1 3 5 6 6a	2 3a 3b 4 6 7 8	2 3 4 5 7 8	2 3 5 7 8	2 4 6 6a 8 9	1 3a 4a 5 6 7 8 9 10 11	4 5a 6 6a 7 9	1 1a 4 6 7 8 10	1 2 3 4 5 6 6a 7 8 9	1 2 3 3a 3b 4 4a 5 6 7 8 9 10	2 3 4 5 6 7 8 9	1 1a 2 3 4 5 6 7 8 10
Comply With and Use Procedures (1)	1 3 5 6a	2 3a 4 6 7 8 10	1 2 5 8	1 2 5 6 7 8	2 4 6a 8 9	1 3a 4a 5 7 8 9 10 11	1 4 5a 6 7 9	1 4 6 7 10	1 2 3 4 5 6a 7 8 9	1 2 3a 3b 4 4a 5 6 7 8 9 10	1 2 4 5 5a 6 7 8	1 2 3 5 6 7 8
Operate Control Boards (2)	1 3 5 6a	2 3a 4 7 8 10	1 2 5 7 8	1 2 5 6 7 8 9	2 4 6a 8 9	1 3a 5 7 8 9, 10 11	1 4 5a 6 7 9	1 1a 4 6 7 8 10				
Communicate and Interact	1 3 5 6 6a	2 3a 3b 4 6 7 8	1 2 3 4 5 7 8	1 2 3 5 7 8	2 4 6 6a 8 9	1 3 3a 5 6 7 8 9 10 11	1 4 5a 6 7 9	1 1a 4 6 7 8 10	1 2 3 4 5 6 6a 7 8 9	1 2 3a 3b 4 4a 5 6 7 8 9 10, 11	1 2 3 4 5 5a 6 7 8 9	1 1a 2 3 4 5 6 7 8 10
Demonstrate Supervisory Ability (3)									1 2 3 4 5 6 6a 7 8 9	1 2 3a 3b 4 4a 5 6 7 8 9 10, 11	1 2 3 4 5 5a 6 7 8 9	1 1a 2 3 4 5 6 7 8 10
Comply With and Use Tech. Specs. (3)									2 4 5	4 6	3 5	3 5

Notes:

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

*dec'd  
6/20/16*



# FINAL WRITTEN SAMPLE PLAN WITH MARKUPS

ES-401

PWR Examination Outline

Form ES-401-2

Facility: NORTH ANNA POWER STATION													Date of Exam: JUNE 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	N/A			3	3	N/A		3	18	3	3	6
	2	1	1	2				2	2			1	9	2	2	4
	Tier Totals	4	4	5				5	5			4	27	5	5	10
2. Plant Systems	1	3	2	2	2	3	3	2	3	2	3	3	28	3	2	5
	2	1	1	1	1	1	1	0	1	1	1	1	10	0	1	2
	Tier Totals	4	3	3	3	4	4	3	3	3	4	4	38	4	4	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





KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

055EA1.02 Station Blackout / 6 4.3 4.4            Manual ED/G start

056AK3.01 Loss of Off-site Power / 6 3.5 3.9            Order and time to initiation of power for the load sequencer

057AA2-02 *BA* Loss of Vital AC Inst. Bus / 6 3.7 3.8             Core-flood tank pressure and level indicators. *pit auto acting that will occur*

4.0 4.3

058AG2.4.11 Loss of DC Power / 6 4.0 4.2            Knowledge of abnormal condition procedures.

WE04EK1.1 LOCA Outside Containment / 3 3.5 3.9            Components, capacity, and function of emergency systems.

WE05EA1.1 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4 4.1 4.0             Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

WE11EK2.2 Loss of Emergency Coolant Recirc. / 4 3.9 4.3             Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.

*BA*  
*12-17-15*

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

008AG2.1.20 Pressurizer Vapor Space Accident / 3 3.8 4.3             Knowledge of operational implications of EOP warnings, cautions and notes. EOP mitigation strategies

12-17-15

AS2.4.6

054AG2.1.19 Loss of Main Feedwater / 4 3.9 3.8             Ability to use plant computer to evaluate system or component status.

055EA2.03 Station Blackout / 6 3.9 4.7             Actions necessary to restore power

058AG2.1.20 Loss of DC Power / 6 4.6 4.6             Ability to execute procedure steps.

077AA2.05 Generator Voltage and Electric Grid Disturbances / 6 3.2 3.8             Operational status of offsite circuit

WE05EA2.2 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4 3.7 4.3             Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G*	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1					X		007EA2.06: Ability to determine or interpret the following as they apply to a reactor trip: Occurrence of a reactor trip	4.3	
000008 Pressurizer Vapor Space Accident / 3	X					X	008AK1.01: Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Thermodynamics and flow characteristics of open or leaking valves.	3.2	
							008AG2.4.20: 008AK1.01: Knowledge of the operational implications of the following concepts as they apply to a Pressurizer Vapor Space Accident: Knowledge of the operational implications of EOP warnings, cautions, and notes	4.3	
000009 Small Break LOCA / 3						X	009EG2.4.21: 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.	4.0	
000011 Large Break LOCA / 3				X			011EA1.09: Ability to operate and monitor Core flood tank initiation as they apply to a Large Break LOCA	4.3	
000015/17 RCP Malfunctions / 4									
000022 Loss of Rx Coolant Makeup / 2					X		022A2.02: Knowledge of the interrelations between the Loss of Reactor Coolant Makeup and Charging pump problems.	3.2	
000025 Loss of RHR System / 4	X						025AK1.01: Knowledge of the operational implications of the Loss of RHR System during all modes of operation as they apply to Loss of Residual Heat Removal System:	3.9	
000026 Loss of Component Cooling Water / 8									
000027 Pressurizer Pressure Control System Malfunction / 3		X					027AK2.03: Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and Controllers and positioners	2.6	
000029 ATWS / 1			X				029EK3.03: Knowledge of the reasons for Opening BIT inlet and outlet valves as the apply to the ATWS.	3.7	
000038 Steam Gen. Tube Rupture / 3			X				038EK3.03: Knowledge of the reasons for Automatic actions associated with high radioactivity in S/G sample lines as the apply to the SGTR.	3.6	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4		X					040AK2.01: Knowledge of the interrelations between the Steam Line Rupture and the valves.	2.6	
000054 (CE/E06) Loss of Main Feedwater / 4						X	054AG2.4.20: Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	
							054AG2.1.19: Ability to use plant computers to evaluate system or component status.	3.8	
000055 Station Blackout / 6				X		X	055EA1.02: Ability to operate and monitor Manual ED/G start as applied to a Station Blackout	4.3	
							055EA2.03: Ability to determine or interpret actions necessary to restore power as they apply to a Station Blackout.	4.7	

Tier 1 / Group 1

000056 Loss of Off-site Power / 6			X				056AK3.01: Knowledge of the reasons order and time to initiation of power for the load sequencer as they apply to the Loss of Offsite Power.	3.5	
000057 Loss of Vital AC Inst. Bus / 6					X		057AA2.02: Ability to determine and interpret Core flood tank pressure and level indicators as they apply to the Loss of Vital AC Instrument Bus.	3.7	
000058 Loss of DC Power / 6					X		058AG2.4.11: Knowledge of abnormal condition procedures.	4.0	
						X	058AG2.1.20: Ability to interpret and execute procedure steps.	4.6	
000062 Loss of Nuclear Svc Water / 4									
000065 Loss of Instrument Air / 8									
W/E04 LOCA Outside Containment / 3	X						WE04EK1.1: Knowledge of the operational implications of the Components, capacity, and function of emergency systems as they apply to the LOCA Outside Containment.	3.5	
W/E11 Loss of Emergency Coolant Recirc. / 4		X					WE11EK2.2: Knowledge of the interrelations between the Loss of Emergency Coolant Recirculation and facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.	3.9	
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4				X			WE05EA1.1: Ability to operate and / or monitor components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features. as they apply to the Loss of Secondary Heat Sink.	4.1	
						X	WE05EA2.2: Ability to determine and interpret adherence to appropriate procedures and operation within the limitations in the facility's license and amendments as they apply to the Loss of Secondary Heat Sink	4.3	
000077 Generator Voltage and Electric Grid Disturbances / 6					X		077AA2.05: Ability to determine and interpret operational status of offsite circuit as they apply to Generator Voltage and Electric Grid Disturbances.	3.2	
K/A Category Totals:	3	3	3	3	3/3	3/3	Group Point Total:		18/6



T1G2 PWR EXAMINATION OUTLINE

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:  
 RO SRO  
 028AK1.01 Pressurizer Level Malfunction / 2 2.8 3.1                     PZR reference leak abnormalities

032AA2.04 Loss of Source Range NI / 7 3.1 3.5                     Satisfactory source-range/intermediate-range overlap

033AK3.01 Loss of Intermediate Range NI / 7 3.2 3.6                     Termination of startup following loss of intermediate-range instrumentation

060AK2.01 Accidental Gaseous Radwaste Rel. / 9 2.6 2.9                     ARM system, including the normal radiation-level indications and the operability status

067AA1.05 Plant Fire On-site / 8 3 3.1                     Plant and control room ventilation systems

068AK3.17 Control Room Evac. / 8 3.7 4                     Injection of boric acid into the RCS

076AA2.03 High Reactor Coolant Activity / 9 2.5 3                     RCS radioactivity level meter

WE08EA1.1 RCS Overcooling - PTS / 4 3.8 3.8                     Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

we09EG2.4.31 Natural Circ. / 4 4.2 4.1                     Knowledge of annunciators alarms, indications or response procedures

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

001AA2.04 Continuous Rod Withdrawal / 1 4.2 4.3             Reactor power and its trend

060AG2.4.30 Accidental Gaseous Radwaste Rel. / 9 2.7 4.1             Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.

061AA2.03 ARM System Alarms / 7 3 3.3             Setpoints for alert and high alarms

we14EG2.4.21 Loss of CTMT Integrity / 5 4.0 4.6            Knowledge of the parameters and logic used to assess the status of safety functions



ES-401		PWR Examination Outline						Form ES-401-2	
		Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)							
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G*	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1					X		001AA2.04: Ability to determine and interpret reactor power and its trend as they apply to the Continuous Rod Withdrawal	4.3	
000003 Dropped Control Rod / 1									
000005 Inoperable/Stuck Control Rod / 1									
000024 Emergency Boration / 1									
000028 Pressurizer Level Malfunction / 2	X						028AK1.01: Knowledge of the operational implications of PZR reference leak abnormalities as they apply to PZR Level Control Malfunctions:	2.8	
000032 Loss of Source Range NI / 7					X		032AA2.04: Ability to determine and interpret satisfactory source-range/intermediate-range overlap as they apply to the Loss of Source Range Nuclear Instrumentation	3.1	
000033 Loss of Intermediate Range NI / 7			X				033AK3.01: Knowledge of the reasons for the termination of startup following loss of intermediate range instrumentation .	3.2	
000036 (BW/A08) Fuel Handling Accident / 8									
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4									
000059 Accidental Liquid Radwaste Rel. / 9									
000060 Accidental Gaseous Radwaste Rel. / 9		X					060AK2.01: Knowledge of the interrelations between the Accidental Gaseous Radwaste Release and the ARM system, including the normal radiation-level indications and the operability status.	2.6	
							060AG2.4.30 Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	4.1	
000061 ARM System Alarms / 7					X		061AA2.03: Ability to determine and interpret setpoints for alert and high alarms as they apply to the Area Radiation Monitoring (ARM) System Alarms	3.3	
000067 Plant Fire On-site / 8				X			067AA1.05: Ability to operate and / or monitor plant and control room ventilation systems as they apply to the Plant Fire on Site.	3.0	
000068 (BW/A06) Control Room Evac. / 8			X				068AK3.17: Knowledge of the reasons for injection of boric acid into the RCS as they apply to the Control Room Evacuation.	3.7	
000069 (W/E14) Loss of CTMT Integrity / 5						X	WE14EG2.4.21: 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	4.6	
000074 (W/E06&E07) Inad. Core Cooling / 4									
000076 High Reactor Coolant Activity / 9					X		076AA2.03: Ability to determine and interpret RCS radioactivity level meter as they apply to the High Reactor Coolant Activity.	2.5	
W/E01 & E02 Rediagnosis & SI Termination / 3									
W/E13 Steam Generator Over-pressure / 4									
W/E15 Containment Flooding / 5									

WE16 High Containment Radiation / 9												
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		WE09EG2.4.31: Knowledge of annunciator alarms, indications, or response procedures.		
BW/E13&E14 EOP Rules and Enclosures												
CE/A11; W/E08 RCS Overcooling - PTS / 4				X						WE08EA1.1: Ability to operate and / or monitor components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features as they apply to Pressurized Thermal Shock.	3.8	
CE/A16 Excess RCS Leakage / 2												
CE/E09 Functional Recovery												
K/A Category Point Totals:	1	1	2	2	2/2	1/2				Group Point Total:		9/4



KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO	SRO	NAME / SAFETY FUNCTION	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC
013A4.01		Engineered Safety Features Actuation	4.5	4.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ESFAS-initiated equipment which fails to actuate
022K4.06		Containment Cooling	2.6	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment cooling after LOCA destroys ventilation ducts <i>CONT. COOL. 150L</i>
026A1.06		Containment Spray	2.7	3.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment spray pump cooling
039K5.08		Main and Reheat Steam	3.6	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Effect of steam removal on reactivity
059A3.02		Main Feedwater	2.9	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Programmed levels of the S/G
061K2.03		Auxiliary/Emergency Feedwater	4.0	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<del>AFW diesel driven pump</del> <i>AFW SYSTEM MOV</i>
062A2.11		AC Electrical Distribution	3.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aligning standby equipment with correct emergency power source (D/G)
062G2.4.11		AC Electrical Distribution	4.0	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Knowledge of abnormal condition procedures.
063K3.01		DC Electrical Distribution	3.7	4.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED/G
064A4 01		Emergency Diesel Generator	4.0	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Local and remote operation of the ED/G
064K3.03		Emergency Diesel Generator	3.6	3.9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ED/G (manual loads)

KA Δ  
7/29/15

KA Δ  
7/29/15



T2G1 PWR EXAMINATION OUTLINE

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO	SRO	
073K1.01	3.6 3.9	Process Radiation Monitoring Those systems served by PRMs
076A3.02	3.7 3.7	Service Water Emergency heat loads
076A4.01	2.9 2.9	Service Water SWS pumps
078G2.1.31	4.6 4.3	Instrument Air Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
078K1.05	3.4 3.5	Instrument Air MSIV air
103K1.03	3.1 3.5	Containment Shield building vent system



ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G*	K/A Topic(s)	IR	#
003 Reactor Coolant Pump					X							003K5.02: Knowledge of the operational implications of effects of RCP coastdown on RCS parameters as they apply to the RCPS.	2.8	
						X						003K6.14: Knowledge of the effect of a loss or malfunction on the starting requirements will have on the RCPS.	2.6	
004 Chemical and Volume Control								X				004A2.22: Ability to (a) predict the impacts of a mismatch of letdown and changing flows on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of the mismatch.	3.2	
005 Residual Heat Removal							X					005A1.07: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including Determination of test acceptability by comparison of recorded valve response times with Tech-Spec requirements.	2.5	
								X				005A2.01: Ability to (a) predict the impacts of failure modes for pressure, flow, pump motor amps, motor temperature, and tank level instrumentation the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations.	2.7	
006 Emergency Core Cooling					X							006K5.07: Knowledge of the operational implications expected temperature levels in various locations of the RCS due to various plant conditions as they apply to ECCS.	2.7	
						X						006K6.05: Knowledge of the effect of a loss or malfunction of HPI/LPI cooling water will have on the ECCS.	3.0	
007 Pressurizer Relief/Quench Tank											X	007G2.1.20: Ability to interpret and execute procedure steps.	4.6	
008 Component Cooling Water		X										008K2.02: Knowledge of bus power supplies to CCW pump, including emergency backup.	3.0	
010 Pressurizer Pressure Control						X						010K6.02: Knowledge of the effect of a loss or malfunction of the PZR will have on the PZR PCS.	3.2	
012 Reactor Protection				X								012K4.04: Knowledge of RPS design feature(s) and/or interlock(s) which provide for redundancy.	3.1	
								X				012A2.04: Ability to (a) predict the impacts of faulty or erratic operation of detectors and function generators on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations.	3.2	









T2G2 PWR EXAMINATION OUTLINE

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

002K5.10	Reactor Coolant	3.6	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Relationship between reactor power and RCS differential temperature
011K4.05	Pressurizer Level Control	3.7	4.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PZR level inputs to RPS
014A1.02	Rod Position Indication	3.2	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Control rod position indication on control room panels
017K6.01	In-core Temperature Monitor	2.7	3.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sensors and detectors
027K2.01	Containment Iodine Removal	3.1	3.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fans
029K1.05	Containment Purge	2.9	3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment air cleanup and recirculation system
033G2.2.3	Spent Fuel Pool Cooling	3.8	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(multi-unit license) Knowledge of the design, procedural and operational differences between units.
035A4.02	Steam Generator	2.7	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fill of dry S/G
055K3.01	Condenser Air Removal	2.5	2.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Main condenser
068A3.01	Liquid Radwaste	2.5	2.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evaporator pressure control

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G

TOPIC:

RO SRO

015G2.2.25	Nuclear Instrumentation	3.2	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
------------	-------------------------	-----	-----	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	-------------------------------------	--

*2.02*

028A2.01	Hydrogen Recombiner and Purge Control	<del>3.4</del>	<del>3.6</del>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hydrogen recombining power setting, determined by using plant data book
----------	---------------------------------------	----------------	----------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	---

*3.9*

*LOCA CONDITIONS & RESOLUTION CONDITIONS OVER H2*  
Knowledge of the parameters and logic used to assess the status of safety functions

071G2.4.21	Waste Gas Disposal	4.0	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
------------	--------------------	-----	-----	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	-------------------------------------	--

*KA Δ*  
*7/07/15*

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)											Form ES-401-2	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G*	K/A Topic(s)	IR	#
001 Control Rod Drive														
002 Reactor Coolant					X							002K5.10: Knowledge of the operational implications of the relationship between reactor power and RCS differential temperature as they apply to the RCS	3.6	
011 Pressurizer Level Control				X								011K4.05: Knowledge of PZR LCS design feature(s) and/or interlock(s) which provide for PZR level inputs to RPS.	3.7	
014 Rod Position Indication							X					014A1.02: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPIS controls, including Control rod position indication on control room panels.	3.2	
015 Nuclear Instrumentation											X	015G2.2.25: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	
016 Non-Nuclear Instrumentation														
017 In-Core Temperature Monitor						X						017K6.01: Knowledge of the effect of a loss or malfunction of the following ITM system components: Sensors and detectors .	2.7	
027 Containment Iodine Removal		X										027K2.01: Knowledge of bus power supplies to the following: Fans.	3.1	
028 Hydrogen Recombiner and Purge Control								X				028A2.01: Malfunctions or operations on the HRPS; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Hydrogen recombinder power setting, determined by using plant data book	3.6	
029 Containment Purge	X											029K1.05: Knowledge of the physical connections and/or cause-effect relationships between the Containment Purge System and Containment air cleanup and recirculation system.	2.9	
033 Spent Fuel Pool Cooling											X	033G2.2.3: Knowledge of the design, procedural, and operational differences between units.	2.7	
034 Fuel Handling Equipment														
035 Steam Generator										X		035A4.01: Ability to manually operate and/or monitor in the control room: Fill of dry S/G	2.7	
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator														
055 Condenser Air Removal			X									055K3.01: Knowledge of the effect that a loss or malfunction of the CARS will have on the Main condenser	2.5	
056 Condensate														

068 Liquid Radwaste														X		068A3.01: Ability to monitor automatic operation of the Liquid Radwaste System including Evaporator pressure control.	2.5	
071 Waste Gas Disposal															X	071G2.4.21: 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.	4.6	
072 Area Radiation Monitoring																		
075 Circulating Water																		
079 Station Air																		
086 Fire Protection																		
K/A Category Point Totals:	1	1	1	1	1	1	1	1	0/1	1	1	1/2		Group Point Total:			10/3	



T3 PWR EXAMINATION OUTLINE

KA NAME / SAFETY FUNCTION: IR K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G TOPIC:

RO SRO

G2.1.14	Conduct of operations	3.1	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trip, mode changes, etc.
G2.1.36	Conduct of operations	3.0	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of procedures and limitations involved in core alterations
G2.2.20	Equipment Control	2.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the process for managing troubleshooting activities.
G2.2.40	Equipment Control	3.4	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to apply technical specifications for a system.
G2.3.11	Radiation Control	3.8	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to control radiation releases.
G2.3.12	Radiation Control	3.2	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiological safety principles pertaining to licensed operator duties
G2.3.15	Radiation Control	2.9	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation monitoring systems
G2.4.14	Emergency Procedures/Plans	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of general guidelines for EOP usage.
G2.4.26	Emergency Procedures/Plans	3.1	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.
G2.4.39	Emergency Procedures/Plans	3.9	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the RO's responsibilities in emergency plan implementation.



Facility: NORTH ANNA POWER STATION		Date of Exam: JUNE 2016				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.14	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.	3.1			
	2.1.36	Knowledge of procedures and limitations involved in core alterations.	3.0			
	2.1.40	Knowledge of refueling administrative requirements.			3.9	
	2.1.					
	Subtotal			2		1
2. Equipment Control	2.2.20	Knowledge of the process for managing troubleshooting activities	2.6			
	2.2.40	Ability to apply Technical Specifications for a system.	3.4			
	2.2.14	Knowledge of the process for controlling equipment configuration or status			4.3	
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.			4.1	
	Subtotal			2		2
3. Radiation Control	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			
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9			
	2.3.14	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			3.1	
	2.3.					
	Subtotal			3		2
4. Emergency Procedures / Plan	2.4.14	Knowledge of general guidelines for EOP usage.	3.8			
	2.4.26	Knowledge of facility protection requirements, including fire brigade and portable firefighting equipment usage.	3.1			
	2.4.39	Knowledge of RO responsibilities in emergency plan implementation.	3.9			
	2.4.27	Knowledge of "fire in the plant" procedures.			3.9	
	2.4.30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.			4.1	
	2.4.					
	Subtotal			3		2
Tier 3 Point Total				10		7



Tier / Group	Randomly Selected K/A	Reason for Rejection
RO		
T1/G1	057AA2.02	<p>Loss of Vital AC Inst. Bus – Core flood tank pressure and level indicators</p> <p>North Anna has 2 power supplies to the process racks. A loss of vital instrumentation will not affect these indications. There are no operator actions required for SI tank indicators on loss of vital AC bus. Unable to write a valid question to match the K/A.</p> <p>Changed K/A to 057AA2.19</p>
T2/G1	005A1.07	<p>Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls including: Determination of test acceptability by comparison of recorded valve response times with Tech-Spec requirements</p> <p>Unable to write a valid RO question due to limited procedures available concerning RHR MOV valve response time testing and no specific test criteria in Tech Specs.</p> <p>Changed K/A to 0051.02</p>
T2/G1	022K4.05	<p>Containment Cooling – Containment cooling after LOCA destroys ventilation ducts</p> <p>North Anna containment ventilation is not relied upon to cool containment following a LOCA (not part of safety analysis). Unable to write a valid question to match the K/A.</p> <p>Changed K/A to 022K4.03</p>
T2/G1	061K2.03	<p>Auxiliary/Emergency Feedwater – AFW diesel driven pump</p> <p>North Anna does not have diesel driven AFW pumps. (2 motor driven and 1 turbine driven pumps per unit)</p> <p>Changed K/A to 061K2.01</p>

SRO ONLY		
T1/G1	008G2.4.20	<p>Pressurizer Vapor Space Accident: Knowledge of the operational implications of EOP warnings, cautions and notes.</p> <p>No warnings, cautions or notes in EOPs that pertain to Pressurizer Vapor Space Accident. Unable to write a valid question to match the K/A.</p> <p>Changed K/A to 008G2.4.6</p>
T2/G2	028A2.01	<p>Hydrogen Recombiner and Purge Control – Hydrogen recombinder power setting, determined by using plant data book.</p> <p>North Anna hydrogen recombiners do not require a determination of power settings. Unable write a valid question to match the K/A</p> <p>Changed K/A to 028A2.02</p>

Facility: North Anna Power Station		Date of Exam: 6-20-2016		Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>		
Item Description	Initial					
	a	b*	c*#			
1. Questions and answers are technically accurate and applicable to the facility.	NA	BS	TBK			
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	NA	BS	TBK			
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401	NA	BS	TBK			
4. The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last two NRC licensing exams, consult the NRR/NRO OL program office).	NA	BS	TBK			
5. Question duplication from the licensee screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate  ___ The audit exam was systematically and randomly developed; or ___ the audit exam was completed before the license exam was started; or ___ the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or ___ other (explain)	NA	BS	TBK			
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			
	2210	12172	4113	NA	BS	TBK
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				
	3717	38118	NA	BS	TBK	
8. References/handouts provided do not give away answers or aid in the elimination of distractors.	NA	BS	TBK			
9. Question content conforms to specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.	NA	BS	TBK			
10. Question psychometric quality and format meet the guidelines in ES Appendix B.	NA	BS	TBK			
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.	NA	BS	TBK			
Printed Name / Signature			Date			
a. Author	RANDALL GARRETT / <i>[Signature]</i>			6/16/16		
b. Facility Reviewer (*)	Bryan Thompson / <i>[Signature]</i>			6-16-16		
c. NRC Chief Examiner (#)	BRUNO CABALLERO / <i>[Signature]</i>			6-16-16		
d. NRC Regional Supervisor	Eugene Guthrie / <i>[Signature]</i>			6/16/16		
Note:	* The facility reviewer's initials or signature are not applicable for NRC-developed examinations.					
	# Independent NRC reviewer initials items in Column "c"; chief examiner concurrence required.					



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 a 1(easy) to 5 (difficult); (questions with a difficulty between 2 and 4 are acceptable)
3. Check the appropriate box if a psychometric flaw is identified:
  - "Stem Focus": The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
  - "Cues": The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc.).
  - "T/F": The answer choices are a collection of unrelated true/false statements.
  - "Cred. Dist": The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
  - "Partial": 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:
  - "Job Link": 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).
  - "Minutia": 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).
  - "# / Units": The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
  - "Backward": 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 K/As that are *designated SRO-only* (K/A and license level mismatches are unacceptable)
6. Enter question's source: (B)ank, (M)odified, or (N)ew. Verify that (M)odified questions meet the 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?  
At a minimum, explain any "U" Status ratings (e.g., how the Appendix B psychometric attributes are not being met).
- 8.



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
2	H	2	x	x								B	E	<p>T1G1 008 AK1.01 (SAMPLE QUESTION) [2013 Farley NRC Exam, Q#?]</p> <p>Note to NRC reviewers: The reason that this proposed test item tests the Tier 1 (Emergency/Abnormal EVOLUTION) aspect is because it indirectly tests the Westinghouse Owner's Group EOP Guideline associated with SI termination steps: pressurizer level is only allowed to be checked after adequate RCS Subcooling is confirmed.</p> <ol style="list-style-type: none"> <li>1. Cue: The 1<sup>st</sup> bullet in the stem <u>tells</u> the applicant that the safety valve failed open instead of only providing the control room indications that indicate that a safety valve failed open (annunciator, tailpipe temperature, etc.)</li> <li>2. Stem Focus: The 2<sup>nd</sup> fill-in-the-blank statement is missing the level indicator. The applicants could be confused whether the question is talking about <u>actual/level</u> vs <u>indicated</u> level. Suggest including the unit # /name of the pressurizer level indicator in the 2<sup>nd</sup> fill-in-the-blank statement, similar to how the 1<sup>st</sup> fill-in-the-blank statement includes the unit#/name.</li> <li>3. Stem Focus: The capitalization protocol in the sample questions may be inconsistent. For example, in this test item the noun name of valve and temperature indicator is capitalized whereas in other sample test items the noun names of valves and rad monitors (Q#3) aren't capitalized. Capitalization is typically reserved for annunciator windows; nevertheless, the entire exam should be consistent.</li> </ol>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
2													E	<p>4-5-16: Received re-work of original sample question; Comment #1 not incorporated (for valid reason); however,</p> <p>1. Q=K/A: The reason (listed in the current and prior versions of the distracter analysis) for why the proposed question was related to the Tier 1 (emergency/abnormal evolution) topic was because <u>the WOG Executive Guideline says that pressurizer level should only be relied upon if Subcooling was present</u>. In the prior ES-401-9, I justified this with a note describing the Tier 1 applicability. Upon further review, it now seems neither portion of the question tests the knowledge that <u>pressurizer level should only be used if Subcooling exists</u>.</p> <p>One suggestion to directly hit the Tier 1 aspect (operational implication of open leaking valve is E-1 prohibits using pressurizer level unless Subcooling exists) is to replace the 2<sup>nd</sup> fill-in-the-blanks as follows.</p> <p><i>Unit 2 was operating at 100% power when a reactor trip occurred after 2-RC-SV-2551B, B PZR Safety Valve failed open.</i></p> <p><i>The following conditions currently exist:</i></p> <ul style="list-style-type: none"> <li>• Crew is at Step 6 in E-1, CHECK IF SI CAN BE TERMINATED</li> <li>• Pressurizer pressure is 1020 psig</li> <li>• PRT pressure is 55 psig</li> </ul> <p>WOOTF completes both statements?</p> <p>1-RC-TI-2467, B PZR Safety Valve Line Temperature, will indicate approximately _____. (320 F vs 546 F)</p> <p>In SI termination Step 6, pressurizer level is checked only after first verifying _____. (RCS Subcooling vs Containment Temperature)</p>
2														Repaired Q#2 rec'd 4-26-16; Question is SAT.



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
3	H	3				X					X				B	E	T1G1 009 SBLOCA G2.4.21 1. Cred Dist: Choice D (green path) is not plausible because an RO can eliminate this choice solely based on the fact that ROs are not responsible for knowing Green Paths; ROs are typically only required to know Red/Orange Path Conditions. 2. Job-Link: Choice B is not operationally valid because there is no orange C.1 procedure.  Repaired Q#3 rec'd 4-26-16; Question is SAT
4	?	2	X												N	E	T1G1 011 LB LOCA EA1.09 1. LOK: Is this higher cog or lower cog? (marked as higher, both parts seem memory level) We can discuss. 2. Stem Focus: The 1 <sup>st</sup> fill-in-the-blank statement ends with a question mark. 3. Stem Focus: Suggest streamlining the 1 <sup>st</sup> part of Choices A/B: <del>Safety-Injection Accumulator Level</del> 4. Stem Focus: Suggest adding the phrase "in accordance with 1-E-1" at the end of the stem question. 5. Stem Focus: Suggest re-wording the 2 <sup>nd</sup> fill-in-the-blank statement as: (add word "discharge" and make statement pertain to only one valve). "If a S/ accumulator discharge isolation valve cannot be closed, then the accumulator will be vented to the ____ (2) ____."  Repaired Q#4 rec'd 4-26-16; Question is SAT

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
5	H	2												<p>T1G1 022 Loss of Makeup AA2.02 (AP-49)</p> <p>1. Q=K/A: Both parts of the proposed test item can be answered solely based on Tier 2 (Plant Systems) interlock logic. Both CH pumps receive an <i>auto</i> start signal and letdown will <i>auto</i> isolate after all charging pump breakers are open at the same time. [See K/A Catalog Tier 2 Topic 004, CVCS, A3.11, K6.04 and K4.15] The Tier 1 aspect is the Emergency/Abnormal EVOLUTION aspect.</p> <p>Suggest re-working the question to test some aspect of "Ability to determine and interpret charging pump problems as they apply to AP-49, Loss of Normal Charging." For example, test a required operator (manual) action or AP-49 requirement for the given stem conditions that cannot be answered solely using plant systems (Tier 2) knowledge.</p>
5														<p>Replaced NEW Q#5 rec'd 4-26-16; however,</p> <p>1. Cred Dist: Choices A/D are not plausible because they're saying the same thing; the applicants can eliminate these choices because they're redundant to one another.</p> <p>Suggest testing whether Letdown is/ is NOT required to be isolated and whether Attachment 2, Venting Charging Pumps, is / is NOT required to be performed before starting "C" Charging Pump.</p> <p>2. Stem Focus: The stem question can be streamlined as:  <i>Which of the following choices describes the required actions in accordance with 1-AP-49, Loss of Normal Charging?</i></p> <p>4-28-16: Changed the four choices to</p> <ol style="list-style-type: none"> <li>Go to 1-AP-48</li> <li>Perform Attachment 2</li> <li>Immediately start "C" charging pump</li> <li>Close disc MOVs on previously running and then start "C" charging pump.</li> </ol> <p><b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A					SRO Only
6	H	2														<p>T1G1 028 Loss of RHR AK1.01 (AP-11) [2008 NA NRC Exam, Q#?]</p> <p>1. Q=K/A: Both parts of the proposed test item can be answered solely based on Tier 2 (Plant Systems) knowledge. RHR Pump 1A amperage indicates a sheared shaft; 1-RH-FCV-1605 auto-opens to maintain flow; and low core flow causes CETs to rise. [See K/A Catalog Tier 2 Topic 005, RHRS, K4.03 and K6.05] The Tier 1 aspect is the Emergency/Abnormal EVOLUTION aspect.</p> <p>Suggest re-working the question to test some aspect of "Knowledge of the operational implication of losing RHR as it applies to AP-11, Loss of RHR." For example, test a required operator (manual) action or AP-11 requirement for the given stem conditions that cannot be answered solely using plant systems (Tier 2) knowledge.</p>
6																<p>Received replacement BANK Question on 4-26-16; however,</p> <p>1. Stem Focus: Did the RH-MOV-1701 spuriously close? Is this the issue? Not clear what occurred. Yes, North Anna used to have auto-closure on MOV-1701.</p> <p>2. Cred Dist: The 2<sup>nd</sup> part of B/D (won't stop pump first) is not plausible because the pump has no suction path and conservative decision making applies to stop the pump first before re-opening MOV-1701.</p> <p>4-28-16: Change to use the outlet valve, which would not require stopping the pump first.</p> <p>6-1-16: <b>QUESTION IS SAT.</b></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.	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A				SRO Only	
7	H	3	x									x				E	T1G1 027 PZR PCS AK2.03 1. Stem Focus: The 1 <sup>st</sup> part of the question is really just asking whether 1-RC-PCV-1455C will / will not open. Suggest re-wording the 1 <sup>st</sup> fill-in-the-blank statement (and the 1 <sup>st</sup> part of the choices) to just test this knowledge instead of including the spray valves. (Since every choice includes spray valves opening.) 2. Stem Focus: The word "AND" in between the fill-in-the-blank statements is not necessary. 3. #/units: The noun name for 1-RC-PCV-1455C is missing.
7																	Repaired Q#7 rec'd 4-26-16; comments incorporated, what is basis for why 1C RCP is first secured? RCP 1C provides best spray flow so its first secured. <b>QUESTION IS SAT.</b>
8	H	2	x											Mod		E	T1G1 029 ATWS EK3.03 1. Stem Focus: The 2 <sup>nd</sup> part of each choice is unique; therefore, the 1 <sup>st</sup> part of each choice is not being tested. The applicant only needs to know the answer to the 2 <sup>nd</sup> part of the question. Suggest the following: WOOTF identifies the required method for injecting the BIT in accordance with 1-FR-S.1, including the reason for this method? A. Initiate Si; boration injection rate B. Initiate Si; heat sink concerns C. Manually align BIT; boration injection rate D. <b>Manually align BIT; heat sink concerns</b>
8																	Repaired Q#8 rec'd 4-26-16; <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward			
9	F	2	x	x										<p>T1G1 038 EK3.03 (SAMPLE QUESTION)</p> <p>1. Q=K/A: The proposed test item solely tests the Tier 2 (Plant Systems) aspect. [See K/A Catalog (Tier 2) Topic 073, Process Radiation Monitoring, K4.01: Knowledge of PRM system design feature(s) and/or interlock(s) which provide for release termination when radiation exceeds set point.]</p> <p>As an idea, an AUTOMATIC action can be an annunciator, since annunciators "automatically" alarm. With this idea, it may be easier to test an operator action in an annunciator procedure, abnormal operating procedure, or emergency operating procedure. There may be other options that would meet the Tier 1 (EVOLUTION) aspect of the K/A, including testing the applicants' knowledge of operator actions in:</p> <ul style="list-style-type: none"> <li>AP-5, Radiation Monitoring System, Attachment 9, Steam Generator Blowdown Monitors</li> <li>1-AR-32, High Capacity Blowdown abnormal alarm procedures</li> </ul> <p>2. #/units: The stem should include the exact wording on the annunciators instead of paraphrasing the annunciator (4<sup>th</sup> and 5<sup>th</sup> bullets in stem)</p> <p>3. Partial: The word ONLY is missing from Choice C. Choice C implies that BD-TV-100A &amp; B remain open. Therefore, the word ONLY should be used.</p> <p>4. Cue: Choice C is the only choice without TV-100A &amp; B and is also the correct answer.</p> <p>5. Stem Focus: It seems that the stem question is the only thing in the stem that is needed to answer the question. If you cover up everything in the stem except the stem question, the answer appears to still be clear.</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.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
9														<p>4-5-16: Received re-work of original sample question;</p> <p>1. Cue: The only choice that has the term "high capacity blowdown" is also the correct answer (4<sup>th</sup> bullet in the stem also says "high capacity blowdown." Per 1-OP-32.3, noun name for 1-BD-FCV-102A, B, &amp; C is "SG to Blowdown Recovery Tank FCVs (not SG High Capacity Blowdown FCVs)."</p> <p>2. Q=K/A: For K3 statements, the "reason" is not being tested because the stem tells the applicant the reason why the auto-closure occurred.</p> <p>3. Stem Focus: the word radiation is misspelled in the stem question.</p> <p>Suggest the following to better hit the K/A and eliminate cue:  <i>Unit 1 was operating at 100% power and the following conditions occurred:</i></p> <ul style="list-style-type: none"> <li>• Pressurizer level lowering</li> <li>• 1-BD-FCV-102A, B, &amp; C, SG to Blowdown Recovery Tank FCVs, auto-closed.</li> <li>• The crew tripped the reactor and initiated safety injection.</li> </ul> <p>The crew is currently implementing E-0, Step 12.c</p> <p>Ⓒ CHECK THAT SG TUBES ARE NOT RUPTURED:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> a) Level in any SG RISING IN AN UNCONTROLLED MANNER</li> <li><input type="checkbox"/> b) GO TO I-E-3, STEAM GENERATOR TUBE RUPTURE, STEP 1</li> <li><input type="checkbox"/> c) Check Radiation Monitors - NORMAL: <ul style="list-style-type: none"> <li>• SG Blowdown radiation last known valid indication</li> <li>• Condenser Air Ejector radiation last known valid indication</li> <li>• SC Main Steamline radiation</li> <li>• Terry Turbine AFW Pump exhaust radiation</li> </ul> </li> <li><input type="checkbox"/> d) GO TO I-E-3, STEAM GENERATOR TUBE RUPTURE, STEP 1.</li> </ul> <p>WOOTF completes both statements?  The reason why 1-BD-FCV-102A, B, &amp; C FCVs auto-closed is because of _____ (RM-125 vs RM-122)  The answer to Step 12.c is _____. (yes vs no)</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
9																	4-26-16: No suggestions to Q#9 incorporated; need to discuss. The Tier 1 aspect could (plant evolution) was hard to hit because the K/A wording is "auto-actions." Accepted the proposed question because it still indirectly tests the reason for why 102A, B, & C auto-closed. <b>QUESTION IS SAT.</b>
10	H	2											x		N	U	T1G1 040 Steam Line Rupture AK2.10 (E-2, AP-38) 1. Q=K/A: Both parts of the proposed test item can be answered solely based on Tier 2 (Plant Systems) knowledge. The fault inside containment causes pressure to rise to 17.8 psia, which auto-isolates the MS Trip Valves. [See K/A Catalog Tier 2 Topic 039, MRSS; K4.08 and A3.02] The Tier 1 aspect is the Emergency/Abnormal EVOLUTION aspect. Suggest re-working the question to test some aspect of "Knowledge of the interrelations between E-2 or AP-38 and valves." For example, test a required operator (manual) action or E-2/AP-38 requirement for the given stem conditions that cannot be answered solely using plant systems (Tier 2) knowledge.
10																	4-26-16: No suggestions to Q#10 incorporated; need to discuss. Discussed a possible 2 x 2 question where the first part tests the applicants' knowledge that caused the auto-closure and the 2 <sup>nd</sup> part tests the RNO for E-2, Step 1. 5-26-16: Licensee reworked question to test a steam line break: the signal that should auto-close MSTVs and E-2 required actions if MSTVs could not be manually closed. <b>QUESTION IS SAT.</b>
11	F	2									x				N	E/U	T1G1 054 Loss of Main FW AG2.4.20 (AP-31) 1. Cred Dist: The 2 <sup>nd</sup> part of Choices A/B (4 %/min) may not be plausible; no basis for why this value is plausible was provided in the distracter analysis. 2. Minutia: Testing the difference between 4% and 5% can be argued in the post exam environment as trivial and/or basically the same. See comment #1 above.
11																	Repaired Q#11 rec'd 4-26-16; licensee changed to 5% and 10%. Need to discuss whether 10% load change ever allowed in any procedure. Change the 10% to 2%. <b>Question is SAT.</b>






Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A				SRO Only
13	F	2											x	B	E/U	<p>T1G1 056 AK3.01 LOOP AK3.01 (AP-10, ECA-0.0)</p> <p>1. Q=K/A: The proposed test item does not test a <u>reason</u> (directly or indirectly) for the load sequencer's order and time delays.</p> <p>2. Q=K/A: This K/A may be difficult to hit from the Tier 1 (Emergency EVOLUTION) aspect. Here are some ideas that may or may not work:</p> <ul style="list-style-type: none"> <li>In ECA-0.0, after the safety related loads are placed in P-T-L, and then ECA-0.1 is entered to recover loads, the <u>reason</u> for the loading sequence may lend itself more to the Tier 1 aspect.</li> <li>When the EDGs are carrying Emergency Busses (sole source), the AP-10 attachments for configuring loads must be done and are given high priority. Does this have to do (directly or indirectly) with the load sequencer automatic order and time delays??</li> <li>Is there any time in AP-10 or ECA-0.0, where the crew must drop the bus and allow the sequencer to re-sequence on? If so, then the "reason" piece may be applicable from the procedure perspective.</li> </ul> <p>If there is not a way to hit the Tier 1 aspect, then write the question to test the <u>reason</u> for the load sequencer automatic order and time delays.</p> <p>3. Ensure no overlap with Q# 46 and 49.</p>
13																<p>4-26-16: No suggestions to Q#13 incorporated; need to discuss. Use Q#46 for this test item. Suggested testing the applicants' knowledge of the stub bus time delay (normally) and then test the applicants' knowledge of why stub bus breaker won't close in this case (RHR pump breaker still closed).</p> <p>6-3-16: Included testing a reason and changed 30 seconds to 20 seconds; <b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A				
15	F	2														<p>T1G1 058 Loss DC Power G2.4.11</p> <p>1. If the suggestion provided in Q#14 is implemented, then Q#15 cues the answer to Q#14 because the same vital bus is used and the stem says the reactor is in mode 3 because of the vital instrument bus loss. Suggest picking a different Vital Bus to write for this question.</p> <p>2. Q=K/A: The proposed test item can be answered solely based on Tier 2 (Plant Systems) knowledge. The 1-III DC Bus supplies control power to the A station service bus and the J emergency bus.</p> <p>[See K/A Catalog Tier 2 Topic 063 DC Elect Distr K2.01, K3.02, A4.01] The Tier 1 aspect is the Emergency/Abnormal EVOLUTION aspect and the K/A requires testing knowledge of AOPs.</p> <p>Suggest testing the applicants' ability to recognize one of the required actions listed in Step 8 of Attachment 15, for example:</p> <ul style="list-style-type: none"> <li>• Whether a fire watch is required</li> <li>• What position to check the G-12 auxiliary switch position</li> <li>• RNO for VCT/PZR level lo/high.</li> </ul>
15																4-26-16: No suggestions to Q#15 incorporated; need to discuss.
15																6-13-16 Re-worked question to test AP-10, Attachment 15 for loss of DC Bus 1-III. <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A			
16	H	1													<p>T1G1 WE04 LOCA Outside Cnmt EK1.1 (ECA-1.1, ECA-1.2)</p> <p>1. LOD=1: The proposed test item provides no discriminatory value because the applicant only has to intersect 75 minutes with the curve on Attachment 3 (provided as a reference). The determination that the initiating event started at 0835 is LOD=1.</p> <p>Here are ideas that may or may not work, to test the ECA-1.1 aspect of the operational implications of components, capacity, and function of emergency systems concepts as they apply ECA-1.1 or ECA-1.2</p> <p>*****</p> <p>CAUTION: • Charging and Low-Head Pumps taking suction from the RWST must be stopped when RWST level decreases to 8%.</p> <p>• Quench Spray/Pumps taking suction from the RWST must be stopped when RWST level decreases to 3%.</p> <p>*****</p> <p>*****</p> <p>CAUTION: When the ECST level decreases to 40%, then 1-AP-22.5, LOSS OF EMERGENCY CONDENSATE STORAGE TANK T-ON-TK-1, should be initiated to provide an alternate water source to the AFW Pumps.</p> <p>*****</p> <p>*****</p> <p>CAUTION: To provide adequate Charging Pump cooling, either the Charging Pump recirc alignment must be established or Charging flow must be maintained at least 60 gpm.</p> <p>*****</p> <p>*****</p>
16															<p>Repair to Q#16 rec'd 4-28-16; added 2<sup>nd</sup> part to test applicants' knowledge of when SI pumps must be stopped (RWST level 8%).</p> <p><b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
19	H	2															<p>T1G2 028 PZR Level Control Malif AK1.01 (AP-3, AP-49)</p> <p>1. Stem Focus: The fill-in-the-blank statement choices say depress the lower/raise button; add the word "output" before lower and raise to be specific to the controllers.</p> 
19																	<p>Repaired Q#19 rec'd 4-28-16; comments incorporated. <b>QUESTION IS SAT.</b></p>
20	H	2						x									<p>T1G2 032 Loss of SRNI AA2.04 (AP-4.1, 1-OP-1.5)</p> <p>1. Partial: To ensure that the 2<sup>nd</sup> part of Choice A (SR blocked, Rx Trip won't occur) is absolutely wrong, add the 1-OP-1.5 Step number to the second line in the stem:</p> <p><i>"The RO is performing Step 2 of Attachment 4, Deenergizing Source Range NI Detectors, to verify proper overlap between Source range and Intermediate range NIs."</i></p>
20																	<p>Repaired Q#20 rec'd 4-28-16; comments incorporated. <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
21	H	2	x										x		N	U	<p>T1G2 033 Loss of IRNI AK3.01 (AP-4.2)</p> <p>1. Q=K/A: The proposed test item can be answered solely based on Tier 2 (Plant Systems) knowledge. The blown control power fuse will cause an auto-reactor trip signal to be generated, which is the correct answer. [See K/A Catalog Tier 2 Topic 015, NIS, K1.01, K3.01, K4.05] The Tier 1 aspect is the Emergency/Abnormal EVOLUTION aspect.</p> <p>Suggest re-working the question to test some aspect of "Knowledge of the reason for stopping startup/ lowering power as required by AP-4.2. after an IR failure. For example, test a required operator (manual) action or AP-4.2 step requirement and the reason for the step.</p> <p>2. Stem Focus: The stem question needs a question mark instead of a period.</p>
21																	<p>Repairs to Q#21 rec'd 5-3-16;</p> <p>1. Cred Dist: Choices C/D are ALWAYS correct (stopping the power increase when something fails) because of conservative decision making; therefore, Choices A/B are not plausible.</p> <p>Suggest revising the 1<sup>st</sup> portion of the question to test whether the crew is/ is not required to lower power to &lt; P-6. Therefore, the REASON for stopping the power increase is indirectly being tested - - that is, power is required to be stopped but NOT lowered to &lt; P-6 because only ONE IR has failed.</p>
21																	<p>6-3-16: Tested whether AP-4.2 allowed power to be raised if one IR NI is inoperable; <b>QUESTION IS SAT.</b></p>
22	F	2											x		N	U	<p>T1G2 060 Accidental Gas RW Release AK2.01</p> <p>1. Q=K/A: The proposed test item can be answered solely based on Tier 2 (Plant Systems) knowledge. The WGDts relief valves release to Vent Stack B and RMS-179/180 must be manually reset after reaching the hi-hi set point. [See K/A Catalog Tier 2 Topic 073, Process Rad Instrumentation, K1.01, A4.02]. The Tier 1 aspect is the Emergency/Abnormal EVOLUTION aspect.</p> <p>Suggest testing some aspect of the required operator actions in 0-AP-54. Attachment 2, or 2B-A5, PROCESS VENT VNT STACK A&amp;B HI HI RADIATION.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
22																	Repaired Q#22 rec'd 5-3-16 1. Q=K/A: The 2 <sup>nd</sup> part of the proposed test item is the Tier 1 aspect; however, it does not hit the K/A. The K/A deals with 0-AP-5.2, MGP RADIATION MONITORING SYSTEM; Attachment 5, 1-VG-RJ-180-1, 2 OR 3, MGP VENT STACK B RAD MONITOR checks for operability on 1-RM-RMS-180. Test the applicants' knowledge of what checks are made IAW Attachment 5. 6-1-16: Revised to test 0-AP-5.2 requirement for whether Ops or Instrument Dept returns to normal range; <b>QUESTION IS SAT.</b>
23	F	2	x				x								N	E/U	T1G2 067 Plant fire on site AA 1.05 1. Cred Dist: Choices B (rout ductwork to 6 charging pumps during a fire) is not plausible because all the charging pumps are not necessary and this takes valuable time when fire combat is occurring. 2. Cred Dist: Choice C is not plausible because all of the other choices have the phrase ". on each unit" and for the same reason as comment #1 listed above. 3. Stem Focus: There is a typo: Attachment 6 (not 9).
23																	Repaired Q#23 rec'd on 5-3-16 1. Stem Focus: Choice C is missing the same phrase that Choice A contains ("on the second floor"). Alternatively, delete the phrase in Choice A to be symmetrical. 2. Stem Focus: The first letter of "attachment" should be capitalized. 3. Stem Focus: the word "the" can be moved to the stem (1 <sup>st</sup> part of fill-in-the-blank statement). 5-4-16: All items fixed; <b>QUESTION IS SAT.</b>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
24	F	2	X											E	T1G2 068 CR Evac AK3.17 1. Stem Focus: The phrase in the 2 <sup>nd</sup> sentence is not necessary, "...due to a spill of cleaning solvents." 2. Stem Focus: The stem question is missing. 3. Stem Focus: The word "AND" (between the fill-in-the-blank statements) is confusing; not required. 4. Cred Dist: To enhance plausibility of the 1 <sup>st</sup> part of Choices B/D, delete the word "ONE" and modify the fill-in-the-blank statement as: <i>Emergency boration is required if ___(1)___ IRP/(s) indicate(s) greater than 10 steps.</i>
24															Repaired Q# 24 rec'd 5-3-16 <b>QUESTION IS SAT.</b>
25	H	2	X											U	T1G2 025 High Rx Coolant Activity AA2.03 (AP-5, OP-3.2) [2014 Surry NRC Exam, Q#?] 1. Cred Dist: The 1 <sup>st</sup> part of Choices C/D (Aux Bldg "sees" rad first) is not plausible because in order for the activity to get out of containment, it always has to come through the Letdown System first. Suggest testing the applicants' ability to determine and interpret one or more of the following screens (AP-5, Attach 8, Step 3); this would also be a way to hit the K/A if the screen shots were provided as a reference for the test item. NOTE: The following are available channel screen displays: <ul style="list-style-type: none"> <li>• Channel A FuelFail %</li> <li>• Channel B Vol Act µCi/cc</li> <li>• Channel C ProcDose mrem/h</li> <li>• Channel D EG Hx Rm mrem/h</li> </ul> 3. Check Letdown Radiation Monitor reading. <input type="checkbox"/> a) Screen display Channel "C ProcDose mrem/h" using the channel and select keys, as applicable. <input type="checkbox"/> b) 1-RM-RR-100, Multipoint Recorder. 2. Stem Focus: The first sentence in the stem should include that the activity is being performed in accordance with 2-OP-3.2, Unit Shutdown from Mode 3 to Mode 4.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other			6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only					
25																	5-3-16: Licensee wants to discuss 6-3-16: Re-wrote question to test Letdown Rad Monitor availability when excess letdown is in service; RCS Activity LCO limit. 6-15-16: Overlap with SRO Q#97 identified for RCS Activity LCO limit; wrote new question to test 0-AP-5, Attachment 8, Step 3. <b>QUESTION IS SAT.</b>	
26	H	1	x				x								B	E	T1G2 WE08 PTS EA1.1 1. LOD=1: No knowledge of FR-P.1 is required; the applicant can deduce the correct answer solely based on the definition of Pressurized Thermal Shock (high pressure, low temperature condition, GFES Topic 1930'10, K1.06, K1.04) as follows: A. choice decreases pressure (good) B. choice lowers temperature (bad) C. choice lowers temperature (bad) D. choice increases pressure (bad) 2. Cred Dist: Choice B is not plausible because placing residual heat removal in service is not contained anywhere in FR-P.1.; also not plausible for the reason listed above. 3. Stem Focus: The 3 <sup>rd</sup> bullet is not necessary. 5-3-16: Licensee wants to discuss. 6-1-16: Licensee changed from testing the max cooldown rate after soak is completed to the prior cooldown rate that requires the soak. <b>QUESTION IS SAT.</b>	
26																	5-3-16: Licensee wants to discuss. 6-1-16: Licensee changed from testing the max cooldown rate after soak is completed to the prior cooldown rate that requires the soak. <b>QUESTION IS SAT.</b>	
27	H	2	x												N	E	T1G2 WE09 Natural Circ EG2.4.31 (ES-0.1, -0.2) 1. Stem Focus: To ensure no one misses this question, re-word the stem question as: <i>WOOTF is an indication of INADEQUATE natural circulation in accordance with Attachment 2?</i> 2. Stem Focus: In the second sentence of the stem, also include the name of Attachment 2. Repaired Q#27 rec'd 5-3-16 <b>QUESTION IS SAT.</b>	
27																	Repaired Q#27 rec'd 5-3-16 <b>QUESTION IS SAT.</b>	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
28	H	2	x			x									B	U	<p>T2G1 003 RCPS K5.02 [2010 NA NRC Exam, Q#?]</p> <ol style="list-style-type: none"> <li>Cred Dist: The 2<sup>nd</sup> part of Choices A/D (insert rods and then trip reactor) is not plausible because it isn't necessary to first insert rods to less than 5 steps and then trip the reactor, the same result is to just trip the reactor. Since both choices end up with the reactor tripped, it isn't necessary to first insert rods 5 steps.</li> <li>The 1<sup>st</sup> part of the question is testing generic fundamentals knowledge [See K/A Catalog Topic 193008, K1.05: List parameters that affect DNR/DNBR and describe their effects.] Instead, suggest testing how a plant specific RCS parameter (Tavg, delta-T, RCS computer screen, etc.) behaves as the RCP is coasting down.</li> <li>Stem Focus: Streamline the stem as follows: <ul style="list-style-type: none"> <li>Unit 1 is at 4% power and performing a startup in accordance with 1-OP-1.5, Mode 3 to Mode 2 Startup.</li> <li>The "B" RCP trips</li> </ul> </li> </ol> <p>WOOTF identifies how the Departure from Nucleate Boiling Ratio (DNBR) is affected and the required action?</p> <p>Repaired Q#28 rec'd 5-3-16</p> <ol style="list-style-type: none"> <li>Licensee showed us 1-OP-1.5, Attachment 2 &amp; 3 that contained inserting five steps and tripping; therefore, 2<sup>nd</sup> part of Choices A/D is plausible</li> <li>Added minimum required action. <b>QUESTION IS SAT.</b></li> </ol>
28																	
29	?	2										x			N	E/U	<p>T2G1 003 RCPS K6.14</p> <ol style="list-style-type: none"> <li>Q=K/A: The question is written to test trip criteria, for example, the question targets A1.01 (vibration), A1.03 (motor stator winding), and A2.03 (faulty motor current) instead of testing the starting criteria implications. None of the information in the stem is necessary. Suggest testing the Tech Spec 3.4.6 and/or 3.4.7 requirement that secondary water temperature of each SG must be ≤ 50°F above each of the RCS Cold Leg Temperatures.</li> <li>LOK: It seems that the question is a memory level question; let's discuss.</li> </ol>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only						
29																	5-3-16: Licensee wants to discuss. 6-1-16: Changed stem question to ask WOOTF prevents starting the RCP; <b>QUESTION IS SAT.</b>	
30	H	3								x						N	E/U	T2G1 004 CVCS A2.22 1. Q=K/A: What procedure is being used to correct, control, mitigate? The (b) part of the A2 K/A statement is required to be tested. Is there a procedure that describes how to calculate the net difference between charging, seal injection, and letdown? If so, then perhaps this question meets the K/A if the procedure captures the essence of what the applicant must do to answer the first part of the question. Provide procedure being used. 2. Job-Link: Is maintaining a 4 °F difference between Tavg and Tref operationally allowed?
30																		5-3-16: Licensee wants to discuss Recommended revising the question to test how VCT level (C-A1, C-A4) is responding ( <b>lowering</b> vs remain the same) with the stem conditions and what actions are required per the AP-16 leak procedure. 6-1-16: Licensee's version didn't test A2 portion of K/A: worked question to test when VCT level auto-makeup will occur and what AP-16 Step 5 requires for letdown isolation. <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
31	H	2		x											E	<p>T2G1 005 A1.07 (SAMPLE QUESTION)</p> <p>1. Cue: The only choice that falls within the RO's job responsibilities is Choice D, which is also the correct answer. All the other choices are follow-up actions that the SRO/STA are responsible for (to ensure VPAP-0805 requirements are met). Consequently, an RO applicant could correctly eliminate all three choices by only knowing that these actions are not within the RO area of responsibility, thereby bypassing the required K/A knowledge.</p> <p>Suggest choosing a RHR valve surveillance procedure that contains stroke time values for <i>normal, alert, and required action ranges</i>. Then provide the applicant with a timeline of operator actions associated with stroking the valve (including stroke time and/or how stroke time was started/stopped), and also (possibly, depending on the question) provide the applicant with the acceptance criteria for the surveillance procedure, as a reference. Then, ask the applicant to identify whether the acceptance criteria is / is NOT met. Even though this idea is also appropriate for a Tier 3 test item, or for an Admin JPM, the idea would still hit the Tier 2 aspect if the valve being stroked was an RHR valve.</p> <p><i>RHR: Ability to (a) predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRs controls, including determination of test acceptability by comparison of recorded valve response times with Tech-Spec requirements.</i></p>
31		x													U	<p>4-5-16: Received re-work of original sample question; however,</p> <p>1. Direct Lookup (LOD=1): The 1<sup>st</sup> part of the question is a direct comparison of the 87 second stroke time for MOV-1701 and the (only) column listed in the reference handout, which is the Required Time column.</p> <p>2. Cred Dist: The 2<sup>nd</sup> part of Choices A/C (clock starts only when red light comes on) is not plausible because the conservative option (clock starts when demand signal) is always the best choice, and, in this case, is also the correct option.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
31																	5-3-16: Licensee requested K/A replacement. Agreed. Randomly selected 005 A1.02: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RHRS controls, including RHR Flow Rate (3.3/3.4)
32	H	2											x	B	U		005 RHRS A2.01 1. Q=K/A: The proposed test item tests a valve malfunction (loss of air to 1-RH-HCV-1758, RHR Hx Outlet Vlv, See K/A Catalog A2.04: RHR Valve Malfunction) instead of testing an instrumentation malfunction. Additionally, the (b) portion of the A2 K/A statement (use procedures to correct, control, mitigate) wasn't justified with the distracter analysis information.
32																	5-3-16: Licensee wants to discuss. 6-1-16: Reworked question to test instrument failure in conjunction with AP-11, Step 8. QUESTION IS SAT.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
33	F	2	X									Mod	E	<p>T2G1 006 ECCS K5.07</p> <p>1. We should try and test some plant specific knowledge instead of the generic ECCS 10CFR50.46 design criteria; here are two ideas:</p> <ul style="list-style-type: none"> <li>An RCS break location affects the expected CET/RCS temperatures; "cooling-thru-the-break."</li> <li>When SI is operating correctly, it has an impact on RCS/CET temperatures.</li> <li>Cold leg response to ECCS flow into a stagnant loop (discussed in FR-P1 background)</li> </ul> <p>For example, the SI lesson plan describes expected CET responses for LB LOCA (see below):</p> <p><b>6.3 Content</b></p> <ol style="list-style-type: none"> <li>If a large break LOCA occurs and neither LHSI pump is available to flood the core, the cladding temperatures will exceed 2200°F. <ol style="list-style-type: none"> <li>This is above the LEIDENFROST temperature.</li> <li>If a LHSI pump is started later in the accident, the first flow of water into the core will not quench the cladding, and a vapor film will impede heat transfer.</li> <li>The water will flow through the core without gaining much heat, and when this water reaches the CETCs, it will decrease the temperature of the CETCs.</li> <li>The CETCs will then decrease in temperature even though the core is not being cooled.</li> <li>The CETCs will then increase in temperature as cladding temperatures drop due to the vapor film on the cladding collapsing as enough water reaches the cladding to lower the surface temperature below the LEIDENFROST temperature.</li> <li>The fall and then rise of the CETCs can be repeated several times as the water quench advances vertically up the core.</li> <li>Eventually, the entire core will quench and the CETCs will decrease continuously as the core cools.</li> </ol> </li> </ol> <p>2. Stem Focus: The 1<sup>st</sup> three sentences are not necessary.</p> <p>3. Stem Focus: The stem question should say "ECCS" (vs. SI) design criteria.</p>
33														<p>5-3-16: Licensee wants to discuss</p> <p>6-1-16: Used question to test WOG caution associated with SI flow into cold leg; <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
34	H	2	x			x		x								E	T2G1 006 ECCS K6.05 1. Cred Dist: Choice A is not plausible because the stem does not contain any flow information for the low head SI pumps and does not pertain to a loss of service water. Similarly, Choice D is borderline because the stem doesn't include any containment temperature. 2. Partial: Choice C is correct; even though the Recirc Spray Pumps are currently running, the heat exchangers won't have a cooling supply WHEN they do (eventually) start. 3. Stem Focus: The word depressurization is misspelled. If you wanted to discard this question (not required, may be salvageable), another option is to write a question that tests the applicants' knowledge of how the ECCS overall system operation is affected when the LHSI pumps or HHSI pumps are lost. This may be one interpretation of the Tier 2 K/A statement as LPI/HPI "cooling."
34																	5-3-16: Licensee wants to discuss 6-13-16: Resolved by testing which component is affected by a loss of service water LHSI, HHSI, Casing Cooling, Quench Spray. <b>QUESTION IS SAT.</b>
35	F	2						x								E	T2G1 007 Pzr Relief Tank G2.1.20 1. Partial: Choice A is also correct because of the following 1-OP-5.7 precaution and limitation allows venting to the process vents; use of the word "directly" (fill-in-the-blank-statement) is too subjective: 4.5 When venting the PRT to Process Vents using the sample sink, then 1-GW-R1-178, Process Vent Radiation Monitor should be closely monitored. Suggest the following: <b>WOOTF completes the statement in accordance with 1-OP-5.7, Operation of the PRT?</b> During normal 100% power operation, the minimum required pressure to maintain the PRT at is _____. PRT pressure should be maintained at least _____ when draining.



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A			
35															Repaired Q#35 rec'd 5-3-16 1. Rewrite to where PRT is drained to. 6-1-16: Rewrote to test what OP-5.7 requires; <b>QUESTION IS SAT.</b>
36	H	3	x									N	E	T2G1 008 CCWS K2.02 1. Stem Focus: The stem sentence "All equipment operates as designed" isn't necessary.	
36														Repaired Q#36 rec'd 5-3-16; <b>QUESTION IS SAT.</b>	
37	F	2								x		B	U	T2G1 010 PZR Pressure Control System (PCS) K6.02 1. Q=K/A: The proposed test item does not test the PZR PCS topic; instead, it tests the PZR Level Control System topic [See K/A Catalog 011, K4.01].	
37														5-3-16: Licensee described the K/A match; got rid of "AND" <b>QUESTION IS SAT.</b>	



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
39	H	2		x										E	T2G1 013 ESFAS A4.01 1. List source of original question (NRC exam? Bank?). 2. Partial: The wording of the 1 <sup>st</sup> fill-in-the-blank statement renders Choice "A" also correct (auto-swapover does indeed occur below a set point of 23%). 3. Cue: The 3 <sup>rd</sup> bullet includes a cue that Low RWST level causes an auto-swapover to the containment sump. Instead, revise the stem to provide only those control room indications that the applicant can infer auto-swapover had occurred. For example, include only the annunciators that are alarming, RWST LO (1J-A2) 4. Cue: The 4 <sup>th</sup> bullet includes a cue that the valve auto-closes; suggest revising to say that the recirc valve failed to auto-actuate.
39															5-4-16 The highest RWST level that will cause an automatic swapover to recirc mode is _____. Changed to valve failed to auto-reposition. <b>QUESTION IS SAT.</b>
40	F	2		x										U	T2G1 022 Cnmt Clg Sys K4.03 [2009 NA NRC Exam, Q#?] 1. Original K/A was K4.05; replaced on 7-29-15 2. Cred Dist: Choices B/C are not plausible (see below) because of the interplay between the 1 <sup>st</sup> and 2 <sup>nd</sup> part of the question; the CARF trip and cooling water auto-isolation are logically designed to occur at the same point in time. <ul style="list-style-type: none"> <li>Choice B: IF the CARFs auto-tripped when the SI occurred, THEN it doesn't make sense that the cooling water wouldn't also be designed to auto=isolate at that same point in time.</li> <li>Choice C: IF the cooling water auto-isolated when the SI occurred, THEN it doesn't make sense that the CARFs would continue to run until the CDA subsequently occurred.</li> </ul> 3. Cue: The phrase "conditions continue to degrade" may provide a cue to RO Q#51.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
40																	Repaired Q#40 rec'd 5-10-16 <b>QUESTION IS SAT.</b>
41	F	2											x		N	U	T2G1 026 CSS A1.06 1. Q=K/A: The proposed test item does not test the applicants' ability to monitor changes while an operator is operating the CSS. Instead, the proposed test item tests the auto-start signal and the normal means to ensure NPSH. Suggest testing the applicants' ability to predict how a parameter will change AFTER CSS has auto-actuated or been manually actuated.
41																	Q#41 rec'd 5-10-16; no changes made – licensee wants to discuss. 1. Q=K/A: The 2 <sup>nd</sup> part of the question is the only part associated with containment spray pump cooling; however, it does not test the applicants' ability to predict/or monitor a change while operating the cooling controls. Suggest testing the applicants' ability to predict when the casing cooling pump auto-starts and when the disch MOV auto-closes. 6-1-16: Reworded question to test casing cooling pump logic; <b>QUESTION IS SAT.</b>
42	H	3												B	E		T2G1 039 MRSS K5.08 [2011 Harris NRC Exam, Q#?] Note to NRC Reviewers: The Point of Adding Heat (POAH) is approximately 2 x 10-6 amps on the IRNIs. SG PORV is worth about 2 or 2 1/2% power. 1. The same knowledge (IRNI indication for POAH) is being tested in RO Q#56. Need to revise or replace one of these questions. 2. Partial: To ensure no post exam contention regarding intermediate position of SG PORV failure, add the word "fully" before the word "open."

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
42														<p>Repaired Q#42 rec'd 5-10-16; licensee revised question to eliminate the IR amperage, which would have overlapped Q#56.</p> <ol style="list-style-type: none"> <li>Stem Focus: Need to verify the step in 1-OP-2.1, Unit Startup from Mode 2 to Mode 1, that requires logging critical data and the corresponding MFRV Bypass controller status at that step in the procedure. What step requires logging critical data? Include information in stem to be more precise.</li> <li>Partial: There may be no correct answer to the 2<sup>nd</sup> part of the question because the fill-in-the-blank question does not specify what the word "final" means. Will power rise to cause an auto-reactor trip? If so, then Lower may also be correct.</li> </ol> <p>6-1-16: Changed to test whether final power above or below POAH <b>QUESTION IS SAT.</b></p>
43	H	3	x	x			x				Mod	E	<p>T2G1 059 MFW A3.02</p> <ol style="list-style-type: none"> <li>Cred Dist: The plausibility of Choice D is questionable because the stem question doesn't contain the phrase "...if any."</li> <li>Cue: the information in parenthesis for the 4<sup>th</sup> stem bullet is not necessary to elicit the correct response.</li> <li>Stem Focus: The last phrase of the stem question ("due to the instrument failure) is not necessary. Suggest the following changes: <i>With NO OPERATOR ACTION, which one of the following predicts how SG level is affected?</i></li> </ol> <p>A. Main Feed Regulating Valves (MFRVs) will control SG level at 33%. B. SG level will reach the Lo-Lo Reactor Trip set point C. <b>MFRVs will control SG level at 38%.</b> D. SG level will remain at its current 100% normal value.</p>	
43													<p>Repaired Q#43 rec'd 5-10-16</p> <ol style="list-style-type: none"> <li>Comment #2 listed above not incorporated; discuss with licensee. Licensee deleted information in parenthesis. <b>QUESTION IS SAT.</b></li> </ol>	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward					Q=K/A
44	H	2	x												E	T2G1 061 AFW K2.01 1. Original K/A was K2.03; replaced on 7-29-15 with K2.01, "AFW system MOVs." 2. Stem Focus: The 4 <sup>th</sup> and 5 <sup>th</sup> bullets are not necessary.
44																Repaired Q#44 rec'd 5-10-16; comment incorporated. <b>QUESTION IS SAT.</b>
45	H	2	x								x		x		N	T2G1 062 AC Elect A2.11 1. Q=K/A: The (b) portion of the A2 K/A statement (use procedures to correct, control, mitigate) is not being met. The 1 <sup>st</sup> part of the question tests automatic load sequencing and the 2 <sup>nd</sup> part of the question tests island mode capability of the voltage regulator. Additionally, the K/A topic is AC Elect Distribution; the proposed test item tests the EDG topic. Suggest testing a required operator action in the 1 <sup>st</sup> or 2 <sup>nd</sup> part of the question. 2. Stem Focus: The word "correctly" in the stem question is not needed. 3. #/units: The word "out" in the 4 <sup>th</sup> bullet is slang; include the term used on the VAR meter (if different than "out").
45																Repaired Q#45 rec'd 5-10-16; 1. Comment #1 (above) not incorporated. Discuss 6-3-16: New question written to test charging pump loading IAW O-AP-10, Attachment 21. <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other			6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
46	F	2	x	x												T2G1 062 AC Elect G2.4.11 1. Ensure no overlap with Q#13 and Q#49. 2. Cue: If an applicant requests the title of Attachment 21 during administration of the exam, we must provide. The title is UNIT 1 EDG LOAD CONFIGURATION TO PREVENT OVERLOADING. The title provides the answer to the test item. 3. Cred Dist: The plausibility of Choice A is questionable because configuring 1H loads (while bus is on the EDG) has nothing to do with eventual restoration of the bus to offsite power. 4. Stem Focus: Since the stem does not include a question, suggest re-wording the fill-in-the-blank statement as: <i>The reason that completion of Attachment 21 is a high priority is to _____.</i> 5. Stem Focus: The 3 <sup>rd</sup> bullet is not necessary. 6. Stem Focus: Choice B can be streamlined as: "ensure charging flow is maintained if off-site power is lost to Bus 1J."
46																Replaced Q#46 with another bank question rec'd 5-10-16; 1. Stem Focus: Add "Step 2" to 2 <sup>nd</sup> bullet and pull the first portion of the 2 <sup>nd</sup> fill-in-the-blank statement up into the stem as another bulleted condition ("The highest RCP Seal Water Outlet Temperature is 225 def. "). 2. Stem Focus: To mirror the wording of the procedure, in the 2 <sup>nd</sup> fill-in-the-blank statement replace the word "energizing" with "prior to restoring power to an emergency bus" <b>QUESTION IS SAT.</b>
47	H	2														063 DC Elect K3.01 [2008 NA NRC Exam, Q#?] 1. Cred Dist: Choices B/D (1J EDG started) are not plausible because the stem says the EDG battery is lost; any diesel engine won't start without a battery.
47																Repaired Q#47 rec'd 5-10-16; <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
48	H	3	x													<p>T2G1 064 ED/G A4.01</p> <p>1. Stem Focus: To enhance distracter plausibility, and make choices symmetrical, suggest:</p> <p><b>A. 2H Diesel will start; EDG field will flash</b></p> <p>B. 2H Diesel will start; EDG field will NOT flash</p> <p>C. 2H Diesel will NOT start because the air vent solenoid is de-energized</p> <p>D. 2H Diesel will NOT start because the fuel racks will remain in the shutdown position</p> <p>2. Stem Focus: The stem question can be more clear and streamlined as:</p> <p>WOOTF predicts how 2H emergency diesel generator (EDG) will respond if the operator opens the air start SOV using its manual override?</p> <p>3. Stem Focus: Identify the name/number of the periodic test in the first bullet, to 1) ensure that the 2<sup>nd</sup> and 3<sup>rd</sup> bullets align with the applicants' perceived status of 1J EDG, and 2) ensure operational validity.</p>
48																<p>Replacement Q#48 bank question rec'd 5-10-16</p> <p><b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
49	F	2	x											<p>T2G1 064 ED/G K3.03</p> <p>1. Cred Dist: The 2nd part of Choices A/C (loads "allowed to" auto-load) is not plausible because allowing auto-load could result in overloading the SBO diesel, especially if a CDA occurs. The plausibility of the 1<sup>st</sup> part of Choices A/B (M→L→F→1H) is questionable because of the tortuous path, which in and of itself can be used, in this question, to correctly eliminate these Choices without any knowledge of the electrical distribution system or 0-OP-6.4 solely based on this observation. Instead, suggest keeping the stem and revising the fill-in-the-blank statements as:</p> <p><i>WOOTF completes both statements?</i></p> <p><i>Bus-0L1 _____ be used to re-energize 1H. (will vs will NOT)</i></p> <p><i>The reason that the 1H Bus is the preferred bus to re-energize is because _____. (instrument air vs some other plausible reason)</i></p> <p>2. Stem Focus: The 2<sup>nd</sup> bullet in the stem is not necessary.</p> <p>3. Stem Focus: The word "restored" in the 2<sup>nd</sup> fill-in-the-blank statement is misspelled.</p> <p>4. Ensure no overlap with Q#13 and Q#46.</p> <p>Repaired Q#49 rec'd 5-10-16; comments incorporated</p> <p><b>QUESTION IS SAT.</b></p>
49														
50	F	3	x									Mod	S	<p>T2G1 073 PRM K1.01</p> <p>1. Stem Focus: The stem question needs a question mark. Also, the word "AND" between the fill-in-the-blank statements is not necessary. <b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q= K/A	SRO Only				
53	F	2														<p>T2G1 078 IAS G2.1.31</p> <p>1. Cred Dist: The 1<sup>st</sup> part of Choices C/D is not plausible because placing the switch to OFF is the only way to stop an air compressor that is experiencing a severe problem (fire, extreme noise, etc.); designing the compressor controls with no other way to quickly (20 minutes?) stop a compressor does not make sense. The applicant can deduce the correct answer to the 1<sup>st</sup> part of the question with no plant-specific knowledge.</p> <p>Suggest replacing the 1<sup>st</sup> portion of the question to test the applicants' knowledge of the normal lineup for the Loss of Power Reset Switch (Off or On).</p>
53																<p>Repaired Q# 53 rec'd 5-10-16; changed to test Hand vs Auto controls.</p> <p>1. Stem Focus: Clarify before/after configuration for each air compressor.</p> <p>Note: the order of manipulations is the order listed in the procedure.</p> <p><b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
54	H	2	x											E	<p>T2G1 078 IAS K1.05 [2012 NA NRC Exam, Q#?]</p> <p>1. Partial: The 2<sup>nd</sup> part of the question may not have a correct answer, depending on the speed of the MSTV closure. Will the high steam flow coincident with low steam pressure signal always occur even if the MSTV <i>slowly</i> drifts close? The simulator model may or may not provide insights; help us understand why high steam flow coincident with low steam pressure is always the correct answer, regardless of the severity/speed of IA loss.</p> <p>2. Stem Focus: The stem question is redundant to the fill-in-the-blank statements and the acronym "SOV" is not defined. Suggest the following to streamline:  <b>WOOTF completes both statements?</b></p> <p><i>The solenoid operated valves (SOV) that provide instrument air to the main steam trip valves (MSTVs) ___(1)___ to vent air from the MSTV actuators.</i></p> <p><i>If one MSTV closes while the unit is at 100% power, the SI signal ___(2)___ will actuate.</i></p>
54															<p>Repaired Q#54 rec'd 5-16-16; need to word the 2<sup>nd</sup> fill-in-the-blank statement as previously suggested (see above) to ensure no partially correct answers associated with instrument air drift status.</p> <p>1. <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
55	H	2													T2G1 103 Containment K1.03 1. The reference disk didn't include 1-OP-63.3; the student lesson plans don't include information related to the containment HVAC system(s). Please provide reference that describes how a loss of containment air recirc fans causes the containment rad monitor to be inoperable. 2. Cred Dist: Choice B (unmonitored release) is not plausible because the stem says the supply fan tripped; two exhaust fans bring the containment negative - - all the air is being drawn into containment. 3. Partial: Choice D may also be correct; "non-functional" can be argued as the same thing as "inoperable" when used in the context of Choice D. Please provide reference that tells when RMS-159/ 160 is inoperable. 4. Stem Focus: Provide the name/title of the governing procedure for core off-load in the stem
55															Repaired Q#55 rec'd 5-16-16; question re-worked into 2 x 2 to test how cavity level responds when one exhaust fan is stopped and 35 deg F auto-fan trip. 1. Cred Dist: The plausibility of the 1 <sup>st</sup> part of Choices A/B (cavity level rises when exhaust fan shut off) is not discussed in the distracter analysis. When an exhaust fan stops sucking, then answer is always lower. The distracter analysis only says "because the candidate must determine the effect of losing the exhaust fan will have on cavity water level." 2. Partial: There may be no correct answer to the 1 <sup>st</sup> part of the question unless the cavity water level ALWAYS lowers when an exhaust fan is turned off. Suggested testing the containment elevation that purge fan suction was and fan status if temperature lowered to less than 35 deg; however, this didn't validate well. Licensee claimed first part was minutia. 6-15-16: The NA containment is sub atmospheric (uses vacuum pumps) which can be tested to hit K/A. <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A			
56	H	2		x											T2G2 002 RCS K5.10 1. Cue: The applicants' knowledge of the relationship between reactor power and RCS loop $\Delta T$ is not really being tested since the stem provides IR indication, which indicates the reactor is subcritical. 2. Q=K/A: The 2 <sup>nd</sup> portion of the question elicits the required operator action when the reactor has (unexpectedly) become subcritical. 3. The same knowledge (IRNI indication for POAH) is being tested in RO Q#42. Need to revise or replace one of these questions. Suggest testing some aspect of the $\Delta T$ protection system. 4. #/units: The exact name/# of the meters (steam flow, steam dump demand, and $\Delta T$ values) should probably be used in the stem.
56															Replacement (new) Q#56 rec'd 5-17-16; 1. Stem Focus: The 2 <sup>nd</sup> part of the fill-in-the-blank statement is vague; are you asking for the set point or are you asking for the normal delta T at 100% power? The distracter analysis hasn't been updated since the previous Q#56; what is basis for the 56.5 degree delta T at 100% power? Reworded the 2 <sup>nd</sup> part of the fill-in-the-blank actual RCS delta-T at 100% power is _____. Changed 67.5 (instead of 56.5) because this is 107% of 62.5. However, not used because the control board meters are in PERCENT (not in deg F); at 100% power delta-T is 100%. Instead tested how delta-T will respond if extraction steam valve closes. <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
57	H	2	x				x					Mod	E	<p>T2G2 011 PZR LCS K4.05</p> <ol style="list-style-type: none"> <li>List source of original question (NRC exam? Bank?).</li> <li>Cred Dist: Choice C (low pressure Rx Trip = 1870 psig) is not plausible because pwr level reduction cannot cause this magnitude of RCS pressure reduction.</li> <li>Stem Focus: The stem question and the correct answer are disjointed; the stem asks for an actuation that WILL occur, whereas the correct answer is "nothing will occur."</li> </ol> <p>Suggest re-working the question to test whether the reactor will / will NOT automatically trip and another aspect that will automatically happen with no operator action.</p>
57														Repaired Q#57 rec'd 5-16-16; <b>QUESTION IS SAT.</b>
58	F	2	x	x								B	E	<p>T2G2 014 RPIS A1.02</p> <ol style="list-style-type: none"> <li>Cue: The stem of the question contains unnecessary information, which may or may not be applicable to other test items on the exam. Additionally, the phrase "output of the" may cue the applicant to the pulse-to-analog-converter choice.</li> <li>Stem Focus: The stem question needs a question mark.</li> <li>Stem Focus: The 1st part of Choices B/D, should be "rod position detector coils" to be more precise.</li> </ol> <p>Suggest the following:  <i>WOOTF completes the statement below?</i>  <i>Control Rod Insertion Limits are automatically monitored by comparing the ___(1)___ with the limit that is derived from ___(2)___.</i></p> <p><b>(pulse-to-analog converter vs rod position detector coils)</b></p>
58														Repaired Q#58 rec'd 5-16-16; <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
59	H	2	x					x				x			B	E	<p>T2G2 017 In-Core Temp Mon K6.01 [2011 Vogtle NRC Exam, Q#?]</p> <p>1. Partial: The wording for the 1<sup>st</sup> part of the fill-in-the-blank is not specific; the word "input" is vague because it doesn't specify whether the question is asking about an indicated value (like on a computer screen) or if it is referring to a milliamp value input to the sub cooling monitor processor. Consequently, this makes the question subject to post exam appeals that there may be no absolutely correct answer. Is the "input to the Subcooling Monitor" a value/parameter that the operator can see in the control room? Or is it only a calculation input? The wording should be refined to not be vague.</p> <p>2. Stem Focus: The 2<sup>nd</sup> part of Choices A/C is confusing; what does "Subcooling will be lower" mean? Does it mean there will be less Subcooling indicated?</p> <p>3. #/units: Include the actual name/number of the control room display/screen that is being referred to in the 2<sup>nd</sup> part of the question.</p> <p>4. Stem Focus: The first three bullets are not necessary.</p>
59																	<p>Repaired Q#59 rec'd 5-16-16; Comment #1 and #3 not incorporated.</p> <p>The signalS sent to the Train A Subcooling Monitor from these two failed CETs are failed _____ and The Train A indicated subcooling value will be _____.</p>
60	F	2	x												B	E	<p>Change A2 to higher than actual. C2 to lower than actual. Comments incorporated; <b>QUESTION IS SAT.</b></p> <p>T2G2 027 Cnmt Iodine Removal (CIRS) K2.01 [2012 NA NRC Exam, Q#?]</p> <p>1. Partial: There may be no correct answer to the 2<sup>nd</sup> part of the question; the System Description (NCRODP-47-NA, Primary Ventilation System) says that the filtration units are placed in service "when necessary to reduce airborne iodine radioactivity." The only place (that I could find) that "tells" the operator to place the filtration units in service is FR-Z.3, which is not one of the answers. Provide procedure that directs placing the filtration units in service for outages.</p> <p>2. Stem Focus: The stem doesn't contain a question.</p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other			6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
60																	Repaired Q#60 rec'd 5-16-16; comment #2 not incorporated. Also suggest also including the unit # of the busses instead of only providing the noun name. Added question to stem: <b>QUESTION IS SAT.</b>
61	F	2	x			x	x								E/U		T2G2 029 Cnmt Purge K1.05 1. Partial: During the post-exam appeal process, an applicant can successfully argue that there is no correct answer because 1-OP-4.1, Attachment 2, Core Alterators Checklist, does NOT include the reason (or basis) for why one Containment Air Recirc Fan is required to be verified in service. 1-OP-21.1, Section 4.17 states: "At least one Containment Air Recirc Fan must be running for the Containment Gaseous Particulate Rad Monitors to be operable." However, the purpose of the step in 1-OP-4.1, Attachment 2 is also to move air around in the containment; the Containment Air Recirc system isn't just to keep the rad monitors operable. 2. Cred Dist: The plausibility of Choices B/C is questionable because containment is not required in Mode 6. 3. Stem Focus: The 1 <sup>st</sup> part of Choice B ["Checks cooling fan running to.."] is not necessary. Also, the word "degrees" is misspelled. 4. Stem Focus: The acronym PDDT in Choice D should be spelled out.
61																	Replaced Q#61 rec'd 5-16-16; 1. Cred Dist: The 1 <sup>st</sup> part of Choices C/D (takes suction from sample line) is not plausible because containment purge blowers could never take a suction from a small sample line. Changed to containment vacuum pump suction; and changed "through" to "via"; <b>QUESTION IS SAT.</b>
62	F	2	x											N	E		T2G2 033 SFPC G2.2.3 1. The exact name/unit# of the annunciator should be included in the stem or in the 1 <sup>st</sup> fill-in-the-blank statement; SFP HIGH/HIGH-HIGH TEMP (window 1E-C5).
62																	Repaired Q#62 rec'd 5-16-16; <b>QUESTION IS SAT.</b>

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	Job-Link	Minutia #/units	Backward	Q= K/A	SRO Only				
63	H	2														<p>T2G2 035 Steam Generator A4.02</p> <p>1. Cred Dist: Choices A/D (Re-establish quickly at &gt;340 gpm/max available) are not plausible because they are saying the same thing. The applicant knows there is only one correct answer; therefore, Choices A/D can be eliminated because they both say "as quickly as possible" and max available flow rate is, in essence, the same thing as greater than 340 gpm.</p> <p>Suggest streamlining the test item to more closely test the Hot/Dry Feed Criteria continuous action step as:</p> <p><i>WOOTF completes both statements, in accordance with FR-H.1, Loss of Heat Sink, if ALL steam generators are Hot/Dry? IF required to feed hot/dry SG(s), THEN _____ should receive feed flow.</i></p> <p><i>(only ONE SG vs at least TWO SGs)</i></p> <p><i>IF Core Exit TCs are _____, THEN limit feed flow to any hot/dry SG to 100 gpm.</i></p> <p><i>(increasing vs decreasing)</i></p>
63																<p>Repaired Q#63 rec'd 5-18-16; Added (s) to SG in 2<sup>nd</sup> fill-in-the-blank; <b>QUESTION IS SAT.</b></p>
64	H	2														<p>055 CARS K3.01</p> <p>1. None of the MOPs were provided on the reference disk; provide 1-MOP-48.31, Main Condenser – B Waterbox.</p> <p>2. Partial: Provide reference that proves the correct answer ("becomes steam bound") to the 1<sup>st</sup> part of the question; the 1<sup>st</sup> part of the question seems to be a slang term, which may or may not have a correct answer.</p> <p>Suggest reworking the first part of the question to test what main control board indications will change when the circ water is valved out to the "B" waterbox. Another item to test is the power level required to remove one waterbox from service.</p> <p>3. Stem Focus: The 2<sup>nd</sup> part of the question is basically testing whether vacuum will / will NOT degrade in the "B" condenser. Suggest rewording the 2<sup>nd</sup> part of the question this way.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
64																	Repaired Q#64 rec'd 5-16-16; 1. Could not verify system configuration because could not locate condenser air removal system description. Discussed orientation with licensee; re-worded the 1 <sup>st</sup> fill-in-the blank; <b>QUESTION IS SAT</b> .
65	F	2													N	E	068 Liq RW System A3.01 1. Licensee stated that BRS is no longer used at NA; however, the system description, approved procedure, and task list exist for BRS. Requested additional information from the licensee that indicates either that the system has been abandoned or states that the system is no longer used. Obtain Ops management buy-in to use this test item. 2. Stem Focus: The stem has no question. 3. Stem Focus: Add the controlling procedure name/number in the stem where it says "During operation of the Boron Evaporators, in accordance with Procedure XXX, Section 4.1, title.
65																	Repaired Q#65 rec'd 5-16-16; OPS Mgmt agrees to this BRS question based on established procedures, including ongoing preventative maintenance routes; acceptable for NRC Exam even though BRS is not used at NA. System is not abandoned; training materials/procedures/maintenance exists. Licensee could not produce anything to document that BRS is not applicable at NA.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A					SRO Only
66	F	2													E	<p>T3 G2.1.14</p> <p>1. Partial: Because of the US/SM discretionary judgement that's allowed in OP-AA-0100, Attachment 2, an applicant can successfully argue that none or any of the answers are correct. For example, the procedure says it's not expected to make an announcement for the Turbine Building Vent Fans (even though they're 480 VAC); Choice A is an Auxiliary Building Supply Fan. To ensure no post-exam comments for partially correct answers, suggest the following as an alternative:</p> <p><i>WOOTF completes both statements in accordance with OP-AA-0100, Conduct of Operations. Attachment 2, Shift Operations, regarding plant PA announcements?</i></p> <p><i>Operations personnel are expected to make a plant announcement when starting or stopping equipment from the control room, for loads that are at least _____ volts.</i></p> <p><b>(480 volts vs. 4160 volts)</b></p> <p><i>At a minimum, the plant announcement, must include the planned activity, and direction for plant personnel to stand clear of the _____.</i></p> <p><b>Component being started/stopped, including its associated electrical breaker vs. Component being started/stopped ONLY.</b></p>
66																<p>Repaired Q#66 rec'd 5-16-16;</p> <p>1. Partial: The wording of the 1<sup>st</sup> fill-in-the-blank statement should be "... for loads that are at least ___ volts and greater."</p> <p>2. Stem Focus: It's should be its (in the choices).</p> <p>6-3-16: Changed 4160 v to 260 v (MG set is plausibility); <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
67	?		x			x									Mod	U	<p>T3 G2.1.36</p> <p>1. Cred Dist: Choices A, B, and D are not plausible; Choices A/B don't represent an ACTION. The stem question says WOOTF ACTIONS should be performed. Choices A/B don't contain actions. The real question being asked is whether or not Core offload are allowed to continue. Suggest re-wording the question to ask "Core offload _____ (is vs is not) allowed to continue." Choice D is not plausible because core alterations have the potential to add positive reactivity.</p> <p>2. Stem Focus: The stem question should include the Tech Spec number/title (Tech Spec 3.9.3, Nuclear Instrumentation)</p> <p>3. LOK: The level of knowledge classification for this test item was not listed in the distracter analysis; suggest Higher Cog.</p> <p>Repaired Q#67 rec'd 5-16-16;</p> <p>1. Partial: There may be no answer to the 1<sup>st</sup> part of the question; provide reference that says 1500 cps is inoperable. Licensee: When moving assemblies, the count rate historically has been &lt; 150 cps; the Nis must be within one-half decade of each other. Replaced no boron dilutions with both gamma metrics operable and tested knowledge of 1<sup>st</sup> fill—in-the-blank with acceptance criteria is / is NOT met. <b>QUESTION IS SAT.</b></p>
67																	
68	F	1				x								B		U	<p>T3 G2.2.20</p> <p>[2013 Seabrook NRC Exam, Q#?]</p> <p>1. Cred Dist: Choice A is not plausible because clamp-on ammeter readings is never intrusive. 2. Cred Dist: Choice D is not plausible because lifting leads is always intrusive. 3. Cred Dist: Choice C is not plausible because vibration readings are never intrusive. 4. LOD=1: The applicant does not have to have any knowledge of MA-AA-103, Conduct of Troubleshooting, to answer this question because of the plausibility issues listed above. 5. MA-AA-103 was not included on the reference disk.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
68																	<p>5-16-16; Licensee requested new K/A because G2.2.20 (Knowledge of process for managing troubleshooting activities) was not RO knowledge. MA-AA-103 still not provided.</p> <p>Request not allowed; Suggest testing the process for resetting protective devices (including whose approval is required) since this is a "troubleshooting" activity, for example, the following from Conduct of Ops procedure:</p> <p>4. <b>Resetting Protective Devices</b>            During normal operations, it is important that the cause of any protective device trip be identified and corrected prior to restoring normal configuration. The Shift Manager may authorize resetting of a tripped circuit breaker, protective relay, or one-time fuse replacement after determining that a fault does <b>NOT</b> exist.            When resetting protective devices (such as circuit breakers, fuses, reactor protection channels with multi-channel logic) attempt to understand the cause of the trip before resetting the devices.            When the SM understands the cause of the trip, the SM may give permission to reset the protective device. To protect the plant or prevent a plant transient, the SM is authorized to reset any tripped protective device without knowing the cause, provided an overcurrent condition is <b>NOT</b> evident.            If a protective device is reset, the Operator should record applicable information concerning the trip of device and initiate a CR.            If a protective device trips a second time following reset, <b>NO</b> additional reset shall be attempted until an evaluation has been performed.</p>
68																	<p>6-1-16: Licensee accepted recommendation to use tripped breaker reset protocol; <b>QUESTION IS SAT.</b></p>
69	F	2	x				x							B	U		<p>T3 G2.2.40</p> <p>1. Cred Dist: The 1<sup>st</sup> part of Choices B/D is not plausible because the fill-in-the-blank statement uses the word "performed." Therefore, this implies "completed." The PT-80 cannot be immediately completed, it takes time to perform the PT. This psychometric flaw can correctly be used to eliminate two distracters without any knowledge of the Tech Spec requirement or PT-80.</p> <p>2. Stem Focus: The first letter of each word in the title of PT-80 should be capitalized, Operability Verification, ...</p> <p>3. Stem Focus: The ending phrase in the 2<sup>nd</sup> bullet is not necessary, ... due to mechanical failure.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only		
69														Replacement BANK question rec'd 5-18-16; 1. Q=K/A: The Tier 3 plant-wide generic aspect is missing because the question solely tests the RWST level/temperature limits. The Tier 3 aspect of "Ability to apply Tech Specs for a system" may better targeted by testing a generic Tech Spec concept that applies to ANY Tech Spec system/component. For example, test something from Section 1 of Tech Specs, or test one of the Tech Spec rules of usage that applies to any system. Alternatively, test the definition of what "immediately" means when a required action says to "immediately" do X or Y.
69														6-3-16: Reworked RWST question to also test MODE knowledge to satisfy Tier 3 aspect; <b>QUESTION IS SAT</b> .
70	F	2	x					x				B	E	T3 G2.3.11, (SAMPLE QUESTION) 2010 NA NRC Exam, Q#? 1. Partial: Choice B is also correct because 0-OP-22.11, Releasing Liquid Radioactive Waste, P&L states: 4.6 WHEN the number of operating Circulating Water pumps decreases OR circulating water flow is reduced by throttling circulating water pump discharge valves, THEN stop Liquid Waste releases until HP reauthorizes the release. 2. Partial: Choices C/D are vague with respect to whether the release can continue for the time being. The choices should be re-worked to avoid partially correct answers, as: <i>Liquid waste releases are _____ to be immediately stopped. (NOT required vs required)</i> 3. Stem Focus: The stem of the question should include a bullet that says a liquid release (previously approved) is in progress.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
70			x											E	<p>4-5-16: Received re-work of original sample question;</p> <p>1. Cue: The 2<sup>nd</sup> fill-in-the-blank statement <u>fills</u> the applicant that the radioactivity is "<b>too high</b>"; the correct answer is "<b>high level</b>" tank (vs clarifier). Suggest replacing the 2<sup>nd</sup> fill-in-the-blank statement with: <i>When the LLLWTs are aligned for Continuous Discharge, the backboards operator _____ documenting Low Level Liquid Waste Releases on O-OP-22.11. Releasing Radioactive Liquid Waste. (must begin vs must stop)</i></p> <p>2. Stem Focus: Consider adding the phrase "are required to be sampled _____" to the 1<sup>st</sup> fill-in-the-blank statement. HP-3010.020, Attachment 2, Liquid Waste Continuous Release Permit, <u>requires</u> weekly samples. (1-OP-22.2, Section 5.10, Aligning 1-LW-TK-3A and 1-LW-TK-3B for Routine Weekly Sample.).</p>
70															<p>Repaired Q#70 rec'd 5-16-16;</p> <p>1. Stem Focus: The 2<sup>nd</sup> fill-in-the-blank statement is not operationally valid; the continuous discharge alignment does not go to the clarifier.</p> <p>6-1-16: Revised 2<sup>nd</sup> fill-in-the-blank statement to test backboards operator responsibilities <b>QUESTION IS SAT</b>.</p>
71	F	2										x		B	<p>T3 G2.3.12</p> <p>1. Q=K/A: The proposed question is also applicable to general rad workers; the K/A requires testing the applicants knowledge of rad safety principles that pertain to <u>licensed operator duties</u>, which is beyond GET knowledge. Suggest writing the question about what an RO is responsible for (in the main control room) while fuel handling is occurring in containment. For example, the operability and monitoring of the NIS SOURCE RANGE HIGH FLUX AT SHUTDOWN (1A-B2) annunciator, including the minimum required RO actions when the annunciator alarms and people are inside containment.</p> <p>Another idea may be to test the applicants' knowledge of the OP-AA-200, Equipment Clearance, requirements for "how" (minimum required tags, breakers or only switches, etc.) to tag out the in-core detectors before a containment entry is required.</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.	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
71																	Replacement (Bank) Q#71 rec'd 5-16-16; Neither OP-AA-200 nor VPAP-0106 specify where the detectors are required to be placed; provide reference that proves the correct answer. Include the reference in the stem fill-in-the-blank if different than OP-AA-200 or VPAP-0106. 6-3-16: 1-OP-1B, Containment Checklist provided; <b>QUESTION IS SAT.</b>
72	F	1	x											N	E		T3 G2.3.15 1. LOD: This test item will provide no discriminatory value on the exam; this is GET knowledge and does not test at the license level. 2. Stem Focus: The 1 <sup>st</sup> two sentences in the stem are not required. Suggest testing a generic plant-wide knowledge associated with area rad monitors.
72																	Replacement (Bank) Q#72 rec'd 5-16-16; 1. Minutia: The type of detector is irrelevant to the control room operator; the annunciator is relevant. 2. Cred Dist: Choice C (ion chamber) is not plausible because the control room area is not a high radiation area. 3. Cues: The word "area" is not necessary to elicit the correct response. Suggest testing a generic plant-wide knowledge associated with area rad monitors, for example, which alarm is or is NOT triggered by an area rad monitor.
72																	6-3-16: Tested location of ARM and whether local audible horn is available; <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
73	F	2	x													<p>T3 G2.4.14</p> <ol style="list-style-type: none"> <li>OP-AP-104, Section 3.4.3, Continuous Action Step, does not list the specific identifier used (brackets or asterisk). Please provide the writer's guide procedure that states the NA requirement for identification of Continuous Action Steps.</li> <li>Stem Focus: The 2<sup>nd</sup> part of Choices A/B should be worded to mirror (to ensure one and only one correct answer) the OP-AP-104 requirement; they should be worded as: "NOTES and CAUTIONS before the first step of a procedure apply <u>through out the procedure.</u>"</li> <li>Stem Focus: The 2<sup>nd</sup> part of Choices C/D should be worded as : "NOTES apply <u>through out the procedure.</u> whereas CAUTIONS apply <u>only to the step they precede.</u>"</li> <li>The word AND in between the fill-in-the-blank statements is not necessary.</li> </ol>
73																<p>Repaired Q#73 rec'd 5-16-16;</p> <ol style="list-style-type: none"> <li>Partial: VPAP-0505, Section 6.4.2.d states the asterisk only applies to procedure steps that are identified in the Westinghouse ERG background document as a continuous action step; therefore, the stem needs to be more specific. VPAP-0505 says that some continuous action steps don't require an asterisk when the procedure test already clearly indicates that it is a continuous action step via usage of continuous action verbs such as maintain, monitor, etc.</li> <li>Partial: OP-AP-104 Section 3.4.1.a says that a NOTE or CAUTION is considered part of the step that it precedes. Section 3.4.1.d says that NOTES and CAUTIONS before the first step of a procedure TYPICALLY apply to the entire procedure; the word "TYPICALLY" is not all inclusive and is missing from the stem. The second part of this question is a "combination" or words from Section 3.4.2.b and 3.4.1.d - - it does not mirror the procedure.</li> </ol>
73																6-3-16: Reworked question to eliminate partially correct answers; <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
74	F	2	x												N	E	T3 G2.4.26 1. Stem Focus: The stem question is missing a question mark. 2. The word AND in between the fill-in-the-blank statements is not necessary.  Repaired Q#74 rec'd 5-16-16; 1. Stem Focus: The 1 <sup>st</sup> fill-in-the-blank is missing a period. <b>QUESTION IS SAT.</b>
75	H	?	x							x					N	E	T3 G2.4.39 1. Job-link: An RO learning objective was not listed on the question pedigree sheet. Provide RO learning objective, RO task #, and procedure reference that: 1) justifies a job-link for an RO to be assigned as State & Local Communicator, and 2) provides procedure number/section that describes which portions of the emergency notification form that an RO is <u>not</u> allowed to complete. 2. Stem Focus: Re-word the stem question and fill-in-the-blank statements (to be bullet-proof and clear) as:  <i>In accordance with EPIP-2.01, Notification of State and Local Governments, which ONE of the following completes both statements?</i>  <i>The wind direction required to be listed on Attachment 2, Report of Emergency to State and Local Governments, is the direction that the wind is ___(1)___.</i> <i>Based on the given conditions, the wind direction value required to be listed on Attachment 2 is ___(2)___.</i> 3. Stem Focus: The 1 <sup>st</sup> bullet (Large break LOCA) is not necessary. 4. Cred Dist: The plausibility of 480°F is questionable; a full circumference is only 360 F. Suggest providing the upper and lower PCS Met Data Screen wind values and use the upper value-minus-360° as the distractor instead of 480°F.

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	Job-Link	Minutia #/units	Backward	Q= K/A	SRO Only				
75																<p>Repaired Q#75 rec'd 5-16-16; comment #1 not addressed.</p> <p>Q#47 on the Brunswick RO Exam administered on Dec 15, 2015 (ML16007A205) was appealed by an RO applicant; the informal review conducted by NRR resulted in the question being deleted based on the same knowledges listed above being beyond what an RO is required to know.</p> <p>Suggest providing a specific RO learning objective that requires the applicant to know the wind direction value and which value to be listed on off-site notification forms. Otherwise, replace question with a test item that is connected directly to an RO E-plan learning objective.</p> <p>Re-worked question to test PCS wind speed indication information versus E-plan context; exam item still meets K/A from the perspective of RO responsibilities in E-plan. <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
76	H	2	X				X							<p>T1G1 008 PZR Vapor Space Acc G2.4.6</p> <ol style="list-style-type: none"> <li>Stem Focus: The 1<sup>st</sup> and 4<sup>th</sup> bullets aren't necessary.</li> <li>Cred Dist: Choice B (Saturated Recovery) is not plausible because the latest ("current") conditions section of the stem don't include Subcooling values.</li> <li>Stem Focus: The 7<sup>th</sup> bullet is not necessary for the plausibility of Choice D; Choice D can stand alone and still be plausible.</li> <li>Stem Focus: The word "currently" listed in the 5<sup>th</sup> bullet conflicts with the second part of the stem ("Current conditions:") Suggest using a timeline to separate what "was" and what now "is."</li> <li>The RCS pressure trend is missing from the latest ("current") conditions; this is needed to ensure 1-E-3, Step 18 RNO is required.</li> <li>Stem Focus: Suggest the following to streamline:  <i>Unit 1 was initially operating at 100% power when a SGTR occurred on "B" S/G; the crew is implementing 1-E-3, Steam Generator Tube Rupture. The following actions were taken:</i> <ul style="list-style-type: none"> <li>RCPs were secured</li> <li>Depressurized was commenced to minimize break flow and refill the pressurizer using 1-RC-PCV-1456, PZR PORV (1-E-3, Step 17)</li> </ul> <i>When the RCS depressurization was required to be stopped, 1-RC-PCV-1456 would not close; 1-RC-MOV-1535 breaker has tripped and cannot be reset.</i>   <i>Current conditions:</i> <ul style="list-style-type: none"> <li>RWST Level</li> <li>"B" S/G level</li> <li>PZR level</li> <li>SG Press</li> <li>RCS Press &amp; trend</li> <li>Subcooling</li> </ul> WOOTF identifies the required procedure transition? </li> </ol>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward					Q=K/A
76			x			x									E	Repairs to Q#76 rec'd 4-26-16; Suggestions listed above incorporated. 1. Cred Dist: The sub cooling value (θ1 degrees) is very large; this makes Choice B not plausible -- suggest smaller sub cooling value and lowering trend. Also, use of the acronym DEGF is not consistent with other exam items; instead, use °F. 2. Cred Dist: Choice D may be more plausible as "Remain in E-3." Discuss with exam team. 3. Stem Focus: The first letter in the word "using" in Choice D should be capitalized ("Using") to be consistent with the other choices punctuation. 4-27-16: Revised to 45 °F and degrading. Changed to degree symbol. Added psig to RCS and SG pressures. Added noun name to RC-MOV-1535. Capitalized "u". <b>QUESTION IS SAT.</b>
77	H	2				x						x			N	T1G1 054 Loss of MFW AG2.1.19 1. The Six Point Trend Graph of WR S/G levels and AFW Pump Flows is difficult to read in black and white; each applicant should have a color version. 2. Partial: Choice D (Re-diagnosis) can also be correct because the stem doesn't indicate whether an SI occurred; loss of MFW can cause SI. 3. #/units: The Six Point Trend Graph indicates approximately 55% WR level (initially) and then lowers to 50% when the "A" AFW Pump auto-starts; is 50% WR S/G level correspond to the 18% NR AFW auto-start on lo S/G level? 4. Cred Dist: Choice B (do AP-22.4) is not plausible because the stem nor the Six Point Trend Graph does not indicate that the 18% NR level auto-start set point was achieved.
77															S	Repairs to Q#77 rec'd 4-26-16; based on 1-AP-20, Attach 4, SG NR Level Curve, 50% WR SG level is well below the 18% NR AFW Auto Start. Therefore, Comments 3 and 4 (above) are resolved. SI signals are Lo-Lo Pzr Press, High Cnmt Press, Lo SL Diff Press, Hi Strm Flow, and Manual; therefore, Comment #2 is resolved. <b>Question is SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only						
78	H	3	x	x		x										Mod	E	<p>T1G1 055 SBO EA2.03</p> <ol style="list-style-type: none"> <li>1. Cue: The only choice that includes a "reason" is also the correct answer. ("...to facilitate recovery actions.")</li> <li>2. Cred Dist: Choice B is not plausible because it, unlike the other choices, is vague; the phrase "to appropriate recovery guidelines" is non-specific and can be used to correctly eliminate this Choice.</li> <li>3. Stem Focus: The 1<sup>st</sup> bullet says "...including charging pump switches...", which is not necessary.</li> <li>4. Stem Focus: The 2<sup>nd</sup> bullet ends with the acronym "SBO"; it seems like the word "diesel" is missing after SBO. Suggest the following Choices:  A. <i>Remain in ECA-0.0; perform the next Step 11</i>  B. <i>Exit ECA-0.0; transition to FR-H.1</i>  C. <i>Exit ECA-0.0; transition to ECA-0.1</i>  D. <i>Remain in ECA-0.0; transition to Step 31</i></li> </ol>
78																		Repairs to Q#78 rec'd 4-26-16; all comments incorporated. Question is SAT.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A					SRO Only	
79	H	2	x	x										x	Mod	U	<p>T1G1 058 Loss of DC AG2.1.20</p> <p>1. SRO-only: For the 1<sup>st</sup> part of the question, the applicant can identify the correct answer by using systems knowledge of DC Bus 2-III loads; when DC Bus 2-III is de-energized, letdown is lost but normal charging is not affected.</p> <p>For the 2<sup>nd</sup> part of the question, the applicant can identify the correct answer solely by knowing that, since letdown is lost, the mitigative strategy to cope with the pressurizer level transient is to minimize makeup and maximize sample flow.</p> <p>Furthermore, the 2<sup>nd</sup> part of the proposed test item contains four distinctly different pieces, therefore, an applicant only needs to know the answer to the 2<sup>nd</sup> half of the question.</p> <p>2. Cue: The 4<sup>th</sup> bullet does not indicate the actual value of pressurizer level.</p> <p>3. Stem Focus: The 2<sup>nd</sup> bullet is a sentence fragment ("The operating crew cannot re-energize .bus."). The bus unit # is missing. ("DC Bus 2-III")</p> <p>4. Stem Focus: The word "attachment" is misspelled in the 1<sup>st</sup> bullet. Additionally, it may be clearer if the procedure was listed this way: "0-AP-10, Loss of Electrical Power, Attachment 9, Loss of DC Bus 2-III. Having the attachment listed after the name of the main procedure may be clearer to the applicants.</p>
79																U	<p>Repairs to Q#79 rec'd 4-26-16; Comment #2, 3, and 4 incorporated; however, Comment #1 not resolved.</p> <p>Licensee chose to write question involving EDG battery and subsequent requirements for service water LCO. First portion of question required knowing whether 127 VDC met LCO 3.8.4 SR requirement of 129VDC. Validation results indicated knowing 129VDC was minuita. First portion of question re-worked to test whether 122 VDC does or does not meet SR 3.8.4 requirements.</p> <p>6-13-16: <b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
80														<p>T1G1 077 Gen Volt/Grid Disturbance AA2.05</p> <p>1. Cred Dist: The plausibility of the 2<sup>nd</sup> part of Choices A/C (inop when voltage high) is borderline because LOW voltage is always more of a concern when compared to high voltage; logically, low voltage means "less electricity", which challenges the safety of the plant more than high voltage. If the stem of the question had contained a timeline, where 550 kV occurred at 1000 and 504 kV occurred at 1100, and the stem asked for the EARLIEST time that the offsite power was required to be declared inoperable, then 550 kV would be plausible. However, the way the proposed test item is presented, choosing the lowest voltage value is always correct.</p> <p>2. SRO-only: The control room logs (1/2-LOG) contain line items for the ROs to check switchyard voltage between 505 – 550 kV each shift/day; normal switchyard voltage is ~ 520 kV. Since the 1<sup>st</sup> part of the question is RO knowledge (keeping voltage regulator in AUTO is overall mitigative strategy for swinging MW), the 2<sup>nd</sup> part of the question must test beyond the RO knowledge level. The 2<sup>nd</sup> part of the question may be acceptable if the stem of the question contained a timeline, where 550 kV occurred at 1000 and 504 kV occurred at 1100, and the stem asked for the EARLIEST time that offsite power was required to be declared inoperable.</p> <p>3. Suggest re-working the proposed test item to test the applicants' to identify when the offsite power was required to be declared inoperable, AND the required Tech Spec action (when provided Tech Spec a reference). Stem Focus: The terms mega-watt "swings" and "fluctuations" in the stem are vague; provide parameter ranges for MW, Voltage, and Frequency.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only						
80																	E/U	Repairs to Q#80 rec'd 4-26-16; a timeline of voltage values was incorporated, however 1. Stem Focus: The 2 <sup>nd</sup> part of each choice is unique; therefore, the applicant is not being tested on the first part of the question because he/she only needs to know when the offsite power is inoperable. Suggest picking two TIME values to toggle between in the 2 <sup>nd</sup> part of each choice. 2. Partial: Choice C can also be argued as correct during post-exam appeals because grid voltage of 550 KV is used as a trigger point in O-AP-8 to contact System engineer as soon as possible to evaluate GDC-17 requirements and Offsite power source operability. 3. Stem Focus: The 2 <sup>nd</sup> fill-in-the-blank statement contains a typo that doesn't make sense ("Describe the operation of the voltage regulator..") 4-27-16: Changed to toggle between 02:00 and 03:00 and changed 03:00 to 499 kv. Eliminated typo. <b>QUESTION IS SAT.</b>
81	H	2				x								x		B	U	T1G1 WE05 Loss Secondary Heat Sink EA2.2 1. SRO-only: RO knowledge of immediate bleed and feed criteria can eliminate Choices A/C. Secondly, if choosing between Choices B/D, the RO applicant knows that AFW is the safety related system of choice; therefore, D is the correct answer. Additionally, there is no procedure selection knowledge being tested; only overall mitigative strategy. 2. Cred Dist: Choices A is not plausible because feed and bleed is always either a FIRST priority or the LAST option.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q= K/A			
81														<p>Replacement BANK Q#81 rec'd 4-26-16</p> <p>1. SRO-only: The proposed bank question tests the knowledge that if a CDA occurs after initiation of RCS bleed and feed, the resulting containment isolation Phase B will isolate Instrument Air (used to operate the PORV) to containment. Therefore, the question can be answered solely with the systems knowledge that in order to restore the capability to open PRZR PORVs with IA, and re-establish the expected RCS bleed path, the CDA must be reset. For example, an RO learning objective in in the FRP lesson plan is:</p> <p><b>Topic 7.8 Bleed and Feed Concepts</b></p> <p><b>7.8 Objective</b></p> <p>U 11255 Explain the following concepts associated with Reactor Coolant System bleed and feed in response to a loss of secondary heat sink (1-FR-H.1).</p> <ul style="list-style-type: none"> <li>Why bleed and feed must be initiated promptly when a loss of secondary/heat removal capability is imminent (SCER-86-1)</li> <li>How a containment depressurization actuation would affect the expected Reactor Coolant System bleed path</li> </ul> <p>Furthermore, there is no procedure selection involved, which is required per 10CFR55.43 for SRO test items. The proposed question does not involve selecting a procedure. Suggest keeping the stem conditions but, instead, test the applicants' ability to select a procedure with which to proceed, or classify the event per the E-plan.</p> <p>2. Stem Focus: The 2<sup>nd</sup> part of the question can be streamlined to test whether the CDS is/ is NOT required to be reset. (All choices include resetting Phase B.)</p>
81														<p>Repaired Q#81 rec'd 5-5-16</p> <p>1. Stem Focus: The timeline tense is confusing; the first sentence says crew is at E-1, Step 20 whereas the 2<sup>nd</sup> paragraph says crew is at FR-H.1, Step 2. Suggest streamlining the stem to indicate the listed parameters without the last bullet (crew entered FR-H.1). Test the applicants' knowledge of the four choices by rewording the stem question as "WOOTF is the required procedure?"</p> <p>5-26-16: Comments incorporated; <b>QUESTION IS SAT</b>.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
82	H	2	x									x	N	<p>T1G2.001 Continuous Rod Withdrawal AA2.04</p> <p>1. SRO-only: The 1<sup>st</sup> part of the question can be deduced by RO knowledge of overall mitigative strategy for AP-1.1 (place rods in manual) and AP-3 (addresses all the system dependencies on turbine first stage pressure); RO applicants are responsible for knowing AOP and EOP entry conditions.</p> <p>2. Cred Dist: The 1<sup>st</sup> part of Choices A/B (AP-1.1 addresses all the system dependencies on turbine 1<sup>st</sup> stage pressure) is not plausible because the word ALL is underlined and the turbine first stage pressure transmitter is VITAL instrumentation (AP-3).</p> <p>3. Stem Focus: The phrase "After assuming duties as the Unit 1 Unit Supervisor" is not necessary.</p> <p>4. Stem Focus: The stem question has the following issues:</p> <ul style="list-style-type: none"> <li>The word "proper" is subjective and AP-1.1 can be successfully argued as the "proper" procedure.</li> <li>The phrase "addresses all the failures of <u>this event</u>" is not clear; instead, the phrase should be "identifies the procedure that contains required actions to address all systems that depend on turbine first stage pressure." (which makes the distractor not plausible – See Comment #2)</li> </ul> <p>Suggest re-working the question to test which instrument failure (choices list two instruments failing high and low) will cause rods to auto-withdraw and the required reactivity management requirement. AP-1.1, Step 10 requires the US to refer to the reactivity management program. There may be a knowledge item to test in the associated procedure. Provide a copy of the reactivity management procedure; was not included on the reference disk.</p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
82														6-3-16: Licensee re-worked question to test Tavag unit failure (which caused rods to auto-withdraw) and reactivity management classification when provided a reference OP-AP-300: Significance Level 2 event. <b>QUESTION IS SAT.</b>  Job Link: The Human Performance individual at North Anna is an off-shift SRO with an RO backup. The Offshift SRO is Stan Krystovic and he is responsible for performing the performance indicator calculation associated with reactivity events.
83	H	2	x	x		x	x					N	E	T1G2 060 AG2.4.30 (SAMPLE QUESTION) (Emergency Plan Classification)  1. Partial: Choice D (RA1.2) can also be argued as correct because at 22:16, the SEM has no idea if the trend will lower or stay the same. Note 2 says that the SEM shouldn't wait until the time has elapsed, but should declare as soon as determined that release will likely exceed the duration. At 22:16, the SEM has no idea if the release rate will lower, rise, or remain the same. Therefore, Choice D is also correct.  2. Cred Dist: Choice A (no declaration) is not plausible because there is an unisolable release to the environment occurring.  3. Cue: The last part of the 22:23 time event is not necessary to elicit the correct response if the ODCM is provided as a reference. This is more operationally valid.  4. Stem Focus: The 22:23 time event does not specify what the HP took a sample of.  5. Stem Focus: The 22:04 event does not need to state that 0-AP-5.2 was entered.  Suggest the following revision (keep the stem information and provide ODCM as reference): <b>WOOTF completes both statements?</b> <i>The highest required emergency classification is _____.</i> <i>The NRC is required to be notified within _____.</i> A. <b>NOUE: 15 minutes</b> B. <b>NOUE: 1 hour</b> C. <b>ALERT: 15 minutes</b> D. <b>ALERT: 1 hour</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
83														<p>4-5-16: Received re-work of original sample question; however, the following previous comment was not incorporated (let's discuss):</p> <ol style="list-style-type: none"> <li>1. Cue: The last part of the 22:23 time event is not necessary to elicit the correct response if the ODCM is provided as a reference and the HP actual release rate is provided. This is more operationally valid (than the HPs telling the SRO the release is "3x ODCM limit") and provides discriminatory value for using the ODCM as a provided reference.</li> </ol> <p>4-26-16: Received same test item as 4-5-16.</p> <ol style="list-style-type: none"> <li>1. Need to discuss Comment #1 (Cue) listed above</li> <li>2. Stem Focus: The stem question refers to two statements even though there is only one statement.</li> <li>3. The following time bullets can be streamlined as: 22:08 no need for the word "severely." 22:09 the phrase "and survey release" is not needed 22:23 the phrase "takes two samples and" is not needed</li> </ol> <p>4-27-16: Compromised to leave 3x ODCM limit. <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
84	H	2	x											<p>T1G2 061 Area Rad Monitoring Alarms AA2.03</p> <p>1. Cred Dist: Choices B/D (leave switch ENABLED) are not plausible because the stem says that there isn't a radiation problem (pegged high, unresponsive to source check or reset). Leaving the switch in ENABLED means the MCR bottled air will dump, MCR isolation and HVAC system shift; the applicant can logically assume that the auto-actions aren't necessary after Health Physics reported rad levels were fine.</p> <p>Suggest re-working the question to test the SRO applicants' ability to <u>interpret</u> the rad monitor alarm set points as follows:  <b>WOOTF completes both statements?</b>  <b>0-AP-5.1, Common Radiation Monitors System. _____ include guidance for attempting to reset 1-RMS-RM-153 by removing its fuses. (does vs does NOT)</b>  <b>The TRM 3.3.7, Radiation Monitoring Instrumentation, required radiation monitoring channels _____ FUNCTIONAL at this time. (remain vs are NOT)</b></p> <p>2. Stem Focus: Include the phrase "...in the ENABLED position" in the first sentence in the stem (instead of "...in ENABLED.")</p> <p>3. LOK: The distracter analysis is missing the LOK classification; I labeled it as Higher Cog.</p>
84														<p>Rec'd NEW (Emergency Plan Classification) Q#84 on 5-5-16</p> <p>5-26-16: E-plan question tests earliest time for EAL classification based on ARM readings and earliest time for Fuel Building Evacuation IAW Caution statement in 0-AP-27. <b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only					
85	H	2				x									Mod	E	<p>T1G2 WE14 Loss of Cnmt Integrity EG2.4.21 [2007 Callaway NRC Exam, Q#85]</p> <p>1. The distracter analysis incorrectly identifies the K/A topic as "high containment pressure" even though the sample plan category is Loss of Containment Integrity.</p> <p>2. Cred Dist: To enhance the plausibility of Choice A (stem question says "proper sequence"; Choice A isn't a "sequence."); recommend the following reword of the stem question and all four Choices.</p> <p>WOOTF identifies the required procedure implementation?</p> <p>A. Remain in 1-ECA-1.1, do not transition to any FRs.</p> <p>B. <b>Immediately transition to FR-Z.1; do not start recirc spray pumps</b></p> <p>C. Remain in 1-ECA-1.1 until Step 9 is completed and then transition to FR-Z.1</p> <p>D. Immediately transition to FR-Z.1; start recirc spray pumps</p>
85																	<p>Repaired Q#85 rec'd 4-26-16; comments incorporated.</p> <p>1. Stem Focus: Choice "D" contains a misspelled word ("trasiotion") <b>Question is SAT.</b></p>
86	F	2		x									x	Mod	U	<p>T2G1 012 RPS A2.05 [2011 Kewanee NRC Exam, Q#?]</p> <p>1. Cue: The only stem bullets necessary are the 2<sup>nd</sup> and 5<sup>th</sup> bullets.</p> <p>2. SRO-only: The question is testing what RPS trip function uses PZR Pressure as its input and the basis for the RPS trip; this is RO knowledge.</p> <p>Suggest testing the Tech Spec Required Action (when provided a reference) for any RPS Tech Spec transmitter failure.</p>	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
86															<p>Rec'd replacement (Bank) Q#86 on 5-16-16;</p> <ol style="list-style-type: none"> <li>2-PT-34.3 was not included on the reference disk.</li> <li>SRO-only: The first part of the question tests whether the turbine governor valves are included in Tech Specs or TRM (RO knowledge). The second part of the question tests what to do if the #2 governor valve failed to close during the turbine valve freedom test. The conservative action is to take the turbine off-line.</li> <li>The distracter analysis says that the SRO applicant is required to determine the required TRM action; however, the question is testing the 2-PT-34.3 required action. If the question is testing the TRM required action, then TRM 3.7.2 must be provided as a reference, which may be a direct lookup.</li> </ol> <p>5-26-16: Licensee provided another replacement (BANK) question; question tests SRO knowledge of TS 3.0.4 requirements for situation were PZR level Channel 3 failed high. <b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
88														<p>T2G1 039 A2.03 (SAMPLE QUESTION)</p> <p>1. Ensure simulator scenarios do not overlap with this question.</p> <p>2. SRO-only: The procedure selection topic is weak. Each one of the choices <u>tells</u> the applicant that Attachment 8 is required to be implemented; the choices boil down to whether AFW flow is / is NOT allowed to be isolated PRIOR to implementing Attachment 8.</p> <p>Item #7 on the continuous action foldout page is:</p> <p>7. <u>RUPTURED SG ISOLATION</u>  <input type="checkbox"/> IF SI is in progress, THEN ATTACHMENT 8, RUPTURED SG ISOLATION may be used for guidance on ruptured SG(s) isolation and AFW flow control.</p> <p>In order to hit the "procedure selection" topic for the SRO applicants, suggest the following changes (see below).</p> <p>3. Operational Validity: It may not be operationally valid to have PRZR level rapidly decreasing and none of the SG levels slowly rising during a SGTR.</p> <p>4. Stem Focus: All the phrases in the stem and choices related to "Backboards operator reports", "BOP reports", ". Direct the BOP", ". SRO will give the BOP" are not necessary. Instead, reword the stem question as "WOOTF is the required action?"</p> <p>5. Stem Focus: The 2<sup>nd</sup> bullet listed under "Current Status" contains a misspelled word (level's)  Recommend the following:  WOOTF completes both statements?  1-E-0, Attachment 8, Ruptured S/G Isolation, _____ allowed to be used as guidance on AFW flow control at this time. (is / is NOT)  (still need another piece if you choose to use a 2 x 2 question.)</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward			
88			X											<p>4-5-16: Received re-work of original sample question;</p> <p>1. Stem Focus: Suggest the following clarifications, which will ensure plausibility, focus, and specificity as to what exactly is being asked. Misspelled word "annunciator" and missing unit#'s for N-16 monitors, etc.</p> <p>Unit 1 was operating at 100% power when the following sequence of events occurred:</p> <ul style="list-style-type: none"> <li>N-16 RAD DET (K-G6) Alarmed <ul style="list-style-type: none"> <li>1-MS-RJ-191, "B" Main Steam Line: Alarm</li> <li>1-MS-FI-193, Main Steam Header: Alarm</li> </ul> </li> <li>1-RM-SV-121, Condenser Air Ejector Rad Monitor: Not in Alarm and indication not changed.</li> <li>PRZR level decreasing</li> <li>1-FW-FCV-1488, "B" MFRV Controller Demand: slightly lower than the other MFRV demands</li> <li>Crew tripped reactor and initiated Safety Injection (SI)</li> </ul> <p><u>Current Status:</u></p> <ul style="list-style-type: none"> <li>Immediate actions of E-0, Reactor Trip or SI, have just been completed.</li> <li>All SG levels are below narrow range indication.</li> <li>Chemistry and Health Physics confirmation of the affected SGTR has NOT yet been obtained.</li> <li>The BOP recommends isolating AFW flow to the "B" SG.</li> </ul> <p>WOOTF identifies the required actions?</p> <p>A. Isolate AFW to "B" SG; Do NOT initiate E-0, Attachment 8, Ruptured SG Isolation, yet.</p> <p>B. Isolate AFW to "B" SG; Immediately initiate E-0, Attachment 8.</p> <p>C. Do NOT isolate AFW to "B" SG; Do NOT initiate E-0, Attachment 8 yet.</p> <p>D. Do NOT isolate AFW to "B" SG; Immediately initiate E-0, Attachment 8.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
88																	Repaired Q#88 rec'd 4-26-16; comments incorporated. Question is SAT.
89	H	3	x	x			x					x			Mod	E	T2G1 076 SWS G2.1.25 (Emergency Plan Classification) 1. Cue: The stem tells the applicant where the fire is located; EAL designator HA2.1 becomes a direct-lookup since Table H-1 is provided on the Cold Conditions EAL Chart. Suggest revising the question to: <ul style="list-style-type: none"> <li>Eliminate the phrase "fire starts in the SW pump house" and also delete the 4<sup>th</sup> bullet</li> <li>Instead, tell the applicant that a specific SW pump caught fire and all SW pump were required to be secured. This way, the stem of the question doesn't tell the applicant the location of the SW pumps.</li> </ul> 2. Partial: To ensure only one correct answer, add in the first two sentences the status of the Unit 1 defueling activity; # of bundles off-loaded, core offload commenced, etc. As written, the applicant will ask the proctor whether the decay time and core offload have been started, etc. 3. Stem Focus: In the 2 <sup>nd</sup> bullet, the term "VCT Float" is slang; add the name/number/section of the procedure being implemented (1-OP-8.1, Section 5.10) 4. Stem Focus: The 6 <sup>th</sup> bullet is not necessary. 5. #/units: The RHR discharge temperature indication is missing its unit # and noun name that appears on the control board, chart recorder, etc.
89																	Repaired Q#89 rec'd 4-26-16; however, comments #2, 3, and 5 (listed above) not incorporated. Discuss with licensee. QUESTION IS SAT

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
90	H	3	X	X				X					E	<p>T2G1 103 Containment System G2.2.38</p> <p>1. Partial: Choice B can also be correct (during the post exam appeal process) because of the subtlety of the 2<sup>nd</sup> part of the question. Specifically, the limits on pressure and temperature ensure that the containment won't reach the lower design pressure. The Bases calculate the lowest pressure that would be reached is 8.6 psia and the design lower pressure limit is 5.5 psia. Even though Choice B incorrectly says that the lower design pressure limit is 8.6 psia, the applicant is still basically right if he/she chooses Choice B because the purpose of the limits IS to ensure the lower design pressure won't be exceeded.</p> <p>Suggest creating a 2<sup>nd</sup> fill-in-the-blank statement as:  <i>The LCO limits ensure the containment structure will depressurize to less than 2.0 psig in ____ following a DBA. (1 hour vs 6 hours)</i></p> <p>2. Cue: The word SETPOINT (bolded and capitalized) in the 3<sup>rd</sup> bullet is not the way the applicant would "see" the Channel 1 and 2 partial pressure indication on the main control board. Instead, in the stem, include what the operator would see and read if the set point were 10.85 psia, to match the actual control board.</p> <p>3. Stem Focus: The stem question should include the phrase "...in accordance with Tech Spec 3.6.4, Containment Pressure?"</p> <p>4. #/units: How are you designating questions that require a reference to be provided to the applicants? Shouldn't the bracketed words [Reference Provided] be included after the fill-in-the-blank statements?</p> <p>5. Stem Focus: The word "annunciator" is misspelled in the first sentence.</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.	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q= K/A			
90														<p>Repaired Q#90 rec'd 4-26-16; licensee plans to use control board picture to address Comment #2 (see above); however, simply using the name/unit# (without the bolded word "SETPOINT") may be adequate enough. Comments #3, 4, &amp; 5 (see above) incorporated.</p> <p>1. What is plausibility of 2 hours (vs recommendation of 1 hour) for the 2<sup>nd</sup> part of the question?</p> <p>4-27-16: Changed to 1-LM-PI-101A-2 (Setpoint); Changed back to 1 hour (was typo). Removed the word "structure" to be consistent with Bases. Got rid of the connecting word "AND." <b>QUESTION IS SAT.</b></p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A			
91	F	2				x							U	<p>015 NIS G2.2.25 [Wolf Creek 2006 NRC Exam, Q#96]</p> <p>1. Cred Dist: Choices A/D (continue the startup) are not plausible because a SRNI just failed; continuing the startup is not operationally valid because the crew will pause, address the failure, etc. The applicants can use this reasoning/logic to correctly eliminate both of these Choices, with no AP-4.1 or Tech Spec Bases knowledge.</p> <p>2. Partial: In the post-exam space, an applicant can successfully argue that there is no correct answer to the 2<sup>nd</sup> part of the question because the Tech Spec Bases for Action H.1 (and I.1) do not say that the basis for suspending the startup is that a single random failure with disable the SR Trip function. See below.</p> <p><u>H.1</u></p> <p>Condition H applies to one inoperable Source Range Neutron Flux trip channel when in MODE 2, below the P-6 setpoint, and performing a reactor startup. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the two channels inoperable, operations involving positive reactivity additions shall be suspended immediately.</p> <p>This will preclude any power escalation. With only one source range channel OPERABLE, core protection is severely reduced and any actions that add positive reactivity to the core must be suspended immediately.</p> <p>Required Action H is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM.</p> <p>3. Note: the 1<sup>st</sup> part of the question is RO knowledge (immediate action statement); the 2<sup>nd</sup> part of the question is the SRO only portion.</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.	8. Explanation			
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q= K/A	SRO Only						
91															<p>Repairs to Q#91 rec'd 5-3-16; comment #1 not addressed.</p> <p>Suggest the following:</p> <p>Unit 1 reactor startup in progress with the following conditions:</p> <ul style="list-style-type: none"> <li>Both IR Channels indicate 5 E-11 amps</li> <li>SR Channel N-31 fails low</li> <li>The SRO has determined that the following Tech Spec 3.3.1, RTS Instrumentation, LCO contains a Required Action, Condition H.1:</li> </ul> <table border="1" style="margin-left: 40px;"> <tr> <td style="width: 100px;">H.1</td> <td>Suspend operations involving positive reactivity additions.</td> <td style="width: 100px;">Immediately</td> </tr> </table> <p>WOOTF completes both statements IAW TS 3.3.1 Bases?</p> <p>The TS LCO requirement for the Source Range Neutron Flux trip Function ensures that protection is provided against a (an) _____ accident. (rod ejection vs <b>uncontrolled bank rod withdrawal</b>)</p> <p>In accordance with Condition H. 1, plant operations that involve limited positive reactivity additions, such as temperature or boron fluctuations associated with RCS inventory or temperature control, _____ allowed at this time. (<b>are vs are not</b>)</p>	H.1	Suspend operations involving positive reactivity additions.	Immediately
H.1	Suspend operations involving positive reactivity additions.	Immediately																
91															<p>5-26-16: Changed question to eliminate two partially correct answers. Final version of question tests basis for Action H in Tech Spec 3.3.1 as SRO piece. <b>QUESTION IS SAT.</b></p>			

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward			
92														<p>T2G2 028 A2.04 A2.02 (SAMPLE QUESTION)</p> <p>Note: The test item distracter analysis lists the old (previous-A2.01) K/A designator instead of the new K/A (A2.02), which was randomly re-selected on 7/29/15. The new re-selected K/A was A2.02.</p> <p>1. SRO-only: The proposed test item can be answered without procedure selection as follows:</p> <p>The hydrogen concentration band that allows placing the recombiner in service is the upper flammability limit of hydrogen in air (4%) and 0.5%. Therefore, Choices B/D can be eliminated solely by knowing this band. Choice C can be eliminated solely based on its plausibility (see comment #3 below); therefore, Choice A is the correct answer. No procedure selection is required.</p> <p>Suggest re-working the question to test the SRO applicants' knowledge of which EOP procedure(s) direct(s) placing the recombiner in service. Alternatively, write the question to test which procedure contains the step-by-step guidance for placing the recombiner in service.</p> <p>2. Q=K/A: The proposed test item does not test the recombiner power setting piece of the K/A. At North Anna, this piece of the K/A could be interpreted as the temperature controllers:</p> <p>5.3.11. Set temperature controllers for normal operation as follows:</p> <ul style="list-style-type: none"> <li>• HRC7S-103, Blower Outlet Temperature 175 °F</li> <li>• HRC7S-104, Heater Temperature 1400 °F</li> <li>• HRC7S-105, Heater Gas Temperature 1200 °F</li> <li>• HRC7S-106, High Heater Gas Outlet Temperature 1450 °F</li> <li>• HRC7S-107, High Reactor Chamber Gas Temperature 1350 °F</li> <li>• HRC7S-108, Low Reactor Chamber Gas Temperature 1000 °F</li> <li>• HRC7C-102, Reactor Chamber Gas Temperature 1300 °F (by holding the READ toggle switch to SET and adjusting the SET display)</li> <li>• HRC7C-100, Reactor Chamber Outlet Wall 1400 °F</li> <li>• HRC7C-101, Gas Room Temperature 150 °F</li> </ul> <p>One possible idea may be associated with annunciator 0-AR-35 if one of the temperature controllers was improperly set, etc.</p> <p>3. Cred Dist: Choice C (place recombiner in service to maintain vessel integrity) is not plausible because the Integrity Status Tree only deals with RCS/vessel temperatures.</p> <p>4. Stem Focus: Each of the choices contain a lot of the same words. It may be better to use a fill-in-the-blank statement (only if you desire).</p>



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
94	F	1														<p>T3 G2.1.40</p> <p>1. SRO-only: The proposed test item can be answered with RO knowledge (no knowledge of refueling administrative requirements required); the proposed test item is a Conduct-of-Ops responsibility for who is in charge on the refuel floor, that ROs are required to also know.</p> <p>2. LOD=1: This question will provide no discriminatory value on the exam.</p> <p>3. Partial: Choices A/C can both be successfully argued as correct because the stem of the question does not specify Attachment 6, Section 9. Choice A (Ops Mgr) is correct if you read the overall responsibilities section 5.2.7 and Choice C (Shift mgr) is correct if you read the overall responsibilities section 5.2.5.</p> <p>Suggest using a test item that tests administrative requirements in 1-OP-4.1, or the refueling procedure that the Refueling SRO must use on a day-to-day basis while on the refuel floor, instead of testing Conduct of Ops procedure requirements.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws			5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only			
94															<p>Repaired Q#94 rec'd 4-26-16</p> <p>1. Partial: Unless we can tighten the question to refer to a specific procedure section, then Choice C may also correct for the 1<sup>st</sup> fill-in-the-blank question. "in accordance with plant procedures" is too vague. See Previous Comment #3 (see above). Can we use Attachment 6, Item 9 below to cite?</p> <p>2. Stem Focus: The wording of the 2<sup>nd</sup> fill-in-the-blank statement is confusing; shouldn't it be "IAW 1-OP-4.1, _____ is a core alteration." If so, then there can be two correct answers because unlatching rods is part of head removal.</p> <p style="text-align: center;">DOMINION North Anna Power Station 1-OP-4.1 Revision 77 Page 71 of 186</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WARNING</p> <p>Control Rod latching and unlatching is a reactivity manipulation as well as a core alteration. Strict procedural compliance and conservative Operator actions are required at all times when Control Rods are latched or unlatched. (References 2.4.4 and 2.4.23)</p> </div> <p>4-27-16: Revised 1<sup>st</sup> fill-in-the-blank to eliminate possibility of partial correct answers by testing the suggested revision listed below.</p> <p><b>WOOTF completes both statements?</b></p> <p><i>In accordance with OP-AA-100, Attachment 6, Status and Config, the _____ is responsible for conditions prior to the start of core alterations, monitoring conditions during core alterations, and stopping when conditions warrant.</i></p> <p><i>IAW op-4.1, title, the first reactor disassembly activity which is a CORE ALT is _____.</i></p> <p><b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation		
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward					Q=K/A	SRO Only
95	F	2	x			x			x					N	U	<p>T3 G2.2.14 (SAMPLE QUESTION)</p> <p>1. Cred Dist: Choices A/D are not plausible because, in combination, they are essentially the same; therefore, the applicants can (correctly) eliminate these choices w/o any knowledge of OP-NA-601.</p> <p>2. Partial: To ensure only one correct answer, need to verify this question with the licensee's procedure. OP-NA-601 (could not find) and OP-AA-600 not provided with sample question. Using the 2012 version of OP-AA-600, Protected Equipment, recommend the following enhancement to the stem:  <i>WOOTF completes the following statement IAW OP-AA-600, Protected Equipment?</i>  <i>Except in emergencies, the minimum required approval to start/stop protected train equipment is _____.</i></p> <p>3. Stem Focus: The stem does not include a question.</p> <p>4. Stem Focus: The acronym OMOC should be spelled out; this choice may/may not be plausible.</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.	8. Explanation							
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q= K/A				SRO Only						
95																<p>Replacement NEW Q#95 rec'd 4-26-16; however,</p> <ol style="list-style-type: none"> <li>The proposed question is a "NOT" question, which is not allowed per NUREG 1021.</li> <li>The required action is an immediate action in accordance with TS 3.7.10; therefore, the RO is required to know this item. Suggest the following: <i>Both Units are operating at 100% power.</i> <i>Due to a breach of the control room envelope, the crew entered Tech Spec. 3.7.10, Main Control Room/Emergency Switchgear Room Emergency Ventilation System, Action B.</i></li> </ol> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <p>B. One or more required MCR/ESGR EVS trains inoperable due to inoperable MCR/ESGR envelope boundary in MODES 1, 2, 3, or 4.</p> </td> <td style="width: 33%; vertical-align: top;"> <p>B.1 Initiate action to implement mitigating actions. <b>AND</b> B.2 Verify mitigating actions ensure MCR/ESGR envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.</p> </td> <td style="width: 33%; vertical-align: top;"> <p>Immediately</p> <p>24 hours</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p><b>AND</b> B.3 Restore MCR/ESGR envelope boundary to OPERABLE status.</p> </td> <td></td> <td style="vertical-align: top;"> <p>90 days</p> </td> </tr> </table> <p><i>Due to the nature of the breach, the Control Room Boundary can NOT be maintained operable by use of an administrative control.</i></p> <p><i>WOOTF completes both statements?</i></p> <p><i>The required mitigating action for B.1 is to _____.</i></p>	<p>B. One or more required MCR/ESGR EVS trains inoperable due to inoperable MCR/ESGR envelope boundary in MODES 1, 2, 3, or 4.</p>	<p>B.1 Initiate action to implement mitigating actions. <b>AND</b> B.2 Verify mitigating actions ensure MCR/ESGR envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.</p>	<p>Immediately</p> <p>24 hours</p>	<p><b>AND</b> B.3 Restore MCR/ESGR envelope boundary to OPERABLE status.</p>		<p>90 days</p>
<p>B. One or more required MCR/ESGR EVS trains inoperable due to inoperable MCR/ESGR envelope boundary in MODES 1, 2, 3, or 4.</p>	<p>B.1 Initiate action to implement mitigating actions. <b>AND</b> B.2 Verify mitigating actions ensure MCR/ESGR envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.</p>	<p>Immediately</p> <p>24 hours</p>																				
<p><b>AND</b> B.3 Restore MCR/ESGR envelope boundary to OPERABLE status.</p>		<p>90 days</p>																				
95																<p>Repairs to Q#95 rec'd 5-3-16; licensee accepted suggestion. Replace the first sentence ("Mechanics have a work order to replace the cable spreading to control room stairwell door due to a broken hinge.") because this may conflict with the statement that the control room boundary can't be administratively controlled. Suggest replacing first sentence with "Both Units are operating at 100% power." <b>QUESTION IS SAT.</b></p>						



Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only				
96	F	2	x	x													<p>T3 G2.2.21</p> <p>1. Partial: Choice D can also be argued as correct because VPAP-2003, Section 6.3.8.g states: "A test requirement may be <b>deferred</b> when plant conditions are such that a test requirement listed on the Test Data Sheet cannot be performed." The premise of <b>WHY</b> the PMTR can't be performed is missing from the distracter analysis. It seems subjective as to why the answer is to <b>WAIVE</b> the PMT requirement. Can the MSIV be stroked if reactor power was lowered? The stem says "based on plant conditions" (which is vague) and the stem doesn't say whether the packing adjustment was completed (assume it was).</p> <p>2. Stem Focus: The stem sentence "The leak comes in surges but is not steaming" is confusing because could imply that the packing adjustment cannot be performed or that the valve is inoperable. If the valve is inoperable, then say that in the stem. If the packing adjustment was not performed due to safety concerns, then say that in the stem.</p> <p>3. Stem Focus: The noun name for 2-MS-TV-201B is misspelled, "stream."</p> <p>4. Cue: The Mode 1 in the first sentence is not necessary to elicit the correct response.</p> <p>Suggest writing a question to test something in OP-AA-100-1001, Operations Department Instructions – Operations PMT Review; or suggest the following to remedy comment #1: <i>WOOTF completes the following statement in accordance with VPAP-2003, Post Maintenance Testing Program?</i></p> <p>"A test requirement may be _____ when plant conditions are such that a test requirement listed on the Test Data Sheet cannot be performed." (<i>deferred vs. waived</i>)</p>
96																	<p>Repaired Q#96 rec'd 4-26-16; comment #2, 3, &amp; 4 incorporated; however,</p> <p>1. Partial: The 2<sup>nd</sup> part of the question is subjective because, instead of just asking the suggestion listed above, the repaired item still includes all the packing leak scenario.</p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
96																6-3-16: Wrote question to test who approves deferral of PMT and who provides the basis for waiving PMTs. <b>QUESTION IS SAT.</b>
97	F	2	x	x									Mod	E		T3 G2:3.14 [2010 Surry NRC Exam, Q#?] 1. Cue: The 4 <sup>th</sup> bullet includes more information that is necessary to answer the question. 2. Stem Focus: The "reason" listed in the 1 <sup>st</sup> bullet is not necessary. 3. The entire stem and choices can be streamlined as: <i>WOOTF completes both statements in accordance with Tech Spec 3.4.16, RCS Specific Activity?</i> <i>In accordance with SR 3.4.16.2, reactor coolant DOSE EQUIVALENT I-131 specific activity must be verified ≤ _____ μCi/gm following thermal power change of 15% in an hour.</i> <i>The LCO 3.4.16 limits are established to minimize the dose consequences in the event of a _____ accident.</i>
97																Repaired Q#97 rec'd 4-26-16; Comment# 1, 2 incorporated, however, 1. Stem Focus: The bus duct cooling scenario is not needed. 2. Stem Focus: the less than or equal to sign is not needed if the word version of this symbol is used; delete one or the other. 4-27-16: Both comments listed above incorporated; <b>QUESTION IS SAT.</b>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation	
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia #/units	Backward	Q=K/A	SRO Only				
98	H	2	X													<p>T3 G2.3.15</p> <ol style="list-style-type: none"> <li>Note: Only TRM Pages 1, 2, and 4 will be provided to ensure testing of TRM Bases knowledge of 25% power requirement for N-16 rad monitors.</li> <li>Partial: An applicant can argue that Condition A is not required to be entered since the stem indicates that power is currently only 26%; therefore, the N-16 monitors remain functional. Suggest changing reactor power to 29% at 22:30 and 24% at 23:30.</li> <li>Stem Focus: The stem is missing a question. Suggest rewording the fill-in-the-blank statement as:  <i>WOOTF completes both statements in accordance with TRM 3.4.5, Primary to Secondary Leakage Detection System? Condition A is required to be entered at _____ (23:30 vs 22:30).</i>  <i>The required Completion Time for obtaining/analyzing grab samples is _____ (4 hours vs 12 hours)</i></li> </ol>
98																<p>Repaired Q#98 rec'd on 4-26-16; Comment #2 and 3 incorporated, however,</p> <ol style="list-style-type: none"> <li>Note: The reason the page 3 of TRM 3.4.5 (surveillance page) is not being provided is because the answer can be determined based on Table and Bases in TRM (&lt;25% power is when N16 and Air Ejector Rad monitor are non-function).</li> </ol> <p>4-27-16: Remove the sentence The Shift STA confirmed leakage rate trend data is correct. <b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws				4. Job Content Flaws				5. Other			6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A	SRO Only			
99	H	2	x	x												<p>T3 G2.4.27 (SAMPLE QUESTION)</p> <p>1. SRO-only: The 1<sup>st</sup> and 2<sup>nd</sup> parts of the proposed test item are both RO knowledge, for the following reasons:</p> <ul style="list-style-type: none"> <li>The 1-FCA-2 mitigative strategy is to use the Remote Monitoring Panel (located in the Fuel Building) to cool down the plant. Since cooling down the plant adds positive reactivity, an NLO can never perform Attachment 13, Fuel Building &amp; Mitigating Spurious Valve Operations.</li> <li>The ROs are responsible for knowing the overall mitigative strategy, which includes the cooldown limitation restrictions' dependency on CRDM fan availability.</li> </ul> <p>Alternate ways of testing the K/A, at the SRO level, may include:</p> <ul style="list-style-type: none"> <li>What to do when conflicting guidance between EOPs and FCAs is encountered (procedure selection aspect)</li> <li>Appendix R component failures assumed to achieve Hot Shutdown (or Cold Shutdown). (conditions of license aspect)</li> </ul> <p>2. Cred Dist: The 1<sup>st</sup> part of Choices B/D is not plausible because the phrase "Topped out" is slang.</p> <p>3. Cue: The word "only" in the 4<sup>th</sup> bullet is not necessary to elicit the correct response. Suggest revising to say "Two CRDM fans are running."</p> <p>4. Stem Focus: The stem does not contain a question.</p> <p>5. Stem Focus: The 6<sup>th</sup> bullet is vague because it does not include the name/number of the attachment (Attachment 13, Fuel Building &amp; Mitigating Spurious Valve Operations).</p>
99																<p>Repaired Q#99 rec'd on 4-26-16; Comments #2, 3, 4, &amp; 5 incorporated. Question did not address Comment #1.</p> <p>4-27-16: Split the fill-in-the-blank statement into two pieces to avoid cueing (linking cooldown rate to reactivity – licensed operator); also, revised Step 7 to say qualified as NCDROP Step 7. Capitalize the first letter of Attachment in the 6<sup>th</sup> bullet. Changed DEGRF to deg F.</p> <p><b>QUESTION IS SAT.</b></p>

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws						4. Job Content Flaws				5. Other	6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Backward	Q=K/A				
100	F	1	x													<p>T3 G2.4.30</p> <p>1. VPAP-2802, Notifications &amp; Reports, was not provided on the reference disk.</p> <p>2. Stem Focus: The 1<sup>st</sup> and 2<sup>nd</sup> bullets are not necessary; there is much information that is not necessary in the stem. The ONLY information that IS necessary is:</p> <ul style="list-style-type: none"> <li>Worker fell and has contaminated injures that can't be decontaminated</li> <li>Worker is required to be transported to hospital</li> <li>Worker was not over-exposed.</li> </ul> <p>3. LOD=1: VPAP-2802, Notifications &amp; Reports, was not provided on the reference disk; however, it seems likely, when all the window dressing is removed from the stem, and the VPAP-2802 is provided to the applicants, that this question is a direct lookup; this test item will provide no discriminatory value on the exam. The applicant will refer to Section 6.2 to identify transport of contaminated injured person as an eight hour notification. (little mental activity)</p> <p>Suggest not providing VPAP-2802 as a reference and testing some other aspect of the procedure.</p>
100																<p>Repaired Q#100 rec'd 4-26-16; however,</p> <p>1. LOD=1: Because the fill-in-the-blank statement says 1 hour report; applicant only has to look in the section for 1 hour. (direct lookup).</p> <p>5-26-16: Licensee provided NEW question that tests situation where T.S. 3.0.3 was entered and exited (RWST Level Transmitter issues). Question tests T.S. 3.0.3 specifics and reportability requirements.</p> <p><b>QUESTION IS SAT.</b></p>

Facility: <u>NORTH ANNA</u>		Date of Exam: <u>7/7/16</u>	Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>
Item Description	Initials		
	a	b	c
1. Clean answer sheets copied before grading	<u>JK</u>	<u>N/A</u>	<u>BM</u>
2. Answer key changes and question deletions justified and documented <i>(NRC REQUIRED)</i>	<u>JK</u>	<u>N/A</u>	<u>N/A</u>
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	<u>JK</u>	<u>N/A</u>	<u>BM</u>
4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail <i>(NO BORDERLINE)</i>	<u>JK</u>	<u>N/A</u>	<u>N/A</u>
5. All other failing examinations checked to ensure that grades are justified <i>(NO FAILURES)</i>	<u>JK</u>	<u>N/A</u>	<u>N/A</u>
6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	<u>JK</u>	<u>N/A</u>	<u>BM</u>
Printed Name/Signature		Date	
a. Grader	<u>NEWTON LACY / <i>Newton Lacy</i></u>	<u>7/20/2016</u>	
b. Facility Reviewer(*)	<u>N/A</u>	<u>N/A</u>	
c. NRC Chief Examiner (*)	<u>BRUNO CABALLERO / <i>B Caballero</i></u>	<u>8-4-16</u>	
d. NRC Supervisor (*)	<u>Eugene Guthrie / <i>E Guthrie</i></u>	<u>8/8/16</u>	
(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.			