

Facility: BROWNS FERRY Date of Examination: June 3-7, 2013

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) 11/28/12	BDL
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	BDL
-120	3. Facility contact briefed on security and other requirements (C.2.c) 11/28/12	BDL
-120	4. Corporate notification letter sent (C.2.d) 11/15/12	BDL
[-90]	[5. Reference material due (C.1.e; C.3.c; Attachment 3)] 3/11/13	BDL
{-75}	6. Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1's, ES-401-1/2, ES-401-3, and ES-401-4, as applicable (C.1.e and f; C.3.d) 2/4/13	BDL
{-70}	{7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)}	N/A
{-45}	8. Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, and any Form ES-201-3 updates), and reference materials due (C.1.e, f, g and h; C.3.d) 4/8/13	BDL
-30	9. Preliminary license applications (NRC Form 398's) due (C.1.i; C.2.g; ES-202) 5/3/13	BDL
-14	10. Final license applications due and Form ES-201-4 prepared (C.1.i; C.2.i; ES-202) 5/20/13	BDL
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f) Op - 5/22/13 Written - 6/24/13	N/A
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g) 4/29 - 5/2/13	BDL
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h) Written - 6/24/13 Op - 5/22/13	BDL
-7	14. Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 5; ES-202, C.2.e; ES-204) 5/23/13	BDL
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k) 6/24/13	BDL
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i) 6/3/13	BDL

\* 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: <b>BROWNS FERRY NPP</b>		Date of Examination: <b>6/3/2013</b>		
Item	Task Description	Initials		
		a	b*	c#
1. W R I T T E N	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	NA	NA	N-1
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	↓	↓	N-1
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	↓	↓	N-1
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	NA	NA	BN
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.	MB	J	BN
	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.	MB	J	BN
	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.	MB	J	BN
3. W / T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	MB	J	BN
	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	MB	J	BN
	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.	MB	J	BN
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.	MB	J	BN
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	MB	J	BN
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	MB	J	BN
	d. Check for duplication and overlap among exam sections.	MB	J	BN
	e. Check the entire exam for balance of coverage.	MB	J	BN
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	MB	J	BN
a. Author	<u>MICHAEL D. GIBSON</u> Printed Name / <u>Michael D. Gibson</u> Signature		Date	<u>1/30/13</u>
b. Facility Reviewer (*)	<u>DOUGLAS G. HAKENBERG</u> / <u>Douglas G. Hakenberg</u>			<u>1-31-13</u>
c. NRC Chief Examiner (#)	<u>BRUNO CABALLERO</u> / <u>B. Caballero</u>			<u>5/3/13</u>
d. NRC Supervisor				
Note:	# Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines			

N-1, This Form ES-201-2 only for operating exam; written exam outline quality checklist Form ES-201-2 previously submitted on 8-6-12.

Rec'd 2/1/13

Facility: <b>BROWNS FERRY</b>		Date of Examination: <b>June 2013</b>		
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.	CA	N/A	BK
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.	CA	N/A	BK
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	CA	N/A	BK
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	N/A	N/A	N/A
<del>2. S I M U L A T O R</del>	<del>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.</del>			
	<del>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.</del>			
	<del>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.</del>			
3. W / T	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.			
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations			
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.			
4. 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.	CA	N/A	BK
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	CA	N/A	BK
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	CA	N/A	BK
	d. Check for duplication and overlap among exam sections.	CA	N/A	BK
	e. Check the entire exam for balance of coverage.	CA	N/A	BK
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	CA	N/A	BK
a. Author	<u>Craig Kontz / <i>[Signature]</i></u>	Printed Name/Signature		Date
b. Facility Reviewer (*)	<u>- N/A -</u>			<u>8-2-12</u>
c. NRC Chief Examiner (#)	<u>BRUNO CABALLERO / <i>[Signature]</i></u>			<u>8-2-12</u>
d. NRC Supervisor	<u>MARK FRANK / <i>[Signature]</i></u>			<u>8/2/12</u>
Note:	# Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines			

*This Form ES-201-2 only for written exam.*

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28, 29</sup> 6/3-11/2013 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 <sup>28</sup> 6/3-11/2013. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	MICHAEL D. GIBSON	EXAM TEAM	<i>Michael D. Gibson</i>	8/1/12	<i>Michael D. Gibson</i>	6/28/13	
2.	GUY N. WYNN	EXAM TEAM	<i>Guy N. Wynn</i>	8/1/12	<i>Guy N. Wynn</i>	6/28/13	
3.	ROBERT M. SPADOLLI	EXAM TEAM	<i>Robert M. Spadolli</i>	8/19/12	SEE ATTACHED		
4.	Morgan O White	Admin	<i>Morgan O White</i>	8/13/12	<i>Morgan O White</i>	7-1-13	
5.	DOUGLAS G. HAKENEWORTH	FACILITY REPRESENTATIVE	<i>Douglas G. Hakeneworth</i>	9-24-12	<i>Douglas G. Hakeneworth</i>	6-28-13	
6.	DANIEL K. ZIELINSKI	EXAM TEAM	<i>Daniel K. Zielinski</i>	10-1-2012	<i>Daniel K. Zielinski</i>	6-28-13	
7.	ARLIE R. CHAMPION	Simulator Support	<i>Arlie R. Champion</i>	10-11-12	<i>Arlie R. Champion</i>	7-2-13	
8.	Van N Miller	Simulator Support	<i>Van N Miller</i>	10-11-12	<i>Van N Miller</i>	7-4-13	
9.	Richard R Choate	Simulator Support	<i>Richard R Choate</i>	10-11-12	<i>Richard R Choate</i>	7/1/13	
10.	Joseph A Loferski	Simulator Services	<i>Joseph A Loferski</i>	10-11-2012	<i>Joseph A Loferski</i>	7/1/13	
11.	PATRICK S ARUNDE	Simulator Services	<i>Patrick S Arunde</i>	11-11-2012	<i>Patrick S Arunde</i>	7/1/13	
12.	William J Cox	Simulator Services	<i>William J Cox</i>	10-11-2012	<i>William J Cox</i>	7/1/13	
13.	JEFFREY D MORRISON	Procs Procedure Mgr	<i>Jeffrey D Morrison</i>	2/5/13	<i>Jeffrey D Morrison</i>	7/1/13	
14.	Robert P. Taylor	Reactor Operator	<i>Robert P. Taylor</i>	2/5/13	<i>Robert P. Taylor</i>	7/10/13	
15.	Adam Cross	SRO	<i>Adam Cross</i>	2/6/13	<i>Adam Cross</i>	7/1/13	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup>6/3-14/2013 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 <sup>28</sup>6/3-14/2013. 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. Eric Reynolds	Reactor Operator	<i>Eric Reynolds</i>	2/8/13	<i>Eric Reynolds</i>	7/1/13
2. Nathan L Cooper	Reactor Operator	<i>Nathan L Cooper</i>	2/8/13	<i>Nathan L Cooper</i>	7/1/13
3. <del>ROBERT L MILLARS</del>	<del>REACTOR OPERATOR</del>	<del><i>Robert L Millars</i></del>	<del>2/8/13</del>	<del><i>Robert L Millars</i></del>	<del>7/1/13</del>
4. Matthew R Humphries	Reactor Operator	<i>Matthew R Humphries</i>	2/8/13	<i>Matthew R Humphries</i>	7/1/13
5. DAVID RENN	SRO	<i>David Renn</i>	2-8-13	<i>David Renn</i>	7/8/13
6. RICKY GIVENS	SRO	<i>Ricky Givens</i>	2-8-13	<i>Ricky Givens</i>	7-1-13
7. Allan Fobitka	SRO	<i>Allan Fobitka</i>	2-7-13	<i>Allan Fobitka</i>	7/1/13
8. Jason Whitlock	SRO	<i>Jason Whitlock</i>	2-19-13	<i>Jason Whitlock</i>	7-12-13
9. NEEL SHUKLA	SRO	<i>Neel Shukla</i>	2-21-13	<i>Neel Shukla</i>	7/2/13
10. Jason Knight	RO	<i>Jason Knight</i>	2-25-13	<i>Jason Knight</i>	7-1-2013
11. WILLIAM SENN	RO	<i>William Senn</i>	2-25-13	<i>William Senn</i>	7-1-13
12. James Brian Fowler	RO	<i>James Brian Fowler</i>	2-26-13	<i>James Brian Fowler</i>	7/1/13
13. Terry Wheeler Jr.	RO	<i>Terry Wheeler Jr.</i>	2-27-13	<i>Terry Wheeler Jr.</i>	7-1-13
14. MICHAEL S BROOKS	SRO	<i>Michael S Brooks</i>	2-27-13	<i>Michael S Brooks</i>	7-1-13
15. Eric J Steele	SRO	<i>Eric J Steele</i>	2-1-13	<i>Eric J Steele</i>	7/1/13

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup> 6/3-11/2013 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 <sup>29</sup> 6/3-11/2013. 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.	Eric Reynolds	Reactor Operator	<i>Eric Reynolds</i>	2/8/13	PREVIOUS PAGE		
2.	Nathan L Cooper	Reactor Operator	<i>Nathan L Cooper</i>	2/8/13			
3.	<del>30334 G MILLERS</del>	<del>REACTOR OPERATOR</del>	<del><i>[Signature]</i></del>	<del>3/8/13</del>			
4.	Matthew R Humphres	Reactor Operator	<i>Matthew R Humphres</i>	2/8/13			
5.	DAVID REYN	SRO	<i>David Reyn</i>	2-8-13			
6.	RICK S GIVENS	SEA	<i>Rick S Givens</i>	2-8-13	PREVIOUS PAGE		
7.	Ray Torres	Peer Reviewer (Person)	<i>Ray Torres</i>	2-11-13	SEE ATTACHED		
8.	Chris L Vaughn	<del>OTM</del>	<i>Chris L Vaughn</i>	4-26-13	<i>Chris L Vaughn</i>	7/01/13	
9.	Russ A Hoffmann	SRO	<i>Russ A Hoffmann</i>	5-9-13	<i>Russ A Hoffmann</i>	7/1/13	
10.	Joseph S Ellis	Reactor Operator	<i>Joseph S Ellis</i>	5/16/13	<i>Joseph S Ellis</i>	7/1/13	
11.	Jonathan Duke	Reactor Operator	<i>Jonathan Duke</i>	5/16/13	<i>Jonathan Duke</i>	7/1/13	
12.	Scott Banzhaf	Instructor	<i>Scott Banzhaf</i>	5/6/13	SEE ATTACHED		
13.	Dale Jennings	Instructor	<i>Dale Jennings</i>	5/6/13	SEE ATTACHED		
14.	WILLIAM BARKLEY	INSTRUCTOR	<i>William Barkley</i>	5/16/13	<i>William Barkley</i>	07/01/2013	
15.	JAMES T SUTPHIN	CAJ. SRO	<i>James T Sutphin</i>	5/2/13	<i>James T Sutphin</i>	07/01/13	

NOTES:

# ILT 1306

ES-201

Examination Security Agreement

Form ES-201 -3

**1. Pre-Examination**

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28<sup>th</sup></sup> 6/3-14/2013 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 <sup>28</sup>did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/3-14/2013. 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.	JEFFREY S. DAVIS	OPS TRG SUPERVISOR		3/4/13		7/2/13	
2.	Ray Jenkins	Reactor Operator		3-6-13		7-1-13	
3.	Don Robertson	US/SRO		3/7/13		7/2/13	
4.	Ray Loggins	US/SRO		3/8/13		7/1/13	
5.	Michael McLaughlin	US/SRO		4/1/13		7/1/13	
6.	Jacob Adams	RO		4/1/13		7/1/13	
7.	MARK NELSON	RO		4/1/13		7/2/13	
8.	RON AZELLIO	RO/SRO TEAM LEAD		4/1/13		7/1/13	
9.	JAMES KARNES	RO		4/1/13		7/1/13	
10.	CHRIS YOUNG	OPS SPECIALIST		4/8/13		7/1/13	
11.	JOHN W. RIDINGER	SRO		4-8-13		7-8-13	
12.	JOHN W. COLE	RO		4-8-13		7-8-13	
13.	TRACY D. RAYOR	RO		4/15/13		7/8/13	
14.	WALTER MITCHELL	SRO		4/24/13		7/1/13	
15.	JOE D. WILSON	SRO		2/14/13		1/20/13	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/3-6/14/13<sup>28</sup> 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 6/3-6/14/13<sup>28</sup>. 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.	Rebecca J. Morris	RO	<i>[Signature]</i>	5/9/13	<i>[Signature]</i>	7/1/13	
2.	Charles D. Throgmorton	RO	<i>[Signature]</i>	5/10/13	<i>[Signature]</i>	7/1/13	
3.	Timothy D. Boland	SRO/STA	<i>[Signature]</i>	5/15/13	<i>[Signature]</i>	7/9/13	
4.	Charles W. Johnson	RO	<i>[Signature]</i>	5-15-13	<i>[Signature]</i>	7-8-13	
5.	Joseph T. Butcher	RO	<i>[Signature]</i>	5-15-13	<i>[Signature]</i>	7-9-13	
6.	David How	SRO/STA	<i>[Signature]</i>	5-15-13	<i>[Signature]</i>	7-1-13	
7.	Amber Lawler	RO	<i>[Signature]</i>	5/15/13	<i>[Signature]</i>	7/1/13	
8.	Steven H. Adams	SRO	<i>[Signature]</i>	5/29/13	<i>[Signature]</i>	7/15/13	
9.	D. C. Walters	ops mgr	<i>[Signature]</i>	5-30-13	<i>[Signature]</i>	7/1/13	
10.	CARMEN ZIELINSKI	CLERK	<i>[Signature]</i>	5/31/13	<i>[Signature]</i>	7/1/13	
11.	DANIEL LAINE	SIT TRAINING DIRECT	<i>[Signature]</i>	5/16/13	<i>[Signature]</i>	7/1/13	
12.	Robert W. Miesch	INSTR	<i>[Signature]</i>	6/14/13	<i>[Signature]</i>	7/9/13	
13.	Randy Knight	INSURANCE	<i>[Signature]</i>	6/5/13	<i>[Signature]</i>	7/8/13	
14.	Len Strzaski	Shift manager	<i>[Signature]</i>	6-5-13	<i>[Signature]</i>	2-1-13	
15.	Timothy Andrews	SRO-T	<i>[Signature]</i>	6/12/13	<i>[Signature]</i>	7/2/13	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup> ~~6/3-14/2013~~ 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 <sup>29</sup> ~~6/3-14/2013~~. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Thomas Jackle	SRO	<i>[Signature]</i>	6/17/13	<i>[Signature]</i>	7/1/13	
2.	Emily J. Cole	SRDT	<i>[Signature]</i>	6/17/13	<i>[Signature]</i>	7/8/13	
3.	Darius Jones	SRO	<i>[Signature]</i>	6/19/13	<i>[Signature]</i>	7/1/13	
4.	JOHN W. RIDINGER	SRO	<i>[Signature]</i>	6-21-13	<i>[Signature]</i>	7-8-13	
5.	JERNIGAN, Don	Sr VP	<i>[Signature]</i>	6-25-13	SEE ATTACHED	-	
6.	Lee Sanders	Advisor	<i>[Signature]</i>	6/25/13	SEE ATTACHED	-	
7.	Renae Milner	VP Support	<i>[Signature]</i>	6/25/13	SEE ATTACHED	-	
8.	S. BOND	GMSS	<i>[Signature]</i>	6/25/13	<i>[Signature]</i>	7/1/13	
9.	MICHAEL THARNE	Instructor	<i>[Signature]</i>	6/28/13	<i>[Signature]</i>	7/1/13	
10.	Brian P. Stetson	Ops Instructor	B.P. Stetson	6/28/13	B.P. Stetson	06/28/13	
11.							
12.							
13.							
14.	NA						
15.							

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup> 6/3-14/2013 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	MICHAEL D. GIBSON	EXAM TEAM	<i>[Signature]</i>	8/1/12	Previous PAGE		
2.	GUY N WYNN	EXAM TEAM	<i>[Signature]</i>	8/1/12	Previous PAGE		
3.	Russell Joplitz	CORP Exam MGR	<i>[Signature]</i>	8/9/12	SEE ATTACHED		
4.	DANIEL M SNAPE	SIM SVCS	<i>[Signature]</i>	10/28/12	<i>[Signature]</i>	07-01-13	
5.							
6.							
7.							
8.							
9.							
10.							
11.		NA		NA			
12.							
13.							
14.							
15.							

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup> ~~6/3-14/2013~~ as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Thomas Jackle	SROT	[Signature]	6/17/13	[Signature]		
2.	Emily J. Cole	SRDT	[Signature]	6/17/13	PREVIOUS PAGE		
3.	Darius Wilson	SRO	[Signature]	6/17/13	PREVIOUS PAGE		
4.	JOHN W. RIDINGER	SRO	[Signature]	6-21-13	PREVIOUS PAGE		
5.	DERNIGAN, Don	Sr VP	[Signature]	6-25-13	[Signature]	6/27/13	
6.	Lee Sanders	Advisor	[Signature]	6/25/13	[Signature]	7/8/13	
7.	Renee Milner	VP Support	[Signature]	6/25/13	Renee Milner	7/2/13	
8.	S. BOYD	GMSC	[Signature]	6/25/13	PREVIOUS PAGE		
9.	MICHAEL THAYER	Instructor	[Signature]	6/28/13	[Signature]	7/1/13	
10.	Brian P. Stetson	Ops Instructor	[Signature]	6/28/13	[Signature]	06/28/13	
11.							
12.							NA
13.							
14.	NA						NA
15.							

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/3-14/2013<sup>28</sup> as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	MICHAEL D. GIBSON	EXAM TEAM	<i>[Signature]</i>	8/1/12	Previous PAGE		
2.	GUY N. WYNN	EXAM TEAM	<i>[Signature]</i>	8/1/12	Previous PAGE		
3.	Russell Joplin	CORP EXAM MGR	<i>[Signature]</i>	8/9/12		7/1/13	
4.	DANIEL M. SNOOK	SIM SVCS	<i>[Signature]</i>	10-28-12	<i>[Signature]</i>	07-01-13	
5.							
6.							
7.							
8.							
9.							
10.							
11.		NA			NA		
12.							
13.							
14.							
15.							

NOTES:

LT 1306

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup> 6/13-14/2013 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 <sup>29</sup> 6/13. 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.	Eric Reynolds	Reactor Operator	<i>Eric Reynolds</i>	2/8/13	PREVIOUS PAGE	
2.	Nathan L Cooper	Reactor Operator	<i>Nathan L Cooper</i>	2/8/13		
3.	JOSIE V G MINNERS	REACTOR OPERATOR	<i>Josie V G Minners</i>	3/8/13		
4.	Matthew R Humphries	Reactor Operator	<i>Matthew R Humphries</i>	2/8/13		
5.	DAVID REIN	SRO	<i>David Rein</i>	2-8-13		
6.	RICK T GIVENS	SRO	<i>Rick T Givens</i>	2-8-13	PREVIOUS PAGE	
7.	Ray TORRES	Reactor Examination (Theory)	<i>Ray Torres</i>	2-11-13		7-6-13
8.	Chris L Vaughn	OTM	<i>Chris L Vaughn</i>	4-26-13		7/01/13
9.	Ralph A Hollman	SRO	<i>Ralph A Hollman</i>	5-9-13		7/1/13
10.	Joseph S Ellis	Reactor Operator	<i>Joseph S Ellis</i>	5/16/13	SEE ATTACHED	
11.	Jonathan Duke	Reactor Operator	<i>Jonathan Duke</i>	5/16/13		7/1/13
12.	Scott Ranzhab	Instructor	<i>Scott Ranzhab</i>	5/16/13	SEE ATTACHED	
13.	Dale Jennings	Instructor	<i>Dale Jennings</i>	5/16/13	SEE ATTACHED	
14.	DONALD C BARKER	Instructor	<i>Donald C Barker</i>	5/16/13	SEE ATTACHED	07/01/2013
15.	JAMES T SUTOLIK	Chief SRO	<i>James T Sutolik</i>	5/17/13	SEE ATTACHED	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28<sup>th</sup></sup> ~~6/3-14/2013~~ 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, <sup>28</sup> I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of ~~6/3-14/2013~~. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	MICHAEL D. GIBSON	EXAM TEAM	<i>Michael D. Gibson</i>	8/1/12	<i>Michael D. Gibson</i>	6/28/13	
2.	GUY N. WYNN	EXAM TEAM	<i>Guy N. Wynn</i>	8/1/12	<i>Guy N. Wynn</i>	6/28/13	
3.	ROBERT M. SPADOLSI	EXAM TEAM	<i>Robert M. Spadolsi</i>	8/13/12	<i>Robert M. Spadolsi</i>	7/10/13	
4.	MORRIS O. WHITE	Admin	<i>Morris O. White</i>	8/13/12	<i>Morris O. White</i>	7-1-13	
5.	DOUGLAS G. HAKENWORTH	FACILITY REPRESENTATIVE	<i>Douglas G. Hakenworth</i>	9-24-12	<i>Douglas G. Hakenworth</i>	6-28-13	
6.	DANIEL K. ZIELINSKI	EXAM TEAM	<i>Daniel K. Zielinski</i>	10-1-2012	<i>Daniel K. Zielinski</i>	6-28-13	
7.	ARDIE R. CHAMPION	Simulator Support	<i>Ardie R. Champion</i>	10-11-12	<i>Ardie R. Champion</i>	7-2-13	
8.	VAN N. MILLER	Simulator Support	<i>Van N. Miller</i>	10-16-12	<i>Van N. Miller</i>	7-1-13	
9.	RICHARD R. CHOATE	Simulator Support	<i>Richard R. Choate</i>	10-11-12	<i>Richard R. Choate</i>	7/1/13	
10.	JOSEPH A. LAFERSTKI	Simulator Services	<i>Joseph A. Laferstki</i>	10-11-2012	<i>Joseph A. Laferstki</i>	7/1/13	
11.	PATRICK S. ARUNDE	Simulator Services	<i>Patrick S. Arunde</i>	10-11-2012	<i>Patrick S. Arunde</i>	7/1/13	
12.	WILLIAM J. COX	Simulator Services	<i>William J. Cox</i>	10-11-2012	<i>William J. Cox</i>	7/1/13	
13.	JEFFREY D. MORRISON	Exams Procedure Mgr	<i>Jeffrey D. Morrison</i>	2/5/13	<i>Jeffrey D. Morrison</i>	2/1/13	
14.	LABRANT M. MAY	Reactor Operator	<i>Labrant M. May</i>	2/5/13	<i>Labrant M. May</i>	7/10/13	
15.	ADAM CROSS	SRO	<i>Adam Cross</i>	2/6/13	<i>Adam Cross</i>	7/1/13	

NOTES:

LT 1306

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of <sup>28</sup> 1/13-11/2013 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1.	Eric Rayno Ibs	Reactor Operator	<i>Eric Rayno Ibs</i>	2/6/13	PREVIOUS PAGE	
2.	Nathan L Vogel	Reactor Operator	<i>Nathan L Vogel</i>	2/6/13		
3.	BOSTON L. AMARAL	Reactor Operator	<i>Boston L. Amaral</i>	3/2/13		
4.	Michael R. Humphreys	Reactor Operator	<i>Michael R. Humphreys</i>	4/8/13		
5.	DAVID REYNOLDS	SRO	<i>David Reynolds</i>	2-8-13		
6.	BICKY GIBSON	SRO	<i>Bicky Gibson</i>	2-8-13	PREVIOUS PAGE	
7.	ANDY TORRES	Reactor Operator (License)	<i>Andy Torres</i>	2-11-13	SEE ATTACHED	
8.	Chris L. Vaughan	Shift Supervisor OTM	<i>Chris L. Vaughan</i>	4-26-13	<i>Chris L. Vaughan</i>	7/10/13
9.	Ross A. McPherson	SRO	<i>Ross A. McPherson</i>	5-9-13	<i>Ross A. McPherson</i>	7/1/13
10.	Joseph S. Ellis	Reactor Operator	<i>Joseph S. Ellis</i>	5/16/13	<i>Joseph S. Ellis</i>	7/1/13
11.	Jonathan Duke	Reactor Operator	<i>Jonathan Duke</i>	5/16/13	<i>Jonathan Duke</i>	7/1/13
12.	Scott Barruhaf	Instructor	<i>Scott Barruhaf</i>	5/16/13	<i>Scott Barruhaf</i>	7/1/13
13.	Dale Jennings	Instructor	<i>Dale Jennings</i>	5/16/13	PREVIOUS PAGE	
14.	DAVID L. BULLOCK	Instructor	<i>David L. Bullock</i>	5/16/13	<i>David L. Bullock</i>	07/01/2013
15.	JAMES T. JUSTON III	Chief SRO	<i>James T. Juston III</i>	5/16/13	PREVIOUS PAGE	

NOTES:

LT 1306

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 2/11/13 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 communications 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 be an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1	Eric Raynolds	React Op for	<i>Eric Raynolds</i>	2/11/13	PREVIOUS PAGE		
	Nathan L. Cooper	Reactor Operator	<i>Nathan L. Cooper</i>	2/12/13			
3	ROBERT G. HARRIS	REACTOR OPERATOR	<i>Robert G. Harris</i>	2/12/13			
4	Michael R. Humphreys	Reactor Operator	<i>Michael R. Humphreys</i>	2/12/13			
5	DAVID BEVIN	SRO	<i>David Bevin</i>	2-12-13			
	RICKY GIBBS	SRO	<i>Ricky Gibbs</i>	2-12-13	PREVIOUS PAGE		
7	RAY TORRES	Reactor Operating (Control)	<i>Ray Torres</i>	2-11-13	SEE ATTACHMENT		
8	Chris L. Vaughan	Reactor O/TM	<i>Chris L. Vaughan</i>	4-26-13	<i>Chris L. Vaughan</i>	7/10/13	
9	Ralph Hoffmann	SRO	<i>Ralph Hoffmann</i>	6-9-13	<i>Ralph Hoffmann</i>	7/1/13	
10	Joseph S. Ellis	Reactor Operator	<i>Joseph S. Ellis</i>	5/16/13	<i>Joseph S. Ellis</i>	7/1/13	
	Jonathan Duff	Reactor Operator	<i>Jonathan Duff</i>	5/16/13	<i>Jonathan Duff</i>	7/1/13	
	Scott B. Smith	Instructor	<i>Scott B. Smith</i>	5/16/13	PREVIOUS PAGE		
3	DALE SCHUBING	Instructor	<i>Dale Schubing</i>	5/16/13	<i>Dale Schubing</i>	7/1/13	
	KENNETH BULLOCK	Instructor	<i>Kenneth Bullock</i>	5/16/13	<i>Kenneth Bullock</i>	09/16/2013	
4	JAMES T. SUTOWILL	Chief SRO	<i>James T. Sutowill</i>	2/11/13	PREVIOUS PAGE		

NOTES:

Facility: Browns Ferry NPP Date of Examination: 6/3/2013  
 Examination Level: RO/SRO Operating Test Number: 1306

Administrative Topic	Type Code *	Describe activity to be performed
Conduct of Operations SRO/RO A1a	M	2.1.5 Evaluate Work Schedule against guidelines of NPG-SPP 3.21 Fatigue Management and Work Hour Limits
Conduct of Operations RO A1b	N	2.1.18: 2/3-SR-2 Operator Logs MODE 5 Table 4.1 through 4.7 part 2
SRO A1b	M	2.1.7 2-SR-3.4.2.1 Jet Pump Mismatch and Operability
Equipment Control RO A2	N	2.2.41: Determine isolation boundary to repair a failed Lube Oil Cooler on Condensate Booster Pump 2B or 3B
SRO A2	N	2.2.23: LCO Tracking Log entry for RWCU PCIS Valves failed
Radiation Control SRO/RO A3	M	2.3.11: Calculate Airborne Effluent Release Rate IAW 0-SI-4.8.b.1.a.1
Emergency Plan SRO A4	N	2.4.44: Follow up Notification and PAR Change

**NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.**

\* Type Codes & Criteria:  
 (C)ontrol Room  
 (D)irect from bank ( $\leq 3$  for ROs;  $\leq 4$  for SROs and RO retakes)  
 (N)ew or (M)odified from bank ( $\geq 1$ )  
 (P)revious 2 exams ( $\leq 1$ ; randomly selected)  
 (S)imulator

*Need  
5/22/13*

## Reactor Operator

1. NPG-SPP-03.21 Fatigue Management and Work Hour Limits
  - **Modified from Bank**
  - NPG-SPP-03.21
  - Evaluate a work hour schedules and determine that one of them exceeded work hour limits for time worked.
  - 2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. Importance RO 2.9
  
2. ICS Logs
  - **New**
  - 2-SR-2 or 3-SR-2
  - Perform Operator logs in accordance with 2-SR-2 Instrument Checks and Observations for log tables 4.1 through 4.7. Verify acceptance criteria are satisfied in accordance with notes.
  - 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. RO 3.6
  
3. Determination of Isolation Boundary Condensate Booster Pump 2B or 3B for work on lube oil cooler.
  - **New**
  - Drawings 2/3-45E721, 0-45E763-3, 2/3-47E804-1, 2/3-45E753-3 and 2/3-47E844-1
  - Determine the components that shall be identified to repair the lube oil cooler for Condensate Booster Pump 2B or 3B
  - 2.2.13 Knowledge of tagging and clearance procedures. Importance RO 4.1
  
4. Calculate Airborne Effluent Release Rate in accordance with 0-SI-4.8.b.1.a.1
  - **Modified**
  - 0-SI-4.8.B.1.a.1
  - Calculate Building Ventilation Release Fraction and determine acceptance criteria met. Calculate Stack Release Fraction and determine that acceptance criteria NOT met. Calculate Total Site Release Fraction and determine acceptance criteria met.
  - 2.3.11 Ability to control radiation releases RO 3.8

## Senior Reactor Operator

1. NPG-SPP-03.21 Fatigue Management and Work Hour Limits
  - Modified from Bank
  - NPG-SPP-03.21
  - Evaluate a work hour schedules and determine that one of them has exceeded work hour limits for time worked and determine actions required for NFR violation.
  - 2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. Importance SRO 3.9
  
2. 1-SR-3.4.2.1 Jet Pump Mismatch and Operability
  - Modified from Bank
  - 3-SR-3.4.2.1
  - Complete a surveillance requirement on Reactor Recirculation System Jet Pump Mismatch and Operability, determines that an Engineering review is required and determines that the Acceptance Criteria is NOT met.
  - 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. Importance SRO 4.7
  
3. LCO Tracking Log entry for failed PCIS Valve
  - New
  - OPDP-8
  - Complete an LCO Tracking Log Entry from the results of 1/2/3-SR-3.6.1.3.5(RWCU) RWCU Primary Containment Isolation Valve Operability
  - 2.2.23 Ability to track Technical Specifications limiting conditions for Operations. Importance SRO 4.6
  
4. Calculate Airborne Effluent Release Rate iaw 0-SI-4.8.b.1.a.1
  - Modified
  - 0-SI-4.8.B.1.a.1
  - Calculate Building Ventilation Release Fraction and determine acceptance criteria met. Calculate Stack Release Fraction and determine that acceptance criteria NOT met. Calculate Total Site Release Fraction and determine acceptance criteria met. Determine ODCM entry is required for NOT met acceptance criteria
  - 2.3.11 Ability to control radiation releases. Importance SRO 4.3

### 5. Protective Action Recommendation Evaluation

- New
- EPIP-1 and 5 Emergency Classification Procedure and General Emergency
- Completed Notification Handouts Appendix F – General Emergency Follow-Up Information Form and J – Upgrade – Protective Action Recommendation
- 2.4.44 Knowledge of emergency plan protective action recommendations. Importance SRO 4.4

Facility: Browns Ferry NPP Date of Examination: 6/3/2013  
 Exam Level: RO/SROI/SROU Operating Test No.: 1306

**Control Room Systems<sup>@</sup> (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)**

System / JPM Title	Type Code*	Safety Function
<b>a. Recirc Pump Shutdown Plant in Mode 2, 2/3-OI-68</b>	<b>A, N, S, L</b>	<b>1</b>
b. Alternate RPV Injection Fire Systems, 2-EOI Appendix-7K	D, S	2
c. Alternate RPV Pressure Control RFPT, 2/3-EOI Appendix-11F	D, S	3
d. Restore Shutdown Cooling, 2/3-AOI-74-1	M, S, L	4(RO Only)
<b>e. TIP Isolation Failure, 2-AOI-64-2E</b>	<b>N, A, S, EN</b>	<b>5</b>
<b>f. RWM Functional Test for Startup 2/3-SR-3.3.2.1.2</b>	<b>P, L, S</b>	<b>7</b>
g. Containment Venting, High Pressure 2/3-EOI Appendix-12	M, S, A	9
h. USST 1B Transformer Tap Changer Auto Checks (Unit 2 only)	A, P, S	6

**In-Plant Systems<sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)**

<b>i. Shutdown Unit 1/2 'D' DG at Diesel Engine Control Cabinet</b>	<b>M, A</b>	<b>6</b>
j. Manual Operation of 3-FCV-85-11B, using 3-PCV-85-11	N, R, E	1
<b>k. SLC Alternate Injection, 3-EOI Appendix-7B</b>	<b>D, R, E</b>	<b>2</b>

**@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.**

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

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**Control Room Systems:****a. Recirc Pump Shutdown with plant in Mode 2 (Unit 2 or 3)**

- Alternate path / New / Simulator / Low power
- 2/3-OI-68 Reactor Recirculation System
- 202001 Recirculation System A2.04 Ability to manually operate and/or monitor in the control room: System valves IMPORTANCE: RO 3.5 SRO 3.4
- Operator directed to shutdown Recirculation Pump B and maintain temperature in the idle loop in MODE 2 in accordance with 2/3-OI-68 section 7.1, when the operator opens the discharge valve to maintain temperature the idle Reactor Recirculation pump will rotate requiring the operator to close the discharge valve.

**b. Alternate RPV Injection Fire System (Unit 2 Only)**

- Direct from Bank / Simulator
- 2/3-EOI Appendix-7K Alternate RPV Injection System Lineup Fire System
- 295031 Reactor Low Water Level EA1.08 Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Alternate Injection systems: Plant-specific IMPORTANCE: RO 3.8 SRO 3.9
- Inject with Fire Systems IAW 2/3-EOI Appendix-7K to restore RPV Level.

**c. Alternate RPV Pressure Control RFPT (Unit 2 or 3)**

- Direct from Bank / Simulator
- 2/3-EOI Appendix-11F Alternate RPV Pressure Control Systems RFPT On Minimum Flow
- 295007 High Reactor Pressure AA2.01 Ability to determine and/or interpret the following as they apply to High Reactor Pressure: Reactor Pressure IMPORTANCE: RO 4.1 SRO 4.1
- Places RFPT A and B in pressure control in accordance with 2/3-EOI Appendix-11F

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**d. Restore Shutdown Cooling (Unit 2 or 3)**

- Modified from Bank / Low Power / Simulator
- 2/3-AOI-74-1 Loss of Shutdown Cooling
- 295021 Loss of Shutdown Cooling AA1.02 Ability to operate and/or monitor the following as they apply to Loss of Shutdown Cooling: RHR/shutdown cooling  
IMPORTANCE: RO 3.5 SRO 3.5
- Operator is directed to restore shutdown cooling following an inadvertent RPS actuation, will restore shutdown cooling with RHR Pump B and establish a cooldown IAW with the AOI for loss of Shutdown Cooling.

**e. TIP Isolation Failure (Unit 2 only)**

- New / Alternate Path / Engineered Safety Feature / Simulator
- 2-AOI-64-2E Traversing Incore Probe Isolation
- 223002 PCIS/NSSS A2.03 Ability to (a) predict the impacts of the following on PCIS/NSSS; and (b) based on those predications, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: System Logic Failures IMPORTANCE: RO 3.0 SRO 3.3
- The TIPS are manually driven in and the ball valve auto closes, for those TIPS that do not retract in manual the TIP shear valve is activated.

**f. RWM Functional Test for Startup (Unit 2 or 3)**

- Direct from Bank / Low Power-Shutdown / Simulator
- 2/3-SR-3.3.2.1.2 RWM functional test for startup
- 201006 Rod Worth Minimizer System (RWM) A2.05 Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Out of sequence rod movement; P-Spec(Not-BWR6) IMPORTANCE: RO 3.1 SRO 3.5
- Operator will perform 2/3-SR-3.3.2.1.2, RWM Functional Test for Startup, which requires operator to select and withdraw a control rod out of sequence to test the functionality of the Select Error, Withdraw Error and Withdraw Block

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**g. Containment Venting High (Unit 2 and 3)**

- Modified / Simulator / Alternate Path
- 2/3-EOI Appendix-12 Primary Containment Venting
- 261000 Standby Gas Treatment System A2.14 Ability to (a) predict the impacts of the following on the Standby Gas Treatment System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High System Pressure IMPORTANCE: RO 3.0 SRO 3.2
- Vent Primary Containment IAW 2/3-EOI Appendix-12, due to high system pressure vent valve will cycle open and close rapidly causing the valve to fail closed. The operator will secure the vent path IAW Appendix 12 and align the other vent path. Once again the vent valve will cycle open and close the operator adjusts flow on the flow controller to lower the system pressure and to stop the rapid cycling of the event valve.

**h. USST 1B Transformer Tap Changer Auto Checks (Unit 2 only)**

- Alternate Path / Previous / Simulator
- 0-GOI-300-4, Switchyard Manual
- 262001 AC Electrical Distribution A4.05 Ability to manually operate and/or monitor in the control room: Voltage, current, power, and frequency on AC buses. IMPORTANCE: RO 3.3 SRO 3.3
- Operator is directed to perform USST 1B Transformer Tap Changer Auto Checks. The Tap changer will fail the initial auto check and a second will have to be performed to verify proper operation of USST 1B Tap Changer.

**In-Plant Systems:****i. Shutdown Unit 1/2 D DG from Diesel Engine Control Cabinet**

- Modified / Alternate Path
- 0-OI-82, Standby Diesel Generator System
- 264000 Emergency Generators K4.07 Knowledge of Emergency Generators design features and/or interlocks for the following: Local operation and control IMPORTANCE: RO 3.3 SRO 3.4
- Simulates performing an Emergency Shutdown of D DG.

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**j. Manual Operation of 3-FCV-85-11B, using 3-PCV-85-11**

- New / RCA / Emergency in Plant
- 3-OI-85, Control Rod Drive System
- 201001 Control Rod Drive Hydraulic System A2.03 Ability to (a) predict the impacts of the following on the Control Rod Drive Hydraulic System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Power supply failures IMPORTANCE: RO 3.0 SRO 3.1
- Perform field actions to manually operate 3-FCV-85-11B using 3-PCV-85-11 due to a loss of Unit Preferred 120VAC.

**k. Alternate RPV Injection Standby Liquid Control System**

- Direct from Bank / Emergency in Plant / RCA
- 3-EOI Appendix-7B Alternate RPV Injection System Lineup SLC System
- 295031 Reactor Low Water Level EA1.08 Ability to operate and/or monitor the following as they apply to Reactor Low Water Level: Alternate Injection systems: Plant-specific IMPORTANCE: RO 3.8 SRO 3.9
- Perform field actions to Line Up for Injection with SLC IAW 3-EOI Appendix-7B.

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Facility: <b>Browns Ferry</b>		Date of Examination: <b>June 2013</b>	Operating Test Number: <b>ILT1306</b>		
<b>1. General Criteria</b>			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).		MDS	J	BK
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.		MDS	J	BK
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1 .a.)		MDS	J	BK
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.		MDS	J	BK
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.		MDS	J	BK
<b>2. Walk-Through Criteria</b>			-	-	-
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>- initial conditions 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>		MDS	J	BK
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.		MDS	J	BK
<b>3. Simulator Criteria</b>			-	-	-
The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301 -4 and a copy is attached.			MDS	J	BK
		Printed Name / Signature	Date		
a.	Author	<u>MICHAEL D. EYSON / Michael D. Eyson</u>	<u>5/20/13</u>		
b.	Facility Reviewed (*)	<u>DOUGLAS G. HAHNEWEGER / Douglas G. Hahneweger</u>	<u>5-20-13</u>		
c.	NRC Chief Examiner (#)	<u>BRUNO CABALLERO / B. Caballero</u>	<u>5-22-13</u>		
d.	NRC Supervisor	<u>MALCOLM T. WIDMANN / Malcolm T. Widmann</u>	<u>05/02/13</u>		
NOTE:	*	The facility signature is not applicable for NRC-developed tests.			
	#	Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.			

Facility: Browns Ferry Date of Exam: 6/3/2013 Scenario Numbers: 1/2/3/4/5 Operating test No.: June 1306					
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.	MDS	JH	BAH	
2.	The scenarios consist mostly of related events.	MDS	JH	BAH	
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) 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>	MDS	JH	BAH	
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	MDS	JH	BAH	
5.	The events are valid with regard to physics and thermodynamics.	MDS	JH	BAH	
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	MDS	JH	BAH	
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	MDS	JH	BAH	
8.	The simulator modeling is not altered.	MDS	JH	BAH	
9.	The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	MDS	JH	BAH	
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.	MDS	JH	BAH	
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	MDS	JH	BAH	
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).	MDS	JH	BAH	
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	MDS	JH	BAH	
<b>Target Quantitative Attributes (Per Scenario; See Section D.5.d)</b>		<b>Actual Attributes</b>			
		—	—	—	
1.	Total malfunctions (5-8)	8/10/9/9/10	MDS	JH	BAH
2.	Malfunctions after EOP entry (1-2)	3/3/3/2/4	MDS	JH	BAH
3.	Abnormal events (2-4)	4/4/4/4/4	MDS	JH	BAH
4.	Major transients (1 -2)	1/1/2/2/1	MDS	JH	BAH
5.	EOPs entered/requiring substantive actions (1-2)	3/1/2/2/2	MDS	JH	BAH
6.	EOP contingencies requiring substantive actions (0-2)	1/0/0/2/2	MDS	JH	BAH
7.	Critical tasks (2-3)	3/3/3/5/4	MDS	JH	BAH

Facility: **Browns Ferry NPP** Date of Exam: **June 3 - 14, 2013** Operating Test No.: **ILT 1306**

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		
		1			2			3			4			5				R	I	U
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	A T C	B O P																
RO	RX																			
SRO-U	NOR	1															1			1
SRO-U #1	I/C	3,4,5,6															4			2
	MAJ	7															1			1
	TS	4,6															2			2
RO	RX		2			2			1								3		1	
SRO-U #1	NOR					1			2								2		1	
SRO-U #1	I/C		3,4			3,4,5,7			3,4,5,6								10		4	
	MAJ		7			8			7								3		2	
	TS					1,6			2,3								4		2	
RO	RX																			
SRO-U #2	NOR	1				2											2			1
SRO-U #2	I/C	3,4,5,6				3,4,5,7											8			2
	MAJ	7				8											2			1
	TS	5,6				1,6											4			2
RO #1	RX					2											1	1		
SRO-U #1	NOR			1					2								2	1		
SRO-U #1	I/C			5,6		3,7			3,6								6	4		
	MAJ			7		8			7								3	2		
	TS																			
RO #2	RX		2														1	1		
SRO-U #2	NOR					1											1	1		
SRO-U #2	I/C		3,4			4,5											4	4		
	MAJ		7			8											2	2		
	TS																			
RO #3	RX					2											1	1		
SRO-U #3	NOR			1													1	1		
SRO-U #3	I/C		5,6			3,7											4	4		
	MAJ		7			8											2	2		
	TS																			
RO #4	RX								1								1	1		
SRO-U #4	NOR					1											1	1		
SRO-U #4	I/C					4,5			4,5								4	4		
	MAJ					8			7								3	2		
	TS																			

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

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

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

Facility: <b>Browns Ferry</b>		Date of Examination: <b>June 2013</b>					Operating Test No.: <b>1306</b>								
Competencies	APPLICANTS														
	RO					SRO-I					SRO-U				
	SCENARIO					SCENARIO					SCENARIO				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Interpret/Diagnose Events and Conditions	3,4,5,6,	3,4,5,7	3,4,5,6,7,9	3,4,5,6,7,8	3,4,5,6,7	3,4,5,6,	3,4,5,7	3,4,5,6,7,9	3,4,5,6,7,8	3,4,5,6,7	3,4,5,6,	3,4,5,7	3,4,5,6,7,9	3,4,5,6,7,8	3,4,5,6,7
Comply With and Use Procedures (1)	1,2,3,4,5,6	1,2,3,4,5,7,8	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7	1,2,3,4,5,6	1,2,3,4,5,7,8	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7	1,2,3,4,5,6	1,2,3,4,5,7,8	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7
Operate Control Boards (2)	1,2,3,4,5,6,7	1,2,3,4,5,7,8	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,7,8	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,7,8	1,2,3,4,5,6,7,9	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7
Communicate and Interact	7	5,8,9	7,9	6,7,8	4,6,7,8	7	5,8,9	7,9	6,7,8	4,6,7,8	7	5,8,9	7,9	6,7,8	4,6,7,8
Demonstrate Supervisory Ability (3)						3,4,5,6,7	3,4,5,7,8,9	3,4,5,6,7,9	3,5,6,7,8	3,4,6,7,8	3,4,5,6,7	3,4,5,7,8,9	3,4,5,6,7,9	3,5,6,7,8	3,4,6,7,8
Comply With and Use Tech. Specs. (3)						4,6	1,6	2,3	1,3	3,4,6	4,6	1,6	2,3	1,3	3,4,6
Notes:															
(1) Includes Technical Specification compliance for an RO.															
(2) Optional for an SRO-U.															
(3) Only applicable to SROs.															

*Instructions:*

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

Facility Browns Ferry		Date of Exam: 2012																			
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	4	3	3	N/A			4	3	N/A			3	20	4	3	7				
	2	1	1	1	N/A			2	1	N/A			1	7	2	1	3				
	<b>Tier Totals</b>	5	4	4	N/A			6	4	N/A			4	27	6	4	10				
2. Plant Systems	1	2	3	3	3	3	2	3	2	2	1	2	28	3	2	5					
	2	1	1	1	1	2	1	1	1	1	1	1	12	0	2	1	3				
	<b>Tier Totals</b>	3	4	4	4	5	3	4	3	3	2	3	38	5	3	8					
3. Generic Knowledge and Abilities Categories		1		2		3		4		10		1		2		3		4		7	
		3		3		2		2				2		2		1		2			

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 outlines, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. \*The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G\* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

ES-401		BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-1	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	R						(R) AK1.03		
295003 Partial or Complete Loss of AC / 6					R S		(R) AA2.02 (S) AA2.05		
295004 Partial or Total Loss of DC Pwr / 6				R			(R) AA1.01		
295005 Main Turbine Generator Trip / 3				R			(R) AA1.01		
295006 SCRAM / 1	R						(R) AK1.02		
295016 Control Room Abandonment / 7						R	(R) G2.1.32		
295018 Partial or Total Loss of CCW / 8				R			(R) AA1.02		
295019 Partial or Total Loss of Inst. Air / 8					S	R	(R) G2.2.39 (S) AA2.02		
295021 Loss of Shutdown Cooling / 4				R			(R) AA2.07		
295023 Refueling Acc / 8			R			S	(R) AK3.04 (S) G2.2.40 REPLACED		
295024 High Drywell Pressure / 5						R S	(R) G2.4.8 (S) G2.4.21		
295025 High Reactor Pressure / 3				R			(R) EA2.01		
295026 Suppression Pool High Water Temp. / 5				R			(R) EA1.01		
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5			R				(R) EK3.04		
295030 Low Suppression Pool Wtr Lvl / 5		R					(R) EK2.01		
295031 Reactor Low Water Level / 2			R				(R) EK3.03		
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	(R)					S	(R) EK1.03 (S) G2.4.30		
295038 High Off-site Release Rate / 9		(R)					(R) EK2.02		
600000 Plant Fire On Site / 8		(R)			S		(R) AK2.01 (S) AA2.13		
700000 Generator Voltage and Electric Grid Disturbances / 6	(R)				S		(R) AK1.01 (S) AA2.05		
K/A Category Totals:	4	3	3	4	3	3	Group Point Total:		20/7



ES-401		BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)											Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode								R				(R) A2.16		
205000 Shutdown Cooling										R		(R) A4.07		
206000 HPCI										R		(R) G2.2.38		
207000 Isolation (Emergency) Condenser								N/A						
209001 LPCS									R		S	(R) A3.03 (S) G2.1.31		
209002 HPCS								N/A						
211000 SLC	R		R						S			(R) K1.01 (R) K3.01 (S) A2.05		
212000 RPS				R								(R) K4.01		
215003 IRM								S	R			(R) A3.03 (S) A2.01		
215004 Source Range Monitor		R										(R) K2.01		
215005 APRM / LPRM		R										(R) K2.02		
217000 RCIC					R		R					(R) A1.02 (R) K5.06		
218000 ADS				R				S				(R) K4.01 (S) A2.05		
223002 PCIS/Nuclear Steam Supply Shutoff				R				R				(R) A2.06 (R) K4.04		
239002 SRVs						R					S	(R) K6.02 (S) G2.2.12		
259002 Reactor Water Level Control					R							(R) K5.03		
261000 SGTS							R					(R) A1.07		
262001 AC Electrical Distribution		R			R							(R) K2.01 (R) K5.02		
262002 UPS (AC/DC)			R									(R) K3.17		
263000 DC Electrical Distribution						R	R					(R) A1.01 (R) K6.01		
264000 EDGs			R									(R) K3.03		
300000 Instrument Air										R		(R) G2.4.3 REPLACED		
400000 Component Cooling Water	R											(R) K1.01		
K/A Category Point Totals: 2 3 3 3 3 2 3 2 2 1 2														
Group Point Total:													26/5	



Facility: Browns Ferry		Date of Exam: 2013		RO		SRO-Only	
Category	K/A #	Topic	IR	#	IR	#	
1. Conduct of Operations	2.1.27	System Purpose and/or Function	3.9				
	2.1.31	locate switches ..., correct lineup	4.6				
	2.1.36	Core Alterations procedures/limitations	3.0				
	2.1.35	SRO fuel handling responsibilities (S)			3.9		
	2.1.43	Use procedures for effects of reactivity (S)			4.3		
	2.1.						
	Subtotal		(3)		(2)		
2. Equipment Control	2.2.15	Plant configuration using design/control doc	3.9				
	2.2.25	Knowledge of T.S. Bases of LO or safety limit	3.2				
	2.2.39	Knowledge of ≤ 1 hour Action Statements	3.9				
	2.2.18	Knowledge of process/managing SD Maint. (S)			3.8		
	2.2.3	Unit Differences (S)			3.9		
	2.2.						
	Subtotal		(3)		(2)		
3. Radiation Control	2.3.13	Rad safety principles pertaining to lic operators	3.4				
	2.3.14	Rad/Contamination hazards	3.4				
	2.3.4	Exposure limits during normal/emerg. (S)			3.7		
	2.3.						
	2.3.						
	2.3.						
	Subtotal		(2)		(1)		
4. Emergency Procedures / Plan	2.4.1	EOP entry conditions & immediate actions	4.6				
	2.4.9	Low Power/Shutdown implications	3.8				
	2.4.18	EOP bases knowledge (S)			4.0		
	2.4.19	EOP layout, symbols, icons (S)			4.1		
	2.4.						
	2.4.						
	Subtotal		(2)		(2)		
Tier 3 Point Total			(10)	10	(7)	7	

KA	NAME / SAFETY FUNCTION:	IR		K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G												TOPIC:					
		RO	SRO																		
295001AK1.03	Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	3.8	4.1	<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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Thermal limits.....
295003AA2.02	Partial or Complete Loss of AC / 6	4.2	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"/>	<input type="checkbox"/>	Reactor power / pressure / and level.....					
295004AA1.01	Partial or Total Loss of DC Pwr / 6	3.3	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D.C. electrical distribution systems.....
295005AA1.01	Main Turbine Generator Trip / 3	3.1	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Recirculation system: Plant-Specific.....
295006AK1.02	SCRAM / 1	3.4	3.7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shutdown margin.....
295016G2.1.32	Control Room Abandonment / 7	3.8	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 explain and apply all system limits and precautions.
295018AA1.02	Partial or Total Loss of CCW / 8	3.3	3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	System loads.....
295019G2.2.39	Partial or Total Loss of Inst. Air / 8	3.9	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of less than one hour technical specification action statements for systems. <i>Tech Spec 3.8.3 Action D</i>
295021AA2.07	Loss of Shutdown Cooling / 4	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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reactor recirculation flow .....
295023AK3.04	Refueling Acc Cooling Mode / 8	3.0	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Non-coincident SCRAM function.....						
295024G2.4.8	High Drywell Pressure / 5	3.8	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

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T1G1 BWR EXAMINATION OUTLINE

FORM ES-401-1

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
295025EA2.01	High Reactor Pressure / 3	4.3	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reactor pressure.....
295028EA1.01	Suppression Pool High Water Temp. / 5	4.1	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"/>	Suppression pool cooling.....
295028EK3.04	High Drywell Temperature / 5	3.6	3.8	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Increased drywell cooling.....
295030EK2.01	Low Suppression Pool Wtr Lvl / 5	3.8	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"/>	HPCI: Plant-Specific.....
295031EK3.03	Reactor Low Water Level / 2	4.1	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Spray cooling.....
295037EK1.03	SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	4.2	4.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Boron effects on reactor power (SBLC).....
295038EK2.02	High Off-site Release Rate / 9	3.6	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"/>	Offgas system.....
600000AK2.01	Plant Fire On Site / 8	2.6	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"/>	Sensors / detectors and valves
700000AK1.01	Generator Voltage and Electric Grid Disturbancecs	3.3	3.5	<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"/>	Definition of the terms: volts, watts, amps, VARS, power factor

not GFES

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KA	NAME / SAFETY FUNCTION:	IR		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO												
295008AK1.02	High Reactor Water Level / 2	2.8	2.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Component erosion/damage.....
295014AA2.03	Inadvertent Reactivity Addition / 1	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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cause of reactivity addition.....
295015AK3.01	Incomplete SCRAM / 1	3.4	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bypassing rod insertion blocks.....
295020G2.4.4	Inadvertent Cont. Isolation / 5 & 7	4.5	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 recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.
295032EK2.08	High Secondary Containment Area Temperature / 5	3.8	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"/>	<input type="checkbox"/>	Systems required for safe shut-down.....
295033EA1.05	High Secondary Containment Area Radiation Levels / 9	3.9	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Affected systems so as to isolate damaged portions....
295035EA1.01	Secondary Containment High Differential Pressure / 5	3.6	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Secondary containment ventilation system.....

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T2G1 BWR EXAMINATION OUTLINE

FORM ES-401-1

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
203000A2.18	RHR/LPCI: Injection Mode	4.4	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of coolant accident
205000A4.07	Shutdown Cooling	3.7	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reactor temperatures (moderator, vessel, flange)
208000G2.2.38	HPCI	3.6	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 checked="" type="checkbox"/>	Knowledge of conditions and limitations in the facility license.
209001A3.03	LPCS	3.5	3.5	<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"/>	System pressure
211000K1.01	SLC	3.0	3.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Core spray line break detection: Plant-Specific
211000K3.01	SLC	4.3	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ability to shutdown the reactor in certain conditions
212000K4.01	RPS	3.4	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	System redundancy and reliability
215003A3.03	IRM	3.7	3.6	<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"/>	RPS status
215004K2.01	Source Range Monitor	2.6	2.8	<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"/>	SRM channels/detectors
215005K2.02	APRM / LPRM	2.6	2.8	<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"/>	APRM channels
217000A1.02	RCIC	3.3	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCIC pressure

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ES-401, REV 9

T2G1 BWR EXAMINATION OUTLINE

FORM ES-401-1

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
217000K5.08	RCIC	2.7	2.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Turbine operation
218000K4.01	ADS	3.7	3.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Prevent inadvertent initiation of ADS logic
223002A2.06	PCIS/Nuclear Steam Supply Shutoff	3.0	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containment instrumentation failures
223002K4.04	PCIS/Nuclear Steam Supply Shutoff	3.2	3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic bypassing of selected Isolations during specified plant conditions
239002K6.02	SRVs	3.4	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Air (Nitrogen) supply: Plant-Specific
259002K5.03	Reactor Water Level Control	3.1	3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Water level measurement
261000A1.07	SGTS	2.8	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SBGTS train temperature
262001K2.01	AC Electrical Distribution	3.3	3.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Off-site sources of power
262001K5.02	AC Electrical Distribution	2.6	2.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Breaker control
262002K3.17	UPS (AC/DC)	2.9	3.1	<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"/>	Process monitoring: Plant-Specific
263000A1.01	DC Electrical Distribution	2.5	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Battery charging/discharging rate

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KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
283000K6.01	DC Electrical Distribution	3.2	3.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A.C. electrical distribution				
284000K3.03	EDGs	4.1	4.2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Major loads powered from electrical buses fed by the emergency generator(s)
300000G2.4.3	Instrument Air	3.7	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"/>	Ability to identify post-accident instrumentation.
400000K1.01	Component Cooling Water	3.2	3.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Service water system



KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
201002K4.04	RMCS	3.3	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Single notch rod withdrawal and insertion
201008A2.05	RWM	3.1	3.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Out of sequence rod movement; P-Spec(Not-BWR6)					
214000K6.01	RPIS	2.5	2.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A.C. electrical power
216000A4.02	Nuclear Boiler Inst.	3.3	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Channel select controls						
230000A1.10	RHR/LPCI: Torus/Pool Spray Mode	3.7	3.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	System lineup				
234000K5.02	Fuel Handling Equipment	3.1	3.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fuel handling equipment interlocks
259001G2.4.6	Reactor Feedwater	3.7	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge symptom based EOP mitigation strategies.						
271000K5.11	Offgas	2.6	2.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Explain the necessity of reducing relative humidity for carbon bed filters.
272000K2.03	Radiation Monitoring	2.5	2.8	<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"/>	Stack gas radiation monitoring system
288000K3.05	Plant Ventilation	3.1	3.3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reactor building pressure: Plant-Specific
290002K1.14	Reactor Vessel Internals	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"/>	RWCU

RO

ES-401, REV 9

T2G2 BWR EXAMINATION OUTLINE

FORM ES-401-1

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
290003A3.02	Control Room HVAC	3.0	3.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initiation/failure of fire protection system						



KA	NAME / SAFETY FUNCTION:	IR		K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G												TOPIC:					
		RO	SRO																		
G2.1.27	Conduct of operations	3.9	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of system purpose and or function.
G2.1.31	Conduct of operations	4.6	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
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 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
G2.2.15	Equipment Control	3.9	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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to determine the expected plant configuration using design and configuration control documentaion
G2.2.25	Equipment Control	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 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.
G2.2.39	Equipment Control	3.9	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of less than one hour technical specification action statements for systems.
G2.3.13	Radiation Control	3.4	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 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 procedures pertaining to licensed operator duties
G2.3.14	Radiation Control	3.4	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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities
G2.4.1	Emergency Procedures/Plans	4.6	4.8	<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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of EOP entry conditions and immediate action steps.
G2.4.9	Emergency Procedures/Plans	3.8	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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
295003AA2.05	Partial or Complete Loss of AC / 8	3.9	4.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Whether a partial or complete loss of A.C. power has occurred.....					
295019AA2.02	Partial or Total Loss of Inst. Air / 8	3.6	3.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Status of safety-related instrument air system loads (see AK2.1 - AK2.19).....					
295023G2.2.40	Refueling Acc Cooling Mode / 8	3.4	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to apply technical specifications for a system.						
295024G2.4.21	High Drywell Pressure / 5	4.0	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the parameters and logic used to assess the status of safety functions						
295037G2.4.30	SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	2.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of events related to system operations/status that must be reported to internal organizations or outside agencies.						
600000AA2.13	Plant Fire On Site / 8	3.2	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Need for emergency plant shutdown					
700000AA2.05	Generator Voltage and Electric Grid Disturbancecs	3.2	3.8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operational status of offsite circuit					

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
295017AA2.01	High Off-site Release Rate / 9	2.9	4.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Off-site release rate: Plant-Specific.....					
295029EA2.03	High Suppression Pool Wtr Lvl / 5	3.4	3.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Drywell/containment water level.....					
500000G2.2.44	High CTMT Hydrogen Conc. / 5	4.2	4.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions						

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
209001G2.1.31	LPCS	4.6	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.						
211000A2.05	SLC	3.1	3.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of SBLC tank heaters						
215003A2.01	IRM	2.8	3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power supply degraded					
218000A2.05	ADS	3.4	3.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Loss of A.C. or D.C. power to ADS valves					
239002G2.2.12	SRVs	3.7	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of surveillance procedures.						

KA	NAME / SAFETY FUNCTION:	IR	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO											
201003G2.4.18	Control Rod and Drive Mechanism	3.3	4.0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Knowledge of the specific bases for EOPs.							
239001A2.11	Main and Reheat Steam	4.1	4.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Steam line break						
268000A2.01	Radwaste	2.9	3.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	System rupture						

Tier / Group	Randomly Selected K/A	Reason for Rejection
RO 2/1	300000 G2.4.3	Rejected due to lack of post-accident instrumentation related to instrument air system at Browns Ferry. Replaced with 300000 G2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.
RO 2/2	290003 A3.02	Rejected due to no Control Room HVAC fire protection system at Browns Ferry. Replaced with 290003 A3.01 Ability to monitor automatic operations of the CONTROL ROOM HVAC including: Initiation/reconfiguration
SRO 1/1	295023 G2.2 <sup>40</sup> <del>44</del>	During Atlanta written exam review, changed KA from 295023 G2.2.40 to 295023 G2.2.44 (Q # 78)
SRO 2/2	201003 G2.4. <sup>18</sup> <del>11</del>	Unable to write an SRO level question. Changed KA from 201003 G2.4.18 to 201003 G2.4.11. (Q # 91)

*BM*  
*7/22/13*

*BM*  
*7/22/13*

*Rec'd*  
*6/24/13*

Facility: <b>Browns Ferry</b>		Date of Exam: <b>June 28<sup>th</sup>, 2013</b>		Exam Level: <b>RO X SRO X</b>			
Item Description				Initial			
				a	b*	c <sup>#</sup>	
1.	Questions and answers are technically accurate and applicable to the facility.			MDS	J	BN	
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.			MDS	J	BN	
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401			MDS	J	BN	
4.	The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office).			MDS	J	BN	
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input checked="" type="checkbox"/> the audit exam was systematically and randomly developed; or <input type="checkbox"/> the audit exam was completed before the license exam was started; or <input type="checkbox"/> the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain)			MDS	J	BN	
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	MDS	J	BN
		22 / 5	15 / 4	38 / 16			
7.	Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	Memory		C/A	MDS	J	BN
		49% / 37 / 6		50.6% / 38 / 19			
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.			MDS	J	BN	
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.			MDS	J	BN	
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.			MDS	J	BN	
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.			MDS	J	BN	
a. Author		MICHAEL D GIBSON / Michael D Gibson		Date: 6/20/13			
b. Facility Reviewer (*)		DOWNS G. HARRIS / Downs G. Harris		Date: 6-21-13			
c. NRC Chief Examiner (#)		BRUNO CABALLERO / Bruno Caballero		Date: 6-24-13			
d. NRC Regional Supervisor		MARK FRANKIE / Mark Frankie		Date: 6-25-13			
Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.							

Rec'd  
6/24/13

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				
Gen																	The SRO portion of the exam was PRELIMINARILY determined to NOT meet the acceptability standards of NUREG-1021. Ten SRO Questions (40%) were rated as unacceptable: <ul style="list-style-type: none"> <li>• Cred Dist: Q# 78, 83, 86, 88, 93, 98</li> <li>• SRO-only: 77, 97, 100</li> <li>• Q-K/A: -90</li> </ul>
Gen																	
																	Fifteen RO Questions (20%) were rated as unacceptable: <ul style="list-style-type: none"> <li>• Cred Dist: Q# 9, 12, 27, 41, 46, 48, 49, 59, 61, 64, 66, 68, 73</li> <li>• Q=K/A: Q# 10, 75</li> </ul>
Gen																	RO Exam: <ul style="list-style-type: none"> <li>• 33 New</li> <li>• 25 Bank</li> <li>• 17 Mod</li> <li>• 36 Higher Cog</li> <li>• 39 Lower Cog</li> </ul>
Gen																	SRO Exam: <ul style="list-style-type: none"> <li>• 13 New</li> <li>• 5 Bank</li> <li>• 7 Mod</li> <li>• 20 Higher Cog</li> <li>• 5 Lower Cog</li> </ul>
Gen																	
																	Preliminarily, there are five BFN 2010 NRC Exam Repeats: Q#40, 45, 47, 64, 93; which is allowed by the NUREG.
Gen																	In order to verify significantly modified, need the original question (from which the modified version was created) for the following: Q#7, 15, 16, 29, and 43

#### Instructions

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

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
  - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
  - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
  - The answer choices are a collection of unrelated true/false statements.
  - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
  - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
4. Check the appropriate box if a job content error is identified:
  - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
  - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
  - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
  - The question requires reverse logic or application compared to the job requirements.
5. Check questions that are sampled for conformance with the approved K/A and those that are *designated SRO-only* (K/A and license level mismatches are unacceptable).
6. Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
7. Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
8. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

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			
1	F	2	x			x	x							B	E	<p>Tier 1 Group 1: 295001 AK1.03 [Brunswick 2010, Q# 37]</p> <ol style="list-style-type: none"> <li>1. Partial: An applicant can successfully argue there is no correct answer to the 2<sup>nd</sup> part of the question when less than 25% power. Specify power level (impacts whether APLHGR and MCPR limits must be adjusted, that is when <math>\geq 25\%</math> power).</li> <li>2. Cred Dist: Borderline plausibility for the 2<sup>nd</sup> part of Choices C and D (thermal limits are not required to be adjusted). Suggest re-wording the 2<sup>nd</sup> fill-in-the-blank statement to test which power distribution limit (MCPR or LHGR) is required to be adjusted in accordance with TS 3.4.1.</li> <li>3. Stem Focus: The first portion of the question is testing generic fundamentals knowledge. Since this is the plant specific written exam, revise the first portion of the question to test the applicants' knowledge of how the Maximum Fractional Limiting Critical Power Ratio (MFLCPR) value is affected <i>instead</i> of how critical power ratio is affected because this is the Powerplex parameter indication that is available to the operators. (plant specific information) Alternatively, test how the Tech Spec 3.2.2 plant specific parameter (MCPR) is affected. These would be more appropriate for the plant specific written exam.</li> </ol> <p>Note: MFLCPR: Ratio of the Operating Limit CPR, modified by either a power or flow dependent penalty, to the critical power ratio for a bundle.</p>

Comments incorporated 4-18-13  
 Q = 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				
2	H	2	x					x					x		N	E/U	<p>Tier 1 Group 1: 295003 AA2.02</p> <ol style="list-style-type: none"> <li>Q=K/A: The proposed question is only testing the SRV/RCIC capacities, which aren't necessarily dependent on a partial/complete loss of AC. [If you cover up the first sentence in the stem (LOOP), how is the answer any different?] These capacities are always true, even when AC power is available. Suggest testing 2-AOI-57-4 (Unit Preferred) or 2-AOI-57-5A/B (I&amp;C A/B) aspects that impact the operator's ability to determine and/or interpret reactor power, pressure, or level indications/values.</li> <li>Stem Focus: Stem does not specify whether RCIC is operating in pressure control mode or injection mode.</li> <li>Partial: The 1<sup>st</sup> fill-in-the-blank implies that an ATWS exists because of the phrase "reactor power is above/below 5%". [Is this referring to neutron power, i.e., APRM downscale indications? decay heat power?]</li> </ol>
3	F	2	x					x							N	E	<p>Tier 1 Group 1: 295004 AA1.01</p> <ol style="list-style-type: none"> <li>Partial: Choice C (can operate MOVs once the board back on normal supply) is also correct.</li> <li>Stem Focus: Choice A should clarify Tech Spec surveillance testing (instead of just "testing").</li> <li>Stem Focus: Choice B should be re-worded as "until the Tech Spec load restrictions on the plant controlled drawings are met."</li> </ol> <p>Note to NRC reviewers: The intent of the K/A is being tested because "monitoring" the DC distribution system involves knowing the requirements for MOV operation.</p>

Need to verify on Simulator?

4-18-13: Replacement question had issues w/ plausibility.  
 1) stem conditions don't list any MOVs  
 2) Unit 1 choice is N/A  
 (see suggested replacement)

4-18-13: ~~Choice A~~  
 → Choice A not plausible because choice D encompasses (subset)  
 → choice B also correct

(See suggested replacement)

Question accepted as SAT 4-29-13

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			
4	H	2	x					x						M	E	<p>Tier 1 Group 1: 295005 AA1.01 [2010 Hope Creek, Q# 50]</p> <ol style="list-style-type: none"> <li>Stem Focus: The recirc pumps' initial speed is missing from the stem. (Is it 28%? If so, then Choice C can also be correct.) Provide recirc initial speeds in stem.</li> <li>Job-Link: Is there a pressure indicator on the control board for main turbine 1<sup>st</sup> stage pressure? If so, include this pressure instrument UNID in the stem. If not, then provide the status of 9-5B, W16 in the stem (dark or lit) instead of the 1<sup>st</sup> stage pressure value since this is what the operators will "see" in the actual plant.</li> <li>Stem Focus: The 4<sup>th</sup> bullet should clarify the position of the EOC/RPT switches (instead of saying "inservice").</li> <li>Stem Focus: The stem question can be streamlined as "WOOTF predicts the effect (if any) on the reactor recirc pumps if an automatic main turbine trip subsequently occurs?"</li> </ol> <p>Note to NRC reviewers: The A RPS Bus loss makes Choice B plausible.</p>

4-18-13:  
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								
5	F	5											x		B	E	<p>Tier 1 Group 1: 295006 AK1.02</p> <ol style="list-style-type: none"> <li>LOD = 5 on RO test. Testing the basis for SDM is beyond the scope for an RO.</li> <li>Q=K/A: This is a Tier 1, Group 1 (emergency abnormal) K/A statement, which should somehow test an <u>operational implication</u> of adequate/inadequate shutdown margin. The proposed question doesn't test an implication of shutdown margin not being met/or being met following a scram.</li> </ol> <p>Suggest testing EOI-1, Note 1, including the implication of this note when met or not met, given a set of plant conditions.</p> <table border="1"> <thead> <tr> <th colspan="2">NOTES</th> </tr> </thead> <tbody> <tr> <td>①</td> <td> <p>THE REACTOR WILL REMAIN SUBCRITICAL WITHOUT BORON UNDER ALL CONDITIONS WHEN:</p> <ul style="list-style-type: none"> <li>ANY 19 CONTROL RODS ARE AT NOTCH 02 WITH ALL OTHER CONTROL RODS FULLY INSERTED</li> <li>OR</li> <li>ALL CONTROL RODS EXCEPT ONE ARE INSERTED TO OR BEYOND POSITION 00</li> <li>OR</li> <li>DETERMINED BY REACTOR ENGINEERING</li> </ul> </td> </tr> </tbody> </table> <p>3. Ensure no overlap w/ SRO Q#91</p>	NOTES		①	<p>THE REACTOR WILL REMAIN SUBCRITICAL WITHOUT BORON UNDER ALL CONDITIONS WHEN:</p> <ul style="list-style-type: none"> <li>ANY 19 CONTROL RODS ARE AT NOTCH 02 WITH ALL OTHER CONTROL RODS FULLY INSERTED</li> <li>OR</li> <li>ALL CONTROL RODS EXCEPT ONE ARE INSERTED TO OR BEYOND POSITION 00</li> <li>OR</li> <li>DETERMINED BY REACTOR ENGINEERING</li> </ul>
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6	H	2	x				x								N	E/U	<p>Tier 1, Group 1: 295016 G2.1.32</p> <ol style="list-style-type: none"> <li>Cred Dist: Choice C (MSIV will reclose again since high steam flow will occur) is not plausible because all rods inserted and nothing related to a PCIS status light/alarm is listed in the stem that could be (incorrectly) construed as an active PCIS signal. Is it even possible to have 135% steam flow after all rods are inserted if there's a break in the piping?</li> <li>Cred Dist: Choice A (PCIS isolation is still present) is borderline plausible because the stem does not include any PCIS status indication(s) would could be construed as an existing isolation signal.</li> <li>Stem Focus: For the transfer switch 2-XS-1-14, also provide the noun name of this switch ( A Inboard MSIV Transfer Switch) in the stem question.</li> </ol> <p>Suggest adding a bullet to the stem that states the PCIS isolation signal has not been reset and re-working Choice C.</p>				

modified (2nd fill in the blank) not used

(see suggested replacement)

Question is SAT 4-29-13

→ choices A/C "reasons" are the same

→ (license added caution (to test) related to whether RCC would still trip on low suction pressure

Question is SAT 4-29-13

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				
7	F	2	✓ Q no SAT 4-29-13					why did you say "modified bank" initially??							M B	S	Tier 1, Group 1: 295018 AA1.02 Please provide the original bank question. <i>mistake</i>
8	H	2					x	x							N	E	<p>Tier 1, Group 1: 295019 G2.2.39</p> <ol style="list-style-type: none"> <li>Job-Link: Operability determinations are typically SRO decisions. However, ROs are responsible for ≤ 1 hr tech spec action statements. (which in this case is declaring the DG inoperable).</li> <li>Partial: An applicant could argue that since both banks have an issue, there is a prudent action to conservatively declare the DG inoperable. (In a situation where one bank's air compressor is tripped and the other bank has an air leak, there is too fine of a line on operability.)</li> </ol> <p>Suggest the following:</p> <p>Re-work the question to pose a situation where the 9-23B, W2 annunciator is received (Diesel Gen B Trouble) and after dispatching an operator, one bank's air compressor breaker is tripped with its air receiver pressure at 0 psig, while at the same time the other air receiver pressure is stable at 160 psig, with the compressor NOT running. Then test the applicants' knowledge with the following statements:</p> <p>_____ of the DGs starting air systems are required for operability. (Both/Only One)</p> <p>Given the conditions listed above, a tech spec required action statement _____ entered. (Is required to be/ is NOT required to be)</p>
9	H	2				x			4-18-13: Proposed Fix: The correct answer is "do nothing" Choice "B" is also correct.						N	U	<p>295021 AA2.07</p> <ol style="list-style-type: none"> <li>Cred: Choice D (verify the pump in service to remove decay heat) is not plausible because pump operation always <u>ADDs</u> heat to a fluid system with no heat exchanger.</li> <li>Cred: Choice B (raise level to remove decay heat) is not plausible because Choice A has a similar reason. In other words, since promoting vessel circulation will indeed remove decay heat, these two choices can't both be the answer. This is basically a sub-set issue.</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				
10	F	2					x	x					x		N	U	<p>Tier 1, Group 1: 295023 AK3.04</p> <ol style="list-style-type: none"> <li>Q=K/A: The proposed question is not testing the <u>REASON</u> for removing the shorting links.</li> <li>Partial: An applicant can successfully argue that Choice C is also correct because the SRM Rod Block will mitigate.</li> <li>Job-Link: 0-GOI-100-3C, Attachment 7, Step 1.0 [5] (page 108 of 130) states that the neutron monitoring system can remain in the coincident mode during the subcriticality check. Does BFN ever remove shorting links? If not, then this K/A statement may not be valid at BFN.</li> </ol> <p>Suggest re-working to test the <u>REASON</u>...perhaps as:</p> <p><i>Unit 2 is in Refueling and 0-GOI-100-3C, Fuel Movement Operations During Refueling, Attachment 7, Subcriticality Check, is being performed. A control rod, surrounded by fuel, is being withdrawn.</i></p> <p><i>WOOTF identifies 1) some other knowledge and 2) the reason why shorting links are required to be removed during this evolution?</i></p> <p><b>A. First item; Because the SRMs are quadrant specific</b>  <b>B. First item; Because a spiral reload is in progress</b>  <b>C. First item; Because the SRMs are quadrant specific</b>  <b>D. First item; Because a spiral reload is in progress</b></p>
																	<p>4-18-13: The licensees proposed fix included one choice also be argued as correct. and cues.  → Choice B → AOI-79-2  → choices C/D → cue</p> <p>Note: a spiral reload is in progress, which tries to keep criticality from occurring.</p> <p>4-29-13: Used how many NIs in non-coincident.</p>
11	H	2	x												N	E	<p>Tier 1, Group 1: 295024 G2.4.8</p> <ol style="list-style-type: none"> <li>Stem Focus: Add information to the stem that clarifies that the immediate operator actions in <u>1-AOI-100-1</u> have been completed.</li> <li>Stem Focus: Modify Choices A and B to also include 1-AOI-100-1.</li> </ol>
																	<p>4-18-13. One proposed choice contained a cue. - changed to "ONLY"</p> <p>Question is SAT  4-29-13</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			
12	F	2	x			x								N	U	<p>Tier 1, Group 1: 295025 EA2.01</p> <ol style="list-style-type: none"> <li>Cred Dist: Choices A and D (will first exceed TS safety limit) are not plausible because the TS safety limit is listed as the first event to occur as pressure rises, which is contrary to the Defense in Depth philosophy/concept.</li> <li>Cred Dist: Choice B (exceed TS safety limit thirdly) is not plausible because the TS safety limit is always the LAST thing to be exceeded in accordance with Defense in Depth philosophy/concept</li> <li>Stem Focus: The title of TS 3.4.10 is missing.</li> </ol> <p>To meet the intent of Tier 1, Group 1 (Emergency/Abnormal), suggest testing the applicants' knowledge of actions in ARP 9-5A, W 1 (Reactor Press High) or AOI-47-2, or an EHC pressure controller malfunction.</p>
13	H	2	x			x								M	E	<p>Tier 1, Group 1: 295026 EA1.01 [2010 River Bend, Q#13]</p> <ol style="list-style-type: none"> <li>Stem Focus: The first 3 bullets are not necessary to elicit the correct response. (delete)</li> <li>Stem Focus: The stem is missing torus pressure, which is required for the RHR NPSH Curve usage.</li> <li>Cred Dist: Choice B (lower loop 2 RHR pump flows due to NPSH) is not plausible because torus temperature is less than the lowest value on the y-axis of Curve 2.</li> <li>Stem Focus: The phrase "suppression pool cooling" is not needed in bullets 7 and 10, because the first sentence already says that both loops of RHR are in suppression pool cooling.</li> </ol>

4-18-13: Two of proposed choices still not plausible.  
 added ATWS AUTO INITIATE (9-5A, W10)  
 Question SAT  
 4-29-13

4-18-13: Correct answer contained a cue.  
 eliminated EOI-App 17A as cue  
 Question SAT  
 4-29-13

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			
14	H	3	x			x								N	E	<p>Tier 1, Group 1: 295028 EK3.04</p> <ol style="list-style-type: none"> <li>Cred Dist: To enhance plausibility of Choice D (ED because torus level is too low), change torus level in the stem (7<sup>th</sup> bullet) to -11 inches).</li> <li>Stem Focus: The 1<sup>st</sup> sentence can be streamlined with the last portion of the sentence to say "...caused an automatic scram."</li> <li>Stem Focus: The words "the reactor" in Choices C &amp; D can be deleted. The words emergency depressurize do not need to be capitalized.</li> </ol>
15	F	2	x				x							M	E	<p>Tier 1, Group 1: 295030 EK2.01</p> <ol style="list-style-type: none"> <li>Please provide original bank question that this question was modified from.</li> <li>Partial: Choice B is a subset of Choice A; that is, Choice B can also be argued as correct.</li> <li>Stem Focus: None of the information above the stem question is necessary to complete the fill-in-the-blank statement.</li> <li>Stem Focus: The phrase "lock out HPCI" may be slang or not defined; the actions in each choice should be further defined.</li> </ol> <p>Suggest re-wording the fill-in-the-blank statement (to be more precise and eliminate possibility of two correct answers) as:</p> <p><i>In accordance with 1-EOI-2, Primary Containment Control, Step SP/L-4, IF suppression pool level cannot be maintained above a minimum level of _____, THEN _____.</i></p> <ol style="list-style-type: none"> <li>11.5 ft; Isolate HPCI by closing the steam supply valves.</li> <li>11.5 ft; Place the aux oil pump in the P-T-L position</li> <li>12.75 ft;</li> <li>12.75 ft;</li> </ol>

4-18-13:  
 all comments  
 incorporated  
 Question is SAT

4-18-13: Licensee's  
 version includes  
 reference to an Ops  
 Directive, which could  
 create no correct  
 answers. Also, licensee  
 did not provide  
 original bank  
 question.

4-21-13 changed 2nd part to  
 that "reason" for HPCI  
 occurred.

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			
16	F	2	x							4-18-13: recommendation implemented; question is SAT.				M	E	<p>Tier 1, Group 1, 295031 EK3.03 [2007 Duane Arnold, Q# 55]</p> <ol style="list-style-type: none"> <li>1. Stem Focus: The stem of the question needs to be focused specifically to a situation where a LOCA occurred and Primary Containment Flooding is required in accordance with 3-EOI-C-1, Step C1-24. Then ask the applicant to complete the fill-in-the-blank statements. This helps to provide context from where the fill-in-the-blank statements are derived.</li> <li>2. Stem Focus: Replace the 1<sup>st</sup> part of each choice with actual levels (-180 " vs. -215")</li> <li>3. Please provide original bank question.</li> </ol> <p>Note to NRC reviewers: The "reason" for spray cooling is being tested (indirectly) in this question because the reason for the minimum level and core spray pattern is adequate core cooling, i.e., preclude core damage and SAMG entry.</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				
17	H	2	x	x		x	x								N	E	<p>295037 EK1.03 (Sample Question Received 1-3-12)</p> <ol style="list-style-type: none"> <li>Partial: There is no one correct answer to the first part of the question (whether the reactor is/is NOT subcritical) because there is a misalignment between asking the applicants to determine if the reactor is critical <i>versus</i> asking the applicants what tank level indicates hot shutdown boron weight. As written, there is not enough information provided in the stem to determine if the reactor is critical. For example, was level lowered? If so, then the boron is in the lower plenum and has not yet been mixed into the core. Upon injection of a predetermined amount of poison, the operator is to restore the water level to its normal operating range, thereby mixing poison throughout the core and bringing the reactor subcritical. IF level was not lowered, then what are SRM, IRM, SRM Period, and APRM indications? It seems the proposed question is trying to test the latter.</li> <li>Cred Dist: The 2<sup>nd</sup> part of Choice D (the reactor will become subcritical during the cool down) is not plausible because cooling down always inserts positive reactivity.</li> <li>Cue: The only choice that contains the word "may" is also the correct answer, that is, the 2<sup>nd</sup> part of Choice C says that the reactor may return to criticality during the reactor cool down.</li> <li>Stem Focus: These type of fill-in-the-blank statements should be split up into two statements. This helps the exam writer and the applicants be clear as to exactly what is being tested.</li> <li>LOK (F/H): Comment #1 also affects whether the question is lower/higher cog. IF the question intends to test the applicants' ability to assess criticality based on the information provided in the stem, THEN this is higher cog. On the other hand, IF the question intends to test the applicants' knowledge of the numerical value of hot shutdown boron weight tank level, THEN this is lower cog.</li> <li>3-15-13: Comments incorporated. Still need to include SRM Period Meter indication in the stem to assure the reactor is subcritical.</li> </ol> <p>4-18-13: "Comments incorporated; but sic only needs to be defined once"  2nd fill-in-the-blank needs to say "If level returned to 51" of this current sic tank level."  Question is SAT  4-29-13</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				
18	H	2													S	Tier 1, Group 1: 295038 EK2.02 [2011 BFN 1102, Q#18] 1. The question is incorrectly listed as Tier 3. 2. To add plausibility to Choices A, B, & C, and to be slightly different from the 2011 NRC Exam item, add annunciator 9-4C, W34 (hi - hi) as the 3 <sup>rd</sup> bullet in the stem. [This will not change the correct answer.]	
19	H	2	x			x	x								B	E	Tier 1, Group 1: 600000 AK2.01 1. Cred Dist/Partial: IF Choice A was true, THEN Choice D would also be true. Since there can't be two correct answers on an NRC exam question, these choices can be eliminated and are not plausible. [subset issue] 2. Stem Focus: The stem does not include any fire header pressures; fire pump status is normally dependent on this parameter, which would add plausibility to Choice C. 3. Stem Focus: The 1 <sup>st</sup> and 2 <sup>nd</sup> bullets are not necessary. 4. Stem Focus: The 3 <sup>rd</sup> bullet is vague; was the LOOP somehow caused by the Transformer 1A fault or was it unrelated? 5. Stem Focus: Was the automatic sprinkler actuation at the transformer or in another plant building?
20	F	2	x								x				M	E	Tier 1, Group 1: 700000 AK1.01 [2009 Perry, Q# 30] 1. #/units: The step in 0-AOI-57-1E states: [6.1.1] <b>LOWER</b> reactive power to system voltage returns to 530KV, <b>OR UNTIL</b> Generator Reactive power reaches -150 MVAR. It appears that this procedure step has a typo; the first word "to" should be "until." Verify w/ Operations which control board switch the operator is required to manipulate to complete this step. 2. Stem Focus: In an effort to ensure plant specific knowledge is being tested (beyond the allowable BFN system voltage limits), change the 1 <sup>st</sup> portion of each choice to a specific control switch, including the UNID#, that the operator is required to lower.

sp

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	F	2	x											N	E	<p>Tier 1, Group 2: 295008 AK1.02</p> <p>1. Stem Focus: The question is disjointed. On one hand, the applicants' are being asked what the AOI-3-1 says. On the other hand, the applicants are required to re-interpret what AOI-3-1 says in light of the fact that the crew closed the MSIVs before level reached the main steam lines. This is confusing and can lead to multiple correct answers.</p> <p>Suggest solely testing the content of the AOI-3-1 caution, that is, do not include the crew's actions to close the MSIVs in the stem. This will be much cleaner and still hits the K/A. For example,</p> <p><i>In accordance with AOI-3-1, WOOTF identifies a malfunction that could occur if reactor water level is left unattended to the point that it enters the main steam lines?</i></p> <p>A. SRVs could fail to open  <b>B. SRVs could fail to close</b>  C. Damage to RCIC/HPCI  D. <del>Damage to HPCL</del></p>
22	H	2					x							M	E	<p>Tier 1, Group 2: 295014 AA2.03 [2007 Duane Arnold, Q#61]</p> <p>1. Partial: Choice B can also be correct, especially if the pressure rate-of-rise is small. Review SPP-10.4 Significance Levels 1, 2, or 3 for other options.</p> <p>2. Stem Focus: For Choices B, C, and D, include the BFN UNID# of the specific components/transmitters that are malfunctioning. For Choice A, identify the location, that is, centrally located CRD number.</p>

4-18-13: Comments in;  
→ The word "malfunction" is misleading - -  
→ Correct answer is B  
4-29-13  
Question is SAT

4-18-13: Enhancements needed on proposed question (cues)

Changed to eliminate cues and nod dop  
4-29-13 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				
23	H	2	x	x		x			4-8-13	Comments Inc; enhancements still needed					N	E/U	<p>Tier 1, Group 2: 295015 AK3.01</p> <ol style="list-style-type: none"> <li>Cred Dist: The power level is too high for the first part of Choices A &amp; B to be plausible. Pick a power level inside the RWM transition zone.</li> <li>Cue: The 1<sup>st</sup> phrase of the fill-in-the-blank statement ("For these plant conditions...") is redundant to the 2<sup>nd</sup> part of Choice C ("at this time"); this is the only choice like this and is also the correct answer.</li> <li>Stem Focus: Split the fill-in-the-blank statement into two separate sentences, revising the 2<sup>nd</sup> portion as necessary. As proposed, the 2<sup>nd</sup> part of the fill-in-the-blank statement is weak.</li> </ol>
									4-29-13	Comments to move the word "ONLY" and lead in phrase to 2 <sup>nd</sup> fill-in-blank statement accepted							
24	H	2	x						4-8-13	Comments Inc; Change the 2 <sup>nd</sup> part of each choice to EOI-3 is/is NOT required		x			N	E	<p>Tier 1, Group 2 295020 G2.4.4</p> <ol style="list-style-type: none"> <li>Q=K/A: In order to directly hit the K/A (Inadvertent Containment Isolation), change the RCIC room temperature in the stem and make the correct answer <u>Choice A</u> (Group 5 was spurious).</li> <li>Stem Focus: The 1<sup>st</sup> part of the choices can be streamlined as "The Group 5 isolation should NOT have occurred." Or "The Group 5 isolation is correct."</li> <li>Stem Focus: The fill-in-the-blank statement needs to be split into two statements because these are two completely separate thoughts.</li> <li>Stem Focus: The word "complete" in the 1<sup>st</sup> sentence is not necessary.</li> <li>Stem Focus: Even though the annunciator engraving includes the identifier "1-TA-71-41", is this necessary to have in the stem? Our request for the actual annunciator wording was to have the annunciator location (9-3D, W10). The 1-TA-71-41 identifier is already listed in the 4<sup>th</sup> bullet.</li> </ol> <p>Note to NRC reviewer: Another common way of hitting this K/A (Inadvertent Containment Isolation) is a RPS MG set trip.</p>
									4-29-13	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				
25	F	2				x	x								B	E/U	<p>Tier 1, Group 2, 295032 EK2.08 [2002 Perry NRC Exam, Q#37]</p> <ol style="list-style-type: none"> <li>Partial: Choice A (access to permit operating the plant) is STILL correct even though the word OPERATION is included, because you need to "operate" the plant in order to safely shut it down.</li> <li>Partial: Choice D (room coolers exceeded their design) is also correct, based on MSOT.</li> <li>Cred Dis: Choice C (spurious fire indications may be received) is not plausible because nothing in the stem indicates any SSI's have been entered.</li> </ol> <p>Suggest writing a question involving EOI-3, SC/T-4.</p>
26	H	2	x										x		M	E	<p>Tier 1, Group 2, 295033 [2010 Brunswick NRC Exam, Q#58]</p> <ol style="list-style-type: none"> <li>Stem Focus: The 1<sup>st</sup> part of the fill-in-the-blank statement is not being tested because each of the 2<sup>nd</sup> parts is unique.</li> <li>Stem Focus: Need to include other parameters in the stem near the RWCU system (normal values), similar to other parameters included in the stem in Brunswick's Q#58.</li> <li>Q=K/A: In order to hit the K/A statement (operate system to isolate affected portions), change the 2<sup>nd</sup> portion of each choice to include switch names, UNID#s, etc. that the operator would manipulate to isolate SDV V&amp;D and RWCU.</li> </ol>

Licensee accepted new question.  
 4-29-3  
 ✓ Question is SRT.

4-18-B: Fill in the blank statement contains the word "isolable" which makes 3 choices not plausible.  
 [See suggested replacement]  
 Shutdown Flooded LI-3-55

4-18-13: Operational validity  
 → concerns w/ no temp alarms when SDV leak occurs.  
 → choices B/D not plausible

Provided suggestion to licensee to test isolating RWCU or SDV V&D and how the SDV's D vlv's fail on loss of air vs how 69-94 fails on loss of air.

Licensee indicated that no temperature alarms was operationally valid for a condition where the SDV V&D vlv's were leaking AFTER a scram had occurred.

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			
27	H	2				x	x							M	U	<p>Tier 1, Group 2, 295036 EA1.01 [2010 Nine Mile Point, Q#62]</p> <ol style="list-style-type: none"> <li>Cred Dist: The 2<sup>nd</sup> part of Choices A/C (stop 2B CS pump) is not plausible because of the 4<sup>th</sup> bullet in the stem that says nothing else is available. Uncovering the core always makes turning the pump off wrong.</li> <li>Partial: Choice B (manually start sump pumps/continue to use leaking CS loop to fill RPV) is also correct because of the meaning of the word VERIFY (if not so, make it so).</li> </ol> <p>Suggest re-working the question to test how EOI-3, Steps SC/L-3 (sump at 66") and/or SC/L-11 (room level at 20") are performed, that is, test the applicants' knowledge of HOW the crew determines these levels while executing EOI-3 in the control room. (requires local observation of a mounted dipstick vs. can be deduced by annunciator setpoints from the control room).</p>
																<p>4-18-13: <i>comment</i> submitted 2 non-plausible distracters (manually "rounding the level") and a cue ("in the R/Bldg")</p> <p>4-29-13 Question is SAT</p> <p>(See suggested replacement not used)</p>
28	H	2	x											N	E	<p>Tier 2, Group 1: 203000 A2.16</p> <ol style="list-style-type: none"> <li>Stem Focus: Provide the current status of the LPCI initiation lights (lit or not lit), located at Panel 9-3, in the stem. This lends credibility to the 2/3 core height choices and is something the operators will see in the control room.</li> <li>Stem Focus: Put the noun name of 74-52 in the stem and delete it from all four choices to minimize reading burden. Do the same for 3-HS-74-155A and 3-XS-74-122.</li> <li>Stem Focus: Add another bullet to the stem to indicate that RHR Loop II is in torus cooling.</li> <li>We will need to see how many scenarios include throttling the LPCI outboard injection valves. This question may overlap too much with scenarios.</li> </ol>
																<p>4-18-13: <i>comment</i> Question is SAT</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			
29	H	2	x											M	E	<p>Tier 2, Group 1: 205000 A4.07 [2007 Duane Arnold, Q#2]</p> <ol style="list-style-type: none"> <li>Job-Link: 2-SR-3.4.9.1(1), Section 1.1 states that this procedure is only used when the reactor is critical. The 1<sup>st</sup> sentence in the stem says that the reactor has been scrambled. Is this the right procedure? If not, then re-work question to include the name/number of the correct procedures. If this is the right procedure, then...</li> <li>Stem Focus: add 2-SR-3.4.9.1 (1) (noun name), Attachment 2 (noun name) to the stem and say that this step is being performed.</li> <li>Based on Table 2 (of 2-SR-3.4.9.1(1)), the difference between 640 psig and 450 psig is 36°F. Is B the correct answer? Need to understand why D is listed as the correct answer.</li> <li>The step being performed in 2-SR-3.4.9.1(1) only is to verify the cooldown rate is <math>\leq 100^\circ\text{F}/\text{hr}</math>. What procedure is used to document the <u>actual</u> cooldown rate? The stem question seems disjointed from what 2-SR-3.4.9.1(1) documents.</li> <li>Please provide Duane Arnold original test item.</li> </ol>
30	F	5												N	E/U	<p>Tier 2, Group 1: 206000 G2.2.38</p> <ol style="list-style-type: none"> <li>LOD=5: The 2<sup>nd</sup> part of the question tests the TS Bases, which is beyond the scope of RO knowledge on the plant specific written exam. The 2<sup>nd</sup> part is not plausible because LCO applicability is based on core safety, not equipment protection.</li> </ol> <p>Suggest keeping the 1<sup>st</sup> part of the question as is, but changing the 2<sup>nd</sup> part of the question to test the applicants' knowledge of whether HPCI is operable when aligned to the suppression pool, since this is more closer aligned to the RO job responsibilities for board walkdowns, etc.</p>

4-29-13, 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				
31	H	2		x		x									B	E	<p>Tier 2, Group 1: 209001 A3.03 [2009 Quad Cities Q# 31]</p> <ol style="list-style-type: none"> <li>Cue: The 2<sup>nd</sup> half of Choice A (continues to discharge to the pool) is a cue of the 1-SR-3.5.1.6 flowpath. The applicants' should know the flowpath.</li> <li>Cred Dist: The 2<sup>nd</sup> part of Choice D (no flowpath available) is not plausible because the stem does not include any potential reasons why the min flow valve wouldn't operate. (1-SR-3.5.1.6 doesn't open the min flow valve breaker, no 480 V RMOV Bds listed, etc.)</li> <li>This question is listed as "modified" even though it is identical to the Quad Cities question (doesn't meet the definition of significantly modified in NUREG 1021). Change to "B" (Bank)</li> </ol> <p>(Suggest changing the 1<sup>st</sup> part of the choices to Remain the same vs. Rise. Add a 2<sup>nd</sup> part to the question to test whether Core Spray is/is not injecting.</p>
32	F	2													B	S	Tier 2, Group 1: 211000 K1.01 [2010 Brunswick Exam, Q#9]
33	H			x		x									B	E	<p>Tier 2, Group 1: 211000 K3.01 2010 Oyster Creek, Q#23]</p> <ol style="list-style-type: none"> <li>Cred Dist: Choice D (pump failed to start) is not plausible because the discharge pressure is listed as 1100 psig.</li> <li>Cue: The 3<sup>rd</sup> bullet is a cue to the applicants; this bullet should list the control board indications and let the applicants' deduce that only one of the SLC system 1 squib firing circuits has actuated. Also list any applicable annunciators that normally/abnormally occur when the operator placed the pump control switch to the START position, e.g., 9-5B, W20 and/or W14, if applicable.</li> <li>This question was listed as lower cog question; however, seems to be higher cog. Disuss.</li> </ol> <p>(Suggest re-working the question to test SLC is / is NOT injecting and reactor shutdown will/ will NOT take longer than designed.</p>

4-18-13: Comments Inc.  
 4-29-13 Question SAT

4-18-13: Comments Inc.  
 → Second fill in the blank & grammar confusing for choices  
 → typo: 6<sup>th</sup> bullet "continuity"  
 → "shutdown" is vague  
 replaced 2nd fill in the blank statement line to non-plausibility concerns) w/ testing how the time to inject HSD [B] was affected w/ one squib vlu failure.

Question is SAT  
 4-29-13

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	F	x	x				x								N	E/U	<p>212000 K4.01 (Sample Question Received 1-3-12)</p> <ol style="list-style-type: none"> <li>LOD=1: Nothing in the stem is necessary to answer the fill-in-the-blank statement. (Cover up the stuff about the fuse with your hand; you can still answer the question). This question will not provide any discriminatory value on the exam because it is LOD=1.</li> <li>Cred Dist: The grammar of the 1<sup>st</sup> fill-in-the-blank makes the first portion of Choice "C" and "D" not plausible, that is, "There is one RPS instruments<sub>s</sub> monitoring." (the word instrument is plural).</li> <li>Cred Dist: Choice D (one pressure instrument in the RPS A trip system and its loss will not cause a half scram) is not plausible because if an applicant only thought there was one pressure instrument monitoring pressure, they would assume that the loss of the only instrument would at least cause a half scram.</li> </ol> <p>Suggest developing a question to test the applicants' knowledge of how RPS is configured and responds during the surveillance testing, for example, 3-SR-3.3.1.1.14, Section 3.4.D.1 and Step 7.4.2 [2] associated with turbine stop valves limit switches and/or whether the annunciator REACTOR CHANNEL A(B) AUTO SCRAM will alarm when one valve is tested.</p> <ol style="list-style-type: none"> <li><b>3-11-13:</b> Suggestion incorporated. See additional comments below</li> <li>Stem Focus: The phrase "simulated closed" is confusing and will generate questions during the exam administration.</li> <li>Cred Dist: The 1<sup>st</sup> part of Choices A and D (will NOT cause half scram) is borderline plausible because...IF the surveillance procedure has simulated the closure of MSV-2, the expressed purpose is to verify a half scram occurs when MSV-1 is actually closed. Does the surveillance include steps to close other MSVs while MSV-2 is simulated closed? If so, then this may be acceptable.</li> <li>Stem Focus: The 2<sup>nd</sup> fill-in-the-blank statement uses slang, that is, "considers." Try to re-word to be more precise.</li> </ol>

4-13-13: Comments Inc.  
 ✓ Consider swapping position  
 Done of the fill-in blank statement,  
 otherwise Question is SAT.  
 4-29-13  
 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				
35	H	2				x									B	E	<p>Tier 2, Group 1: 215003 A3.03 [2010 Oyster Creek, Q# 17]</p> <p>1. Cred Dist: Choice A (half scam only) is not plausible because all IRM half scrams result in a rod block.</p> <p>Suggest making a two part question to test the applicants' ability to predict the new readings on Range 5 AND whether a half scam exists.</p>
36	F	2	x												B	E	<p>Tier 2, Group 1: 215004 K2.01 [2009 Vermont Yankee, Q#3]</p> <p>1. Stem Focus: Change the 1<sup>st</sup> part of Choices A and D (RPS) to 120 VAC, to be consistent with the 1<sup>st</sup> part of Choices B and C.</p> <p>2. Stem Focus: In order to be precise, add the Panel # (Panel 9-12?) where the SRM A "drawer" is located to the 1<sup>st</sup> sentence in the stem.</p>

4-18-13; Comments addressed by new distracter for choice 'A'; Question is SAT.

4-18-13; Comments Inc. 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				
37	F	2	x			x					x				N	E	<p>215005 K2.02 (Sample Question Received 1-3-12)</p> <ol style="list-style-type: none"> <li>The plausibility analysis for Choices "C" and "D" is missing.</li> <li>Cred Dist: Choice "C" (half scram will occur even though APRM is still energized) is not plausible.</li> <li>Stem Focus: The word "completely" in the first sentence is not necessary to elicit the correct response.</li> <li>Stem Focus: The word "properly" in the stem question is not necessary to elicit the correct response. (words like "properly", "correct", etc. are not needed in stem questions because these concepts are always implied and only add reading burden).</li> <li>#/units: There is no such thing as APRM "A", that is, the APRMs at BFN are APRM 1, 2, 3, and 4.</li> </ol> <p>Suggest the following:</p> <p><i>WOOTF completes both statements for the Unit 2 APRM power supply arrangement?</i></p> <p><i>Each APRM is _____ at Panel 2-9-14.</i></p> <p><i>Within a QLVPS, LVPS 1 and 2 are powered from _____.</i></p> <ol style="list-style-type: none"> <li><i>only powered from the QLVPS located in its associated bay; RPS B</i></li> <li><b><i>only powered from the QLVPS located in its associated bay; RPS A</i></b></li> <li><i>powered from two QLVPS; RPS B</i></li> <li><i>powered from two QLVPS; RPS A</i></li> </ol> <p>6. <b>3-11-13:</b> Comment partially incorporated. See additional comment below</p> <ol style="list-style-type: none"> <li>Cred Dist: The 2<sup>nd</sup> part of Choices A/C (the individual LVPS are powered from the QLVPS) is not plausible because this implies that the LVPS are self powered; that is, one low voltage power supply can't be powered from itself.</li> </ol> <p>Modify the 2<sup>nd</sup> fill-in-the-blank statement as listed above.</p>

4-18-13; Comments Inc. 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			
38	H	2									4-8-13: SAT			N	S	Tier 2, Group 1: 217000 A1.02 1. Verify the RCIC response on the simulator to ensure a correct answer. Provide results.
39	H	2	x	x		x					4-18-13: Comments not incorporated → Done new word "attempted" is a cue. ② Choice D (new) still not plausible b/c. ③ Why provide status of 71-3 and not 71-4? ④ 71-8 room name missing. ⑤ Suggest test whether RCIC tripped on OS and whether RCIC is reset.			B	E	Tier 2, Group 1: 217000 K5.06 [2008 Fitzpatrick, Q#37] 1. Cred Dist: Choice D (auto isolation logic pb required to be depressed) is not plausible because the stem does not include any parameters that could be misconstrued as a potential RCIC isolations. 2. Cue: The word "spurious" in the 1 <sup>st</sup> sentence is a cue that a mechanical overspeed event occurred, which is the correct answer. 3. Stem Focus: the word "an" before UO (in the 2 <sup>nd</sup> sentence) may not be grammatically correct. Can also streamline this sentence by eliminating the Unit Supervisor.  Suggest changing the "spurious" trip to a RCIC Hi Water Level Trip Light is LIT. Then, keep the first part of the question related to the simultaneous existence of a mechanical overspeed trip (Choices are RCIC is still tripped / RCIC is reset), but add a second part to test the applicants' knowledge of whether the Hi Water Level trip p.b. is required to be depressed before RCIC will operate.
40	H	2									4-18-13: SAT 4-29-13 SAT			B	S	Tier 2, Group 1: 218000 K4.01 [2010 BFN 1006, Q# 40] Try changing up the electrical boards/pump availabilities to make the question a bit different. Also change the placement of the correct answer. (Done)

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			
41	H	2	x			x	x							B	U	<p>Tier 2, Group 1: 223002 A2.06 [2008 BFN NRC Exam, Q#13]</p> <ol style="list-style-type: none"> <li>Cred Dist: The 1<sup>st</sup> part of Choices C/D (tripping the ATU) is not plausible because neither OI-64 nor OI-99 lists this method for placing ANY instrument channel in a tripped condition. All actions listed in OI-64 and OI-99 are to pull fuses.</li> <li>Cred Dist: The 2<sup>nd</sup> part of Choices B/D (PCIS Groups 2, 3, &amp; 6 isolate) is not plausible because 1) plant design allows maintenance and testing of a channel without affecting the operation of the unit and 2) there are no other parameters listed in the stem that could be misconstrued as a reason why Groups 2, 3, &amp; 6 would isolate.</li> <li>Partial: Choice C is also correct because pulling a fuse is virtually the same thing as placing a trip into the ATU.</li> <li>Stem Focus: Add the phase "IAW OI-64 &amp; OI-99" somewhere in the stem, which is the procedure portion of the K/A statement and provides context for the controlling document being implemented to the applicants.</li> </ol> <p>May have to provide a reference to the applicants to remedy this question.</p>

4-18-13: Comments Inc by telling applicants a fuse was pulled

→ 1<sup>st</sup> part of B/C is vague; "an indication..."

→ Fill-in-the-blank statement includes "Unit's PCIS" and "Unit's RPS" - which are both undefined.

provide indicators for all 4 choices (illuminated, extinguished, etc.)

**DONE**

4-30-13: The licensee's proposed question tests the applicants' knowledge of procedures because they have to realize the surveillance procedure being conducted is level 3 instrument.

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			
42	F	2		x			x							N	E	<p>Tier 2, Group 1: 223002 K4.04</p> <ol style="list-style-type: none"> <li>Cue: the word "stabilize" in the 1<sup>st</sup> sentence is a cue that the MSIVs are still open.</li> <li>Partial: Choice D (isolation is bypassed at ≤ 852 psig) can also be argued as correct.</li> </ol> <p>Suggest the following:</p> <p><i>Reactor pressure is lowering.</i></p> <p><i>WOOTF completes the statement in accordance with 1-OI-1, Section 3.2.2.B?</i></p> <p><i>Whenever reactor pressure FIRST reaches _____ and the reactor mode switch is in the _____ position, the MSIVs will auto-close.</i></p> <p>A. 725 psig; RUN  B. 725 psig; START/HOT STBY  <b>C. 852 psig; RUN</b>  D. 852 psig; START/HOT STBY</p>

4-18-13: Comments Inc;  
Question is SAT  


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4-30-13

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				
43	F	2	x			x									M	E	<p>Tier 2, Group 1: 239002 K6.02 [2007 Clinton, Q# 6]</p> <ol style="list-style-type: none"> <li>Stem Focus: Need to ensure that the stem is clear that the DWCA system has no residual pressure, that is, pressure is not continuing to decay, it is zero.</li> <li>Cred Dist: Discuss the plausibility of the non-ADS valves in the 2<sup>nd</sup> portion of Choices A/C (can still be operated once?) Is this based on residual pressure in the DWCA system?</li> <li>Please provide original Clinton question.</li> </ol> <p>Suggest the following:</p> <p>WOOTF completes the following statement?</p> <p><u>SRVs</u> are equipped with accumulators, which are sized to contain sufficient pneumatic pressure for a minimum of _____.</p> <p>A. ALL-MSRVs; 5 valve operations  B. ALL-MSRVs; 5 hours  C. <b>ONLY the ADS-MSRVs; 5 valve operations</b>  D. ONLY the ADS-MSRVs; 5 hours</p>
																	<p>4-18-13: Comment, Inc.  → However;</p> <p>4-30-13:  The licensee says that this is only for Unit 3</p> <p>Question made specific to Unit 2.  Question is SAT</p> <p>3-AD I-32A-1 states that MSRVs 1-30 and 1-31 also have accumulators even though these are NOT ADS SRVs.</p> <p>No correct answer</p> <p>→ Ensure no overlap w/ SRO Q# 77</p>
44	H	2		x											B	E	<p>Tier 2, Group 1: 259002 K5.03 2004 BFN NRC Exam, Q#30]</p> <ol style="list-style-type: none"> <li>Cue: The 2<sup>nd</sup> sentence in the stem is not necessary to elicit the correct response.</li> <li>Cue: The phrase in parenthesis is not necessary to elicit the correct response.</li> </ol>
																	<p>4-18-13: Comment, Inc.  Question is SAT</p> <p>4-30-13</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			
45	F	2	x				x							B	E	<p>Tier 2, Group 1: 261000 A1.07 [2010 BFN NRC Exam, Q#46]</p> <ol style="list-style-type: none"> <li>Partial: Choice C is also correct. (subset issue)</li> <li>Partial: There may be no absolutely correct answer because the fill-in-the-blank statement specifies "plenum" temperature as the controlling parameter whereas OI-65, specifies "charcoal bed temperature."</li> <li>Stem Focus: In order to mirror precaution &amp; limitation 3.0, Item G, the fill-in-the-blank statement needs to have a phrase added at the end, that is, "once the SGT has been shutdown."</li> </ol> <p>Suggest the following:</p> <p><i>In the event that the SGT charcoal filter temperature rises to _____ (due to iodine adsorption following a LOCA, the decay heat removal dampers _____ once the train has been shutdown.</i></p> <ol style="list-style-type: none"> <li>125°F; will automatically open</li> <li>140 °F; will automatically open</li> <li>125°F; must be manually opened</li> <li><b>140 °F; must be manually opened</b></li> </ol>

4-18-13: Comments Inc.  
 → Subset issue -- use the word "first reaches" in the fill-in-the-blank statement.  
 Comment incorporated  
 4-30-13  
 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			
46	F	2				x		x						<del>B</del> N	U	<p>Tier 2, Group 1: 262001 K2.01</p> <ol style="list-style-type: none"> <li>Cred Dist: Choices C/D (first to a unit board then back up to a start bus) are not plausible because the Unit Boards are listed FIRST, then the Start Busses. Each of the choices should present a flowpath, sequenced to start at the switchyard and end at a shutdown board. Reversing the components such that the unit board comes before the start bus doesn't make sense and both of these choices are not the correct answer.</li> <li>Cred Dist: Choice A (USST 1A feeds Unit Board 2B) is not plausible because this path physically doesn't exist.</li> <li>Job-Link: Verify with 1) Ops management and 2) an RO learning objective that ROs are required to know the qualified circuits.</li> </ol> <p>Suggest providing 4 choices of paths that physically exist, and which are sequenced correctly. For example:</p> <p>WOOTF identifies a qualified circuit from the offsite transmission network to the 4 KV Shutdown Board for Units 1 and 2?</p> <p>A. From the 500 kV switchyard, through unit station service transformer (USST) 1A to a 4.16 kV unit board. That unit board feeds 4.16 kV shutdown bus 1 or 2, which then feeds two of the Unit 1 and 2 4.16 kV shutdown boards (A and B or C and D) (INCORRECT)</p> <p>B. From the 500 kV switchyard, through unit station service transformer (USST) 1B to a 4.16 kV unit board. That unit board feeds 4.16 kV shutdown bus 1 or 2, which then feeds two of the Unit 1 and 2 4.16 kV shutdown boards (A and B or C and D) (CORRECT)</p> <p>C. From the 500 kV switchyard, through USST 2A to a 4.16 kV unit board. That unit board feeds 4.16 kV shutdown bus 1 or 2, which then feeds two of the Unit 1 and 2 4.16 kV shutdown boards (A and B or C and D) (CORRECT)</p> <p>D. Need another incorrect choice here (INCORRECT)</p>

4-18-13: Items #1 and 3 addressed w/ new question testing applicants knowledge of how many qualified off site circuits exist and how many are req'd to be operable per T.S. 3.8.1.

Question is SAT ~~BUT~~

→ 2nd fill-in-the-blank statement has question mark (typo)

→ Overlap w/ SPD Q# 76 Reference makes this question a direct lookup

4-30-13

changed question to test how many off site lines (500KV) and which 161 line has capacitor banks

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			
47	F	2	x								4-8-13: Question is SAT 4-30-13 (Comment #2 not implemented)			B	S	<p>Tier 2, Group1: 262001 K5.02 [2010 BFN NRC Exam, Q#47]</p> <ol style="list-style-type: none"> <li>Stem Focus: Provide UNID#'s for the 2<sup>nd</sup> and 3<sup>rd</sup> bullets, that is, the breaker numbers and noun names.</li> <li>Use a Unit 3 bus and change the placement of the correct answer, to be different from 2010 BFN NRC Exam Q#47.</li> </ol>
48	F	2	x				x				4-18-13: Reworked question has a possibility of having no correct answers since AVDs may/may not be dispatched to look for steam Reabrs. 4-30-13: Reworked question to test how long of UPS (Panel 9-9, Cab 6) affects power to SRV acoustics, CRD FCV, RFWCS Station and CRD accumulators/pump instruments Question is SAT	x		N	U	<p>Tier 2, Group 1: 262002 K3.17</p> <ol style="list-style-type: none"> <li>Cred Dist: The "reasons" included in Choices A, B, and D make these choices not plausible because.....  For Choice A, ...IF the <math>\Delta P</math> compressor was running continuously, then monitoring <i>DW-to-Torus <math>\Delta P</math></i> wouldn't be necessary because more <math>\Delta P</math> is a good thing, that is, TS requires <math>\geq 1.1</math> psid.  For Choice B, ...IF the ECCS and RCIC bus logic power monitors were unavailable, NOTHING would auto-start, because these systems are energize-to-actuate. Therefore, there is no reason to monitor <i>2-9-3 indications</i>.  For Choice D, ...IF 64-20 and -21 (The Rx-Bldg-to-Torus Vacuum Breaker ISOLATION VALVES) were to fail open, then the in-series check valve discs' operation would be unimpeded; therefore, there is no reason to monitor <u><math>\Delta P</math></u>  The K/A statement does not require testing the applicants' knowledge of the reason.</li> <li>Q=K/A: What "process monitoring" is lost during a loss of Panel 9-9, Cabinet 6? May want to re-work question for another 120VAC system (since uninterruptible power supply K/A can also apply to there 120VAC systems with redundant backup power schemes) that affects the monitoring of some process.  Does Panel 9-9, Cabinet 6 affect the Panel 2-9-21 Steam Leak Detection? (Item "n" in AOI-57-4) If so then this could match the K/A. As written, it seems that the question is testing CRD temperatures, which isn't a normal process monitoring load on Panel 9-9, Cabinet 6. Discuss.</li> <li>Stem Focus: The 2<sup>nd</sup> sentence is not necessary to elicit the correct response.</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			
49	H	2	x	x										M	U	<p>Tier 2, Group 1: 263000 A1.01</p> <ol style="list-style-type: none"> <li>Cred Dist: Choices C/D (voltage will rise) are not plausible because BB2 Panel 1 amps is 340 and charger current is 300.</li> <li>Cue: Shouldn't the applicants' know the charger capacity without providing this information?</li> <li>Cue: The word "discharge" in the 3<sup>rd</sup> bullet may be a cue if the BB Panel 1 ammeter does not have this label.</li> <li>Stem Focus: The phrase "Battery Board 2 Panel 1" in the 2<sup>nd</sup> and 3<sup>rd</sup> bullets is redundant to the first sentence, reading burden.</li> <li>Please provide the original bank question from which this question was modified.</li> </ol>
																<p>Added picture instead</p> <p>4-30-13 Eliminated the word "discharge" and reworked choices C/D to say "remain the same", including reasons <u>Question is SAT</u></p> <p>4-18-13: Reworked question still had issues: 1) Choice "C" is not plausible Choice "D" is not plausible 2) 3<sup>rd</sup> bullet still had the word "discharge". Applicants should know this should be normally zero.</p>
50	H	2	x	x		x								M	E	<p>Tier 2, Group 1: 263000 K6.01 [2009 Vermont Yankee, Q# 11]</p> <ol style="list-style-type: none"> <li>Stem Focus: The 1<sup>st</sup> sentence implies that offsite power was lost to all 3 units, which is the intent of the question; however, may want to be more clear in this sentence as "...All three units were initially operating at 100% power when offsite power was lost to the entire plant site."</li> <li>Cue: The 2<sup>nd</sup> sentence is not necessary to elicit the correct response.</li> <li>Cred Dist: Choice A is not plausible because 1) it lists one charger and the 2<sup>nd</sup> fill-in-the-blank statement begins with the words "The chargers.." (plural) and 2) the 2<sup>nd</sup> portion of this Choice is different from the others. For the 1<sup>st</sup> part of Choice A, modify to say Chargers 1, 2A, 2B, and 4. For the 2<sup>nd</sup> part of Choice A, modify to match the other three choices.</li> <li>Stem Focus: The stem question can be streamlined to eliminate repeating the phrase "250V DC battery chargers" in the 1<sup>st</sup> part of Choices B, C, and D. "WOOTF predicts the impact on the 250VDC Battery Chargers?"</li> </ol>
																<p>EDG JEA</p> <p>4-18-13: Use see submitted reworked question: Add enhancements to 1) make chargers 3/4 plausible and 2) clarity term "load shed."</p> <p>5-1-13 <u>Question is SAT</u></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			
51	H	2	x						4-18-13: change LOCA to accident signal. higher cog? 5-1-13: changes (above) in unprated; <u>Question is SAT</u>					N	E	Tier 2, Group 1: 264000 K3.03 1. Stem Focus: The 1 <sup>st</sup> sentence implies that offsite power was lost to all 3 units, which is the intent of the question; however, may want to be more clear in this sentence as "...All three units were initially operating at 100% power when offsite power was lost to the entire plant site." ✓ 2. Stem Focus: The first two sentences should be written in past tense. ✓ 3. Stem Focus: The first word in the 2 <sup>nd</sup> sentence should be changed from "A" to "The." ✓ 4. Stem Focus: In the stem question, the acronym "LOCA" should be changed to "accident signal was received." 5. This question was marked as lower cog; however, it appears to be a higher cog question. Discuss.
52	H	2	x						4-18-13 5-1-13 <u>Question is SAT</u>					N	S	Tier 2, Group 1: 300000 G2.4.45 1. Stem Focus: For the 1 <sup>st</sup> fill-in-the-blank statement, change the first word from "A" to "The."
53	H	2							4-18-13: Partial: Choice "D"'s also correct; <u>"all all three units"</u>					M	E	Tier 2, Group 1: 400000 K1.01 [2007 Nine Mile 1, Q#36] 1. Partial: Since there are no pressures provided in the stem, there may be no correct answer. 2. Why is the word AUTOMATIC necessary? Discuss. 3. This question was listed as lower cog; however, it appears to be higher cog. Maybe ok. Discuss. 5-1-13: Licensee explained that Raw Cooling Water is still flowing to components; in the event A3/C3 trip the backup c/w supply is no longer available. <u>Question is SAT</u>

Add:

Assume the header pressure lowers to 50 psig

Doesn't matter what happens to A3/C3 pumps b/c North Header normally isolated to U/U2 R/BCCW Hx's.

Licensee explained that Raw Cooling Water is still flowing to components; in the event A3/C3 trip the backup c/w supply is no longer available.  
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			
54	F	2							x				N	E	<p>Tier 2, Group 2: 201002 K4.04</p> <ol style="list-style-type: none"> <li>This knowledge will be tested a lot on the operating exam; suggest keeping the 2<sup>nd</sup> part of the question (whether the switch can be used to insert rods) and replacing the 1<sup>st</sup> part with another item to test the applicants knowledge of the Rod Out Permit light, or some other RMCS logic feature associated with the settle function.</li> <li>#/units: The picture has unit 2 designation whereas the stem question includes a unit 3 designation.</li> <li>This question was listed as higher cog; however, it appears to be lower cog.</li> </ol>
55	H	2				x							N	E	<p>Tier 2, Group 2: 201006 A2.05</p> <ol style="list-style-type: none"> <li>Cred Dist: Choice D (rod isn't "mispositioned" even though it was continuously withdrawn beyond one notch) is not plausible. Plausibility analysis provided was based on the one rod test mode; however, this is not performed during a plant startup at 5% power.</li> </ol> <p>Suggest modifying the 2<sup>nd</sup> portion of the question to test the applicants' knowledge of whether an action statement is required/ is not required in accordance with TS 3.1.6. (TS can be a "procedure" for the purpose of satisfying the K/A statement). This is "above-the-line" information, which is testable to RO and will solve the plausibility issue with Choice D.</p>

not addressed

→ 3) Not enough info in the stem -- maybe able to continuously w/d depending on insert/withdrawal limits.

4) Need specifics on where rod finally landed for the 2<sup>nd</sup> part of question.

5-1-13:  
Question is SAT  
 changed to clarify which rods within the sequence were applicable.

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			
56	F	2	x								x			N	E	<p>Tier 2, Group 2: 214000 K6.01</p> <ol style="list-style-type: none"> <li>#/units: Include the electrical cabinet and/or panel number beside each of the choices.</li> <li>Verify none of the scenarios include a loss of unit preferred</li> <li>Stem Focus: The picture is sort of blurry, might be just as good to tell them that full core display rod position values are all blank. The 1<sup>st</sup> sentence says "...when a loss of power occurred." Might be better to say "when all rod position indications on the full core display were lost as shown." Alternatively, get a picture with less glare.</li> <li>Stem Focus: The first choice is the only one with the word "power."</li> </ol>
57	F	2									4-18-13			N	S	<p>Tier 2, Group 2: 216000 (Nuc Boiler Inst) A4.02</p> <p>4-18-13 Question SAT</p>
58	H	2				x	x				4-18-13			N	E/U	<p>Tier 2, Group 2: 230000 A1.10</p> <ol style="list-style-type: none"> <li>Cred Dist: The 1<sup>st</sup> part of Choices A/B (torus spray valves auto-isolated) is not plausible because the 6<sup>th</sup> bullet in the stem says that DW sprays are in service. (If DW sprays haven't auto-isolated, then neither have torus sprays.)</li> <li>Partial/Cred Dist: The correct answer appears to be Choice D because EOI-2 is still in process. The decision of when to exit EOI-2 is an SRO judgement and is not indicated in the stem. There is nothing in EOI-2 that says to return the loop to standby readiness.</li> </ol> <p>Suggest modifying the question to eliminate the 6<sup>th</sup> bullet (applicants can deduce DW sprays are in service based on the drywell pressure trend) and re-word the 1<sup>st</sup> fill-in-the-blank statement to test whether or not an auto-isolation signal currently exists for 74-57/74-58:</p> <p>5-1-13: Eliminated IAW EOI-2 and only tests whether RHR loop I can be placed in Sby alignment.</p> <p>4-18-13 choice 'D' may also be correct depending on whether EOI-2 was exited or is still in effect. The word "MUST" isn't good enough. Fix</p> <p>Question is SAT</p>

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				
59	F	2				x				4-18-13: → Need wording enhancements to the fill-in-the-blank statement to make it work w/ Choice "D"				B	U	<p>Tier 2, Group 2: 234000 K5.02</p> <p>1. Cred Dist: Choices C/D are not plausible because there is no way refueling the reactor could ever occur. There's nothing in the stem that can be misconstrued as a reason why the bridge would stop before it reached the core.</p> <p>Suggest testing the applicants' knowledge of whether a rod out block will / will not occur and some other piece of knowledge. Alternatively, include something in the stem that could be misconstrued as a reason why the bridge would stop all of a sudden when it reached the core.</p>	
60	H	2	x				x			4-18-13: → the 2nd fill-in-the-blank statement provides a cue to the 1st fill-in-the-blank statement. → Choices B/D not plausible. (keep K/A statement in mind)				N	E	<p>Tier 2, Group 2: 259001 G2.4.6</p> <p>1. Partial: An applicant can successfully argue that Choice C is also correct. Also, in C-5, under the steps that say "Stop and Prevent", the flowchart uses the words "stop lowering level", which could make Choice B also correct. Too subtle of differences between the correct answer and Choices C/D.</p> <p>2. Stem Focus: In Choices B/D, the phrase "maintain level in a 50 inch band" is not specific.</p> <p>3. #/units: At BFN, the C-5 flowchart never uses the phrase "Terminate and Prevent"; should be "Stop and Prevent."</p> <p>4. Stem Focus: The stem question should include "in accordance with C-5."</p> <p>5. Ensure no overlap w/ SRO Q#77</p> <p>Suggest re-working the question to test 1) whether injection is / is NOT required to be Stopped and Prevented and 2) the reason. (knowledge of mitigation strategies).</p>	

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			
61	F	2				x								N	U	<p>Tier 2, Group 2: 271000 K5.11</p> <ol style="list-style-type: none"> <li>Cred: Choices A/C are not plausible.</li> <li>Job-Link: Lesson plan says charcoal will heat up with more water. However, OPL171.030, Appendix C does not describe this phenomenon. Need to understand the conditions under which this can occur.</li> </ol> <p>Rework the question to include an alarm [ 9-53, W27 (CHARCOAL BED GAS REHTR OUTL DEW PT TEMP HIGH) and the required actions (operational implication) when MT-066-110 (dewpoint) is abnormal and/or the possible malfunctioning component (provided temperature and dewpoint values).</p> <p>There appears to be conflicting BFN guidance for dewpoint:</p> <p>Lesson OPL171.030 says:</p> <ul style="list-style-type: none"> <li>e. Moisture element 66-110 measures the dewpoint. if dewpoint is &gt;42° F charcoal beds should be bypassed</li> </ul> <p>But ARP 9-53 says:</p> <ul style="list-style-type: none"> <li>E. IF dewpoint cannot be restored to below 42°F, THEN INITIATE WO to troubleshoot and CONTACT system engineer for evaluation.</li> </ul>
			<p>5-1-13: accepted proposed fix to test how a cooler condenser malfunction would affect plant operation; licensee will write new question for Q#66 <u>This question is SAT</u></p>					<p>4-18-13: Reworked question has issues: 1) choices B/D are identical 2) H<sub>2</sub>O concentration LWRD or location in the plant is missing. 3) LOD=5 for knowledge of annunciators &amp; setpoints → 4) my proposed fix overlaps w/ Q# 66</p>								
62	F	2				x								N	E/U	<p>Tier 2, Group 2: 272000 K2.03</p> <p>Note to NRC reviewers: The Wide Range Gaseous Effluent Monitor (WRGERMs – 0-RM-90-306), located at Panel 9-10) receives signals from two in-series detectors (0-RM-90-147 and -148). The WRGERMs monitor at Panel 9-10 is powered from 120VAC UPS whereas the detectors are powered from <b>Battery Board 2</b>, Panel 13. Loss of detector power causes annunciator 9-3A, W20, STACK GAS RADIATION MONITOR DNSC/INOP.</p> <p>Licensee says these are not associated w/ WRGERMs they are powered from BB2, Panel 13</p> <ol style="list-style-type: none"> <li>Cred: Choices C/D are not plausible because all scintillation radiation detectors are powered from DC sources.</li> </ol> <p>(Suggest testing which unit's battery board powers the WRGERMs detectors (BB1 or BB2) and the power supply to the WRGERMs monitor located at Panel 9-10 (I&amp;C or Unit Preferred).</p>
			<p>5-1-13 Licensee not sure question is technically correct for power supplies to WRGERMs and/or Stack Gas Rad Monitor. 0</p>					<p>4-18-13: Annunciators Inc. plural? detector =</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				
63	H	2				x					4-18-13:				N	E	<p>Tier 2, Group 2: 288000 K3.05</p> <p>1. Cred Dist: The 2<sup>nd</sup> part of Choice B (supply fan trips, exhaust fan doesn't trip, and building pressure rises) is not plausible because the exhaust fan is still running, which sucks on the building causing pressure inside the building to always lower.</p> <p>Suggest testing the applicants' knowledge of 1) how a failure of PdIC 64-2 will affect building pressure, that is, PdIC 64-2 output signal fails either upscale or downscale, and 2) the setpoint for annunciator 9-3D, W32 (EOI-3 entry condition).</p>
64	F	2				x					4-18-13:				B	U	<p>Tier 2, Group 2: 290003 A3.01 [2010 BFN NRC Exam, Q#34]</p> <p>1. Cred Dist: Choice A (neither CREV units auto-start) is not plausible because the 1<sup>st</sup> bullet says that high radiation has been detected in the U3 CR air inlet. The purpose of CREV is to protect the CR operators from high rad by auto-starting. Nothing in the stem indicates a condition which can be misconstrued to imply CREV unavailability.</p> <p>2. Cred Dist: Choice B (CREVs suck off of outside air) is not plausible because the 1<sup>st</sup> bullet says that high radiation has been detected in the U3 CR air inlet. The purpose of CREV is to protect the CR operators from high rad by isolating the outside air.</p> <p>3. Cred Dist: Choice C (Control Bay normal ventilation is restarted) is not plausible because the 1<sup>st</sup> bullet says that high radiation has been detected in the outside air; therefore, no one would align normal ventilation back in service.</p> <p>This only leaves Choice D. Which is the correct answer.</p>

5-1-13  
 Rewrote question to clarify that sensed sp is 0.5"  
 Question is SAT

4-18-13:  
 1) Proposed fix contains a cue (0.5" h<sub>2</sub>O)  
 2) all the word setpoint

5-1-13  
 Licensee had new question to test setpoint/logic for CREV indication  
 Question is SAT

4-18-13:  
 Enhancements needed  
 1) include Fan 9-3D  
 2) Typo in Choice D  
 3) add " in U3 Mech Equipment Room Elev 617" to Choices C/D.

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			
65	F	2	x											B	E	<p>290002 K1.14 (Sample Question Received 1-3-12)</p> <p>1. Q=K/A: In order to more directly link the question to the RPV <u>INTERNALS</u>, change the term "feedwater line(s)" in each of the four choices to "feedwater sparger(s)."</p> <p>2. Stem Focus: The word "correct" in the stem question is not necessary to elicit the correct response. (words like "properly", "correct", etc. are not needed in stem questions because these concepts are always implied and only add reading burden).</p> <p>3. Stem Focus: Steam line the stem question as: <i>WOOTF describes the piping configuration for the RWCU system return flow back to the reactor?</i></p> <p>A. Units 2 and 3 can return via the "A" or "B" feedwater spargers.</p> <p>B. <b>ONLY Unit 3 can return via the "A" or "B" feedwater spargers.</b></p> <p>C. Units 1 and 2 can return via the "A" or "B" feedwater spargers.</p> <p>D. <b>ONLY Unit 1 can return via the "A" or "B" feedwater spargers.</b></p> <p>4. <b>3-11-13</b>: Comments incorporated.</p> <p>5. Stem Focus: In Choice B, the first word (Units) should be plural.</p>

4-19-13  
Comments Inc;  
Question is SPT.  
5-1-13

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				x	x							B	U	<p>Tier 3: G2.1.27</p> <ol style="list-style-type: none"> <li>Cred Dist: The 2<sup>nd</sup> part of Choices A/B (delays releasing O2/H2) is not plausible because the earth's environment contains these elements.</li> <li>Partial: Choice D could also be correct since the recombination of hydrogen and oxygen could involve radioactive hydrogen and radioactive oxygen.</li> </ol> <p>Suggest testing the applicants' knowledge of how the OG system 1) minimizes the potential for explosions (recombination of O2/H2 vs. cooling the effluent steam via Glycol Coolers) and 2) reduces the volume of offgas (recombination of O2/H2 vs. Charcoal filtration).</p>
67	H	2	x						x					B	E	<p>Tier 3: G2.1.31 [2011 BFN NRC Exam, Q#15]</p> <ol style="list-style-type: none"> <li>Stem Focus: The fill-in-the-blank statement includes two separate thoughts. Split this statement into two fill-in-the-blank statements.</li> <li>#/units: Use only the noun name (and UNID#) on the control board labels to describe the pressure indicators. Alternatively, test the applicants' to predict the narrow range indications for this situation.</li> <li>Partial: choice C (pressure stable) is also correct. Provide pressure ranges for the 2<sup>nd</sup> part of each choice to ensure only one correct answer, that is, one pressure range is 800 to 1000 psig (which would indicate that only a reactor scram had been inserted) and the other pressure range whatever it is after an ED has been performed.</li> </ol>

Question is SAT

4-8-3  
 1) my proposal fix to Q#61 overlaps with this question  
 2) LOD=1 w/ add-or phrases in each choice; only include the component name.

4-18-13  
 1) The 1st part of choices A/B (only on Panel 9-5) is not plausible with THREE pressure indicators.  
 2) The 2nd fill-in-the-blank statement should use the phrase "wide range pressure indicators" instead of reactor pressure to link to the K/A.

3) Consider swapping the order of the fill-in-the-blank statements to make better sense.

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	F	1				x								M	U	<p>Tier 3: G2.1.36</p> <ol style="list-style-type: none"> <li>Cred Dist: Choice A (cold pool) is not plausible because the spent fuel pool is never this cold. To test the applicants' knowledge of the minimum allowed SFP temperature, use a fill-in-the-blank statement with two plausible numbers.</li> <li>Cred Dist: Choice C (defective storage rack) is not plausible because the storage rack is defective, which could result in criticality during fuel sipping.</li> <li>Cred Dist: Choice B (2 way movement when loaded) is borderline plausible, given Choice D (make sure pneumatic system working).</li> <li>LOD=1: This question will provide no discriminatory value.</li> <li>Please provide bank question from which this question was modified.</li> </ol>
69	F	2	x	x										M	E	<p>Tier 3: G2.2.15 [2009 Hatch NRC Exam, Q#68]</p> <ol style="list-style-type: none"> <li>#/units: The noun name of 2-HS-66-15 (Panel 2-9-8) is missing.</li> <li>Stem Focus: The stem question is vague because of the phrase "the valve and actuator"; noun names should be provided.</li> <li>Cue: The 2<sup>nd</sup> sentence in the stem is not necessary to elicit the correct response.</li> <li>Stem Focus: Suggest the following changes: Solenoid FSU 66-15 is shown _____ . The SJAE 2B Inlet Valve, FCV-66-15, fails _____ . A. Energized; closed B. Energized; open C. De-energized; closed D. De-energized; open</li> </ol>

- mistake!
- 1) Take out the noun name, and 66-15 everywhere
  - 2) White Out Bottom portion of SFAE picture
  - 3) 1<sup>st</sup> fill-in-the-blank should say FSU (not FCV)

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	F	2		x			x							B	E	<p>Tier 3: G2.2.25 [2009 Hatch NRC Exam Q#70]</p> <p>1. Cue: The only choice that has the word "NOT" capitalized is also the correct answer.</p> <p>2. Partial: Choice D is also correct.</p> <p>Suggest the following for fix both comments and to create a significantly modified version from the original Hatch exam item:</p> <p>WOOTF completes the following statement in accordance with the bases for Tech Spec 2.1.1, Reactor Core Safety Limits?</p> <p>The _____ ensures that during normal operation and during abnormal operational transients, _____.</p> <p>A. APLHGR safety limit; at least 99.9% of the fuel rods in the core do not experience transition boiling</p> <p>B. APLHGR safety limit; the cladding oxidation does not exceed 0.17percent of the total cladding thickness</p> <p><b>C. MCPR safety limit; at least 99.9% of the fuel rods in the core do not experience transition boiling</b></p> <p>D. MCPR safety limit; the cladding oxidation does not exceed 0.17percent of the total cladding thickness</p>

5-1-13  
Question is SAT

4-18-13  
Probably best we can do with this K/A since requires bases knowledge.

6/25/13  
bases knowledge req'd

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				
71	F	2	x			x							4-18-13 Comments Inc.; Question is SAT		N	E	<p>Tier 3: G2.2.39</p> <ol style="list-style-type: none"> <li>Cred Dist: Borderline plausibility for Choice D (waiting an hour before verifying having to verify separation criteria) because this is an action that can be performed quickly in the control room.</li> <li>Stem Focus: The stem question should include "Condition A" as shown below:</li> </ol> <p>Suggest the following to remedy both comments:</p> <p>WOOTF completes the statement below in accordance with Tech Spec 3.1.3, Control Rod Operability, Condition A, One withdrawn control rod stuck?</p> <p>In accordance with Tech Spec 3.1.3, Condition A, if one withdrawn control rod is stuck, then _____.</p> <ol style="list-style-type: none"> <li>Immediately verify separation criteria are met</li> <li>Disarm the adjacent control rods within 1 hour</li> <li>Declare the control rod "slow" within 1 hour</li> <li>Immediately declare the control rod inoperable</li> </ol>
72	F	2				x			x				4-18-13 Comments Inc., Question is SAT		N	E	<p>Tier 3: G2.3.13</p> <ol style="list-style-type: none"> <li>Partial: The wording of the stem question and the fill-in-the-blank statement needs to exactly mirror the words in GOI-200-2 to preclude potential appeals by an the applicants.</li> <li>Verify with Ops Mgmt that this question is not testing minutia.</li> </ol> <p>WOOTF completes the following statement in accordance with 2-GOI-200-2, Primary Containment Initial Entry and Closeout?</p> <p>Entering the drywell to perform a leak inspection, when the primary system is at or near rated operating temperature and pressure, requires the _____'s permission.</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				
73	F	2				x								B	U	<p>Tier 3: G2.3.14</p> <p>1. Cred Dist: Choices B/C are not plausible.</p> <p>For example, if one had no idea what the normal Unit 3 injection rate was, one would look at Choices A/B and say to themselves..since 16 is higher than 12...and the 2<sup>nd</sup> part of each choice is the same, ...then even IF B is correct, A is always correct. Therefore B is not plausible.</p> <p>The same deductive reasoning applies for Choices C/D in the opposite direction.</p> <p>This allows the applicant to get rid of Choices B/C using only deductive reasoning.</p>	
			<p>5-30-13  revised question to test the MSLRM annunciator  Reduce FW pacing HWC in service 3-DI-4  Question is SAT</p>								4-18-13: <u>U</u> Proposed question does not hit K/A. suggest adding MSLRMs levels will rise by normal full power background during 100% H <sub>2</sub> injection.						
74	F	2	x	x		x							x	M	E	<p>G2.4.1 (Sample Question Received 1-3-12) [River Bend 2008 #74]</p> <p>1. Cred Dist: Choice "D" (No EOI entry conditions) is not plausible because the stem contains containment parameters increasing increasing in severity and an ATWS (power 3%).</p> <p>2. Cue: Providing hydrogen and oxygen readings, drywell pressure/temperature, and torus temperature is not required to elicit the correct response.</p> <p>3. Q=K/A: The proposed question <u>may</u> not fully test the applicants' knowledge of immediate action steps, for example, immediate operator actions in 2-AOI-100-1. See if it is also possible to test an IOA as part of this question, in addition to the EOI entry conditions.</p> <p>4. Stem Focus: The first sentence should say that the reactor <u>automatically</u> scrammed.</p> <p>5. 3-11-13: Comments incorporated. See additional enhancement to the fill-in-the-blank statements below:</p> <p>WOOTF completes both statements for the current conditions?</p> <p>The Unit Supervisor _____ required to enter C-5. (is / is NOT)</p> <p>The OATC _____ required to trip the Recirc Pumps. (is / is NOT)</p>	
										4-13-13: Comments Incj Question is SAT.						5-1-13 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				
75	F	2											x		B	U	<p>Tier 3: G2.4.9</p> <p>1. Q=K/A: The accident being tested is a control rod drop event; however, <u>the mitigation strategy for this event is the same whether the reactor is at high power or low power</u> (the mitigative strategy is to drive the rod full in). Since the mitigative strategy is the same, then the question is not meeting the K/A.</p> <p>The intent of the K/A is to test the applicants' knowledge of the implication of being at a low power when an accident/event occurs. The examples listed in the K/A statement (LOCA or Loss of RHR) have big differences in the procedures/methods used to mitigate these events during low power as compared to when the reactor is at 100% power. Likewise, we should test an accident/event where the mitigative strategy is different or does not apply when the reactor is operating at 100% power.</p> <p>2. Verify no overlap with any scenario events.</p> <p>Suggest testing the applicant's knowledge of mitigative strategies listed in <u>AOI-74-1</u> during a RCS leak, since these strategies don't apply when the reactor is at 100% power.</p>

4-18-13

1) Proposed Question does not match the AOI-74-1 actions for resetting the Gp2 isolation and returning SDC's to service.

2) B is also correct  
D is also correct  
C is also correct

U

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			
76	H	3		x										N	E	<p>Tier 1, Group 1: 295003 AA2.05 (Sample Question Received 1-3-12)</p> <ol style="list-style-type: none"> <li>SRO-only: SRO-only knowledge should not be credited for questions that can be answered solely using knowledge of an AOP entry condition. Plant conditions which require entering AOPs are required RO knowledge items. Station Blackout (SBO) is defined as a loss of 161 and 500kV systems and a failure of the two diesel generators which supply normal power to the two 480V Shutdown Boards on a unit. This is RO knowledge. Likewise, a loss of the 500 KV system requires entry to 0-AOI-57-1B. This is also RO knowledge.</li> <li>Stem Focus: The stem question is not clear. It appears that the procedures listed in the stem are missing some sort of number in front of the procedure number because the choices don't seem to match the stem question.  Suggest writing a question to test the SRO applicants' ability to perform Step 4.2 [13] in 0-AOI-57-1B, given a specific switchyard, transformer, diesel configuration.</li> <li><b>3-11-13:</b> Received new replacement question. Graded as enhancement, see below.</li> <li>Cue: The words "two QUALIFIED" in the 10:00 sentence are not necessary to elicit the correct response.</li> </ol>

4-18-3  
 Comment: Frnd.;  
 However --  
 → Overlap w/ RO Q# 46;  
 Providing this reference  
 (T.S. 3.8.1) makes Q# 46  
 a direct lookup.  
 Otherwise this question  
 is SAT.

4-30-13: License will change  
 Q# 46 - This 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			
77	H	2											x	M	U	<p>Tier 1, Group 1: 295019 AA2.02 [2009 Hope Creek, Q#78]</p> <p>1. SRO-only: The 1<sup>st</sup> part of the question can be answered using RO systems knowledge that SDV V&amp;D valves preclude another manual scram (Title of App 1F is "Manual Scram")</p> <p>The 2<sup>nd</sup> part of the question presumably is the SRO piece; however, this part of the question does not hit the K/A statement (interpret status of safety related pneumatic loads) because the level band doesn't necessarily depend on the loss of instrument air - this is always the required level band when power is below 5%. In other words, if you take instrument air problem out of the question, and only provide the other information in the stem, the correct answer (+2 to +51") is still the same.</p> <p>The K/A statement is required to be hit at the SRO level. In this question, only the RO portion hits the K/A statement.</p> <p>2. Ensure no overlap with RO Q#60</p> <p>Two suggestions to remedy these comments:</p> <p>One alternative is to use the wording of the K/A statement ("interpret" the status of safety related instrument air loads") to test the SRO applicants' ability to make the right E-plan call based on the status of the control rods (which can be called <u>safety related loads on the instrument air safety system</u>) and/or status of the unit.</p> <p>Another alternative is to pose a situation where a portion (or all) of the reactor building pneumatic system has depressurized and and test the applicants' ability to determine which safety related components are inoperable (RO knowledge), including the required TS action statements (SRO knowledge). (can't be direct lookup when provided the TS reference).</p>

4-18-13;

→ Not providing a reference to LOD=5

→ Choices B/C are not plausible because no containment parameters provided in the stem.

→ Phrase "Based on status of safety related instrument air loads" is misleading.

→ General Emergency not plausible.

→ 2nd bullet is cue

MAIN STEAM RELIEF VLV  
AIR ACCUM PRESS LOW  
(9-30, W 18)

→ Choice B is also correct

Licensee stated that outboard MSWs use air supply

[Suggested replacement]

4-30-13: Licensee accepted proposed question 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			
78	H	2	x			x								N	U	<p>Tier 1, Group 1: 295023 <u>G2.2.40</u></p> <ol style="list-style-type: none"> <li>Cred Dist: Choices A/C (continue moving fuel) are not plausible because the fuel pool level is "noticeably" lowering.</li> <li>Stem Focus: The stem conditions do not provide the status of Loop I RHR. Is Loop I RHR in the SDC'g mode of operation? Choice B mentions securing shutdown cooling even though the stem doesn't say shutdown cooling was in operation. This is disjointed and may not allow any of the choices to be correct.</li> <li>Stem Focus: The 2<sup>nd</sup> sentence can be modified so that the C2 RHRSW Pump can become the (new) 3<sup>rd</sup> bullet.</li> </ol> <p>Suggest the following to remedy comment 1:</p> <p>Replace the 5<sup>th</sup> sentence in the stem ("A report from the refuel floor indicates that the fuel pool level is noticeably lowering") with "The current fuel pool level indication is xxx inches and stable." (This will be a level just under the fuel pool abnormal alarm setpoint that corresponds to below 22ft.) This situation will suffice as a "refueling accident."</p> <p>Then test the SRO applicants' ability to 1) determine which LCO applicability applies (TS 3.9.7 or 3.9.8) AND 2) interpret how to implement "alternate decay heat removal" in accordance with the bases paragraph that states:</p> <p>"Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. For example, this may include the use of the Reactor Water Cleanup System. The method used to remove the decay heat should be the most prudent choice based on unit conditions."</p> <p>If a discriminating question at the SRO level cannot be written for this K/A, then contact the Chief Examiner for a replacement K/A statement in the Refueling Accident topic.</p>

4-18-13:  
 → Why is a reference being provided since this is RO knowledge (above the-line)?

→ 2<sup>nd</sup> part of A/D not plausible, (TRM 3.5.1)

Suggestion for replacement

4-30-13: license randomly selected  
 G2.2.44

5-30-13: license write new question to new K/A to test AOI-79-1, Fuel Damage During RF, req's and EPIP-1 classification following dropped fuel bundle.

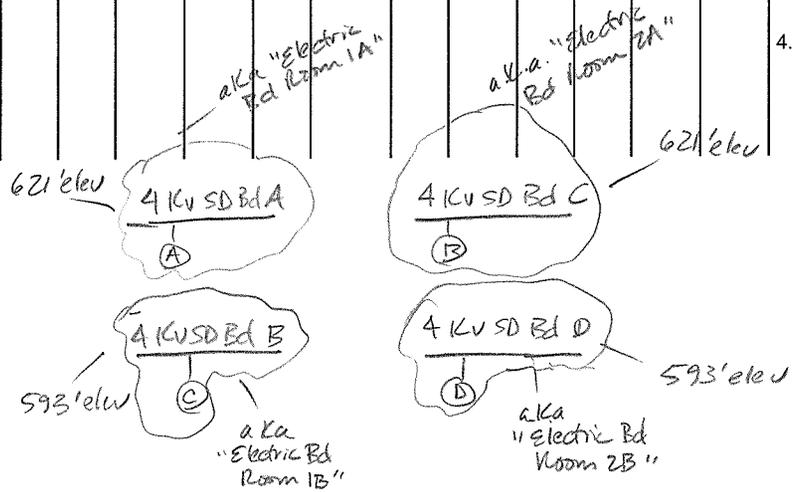
Question is SAT

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	x	x			x		x					x		M	E/U	<p>295024 G2.4.21 (Sample Question Received 1-3-12)</p> <ol style="list-style-type: none"> <li>Cred Dist: The 1<sup>st</sup> part of Choices A and B (previous HPCI testing causing DW pressure to lower and torus pressure to rise) is not plausible <u>because the HPCI testing occurred 7 Hours ago.</u></li> <li>Q=K/A: The proposed question does not test a high drywell pressure condition.</li> <li>Job-Link: The premise of the first part of the question may not be operationally valid. According to the distracter analysis, the premise of the question is that a "drywell to containment leak bypassing the containment pressure suppression function" is causing DW pressure to lower, Torus pressure to rise, and a lowering torus level. One possible situation that represents this premise is a stuck open Torus-to-Drywell Vacuum Breaker; however, the torus level would not be dropping. The change in torus level, due to changing torus pressure, is relatively small. The applicants' may think that this means the torus is leaking, and argue that there is no absolutely correct answer.</li> <li>LOD=1: The SRO portion of this question is a direct lookup.</li> <li>Stem Focus: The last two bullets (Venting torus just been secured and HPCI testing completed at 05:00) should be included in the first few sentences instead of at the end of the list of bulleted items because the bulleted list occurred subsequent to these two bullets.</li> <li>Stem Focus: The portion of the annunciator UNID# (1-pda-64-137) is not necessary. Even though this may be part of the engraving, the intent is to provide the exact wording of the annunciator (without paraphrasing). The portion of annunciator UNID# inside the parenthesis is appropriate (9-3B, W26).</li> <li><b>3-11-13:</b> Received replacement question; see the next row below for continuation...</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			
79	H	2											x	M	E/U	<p>(continued from previous row)</p> <p>Tier 1, Group 1: 295024 [2010 BFN, Q#81]</p> <p>8. Q=K/A: The SRO portion of the question (can / cannot change modes) has a very weak link to the high DW pressure K/A statement. The SRO portion of the proposed question tests whether the unit can enter Mode 2 from Mode 4 even though a PCIV is inoperable:  The intent of the K/A statement is to test the SROs knowledge (during a high drywell pressure condition) of a parameter or EOP logic system that's used to protect/assess the status of a key safety function like the containment.</p> <p>For example:  Given the following excerpt from EOI-2, PC/P....</p> <p>WOOTF completes the following statement?  The number 13 beside each step refers to the preceding "before" step, which deals with _____ pressure reaching 55 psig, in order to preclude _____.</p> <p>A. torus; the loss of a fission product barrier  B. torus; SAMG entry  C. drywell; the loss of a fission product barrier  D. drywell; SAMG entry</p>
<p>4-18-13: my proposed question doesn't work b/c</p> <p>1) The New EOI Step PC/P-13 contains the answer (supp chbr pres) to the question.</p> <p>→ 2) Question doesn't include one of the 7 topics in 10CFR 55.43</p> <p>[Suggested replacement]</p> <p>4-30-13  please see accepted replacement.  Question is SAT</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	H	3	x	x						4-18-13; <i>Minutia Inc.</i>				N	E	<p>Tier 1, Group 1: 295037 G2.4.30</p> <ol style="list-style-type: none"> <li>Stem Focus: The stem does not provide the clock time for the bulleted conditions.</li> <li>The fill-in-the-blank statement should be re-worded as:  <p>"At XX:XX (time), the highest required classification is _____ and the State of Alabama was/is required to be notified no later than _____."</p> </li> <li>Cue: The level band in the 3<sup>rd</sup> bullet is a cue for other questions on the exam.</li> </ol>
81	H	2	x			x				4-18-13; <p>⇒ Choices A/C are both correct?</p> <p>⇒ The SSI-9 selection is actually incorrect for the explosion location.</p> <p>a.k.a. "Electric Bd Room 1A"</p> <p>a.k.a. "Electric Bd Room 2A"</p>		x		N	E/U	<p>Tier 1, Group 1: 600000 AA2.13</p> <ol style="list-style-type: none"> <li>Q=K/A: Because each of the choices includes an SSI, the applicants can already assume that the decision to enter the SSIs has been made. Therefore, the word "determine" in the K/A statement is not being tested, that is, the applicants' ability to determine the need for an emergency plant shutdown.</li> <li>Stem Focus: The stem question asks for a two items: 1) a SM decision and 2) a governing procedure. All four choices indicate a decision to manually scram, which means this can be moved to the stem question.</li> <li>Stem Focus: The phrase "governed by" is subjective; re-work the stem question to test what procedure is required to be implemented in order to perform a manual scram on each unit and delete the reference to a manual scram in all of the four choices (since the stem question will contain this).</li> <li>Cred Dist: Choice D (U3 scram in accordance with 3-GOI-100-12A) is not plausible because a normal unit shutdown from 100% power to cold shutdown takes a long time, given the urgency of an SSI scram event on all three units.</li> </ol>



4-30-13: licensee revised question to test the reason why SSIs were ordered as new 1st fill-in-the-blank.

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			
82	H	2	x			x			4-18-13					N	E	<p>Tier 1, Group 1: 700000 AA2.05</p> <ol style="list-style-type: none"> <li>Cred Dist: The 2<sup>nd</sup> part of Choice B (all 161 circuits inop but all 500 circuits still operable) is not plausible because the stem says that 161 voltage is 161 and that the 161 status is yellow and 500 status is red.</li> <li>Stem Focus: Boil down the first part of all choices to either 1) Raise reactive load or 2) Raise turbine load.</li> <li>Stem Focus: Add TRO-TO-SOP-30.128 (name/number) to the stem question as "in accordance with...."</li> </ol>
83	H	2	x			x			4-18-13					B	U	<p>Tier 1, Group 2: 295017 AA2.01 [2009 Hatch, Q#86]</p> <ol style="list-style-type: none"> <li>Cred Dist: The 1<sup>st</sup> part of Choices C/D (ED not required) is not plausible when the dose rate at the site boundary is 1 R/hr, reactor still pressurized, and an unisolable steam break exists.</li> <li>Stem Focus: The first sentence says reactor building temps/rad was rising due to a steam line break in the turbine building.</li> </ol> <p>Suggest testing the SRO applicants' knowledge of a parameter (not the value) or rule-of-usage for the Tables associated with EPIP-1 Gaseous effluent release limit thresholds.</p> <p>For example, test the knowledge that 1) one of the EPIP-1 Gaseous effluent release limit threshold parameters for a general emergency is <u>iodine 131 dose at the site boundary</u> (vs. the site boundary gamma reading-incorrect) and 2) whether WRGERMs <u>is/is not</u> allowed to be used to base the general emergency declaration. (EPIP-1 says that actual field measurements or projected dose assessments are to be used to make the declaration unless neither of these assessments can be conducted within 15 minutes.)</p> <ol style="list-style-type: none"> <li>Ensure no overlap w/ SRO Q#99</li> </ol>

4-30-13  
Question is SAT

→ B/D not plausible (reactive load with 10MVA/min)  
Licensee corrected problems w/ Choices B & D and only noted whether yellow is inoperable

→ The reference provided to the applicants (EPIP-1) makes the question a direct lookup (1<sup>st</sup> fill in the blank)  
→ See my fix

4-30-13: Licensee revised question (per my recommendation) to test a situation where Actual Projected doses (at site boundary) only yield a Site Emergency but WRGERMs is a General Emergency. (Provide reference)  
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			
84	H	3							4-18-13; Replace choice "D" w/ C-1, alt level C1.					M	E	<p>Tier 1, Group 2: 295029 EA2.03 [2010 Vermont Yankee, Q#83]</p> <p>1. Partial: Choice A (Perform Appendix 18) is also correct. See Step SP/L-2.</p> <p>2. Stem Focus: Only list procedures in each of the choices; title and number only. Come up with another plausible procedure to replace one of the Appendix 13 (Choices C/D); this new choice could potentially be SAMG entry is required if the Core Spray flow value is also included in the stem.</p> <p>A. Appendix ??  <b>B. EOI-C-2</b>  C. Appendix 13  D. SAMG entry is required</p>

4-30-13

Comments Inc.  
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			
85	H	2		x										N	E	<p>500000 G2.2.44 (Sample Question Received 1-3-12)</p> <p>1. Stem Focus: The 2<sup>nd</sup> portion of each choice is unique; therefore, the 1<sup>st</sup> portion of the question is not being tested. Additionally, only the 2<sup>nd</sup> portion of Choices B and C include a "reason", which makes the choices disjointed. Suggest changing the 2<sup>nd</sup> portion of two distracters to 1-EOI-Appendix-14B, CAD Operation.</p> <p>2. Partial: An applicant could successfully argue that by venting per Appendix 12, the hydrogen/oxygen concentrations may actually lower. Choice B can also be correct even though Appendix 12 is only directed in the PC/P leg of EOI-2.</p> <p>3. Stem Focus: The first two bullets are not necessary to elicit the correct response. Suggest the following remedies for all comments listed above:</p> <p><i>A LOCA has occurred on Unit 1 and the following conditions currently exist:</i></p> <ul style="list-style-type: none"> <li>• <i>Suppression Pool level is 16 ft</i></li> <li>• <i>H2/O2 Concentrations are indicated below:</i> [PICTURE HERE: O2 @ 4.5% &amp; H2 @ 9%] <i>WOOTF completes both statements?</i></li> </ul> <p><i>In accordance with 1-EOI-Appendix 19, H2O2 Analyzer Operation, readings from 1-XR-76-110 H2/O2 Concentration Recorder (Panel 1-9-54) or from 1-MON-76-110, H2/O2 Analyzer (Panel 1-9-55) may only be obtained after _____.</i></p> <p><i>Based on the current H2/O2 readings and in accordance with 1-EOI-2, PC/H leg, the crew is required to enter _____.</i></p> <p>A. 5 minutes; 1-EOI-Appendix 14 A  B. 5 minutes; 1-EOI-Appendix 14B  C. <b>10 minutes; 1-EOI-Appendix 14A</b>  D. 10 minutes; 1-EOI-Appendix 14B</p> <p>4. <b>3-11-13:</b> Comments incorporated; except...</p> <p>5. Cue: The 2<sup>nd</sup> bullet is not necessary to elicit the correct response. The last phrase in the 2<sup>nd</sup> fill-in-the-blank statement "to purge the containment with.." should be replaced with "enter."</p>

4-18-13: Comments Inc;  
Question is SA  
4-30-13

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	H	2	4-30-13 license accepted revision to test one loop CS already inoperable and other loop pressure w/ TLM requirements			x				4-18-13: NO knowledge [See suggested replacement]					N	U	Tier 2, Group 1: 209001 G2.1.31 1. Cred Dist: The 2 <sup>nd</sup> part of the question (which is the only part of the question that is SRO-only) is not plausible because the EOIs are in effect during a LOCA. This is also RO knowledge.  Suggest writing a question that deals with Tech Specs.
87	H	2	x							4-18-13: Comments, Inc. ✓ Question is SAT  4-30-13 Added RP Pressure @ 13:00 psig to clarify which Mode					B	E/U	Tier 2, Group 1: 211000 A2.05 [2010 Nine Mile Point, Q#86] 1. Cred Dist: The plausibility of the 2 <sup>nd</sup> part of Choices A/B (SLC needed in Mode 3 for an ATWS) is borderline because all rods are inserted and it is impossible for an ATWS to occur. 2. Stem Focus: The times in each of the choices are vague because the stem doesn't include a timeline of events. Add times to the stem events.  Suggest keeping the 1 <sup>st</sup> part of the question, provided a timeline of events is included in the stem, and substitute the following knowledge for the 2 <sup>nd</sup> part:  "In accordance with Tech Spec Bases 3.1.7, the bases for requiring SLC to remain operable in Mode 3 is to ensure that the suppression pool pH remains above 7.0 under worst case conditions for ___ days following a LOCA."

A  
C  
E

B  
D  
F

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	H	2		x		x								M	U	<p>Tier 2, Group 1: 215003 A2.01 [2007 Brunswick, Q#88]</p> <ol style="list-style-type: none"> <li>1. Cue: The 2<sup>nd</sup> and 3<sup>rd</sup> bullets point to Choice C as the correct answer.</li> <li>2. Cred Dist: Choice A (bypass SRM D and keep going) is not plausible because there is nothing in the stem that could be misconstrued to imply that SRM D was malfunctioning.</li> <li>3. Cred Dist: Choice D (bypass SRM D and perform calibration) is not plausible because it is the same thing as Choice B. The applicants know there can only be one correct answer; therefore, since Choices B/D are virtually the same, the applicants can eliminate these choices solely based on psychometrics.</li> </ol> <p>Suggest re-working the question to tell the SRO applicants that two IRMs have degraded power supply such that they failed to meet SRM/IRM overlap criteria during a startup. Then test the SROs ability to predict whether an action statement in Tech Specs and the TRM is required to be entered. (no reference provided) and some other administrative restriction regarding whether the startup should be halted, or plant management notification, etc.</p> <p>Alternatively, if a discriminating question cannot be written at the SRO level, Chief Examiner will provide replacement K/A at your request.</p> <p>Note to NRC reviewers: SRM/IRM overlap criteria is RO knowledge. See the following OPL171.020 Learning objective:</p> <p>**10. Describe the range for IRM/APRM overlap. [SOER 90-Recommendation 1] ROs are required to monitor neutron monitors, for any abnormality, during a startup.</p>

4-18-13:  
 → Q does not involve procedure selection or application of Tech Specs  
 → no knowledge.

not good enough

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			
89	H	3		x										N	E	<p>218000 A2.05 (Sample Question Received 1-3-12)</p> <ol style="list-style-type: none"> <li>Note: Ensure that the applicants are <u>not</u> being provided Attachment 1 of 3-AOI-1-1; only Tech Spec 3.5.1 (no bases) is being provided as a reference.</li> <li>Suggest the following enhancements:  <i>Unit 3 is operating at 100% power and a loss of 250V RMOV Board 3B occurs.</i>  <i>WOOTF identifies the required action(s), if any, in accordance with Tech Spec 3.5.1?</i> <ol style="list-style-type: none"> <li>No action statement in LCO 3.5.1 is required to be entered.</li> <li><b>ONLY</b> action statement E.1 is required to be entered.</li> <li><b>Action statements G.1 and G.2 are required to be entered.</b></li> <li>Action statement H.1 is required to be entered.</li> </ol> </li> <li><b>3-11-13:</b> Comments incorporated ...except for</li> <li>Cue: the only choice that has a phrase after the word "entered" is also the correct choice. Delete the phrase "for the supported systems."</li> </ol>

4-18-13;  
Comments Inc;  
Question is SAT  
4-30-13 ✓

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			
90	F	2												N	U	<p>Tier 2, Group 1: 239002 G2.2.12</p> <p>1. Q=K/A: The proposed question only tests generic surveillance attributes (partial performance of a surveillance test okay as a PMT and protocols for conduct of testing) even though the K/A statement is linked to Relief/Safety Valves. The proposed question is more suited to a Tier 3 RO K/A statement and does not meet the intent of the Tier 2, Group 1 topic.</p> <p>Suggest the following:</p> <p><i>WOOTF completes both statements in accordance with 2-SR-3.4.3.2, Main Steam Relief Valves Manual Cycle Test, acceptance criteria?</i></p> <p><i>Each relief valve shall be manually opened and OPEN position indicated exhibited by acoustic monitors downstream of the valve indicate steam is flowing from the valve <u>AND/OR</u> thermocouples downstream of each relief valve detect steam flow from an open relief valve as indicated by rising tailpipe temperature.</i></p> <p><i>The green valve indicating light shall indicate a CLOSED valve as evidenced by no acoustic monitor response <u>AND/OR</u> thermocouples downstream of each relief valve indicates no steam flow by lowering tailpipe temperature.</i></p> <p>Meets SRO-only based on the OPERABILITY determination incorporated with acceptance criteria.</p>

4-18-13: Comments Inc.  
 Question is SAT  
 4-30-13

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	H	2		x		x							N	E/U	<p>Tier 2, Group 2: 201003 G2.4.18</p> <ol style="list-style-type: none"> <li>Cred Dist: Choice C (exit C5 when reactor not subcritical) is not plausible because C-5 is always entered when the reactor is not subcritical.</li> <li>Cred Dist: Choice D (stay in C5 when the reactor IS subcritical) is borderline plausible because C-5 only applies when the reactor isn't subcritical.</li> <li>Stem Focus: The 1<sup>st</sup> part of each choice can be streamlined to "<u>Exit C-5</u>" or "<u>Remain in C-5</u>." None of the other information in the 1<sup>st</sup> part of each choice is required to elicit the correct response.</li> <li>Cue: Ensure no overlap w/ RO Q#60 (level band required to be maintained in 1<sup>st</sup> bullet)</li> <li>Ensure no overlap w/ RO Q#5</li> </ol> <p>Suggest the following:</p> <p>A scram occurred and during the implementation of EOI-1, the US reaches the following retainment override step:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>WHILE EXECUTING THE</b></p> <p style="text-align: center;"><b>IF</b></p> <p>1 IT HAS <b>NOT</b> BEEN DETERMINED THAT THE REACTOR WILL REMAIN SUBCRITICAL WITHOUT BORON UNDER ALL CONDITIONS (SEE NOTE)</p> </div> <p>In accordance with EOI Program Manual Basis document xxxxxIVVIIIIAAA, noun name, WOOTF identifies the basis for the word "subcritical" and the procedure required for level control for this situation?</p> <p>First part of the question test the term "subcritical" means that reactor power is below the heating range (range 7). OPL171.20<sub>3</sub> (versus some other wrong condition)</p> <p>Second part test RC/L vs C-5</p>
<p>4-18-13; Proposed new question only requires RO knowledge and does not test EOP Basis knowledge.</p> <p>4-30-13; licensee replaced the question with the original recommendation; however the 1<sup>st</sup> portion of C/D the question overlapped with RO Question # 5</p> <p>→ Can't find basis for critical in EOI Program Manual.</p> <p>5-30-3 - Picked a new K/A (201003 CRD G2.4.11) knowledge of ADPs</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			
92	H	2				x								N	E/U	<p>Tier 2, Group 2: 239001 A2.11</p> <ol style="list-style-type: none"> <li>Direct Lookup: Since the proposed reference to be provided to the applicants is TS 3.6.1.3, the 1<sup>st</sup> part of the question is a direct lookup. <p>Suggest still providing the reference to the applicants, but change the 1<sup>st</sup> part of the question to test the TS basis for WHY there is a 4 hour difference for the completion time regarding a MSIV. (because an additional 4 hours allows time to restore the MSIV to operable before having to reduce power or shutdown the unit VS. and additional 4 hours allows time to implement administrative controls for the operable in series valve when the probability of misalignment is low)</p> </li> <li>Cred Dist: The plausibility of a Site Area emergency existing when the steam line is isolated and all temperatures are slowly lowering is borderline. (2<sup>nd</sup> part of Choices B/D). <p>Suggest changing the 2<sup>nd</sup> part of the question to test the applicants' knowledge of whether or not an emergency classification is required/ not required.</p> </li> </ol>
93	H	2				x	x							B	U	<p>Tier 2, Group 2: 268000 A2.01 [2010 BFN, Q# 91]</p> <ol style="list-style-type: none"> <li>Cred Dist: The 2<sup>nd</sup> part of Choices A/C (use EPIP-1 to determine what is leaking and the isotopes) is not plausible because EPIP-1 is the emergency plan classification procedure and does not provide guidance to determine the source of underground water leaks on site.</li> <li>Partial: Choice B is also correct.</li> <li>Partial: The 2<sup>nd</sup> sentence in the stem may not necessarily mean that the waste sample tank discharge pipe is leaking. This is a cryptic way to provide the information to the applicants that the waste sample tank discharge piping is leaking inside the protected area. Consequentially, an applicant could argue that there is no correct answer.</li> </ol>

4-30-13: Changed 2<sup>nd</sup> fill-in-the-blank to test whether TSC is/ is not req'd to be staffed. Enhanced the fill-in-the-blank statements to clarify why add'l 4 hrs allowed.  
4-30-13  
Question is SAT

4-18-13:  
→ Enhancement needed on the fill-in-the-blank statements  
→ delete "when the probability of misalignment is low."  
→ 2<sup>nd</sup> fill-in-the-blank (whether classification exists) is direct lookup given reference.

4-18-13:  
Direct lookup - no discriminatory value  
[see suggested replacement]

4-30-13: licensee was reluctant to use suggested revision b/c of LOD=5  
5-30-13: licensee subsequently re-submitted question - - need to document buy-in

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	2	x											M	E	<p>G2.1.35 (Sample Question Received 1-3-12) [Fitzpatrick 2010 #94]</p> <ol style="list-style-type: none"> <li>SRO-only: The <u>only</u> knowledge required to identify the correct answer (Choice A) is found in 1-OI-78, Precaution and Limitation 3.A.1, that is, spent fuel temperatures below 68°F exceed the temperature reactivity in the criticality analysis. This is a system cooling limitation (not an administrative limitation) and it is RO knowledge.</li> <li>Cue: The 6<sup>th</sup> bullet does not provide the actual fuel pool level. Instead, it only states that the required level above the fuel is met.</li> <li>Stem Focus: Choice B does not state whether to suspend or continue with fuel movement, which is unlike the other three choices.</li> <li>Stem Focus: The stem question does not elicit a "reason" for the action even though each of the choices includes a reason.  Suggest testing the SRO applicants' knowledge of 0-GOI-100-3C, Step 5.1 [2.1], which deals with requirements for the FATF.</li> <li><del>3-11-13</del>: Comment for replacement test item incorporated, except....</li> <li>Stem Focus: the word "copy" in the stem question may be misleading. Suggest enhancing as : "IAW.....WOOTF identifies where the OFFICIAL Fuel Assembly Transfer Form (FATF) is required to be located during refueling?"</li> <li>Stem Focus: In order to be parallel with Choice A, revise Choice D to say "In the control room on the Unit Supervisor's desk."</li> </ol>

4-18-13,  
Comments Inc.  
Question is SRT

4-30-13  
Question is SRT

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	H	5	x					x							M	E	<p>Tier 3: G2.1.43 [2010 Vermont Yankee, Q# 94]</p> <ol style="list-style-type: none"> <li>LOD = 5: Requiring the applicants' to know the SPP-3.5 reporting criteria from memory (without a reference) is too difficult. Suggest providing a copy of SPP-3.5 to the applicants for this question.</li> <li>Partial: There is no correct answer to this question because the stem does not specify how high reactor power was, including the duration. Modify the stem to say that the core thermal power exceeded 3458 MWth for an 8 hour period ( 8 hr average). This is a clearer violation of the BFN operating license.</li> <li>Stem Focus: Modify the stem question to include reference to 1-AOI-6-1A and SPP-3.5.</li> <li>Stem Focus: Modify the 1<sup>st</sup> sentence to include the reason why the extraction steam was lost, that is, an inadvertent closure of Heater 1A1 Extraction Isolation Valve, 1-FCV-005-0005. .</li> <li>Verify on the simulator by closing 1-FCV-005-005 to ensure all other automatic valve operations do not result in a reactor trip or feedwater event.</li> </ol>

4-30-13  
Question is SAT

Hakeneworth verified that skaddled out @ 3615-ish MWth

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								N	E	<p>Tier 3: G2.2.18</p> <ol style="list-style-type: none"> <li>Cred Dist: Choice C (only can enjoy TS 3.0.4(b) when RHR Pump 2A becomes a higher risk) is not plausible because it is backwards to defense in depth.</li> <li>Stem Focus: The term "<u>MODE Restraint Assessment</u>" is subjective and can be misleading. The assessment is always performed; however, the Tech Spec privilege of 3.0.4(b) may or may not be invoked.</li> <li>Stem Focus: The first part of the stem can be simplified. <i>Unit 2 is in Mode 4 and is preparing to enter Mode 2; however, an inoperable Tech Spec component exists.</i> <i>WOOTF completes both statements?</i></li> </ol> <p><i>Tech Spec LCO 3.0.4(b) allows entry into a mode with the LCO not met ONLY if _____.</i></p> <p><i>In accordance with NPG-SPP-09.11.2, Risk Assessment Methods for Tech Specs, the Tech Spec 3.0.4(b) provision should only be used when _____.</i></p> <p><b>A. a risk assessment is performed;</b></p> <p><b><i>there is reasonable likelihood that the inoperable equipment will be made operable within the applicable completion time once the mode is entered.</i></b></p> <p><b>B. the associated actions to be entered permit continued operation in the higher mode for an unlimited period of time;</b></p> <p><i>some plausible distracter.</i></p> <p><b>C. similar</b> <b>D. similar</b></p>

4-30-13, Modified  
 Suggestion to eliminate  
 1) 3.0.4.(b) minutia and  
 2) first fill-in-the-blank  
 giving way 2nd fill-in-the-blank.  
 Questions SAT

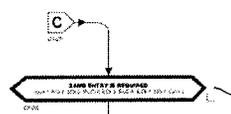
Question is SAT

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					
97	F	2												x	N	U	<p>Tier 3: G2.2.3</p> <p>1. SRO-only: The proposed question only tests the minimum zero injection reactor water level value. This is RO knowledge pertaining to the definition of adequate core cooling. Reference lesson plan OPL171.201, Learning objective:</p> <p>10. Identify the meanings of the following terms as they relate to the EOLs:</p> <p>a. Adequate Core Cooling</p> <p>Additionally, this question is not linked to any of the 7 topics in 10CFR55.43(b).</p>	
																	<p>4-30-13: Licensee re-submitted unit differences question to test CRT availability on Unit 3 and basis for GE threshold <math>\Delta</math>'s on units for radiation - Limited to 10CFR55.43(A)</p> <p>4-30-13: Licensees replacement question had G.2.2.4 listed (incorrect), as K/A. - Not linked to 10CFR55.43(b) topics. Radiation hazards</p>	
98	F	2	x			x	x									B	U	<p>Tier 3: G2.3.4</p> <p>1. Cred Dist: The 1<sup>st</sup> part of Choices C/D (person already received 25 REM and can get more emergency dose) is not plausible.</p> <p>2. Stem Focus: The fill-in-the-blank statements seem unrelated. This is confusing.</p> <p>3. Partial: The stem does not include "in accordance with...", which could make the answer subjective.</p> <p>Suggest the following:</p> <p>WOOTF completes both statements in accordance with EPIP-15, Emergency Exposures?</p> <p>SED or SED</p> <p>The _____ shall provide authorization for all emergency radiation doses that may exceed 10 CFR 20.1201 entitled "Occupational Dose Limits for Adults".</p> <p>Potassium Iodide (KI) should be issued if a projected dose to the thyroid is expected to exceed _____ during emergency conditions.</p> <p>10/25 rem</p>
																	<p>4-30-13: Question is SAT</p>	

Licensee

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	x						B	E	<p>Tier 3: G2.4.18</p> <ol style="list-style-type: none"> <li>1. Job-Link: Will <u>one</u> fuel bundle being damaged cause the general emergency threshold for offsite radioactive release to be met if the reactor building is intact? Suggest re-working the stem of the question to say that major damage to the reactor building roof and spent fuel pool has occurred.</li> <li>2. Partial: the 2<sup>nd</sup> fill-in-the-blank statement is vague, that is, the phrase "the basis for this action" does not match the fuel pool conditions: For only the case of proceeding to Cold Shutdown per EOI-3, when 2 areas are above max safe and no primary system discharging, <u>yes</u>; however, this question has to do with a huge fuel pool problem. The basis for going to Cold Shutdown is totally unrelated to the situation at hand. Therefore, an applicant can argue that there is no completely correct answer.</li> <li>3. Cue: The 1<sup>st</sup> bullet should be modified to ensure no overlap with other test items. Suggest re-wording as "The offsite radioactive release threshold for a general emergency has been met."</li> </ol> <p>Suggest testing ONLY a situation where a missile has caused extensive damage to the fuel pool with the reactor continuing to operate in Mode 1. Then test the applicants' knowledge of whether ED is/is NOT required and the basis for EOI-4, Step RR-5.</p> <ol style="list-style-type: none"> <li>4. Ensure no overlap w/ SRO Q#83</li> </ol>

*4-30-13: New EOI-4 requires  
1) at least GE classification entry and 2) "Is primary system discharging" question  
→ licensee's question required more work (linked step 50/k-6 as EOI-4 step)  
Need EOI-4 draft version*

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			
100	F	2											x	N	U	<p>Tier 3: G2.4.19</p> <p>1. SRO-only: The proposed question solely tests knowledge of EOP layout, symbols, and icons, at the RO level. Knowledge of EOP layout, symbols, and icons is RO knowledge; refer to OPL171.201, RO learning objectives #1 and #3. Additionally, the question must have some relation (be linked) to one of the 7 topics in 10CFR55.43(b).</p> <p>B Enabling Objectives*</p> <p>1. Describe or identify the intent and conditions for use of the following EOI flow chart symbols.</p> <ul style="list-style-type: none"> <li>a. Entry Arrow</li> <li>b. Flow Path Identifier</li> <li>c. Exit Arrow</li> <li>d. Execute Concurrently Step</li> <li>e. Retainment Override Step</li> <li>f. Contingent Action Step</li> <li>g. Action Step</li> <li>h. Decision Step</li> <li>i. Before Decision Step</li> <li>j. Signal Step</li> <li>k. Operator Note</li> <li>l. Table</li> </ul> <p>3. Describe or identify the means by which an operator keeps track of the progression through an EOI flowchart.</p> <p><b>Suggest the following:</b></p> <p>The Unit Supervisor reaches the following step C1-35:</p>  <p>WOOTF identifies 1) the generic name this shaped EOI symbol and 2) the point in C-1 at which the exit arrow "C" symbol originated?</p> <ul style="list-style-type: none"> <li>A. Action Step Symbol; in the <u>Primary</u> Containment Flooding portion of C-1</li> <li>B. Signal Step Symbol; in the Primary Containment Flooding portion of C-1</li> <li>C. Action Step Symbol; in the Steam Cooling portion of C-1</li> <li>D. Signal Step Symbol; in the Steam Cooling portion of C-1</li> </ul>

4-30-13

Question recommendation implemented --  
Question is SAT

Additional Action Step

Facility: <u>BROWNS FERRY</u>		Date of Exam: <u>6/28/13</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>AG</u>	<u>N/A</u>	<u>BM</u>		
2. Answer key changes and question deletions justified and documented	<u>AG</u>		<u>N/A</u>		
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	<u>AG</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	<u>AG</u>		<u>N/A</u>		
5. All other failing examinations checked to ensure that grades are justified	<u>AG</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>AG</u>	<u>N/A</u>	<u>BM</u>		
Printed Name/Signature		Date			
a. Grader	<u>Andreas Goldau / AG</u>			<u>7-8-13</u>	
b. Facility Reviewer(*)	<u>N/A</u>			<u>N/A</u>	
c. NRC Chief Examiner (*)	<u>BRUNO CABALLERO / B. Caballero</u>			<u>7-9-13</u>	
d. NRC Supervisor (*)	<u>MARK FRANKE</u>			<u>7/10/13</u>	
(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.					