FINAL

Browns Ferry
ILT 1205

NRC EXAM

ES Forms

Facility: BROWNS FERRY Date of Examination: MAY 2012

Examinations Developed by: (Facility) / Written / Operating Test NRC Written / Operating Test

Target Date*	Task Description (Reference)	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a and b)	RSB
-120	2. NRC examiners and facility contact assigned (C.1.d; C.2.e)	RSB
-120	3. Facility contact briefed on security and other requirements (C.2.c)	RSB
-120	4. Corporate notification letter sent (C.2.d)	RSB
[-90]	[5. Reference material due (C.1.e; C.3.c; Attachment 2)]	RSB
{-75}	6. Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1's, ES-401-1/2, ES-401-3, and ES-401-4, as applicable (C.1.e and f; C.3.d)	RSB
{-70}	{7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)}	RSB
{-45}	8. Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6), and reference materials due (C.1.e, f, g and h; C.3.d)	RSB
-30	9. Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202)	RSB
-14	10. Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202)	RSB
-14	11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	RSB
-14	12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	RSB
-7	13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	RSB
-7	14. Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 4; ES-202, C.2.e; ES-204)	RSB
-7	15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	RSB
-7	16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	RSB

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

Facility: BROWNS FERRY NUCLEAR PLANT Date of Examination: MAY 2012

Item	Task Description	Initials a	Initials b*	Initials c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	MDS	H	MDS
	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.	MDS	H	MDS
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	MDS	H	MDS
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	MDS	H	MDS
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	MDS	H	MDS
	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.	MDS	H	MDS
	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.	MDS	H	MDS
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.	MDS	H	MDS
	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	MDS	H	MDS
	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.	MDS	H	MDS
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	MDS	H	MDS
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	MDS	H	MDS
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	MDS	H	MDS
	d. Check for duplication and overlap among exam sections.	MDS	H	MDS
	e. Check the entire exam for balance of coverage.	MDS	H	MDS
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	MDS	H	MDS

	Printed Name/Signature	Date
a. Author	MICHAEL D. GIBSON	4/11/12
b. Facility Reviewer (*)	DOUGLAS L. HOUKENEWERTH	5-1-12
c. NRC Chief Examiner (#)	RICHARD S. BAUMANN	5/2/2012
d. NRC Supervisor	MARK STANDER	5-7-12

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

BROWNS FERRY 2012 EXAM.

ILT 1205

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 5/7-18/2012 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 5/7-18/2012 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.	JORDAN RUBY	EXAM TEAM		9/12/11		5/18/12	
2.	MICHAEL D. GIBSON	EXAM TEAM		9/12/11		5/18/12	
3.	DANIEL A. ZIELINSKI	EXAM TEAM		9/12/2011		5/21/12	
4.	MICAH NASH	EXAM TEAM		9/19/11		5/22/12	
5.	Thomas S. Albright	Sim. SUS.		9/22/11		5/21/12	
6.	William J cobb	SIM. SUS		9/22/11		5/21/12	
7.	DANIEL P NEWTON	SIM SUS		9/22/11		5/21/12	
8.	DANIEL M. SNARE	SIM SUS		9-22-11		5-21-12	
9.	PATRICK J ARUNDEL	SIM SUS		9-22-11		5-21-12	
10.	RICHARD R CHOATE	SIM SUS		9-22-11		5/21/12	
11.	VAN N MILLER	SIM SUS		9-22-11		5/21/12	
12.	ARDIE R. CHAMPION	SIM SUS		9-23-11		5/21/12	
13.	GARY A HYDE	LOR EXAM DEV		9-23-11		5/22/12	
14.	RANDAL E KNIGHT	EXAM DEV		10-1-11	RKK	11/15/11	①
15.	MICAH NASH	SM		10/13/11		5/22/12	

NOTES:

① NO ILT 1205 Exam knowledge obtained, Signed off to support License class 1205, TELECON with RICK BALDWIN ON 11/15/2011

ILT 1205

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Russell Joplin	CORP EXAM MGR		12/8/11	(1)		
2.	Christopher M. Lacy	TECH REVIEWER		12/20/11		5/21/12	
3.	Donald C Binkley	OPS TRNG INSTRUCTOR		1/4/12		5/21/2012	
4.	Douglas G. Hakenewerth	FACILITY REP.		3-11-12		5-18-12	
5.	Aaron D Allday	R.O.		1-25-12		5-22-12	
6.	Matthew R. Humphries	R.O		1-26-12		5-22-12	
7.	Allan A Fisher	US		1-26-12		5-22-12	
8.	Brian Maze	US		1/30/12		5/22/12	
9.	Terry Wheeler Jr.	R.O		1-31-12		5-22-12	
10.	Nathan Cooper	R.O		1/31/12		5/22/12	
11.	Neel Shukla	US/SRO		2/3/12		5/22/12	
12.	Eric Steele	SRO		2/4/12		5/22/12	
13.	Jonathan Duke	RO		2/8/12		5/22/12	
14.	David Pettit	SRO		2-9-12		6/12/12	
15.	James Brian Fowler	RO		2-9-12		6/11/12	

NOTES:

(1) SEE ATTACHED PHOTO COPY

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	RAYMOND TORRES	PENN FLEET EXAM DEVELOPMENT LEAD		2-FEB-2012	(1)		
2.	WALTER MILLER	SRO		3/6/12		5/22/12	
3.	IRON GILDIN	RO		3/7/12		5/22/12	
4.	DENNIS WINDER	SRO		3/8/12		5/22/12	
5.	Edward Mack	RO		3/12/12		5/22/12	
6.	Ralph Hoffman	SRO		3/12/12		5/21/12	
7.	Christopher L Vaughn	Asst Ops Supt / SRO		3/16/12		5/22/12	
8.	DAVID RANN	SRO		3/19/12		5/23/12	
9.	MARK MOEBES	SRO		3/19/12		5/23/12	
10.	Gary Wynn	INSTRUCTOR		3/29/12		5/21/12	
11.	JEFF BARKER	DEPT. TRNG COORD.		4-16-12		5-21-12	
12.	David Higgins	OPS TRAINING		4/16-12		5/21/12	
13.	Eric Prebmore	OPS TRAINING		4-16-12		5-21-12	
14.	Matthew Robinson	Ops Supt		4/19/12		5/22/12	
15.	JEFFREY S DILLI	OPS MGR SUPR		5/7/12		6/30/12	

NOTES:

(1). SEE ATTACHED PHOTO COPY

Dills, Jeffrey S

To: Gibson, Michael David
Cc: Zielinski, Daniel Kenneth; Ruby, Jordan Grant; Malinowski, David A
Subject: FW: NRC Security Agreement

Mike,

Please add this to your communication log.

I also need to have this string of email attached to the NRC Security Agreement for 12-05 and have Randy Sign off the agreements.

If you have any questions please let me know.

Thanks,

Jeffrey Dills
BFN Operations Training
(256) 729-2824

From: Malinowski, David A
Sent: Tuesday, November 15, 2011 8:41 AM
To: Dills, Jeffrey S
Cc: Zielinski, Daniel Kenneth; Knight, Randy E; Gibson, Michael David
Subject: FW: NRC Security Agreement

Jeff,
Per phone conversation with NRC Rick Baldwin today, we agreed that Randy Knight may sign off ILT 12-05 exam security agreement. He can annotate on the security agreement and attach this e-mail documenting our communication on this issue.

Exam team should log this as a communication with the Region as well.

From: Dills, Jeffrey S
Sent: Monday, November 14, 2011 12:02 PM
To: Malinowski, David A
Subject: NRC Security Agreement

Dave,

I have spoken to Dan Zielinski and Randy about the need for using Randy for Instruction in the 12-05 ILT Class.

Randy was signed on to the LOR security agreement to work on the LOR Exam and then onto the ILT 12-05 agreement as a precaution.

Based on his having no involvement with the 12-05 NRC or Audit exam I would like to remove him from the 12-05 NRC Security Agreement.

ILT 1205

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Marlena Howard	Info Rep Records	Marlena Howard	5-16-12	Marlena Howard	5-22-12	
2.							
3.							
4.							
5.							
6.							
7.							
8.			NA				
9.							
10.							
11.							
12.							
13.							
14.							
15.							

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1.	Raymond Torres	Performance Improvement Lead		2-Apr-2012		12-May-2011	
2.	Walter Miller	SRO		3/6/12	NA	NA	
3.	Ron Gilpin	RO		3/7/12			
4.	Dewayne Wilson	SRO		3/8/12			
5.	Edward Mack	RO		3/9/12			
6.	Ralph Hoffman	SRO		3/12/12	Ro-CR	5/12/12	
7.	Christopher L Vaughn	Asst Ops Supt / SRO		3/14/12	NA	NA	
8.	David Rann	SRO		3/19/12		NA	
9.	Mark McGee	SRO		3/19/12		NA	
10.	Gary Wynn	Instructor		3/29/12		5/21/12	
11.	Jeff Barker	Dept. Train Coord.		4-16-12		5-21-12	
12.	David H. Goins	Ops Training		4/16-12		5/21/12	
13.	Eric Freeman	Ops Training		4-16-12		5-21-12	
14.	Matthew Rencher	Ops Supt		4/19/12	NA	NA	
15.	Jeffrey S Dill	Ops Mgr Supv		5/7/12	NA	NA	

NOTES:

ILT 1205

ES-201 | **Examination Security Agreement** | **Form ES-201-3**

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5.	Aaron D Allday	R.O.		1-25-12	NA	NA
6.	Matthew R. Hughes	R.O		1-21-12		5-22-12
7.	Allan A Fisher	US		1-26-12		5-22-12
8.	Brian Maze	US		1/30/12		5/22/12
9.	Terry Wheeler Jr.	R.O		1-31-12		5/22/12
10.	Nathan Cooper	R.O		1/31/12		5/22/12
11.	Neel Shukla	US/SRO		2/3/12		5/22/12
12.	Eric Steele	SRO		2/4/12	NA	NA
13.	Jonathon Duke	RO		2/8/12		5/22/12
14.	David Pettit	SRO		2-9-12	NA	NA
15.	James Brian Fowler	RO	James Brian Fowler	2-9-12	NA	NA

NOTES:

Facility: Browns Ferry NPP | Date of Examination: 5/7/2012

Examination Level: RO/SRO | Operating Test Number: 1205

Administrative Topic (see Note)	Type Code *	Describe activity to be performed
Conduct of Operations SRO/RO A1a	D	2.1.31 Verification of Off Site Power Availability to 4.16 kV Shutdown Boards
Conduct of Operations RO A1b	P	2.1.19 ICS Logs
SRO A1b	N	2.1.18 NRC event notification due to HPCI valve failure
Equipment Control RO A2	N	2.2.12 Complete Primary Containment Nitrogen Leakage and Consumption Surveillance and evaluate Acceptance Criteria
SRO A2	N	2.2.12 Complete Primary Containment Nitrogen Leakage and Consumption Surveillance, evaluate Acceptance Criteria, and determine Technical Specifications
Radiation Control SRO/RO A3	N	2.3.11 Calculate Airborne Effluent Release Rate iaw 0-SI-4.8.b.1.a.1
Emergency Plan SRO A4	M	2.4.41 Classify an Event

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 (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)

(N)ew or (M)odified from bank (≥ 1)

(P)revious 2 exams (≤ 1; randomly selected)

(S)imulator

FINAL

Reactor Operator

1. Verification of Off Site Power Availability to 4.16 kV Shutdown Boards
   - Direct
   - 0-SR-3.8.1.A.1
   - Marks 500KV and 161KV Sources as Qualified. Completes Attachment 1 for Unit 3 accurately, records indicated voltages for step 7.2[5] and does not sign acceptance criteria, does not sign acceptance criteria for 7.4[1], and marks acceptance criteria satisfied on Surveillance Task Sheet as NO.
   - 2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup. Importance RO 4.6

2. ICS Logs
   - Previous
   - 2-SR-2 or 3-SR-2
   - Perform Operator logs using ICS screens in accordance with 2-SR-2 Instrument Checks and Observations for log tables 1.1, 1.6, 1.25, and 1.30. Verify acceptance criteria are satisfied in accordance with notes.
   - 2.1.19 Ability to use plant computers to evaluate system or component status. RO 3.9

3. Complete Primary Containment Nitrogen Leakage and Consumption Surveillance and evaluate Acceptance Criteria
   - New
   - 3-SI-4.7.A.2.A, Primary Containment Nitrogen Leakage and Consumption
   - Completes Surveillance and determines that it does not meet acceptance criteria. Determines that an LCO must be entered and informs the Unit Supervisor.
   - 2.2.12 Knowledge of surveillance procedures. RO 3.7

4. Calculate Airborne Effluent Release Rate iaw 0-SI-4.8.b.1.a.1
   - New
   - 0-SI-4.8.B.1.a.1, 2-EOI Appendix-12
   - Calculate Stack Release Rate and Total Site Release Fraction determine it does not meet Acceptance Criteria, and determine that vent flowrate must be reduced in accordance with 2-EOI Appendix-12.
   - 2.3.11 Ability to control radiation releases RO 3.8

FINAL

Senior Reactor Operator

1. Verification of Off Site Power Availability to 4.16 kV Shutdown Boards

   - Direct
   - 0-SR-3.8.1.A.1
   - Marks 500KV and 161KV Sources as Qualified. Completes Attachment 1 for Unit 3 accurately, records indicated voltages for step 7.2[5] and does not sign acceptance criteria, does not sign acceptance criteria for 7.4[1], and marks acceptance criteria satisfied on Surveillance Task Sheet as NO.
   - 2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup. Importance SRO 4.3

2. NRC event notification due to HPCI Valve Failure

   - New
   - NPG-SPP-03.5, Regulatory Reporting Requirements
   - Determine NRC event notification requirements, as the Shift Manager due to a failure of the HPCI Pump Injection Valve. Determines Technical Specification actions required.
   - 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. Importance SRO 3.8

3. Complete Primary Containment Nitrogen Leakage and Consumption Surveillance, evaluate Acceptance Criteria, and determine Technical Specifications

   - New
   - 3-SI-4.7.A.2.A, Primary Containment Nitrogen Leakage and Consumption
   - Completes Surveillance, recognizes that it does not meet acceptance criteria, and determines Technical Specification actions required.
   - 2.2.12 Knowledge of surveillance procedures. SRO 4.1

4. Calculate Airborne Effluent Release Rate iaw 0-SI-4.8.b.1.a.1

   - New
   - 0-SI-4.8.B.1.a.1, 2-EOI Appendix-12
   - Calculate Stack Release Rate and Total Site Release Fraction determine it does not meet Acceptance Criteria, and determine that vent flowrate must be reduced in accordance with 2-EOI Appendix-12.
   - 2.3.11 Ability to control radiation releases SRO 4.3

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5. Classify an Event

- Modified
- EPIP-1 and 3 Emergency Classification Procedure and Alert
- The event is classified as an Alert 1.1-A2 and the Initial Notification appendix is completed with the correct information. Event is classified within 15 minutes and Initial Notification is completed within 15 minutes of classification.
- 2.4.41 Knowledge of emergency action level thresholds and classifications. Importance SRO 4.6

FINAL

FINAL

Facility: Browns Ferry NPP Date of Examination: 5/7/2012

Exam Level: RO/SROI/**SROU** Operating Test No.: 1205

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	**Type Code***	**Safety Function**
a. Recirc Pump trip, power oscillations and loss of ability to insert rods require manual reactor scram	**A, N, S**	**1**
b. Remove RFPT 'A' from service	A, N, S	2
c. Rapid Depressurization with Turbine Bypass Valves EOI Appendix-11H	L, N, S	3
d. EHC Auto Cooldown	**L, N, S**	**4**
e. EOI Appendix-13 Emergency Venting Primary Containment	**A, EN, P, S**	**5**
f. OI-82 Parallel D/G with Off-Site Power	D, S	6
g. Off-Gas Post-Treatment Radiation HI-HI-HI	A, D, L, S	9
h. Returning an IRM to service from Bypass	D, L, S	7(RO only)
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Vent and Re-pressurize the Scram Pilot Air Header	D, E, R	1
j. 3-AOI-100-2, Attachment 3, Part A- Start RCIC from outside the Control Room	**D, E, R**	**7**
k. 0-SSI-2-1, Attachment 2	**A, D, E**	**8**

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6/2-3 **(5)(5)(3)**
(C)ontrol room	
(D)irect from bank	≤ 9/≤ 8/≤4 **(6)(5)(2)**
(E)mergency or abnormal in-plant	≥ 1/≥ 1/≥1 **(3)(3)(2)**
(EN)gineered safety feature	- / - /≥1 (control room system) **(1)(1)(1)**
(L)ow-Power / Shutdown	≥1/≥1/≥1 **(4)(3)(1)**
(N)ew or (M)odified from bank including 1(A)	≥ 2/≥ 2/≥1 **(4)(4)(2)**
(P)revious 2 exams	≤ 3/≤ 3/≤ 2 (randomly selected) **(1)(1)(1)**
(R)CA	≥1/≥1/≥1 **(2)(2)(1)**
(S)imulator	**(8)(7)(3)**

FINAL

Control Room Systems:

a. **Recirc Pump trip, power oscillations and loss of RPIS require manual reactor scram**

- Alternate Path/New/Simulator
- 2/3-AOI-68-1A, Recirc Pump Trip/Core Flow Decrease OPRMs Operable.
- 295001 Partial or Complete Loss of Forced Core Flow Circulation, AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Neutron monitoring. IMPORTANCE: RO 3.1 SRO 3.2
- The operator will perform the actions of 2/3-AOI-68-1A, Recirc Pump Trip/Core Flow Decrease OPRMs Operable. This will direct the operator to insert control rods to less than 92.5% load line to suppress power oscillations. After the operator has inserted at least one control rod, a failure of Rod Control Power will occur. Power oscillations will ramp in and the following alarm will come in, "OPRM Pre-Trip Condition," 2-9-5A window 18. With power oscillations present, the ARP will direct the operator to manually scram the reactor in these conditions.

b. **Remove RFPT 'A' from Service (Unit 2 or 3)**

- Alternate Path/New/Simulator
- 2/3-OI-3, Reactor Feedwater System
- 259001 Reactor Feedwater System A4.04 Ability to manually operate and/or monitor in the Control Room: System valves. IMPORTANCE: RO 3.1 SRO 2.9
- Operator will be directed remove the 2A/3A RFPT from service in accordance with 2/3-OI-3, Reactor Feedwater System. The operator will identify that the RFPT A discharge check valve fails to close and take actions in accordance with 2/3-OI-3

c. **Rapid Depressurization with Turbine Bypass Valves, EOI Appendix-11H (Unit 2 or 3)**

- Low Power/New/Simulator
- 2/3-EOI Appendix-11H, Alternate RPV Pressure Control Systems – Main Condenser
- 241000 Reactor/Turbine Pressure Regulating System A4.06 Ability to manually operate and/or monitor in the control room: Bypass valves IMPORTANCE: RO 3.9 SRO 3.9
- Operator is directed to perform operations necessary to establish the Main Condenser as an Alternate RPV pressure control system for Rapid Depressurization as directed by 2-EOI Appendix-11H

d. **EHC Auto Cooldown (Unit 2 or 3)**

- Low-Power/New/Simulator
- 2/3-OI-47, Turbine Generator System
- 239001 Main and Reheat Steam System A4.09 Ability to manually operate and/or monitor in the control room: Reactor Pressure IMPORTANCE: RO 3.9 SRO 3.3
- Operator is directed to commence an Auto Cooldown with EHC in accordance with 2/3-OI-47, Turbine Generator System. Operator must utilize the Human Machine Interface (HMI) of the EHC system to commence a cooldown as well as adjust final target pressure.

e. EOI Appendix-13 Emergency Venting Primary Containment (Unit 2 or 3)

- **A**lternate Path /**EN**gineered Safety Feature /**P**revious /**S**imulator
- 2/3-EOI Appendix-13, Emergency Venting Primary Containment
- 295024 High Drywell Pressure EA2.01 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell Pressure IMPORTANCE: RO 4.2 SRO 4.4
- Operator is directed to emergency vent Primary Containment to restore and maintain Drywell Pressure below 55 psig as directed by 2/3-EOI Appendix-13, Emergency Venting Primary Containment. Emergency Venting of the Suppression Chamber through the Hardened Wetwell Vents will be unsuccessful and the operator will vent the Drywell to Secondary Containment via Primary Containment vent duct failure.

f. OI-82 Parallel D/G with Off-Site Power Source (Unit 2 or 3)

- **D**irect from bank/**S**imulator
- 0/3-OI-82, Standby Diesel Generator System
- 264000 Emergency Generators (Diesel/Jet) A4.04 Ability to manually operate and/or monitor in the control room: Manual start, loading, and stopping of emergency generator IMPORTANCE: RO 3.7 SRO 3.7
- Operator will perform actions necessary to parallel the A/3A Diesel Generator (DG) with the Off-Site power source in accordance with 0/3-OI-82, Standby Diesel Generator System.

g. Off-Gas Post-Treatment Radiation HI-HI-HI (Unit 2 or 3)

- **A**lternate Path/**D**irect from bank/**L**ow power/**S**imulator
- 2/3-ARP-9-4C, Window 35 and 2/3-AOI-66-2, Offgas Post-Treatment Radiation HI-HI-HI
- 271000 Offgas System A2.04 Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Offgas system high radiation IMPORTANCE: RO 3.5 SRO 3.8
- Operator is directed to respond to Offgas Post-Treatment Radiation HI-HI-HI alarm in accordance with 2/3-ARP-9-4C Window 35. Operator will determine that the Offgas Isolation valve 2/3-FCV-66-28 failed to close; operator will close the valve then refer to 2/3-AOI-66-2, Offgas Post-Treatment Radiation HI-HI-HI, and perform the actions of 2/3-AOI-66-2 insert a core flow runback and reactor scram. Operator will then shut the MSIVs.

h. Returning an IRM to service from Bypass (Unit 2 or 3) (RO only)

- Direct from bank/Low-Power/Simulator
- 2/3-OI-92A Intermediate Range Monitors
- 215003 Intermediate Range Monitor System A2.02 Ability to (a) predict the impacts of the following on the IRM System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: IRM inop condition IMPORTANCE: RO 3.5 SRO 3.7
- Operator is directed to return a bypassed IRM to service in accordance with 2/3-OI-92A, Intermediate Range Monitors. Operator must fully insert the IRM and then range the IRM to the proper scale to prevent a half scram when un-bypassed.

In-Plant Systems:

i. Vent and Re-pressurize the Scram Pilot Air Header

- Direct from bank/Emergency or Abnormal In-Plant/RCA Entry
- 1-EOI Appendix-1B, Venting and Re-pressurizing the Scram Pilot Air Header
- 295015 Incomplete SCRAM AA1.01 Ability to operate and/or monitor the following as they apply to INCOMPLETE SCRAM: CRD hydraulics IMPORTANCE: RO 3.8 SRO 3.9
- Operator will simulate the component manipulations required to vent and subsequently re-pressurize the Scram Pilot Air Header as directed by 1-EOI Appendix 1B, Venting and Re-pressurizing the Scram Pilot Air Header.

j. 3-AOI-100-2, Attachment 3, Part A- Start RCIC from outside the Control Room

- Direct from bank/Emergency or Abnormal In-Plant/RCA Entry
- 3-AOI-100-2, Control Room Abandonment, Attachment 3, Part A
- 295016 Control Room Abandonment AA1.07 Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: Control room/local control transfer mechanisms IMPORTANCE: RO 4.2 SRO 4.3
- Operator will simulate performing operations necessary to align RCIC from outside the Control Room as directed by 3-AOI-100-2, Control Room Abandonment.

k. 0-SSI-2-1, Attachment 2

- Alternate Path/Direct from bank/Emergency or Abnormal In-Plant
- 0-SSI-2-1, Unit 2 Reactor Building Fire EL' 519 through 565 West of Column Line R11
- 600000 Plant Fire on Site AA2.16 Ability to determine and interpret the following as the apply to PLANT FIRE ON SITE: Vital equipment and control systems to be maintained and operated during a fire IMPORTANCE: RO 3.0 SRO 3.5
- Time Critical JPM for an operator to simulate performing designated steps of an SSI as directed by the Unit 2 Unit Supervisor and 0-SSI-2-1. Operator will have to simulate starting the 2D RHR pump using the manual breaker close pushbutton after the breaker fails to close.

Facility: **Browns Ferry** Date of Examination: **May 2012** Operating Test Number: **ILT 1205**

	1. General Criteria	Initials a	Initials b*	Initials 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	H	pbs
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	MDS	H	pbs
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	MDS	H	pbs
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	MDS	H	pbs
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	MDS	H	pbs
	2. Walk-Through Criteria	--	--	--
a.	Each JPM includes the following, as applicable: • initial conditions • initiating cues • references and tools, including associated procedures • reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee • operationally important specific performance criteria that include: - detailed expected actions with exact criteria and nomenclature - system response and other examiner cues - statements describing important observations to be made by the applicant - criteria for successful completion of the task - identification of critical steps and their associated performance standards - restrictions on the sequence of steps, if applicable	MDS	H	pbs
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	H	pbs
	3. Simulator Criteria	--	--	--
	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	MDS	H	pbs

	Printed Name / Signature	Date
a. Author	MICHAEL D. GIBSON / Michael D. Gibson	4/26/12
b. Facility Reviewer(*)	DOUGLAS G. HAKENEWERTH / Douglas G. Hakenewerth	4-26-12
c. NRC Chief Examiner (#)	RICHARD S. BALDWIN / Richard S. Baldwin	5/2/2012
d. NRC Supervisor	MARK FRANKE / Mark Franke	5/2/12

NOTE: * The facility signature is not applicable for NRC-developed tests.
Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.

FINAL

ES-301 **Simulator Scenario Quality Checklist** **Form ES-301-4**

Facility: **Browns Ferry** Date of Exam: **May 2012** Scenario Numbers: **1/3/5/9** Operating Test No.: **ILT 1205**

QUALITATIVE ATTRIBUTES		Initials a	Initials b*	Initials c#
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.			
2.	The scenarios consist mostly of related events.			
3.	Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)			
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.			
5.	The events are valid with regard to physics and thermodynamics.			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.			
8.	The simulator modeling is not altered.			
9.	The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			

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

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Facility: Browns Ferry NPP Date of Exam: May 7 - 18, 2012 Operating Test No.: ILT 1205

APPLICANT	EVENT TYPE	Scenarios 1 SRO	1 ATC	1 BOP	3 SRO	3 ATC	3 BOP	5 SRO	5 ATC	5 BOP	9 SRO	9 ATC	9 BOP	TOTAL	MINIMUM (*) R	I	U
RO	RX					2								1		1	
SRO-I ☑ #4	NOR							1						1		1	
	I/C					4,6		3,4,5,6						6		4	
SRO-U	MAJ					7		7						2		2	
	TS							3,5						2		2	
RO	RX					2								1		1	
SRO-I ☑ #5	NOR							1						1		1	
	I/C					4,6		3,4,5,6						6		4	
SRO-U	MAJ					7		7						2		2	
	TS							3,5						2		2	
☑ RO #1	RX					2								1	1		
SRO-I	NOR			1						1				2	1		
	I/C			4,6		4,6				4,6				6	4		
SRO-U	MAJ			7		7				7				3	2		
	TS																
RO ☑ #2	RX								2					1	1		
SRO-I	NOR			1			1							2	1		
	I/C			4,6			3,5		3,5					6	4		
SRO-U	MAJ			7			7		7					3	2		
	TS																
RO ☑ #3	RX								2					1	1		
SRO-I	NOR			1			1							2	1		
	I/C			4,6			3,5		3,5					6	4		
SRO-U	MAJ			7			7		7					3	2		
	TS																
RO ☑ #4	RX								2					1	1		
SRO-I	NOR						1							1	1		
	I/C						3,5		3,5					4	4		
SRO-U	MAJ						7		7					2	2		
	TS																

Instructions:

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

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

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.

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Facility: Browns Ferry NPP | Date of Exam: May 7 - 18, 2012 | Operating Test No.: ILT 1205

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

FINAL

ES-301, Rev. 9 **Competencies Checklist** **Form ES-301-6**

Facility: **Browns Ferry** Date of Examination: **May 2012** Operating Test No.: **ILT 1205**

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

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

Instructions:

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

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{PRIVATE }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	3	4	3	N/A			3	3	N/A		4	20	3	4	7
	2	1	2	1				1	1			1	7	1	2	3
	Tier Totals	4	6	4				4	4			5	27	4	6	10
2. Plant Systems	1	3	3	2	2	3	2	3	2	2	2	2	26	2	3	5
	2	2	1	1	1	1	1	1	1	1	1	1	12	0 / 1	2	3
	Tier Totals	5	4	3	3	4	3	4	3	3	3	3	38	3	5	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7
		2			2			3			3			1	2	2	2	

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

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295001AA2.03	Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	3.3	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Actual core flow.....
295003AK3.04	Partial or Complete Loss of AC / 6	3.0	3.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Ground isolation.....
295004AK1.02	Partial or Total Loss of DC Pwr / 6	3.2	3.4	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Redundant D.C. power supplies: Plant-Specific.....
295005G2.2.39	Main Turbine Generator Trip / 3	3.9	4.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of less than one hour technical specification action statements for systems. ?
295006AA2.03	SCRAM / 1	4.0	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Reactor water level.....
295016AA1.04	Control Room Abandonment / 7	3.1	3.2	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	A.C. electrical distribution.....
295018AK1.01	Partial or Total Loss of CCW / 8	3.5	3.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Effects on component/system operations.....
295019AA1.02	Partial or Total Loss of Inst. Air / 8	3.3	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Instrument air system valves: Plant-Specific.....
295021AK3.03	Loss of Shutdown Cooling / 4	2.9	2.9	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Increasing drywell cooling.....
295023AK2.05	Refueling Acc Cooling Mode / 8	3.5	3.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Secondary containment ventilation.....
295024EK2.05	High Drywell Pressure / 5	3.9	4.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RPS.....

IN

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295025EK3.02	High Reactor Pressure / 3	3.9	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Recirculation pump trip: Plant-Specific.....
295026EK1.02	Suppression Pool High Water Temp. / 5	3.5	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Steam condensation.....
295028EK2.01	High Drywell Temperature / 5	3.7	4.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Drywell spray: Mark-I&II.....
295030G2.2.22	Low Suppression Pool Wtr Lvl / 5	4.0	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of limiting conditions for operations and safety limits.
295031EK2.15	Reactor Low Water Level / 2	3.2	3.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	A.C. distribution: Plant-Specific.....
295037EA2.06	SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1	4.0	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Reactor pressure.....
295038G2.4.46	High Off-site Release Rate / 9	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify that the alarms are consistent with the plant conditions.
600000G2.2.40	Plant Fire On Site / 8	3.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to apply technical specifications for a system.
700000AA1.05	Generator Voltage and Electric Grid Distrurbancecs	3.9	4.0	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Engineered Safety Features

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295007AA1.05	High Reactor Pressure / 3	3.7	3.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Reactor/turbine pressure regulating system.....
295008AK2.10	High Reactor Water Level / 2	2.7	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RHR (ability to drain): Plant-Specific.....
295022G2.4.1	Loss of CRD Pumps / 1	4.6	4.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of EOP entry conditions and immediate action steps.
295029EK2.09	High Suppression Pool Wtr Lvl / 5	3.1	3.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RCIC: Plant-Specific.....
295033EK3.01	High Secondary Containment Area Radiation Levels / 9	3.3	3.5	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Emergency depressurization.....
295034EK1.02	Secondary Containment Ventilation High Radiation / 9	4.1	4.4	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Radiation releases.....
295036EA2.03	Secondary Containment High Sump/Area Water Level / 5	3.4	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Cause of the high water level.....

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
203000K2.01	RHR/LPCI: Injection Mode	3.5	3.5	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Pumps
203000K3.04	RHR/LPCI: Injection Mode	4.6	4.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Adequate core cooling
205000A2.06	Shutdown Cooling	3.4	3.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	SDC/RHR pump trips
206000A2.08	HPCI	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	†High suppression pool temperature: BWR-2,3,4
209001G2.4.46	LPCS	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify that the alarms are consistent with the plant conditions.
211000K2.01	SLC	2.9	3.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	SBLC pumps
212000A1.01	RPS	2.8	2.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	RPS motor-generator output voltage
215003G2.4.2	IRM	4.5	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
215003K2.01	IRM	2.5	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	IRM channels/detectors
215004A1.04	Source Range Monitor	3.5	3.5	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Control rod block status
215005K4.01	APRM / LPRM	3.7	3.7	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Rod withdrawal blocks

IG

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
217000K5.07	RCIC	3.1	3.1	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Assist core cooling
218000A4.07	ADS	3.5	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	ADS valve acoustical monitor noise: Plant-Specific
223002K6.03	PCIS/Nuclear Steam Supply Shutoff	2.9	3.1	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Process radiation monitoring system
239002K1.07	SRVs	3.6	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Suppression pool
239002K5.04	SRVs	3.3	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Tail pipe temperature monitoring
259002A1.05	Reactor Water Level Control	2.9	2.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	FWRV/startup level control position: Plant-Specific .
259002K4.02	Reactor Water Level Control	2.8	3.0	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Bypassing of the RWM: Plant-Specific
261000K1.03	SGTS	2.9	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Suppression pool
262001A3.01	AC Electrical Distribution	3.1	3.2	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Breaker tripping
262002K3.17	UPS (AC/DC)	2.9	3.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Process monitoring: Plant-Specific
263000K1.03	DC Electrical Distribution	2.6	2.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Battery ventilation

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
264000A3.05	EDGs	3.4	3.5	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Load shedding and sequencing
264000K5.06	EDGs	3.4	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Load sequencing
300000A4.01	Instrument Air	2.6	2.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Pressure gauges
400000K6.07	Component Cooling Water	2.7	2.8	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Breakers, relays, and disconnects

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KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
201002G2.1.25	RMCS	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to interpret reference materials such as graphs, monographs and tables which contain performance data.
201006A3.01	RWM	3.2	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	System window and light indication: P-Spec(Not-BWR6).
214000A4.02	RPIS	3.8	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Control rod position
219000K3.01	RHR/LPCI: Torus/Pool Cooling Mode	3.9	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Suppression pool temperature control
230000K2.02	RHR/LPCI: Torus/Pool Spray Mode	2.8	2.9	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Pumps
256000K1.18	Reactor Condensate	2.9	3.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Circulating water system
259001A2.07	Reactor Feedwater	3.7	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Reactor water level control system malfunctions
271000A1.15	Offgas	2.7	2.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Steam supply pressures
272000K6.02	Radiation Monitoring	2.5	2.7	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	D.C. power
288000K4.03	Plant Ventilation	2.8	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Automatic starting and stopping of fans
290001K5.01	Secondary CTMT	3.3	3.4	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Vacuum breaker operation: BWR-4

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KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
290003K1.03	Control Room HVAC	2.8	2.9	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Remote air intakes: Plant-Specific

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.15	Conduct of operations	2.7	3.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of administrative requirements for temporary management directives such as standing orders, night orders, Operations memos, etc.
G2.1.38	Conduct of operations	3.7	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the stations requirements for verbal communication when implamenting procedures
G2.2.3	Equipment Control	3.8	3.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	(multi-unit license) Knowledge of the design, procedural and operational differences between units.
G2.2.6	Equipment Control	3.0	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for making changes to procedures
G2.3.15	Radiation Control	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation monitoring systems
G2.3.4	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation exposure limits under normal and emergency conditions
G2.3.5	Radiation Control	2.9	2.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to use radiation monitoring systems
G2.4.2	Emergency Procedures/Plans	4.5	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.
G2.4.22	Emergency Procedures/Plans	3.6	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.
G2.4.6	Emergency Procedures/Plans	3.7	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge symptom based EOP mitigation strategies.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295001AA2.04	Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4	3.0	3.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Individual jet pump flows: Not-BWR-1&2.....
295005AA2.03	Main Turbine Generator Trip / 3	3.1	3.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Turbine valve position.....
295018G2.4.9	Partial or Total Loss of CCW / 8	3.8	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.
295021AA2.05	Loss of Shutdown Cooling / 4	3.4	3.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Reactor vessel metal temperature .....
295026G2.1.30	Suppression Pool High Water Temp. / 5	4.4	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate and operate components, including local controls.
295028G2.2.25	High Drywell Temperature / 5	3.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
295038G2.2.12	High Off-site Release Rate / 9	3.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of surveillance procedures.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
295008G2.4.18	High Reactor Water Level / 2	3.3	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the specific bases for EOPs.
295013AA2.02	High Suppression Pool Temp. / 5	3.2	3.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Localized heating/stratification.....
295020G2.2.37	Inadvertent Cont. Isolation / 5 & 7	3.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to determine operability and/or availability of safety related equipment

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KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
206000A2.17	HPCI	3.9	4.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	†HPCI inadvertent initiation: BWR-2,3,4
211000G2.2.38	SLC	3.6	4.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of conditions and limitations in the facility license.
215003G2.1.27	IRM	3.9	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system purpose and or function.
223002G2.4.20	PCIS/Nuclear Steam Supply Shutoff	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of operational implications of EOP warnings, cautions and notes.
239002A2.04	SRVs	4.1	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	ADS actuation

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
202002A2.03	Recirculation Flow Control	2.6	2.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loss of D.C.
214000G2.2.42	RPIS	3.9	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to recognize system parameters that are entry-level conditions for Technical Specifications
233000G2.2.39	Fuel Pool Cooling/Cleanup	3.9	4.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of less than one hour technical specification action statements for systems.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.17	Conduct of operations	3.9	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to make accurate, clear and concise verbal reports.
G2.2.14	Equipment Control	3.9	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the process for controlling equipment configuration or status
G2.2.4	Equipment Control	3.6	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.
G2.3.12	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiological safety principles pertaining to licensed operator duties
G2.3.15	Radiation Control	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation monitoring systems
G2.4.31	Emergency Procedures/Plans	4.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of annunciators alarms, indications or response procedures
G2.4.37	Emergency Procedures/Plans	3.0	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the lines of authority during implamentation of an emergency plan.

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Tier / Group	Randomly Selected K/A	Reason for Rejection
RO 1/1	295003 AK3.04	Rejected due to maintenance function at Browns Ferry. Replaced with AK3.06 Containment Isolation
RO 1/1	295005 G2.2.39	Rejected due to NO one hour tech spec actions in relation to Turbine Trip for ROs. Replaced with G2.2.44 Ability to interpret control room indications to verify the status and operation of a system,...
RO 1/1	295021 AK3.03	Rejected due to no guidance at Browns Ferry to increase Drywell Cooling during a loss of shutdown cooling. Replaced with AK3.05 Establishing alternate heat removal paths
RO 2/2	272000 K6.02	Rejected due to no significant relationship at Browns Ferry between Radiation Monitors and DC Power. Replaced with K6.03 AC power

FINAL

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

Facility: Browns Ferry Date of Exam: May 18, 2012 Exam Level: RO ☒ SRO ☒

Item Description				Initial a	Initial b*	Initial c#
1.	Questions and answers are technically accurate and applicable to the facility.			MDS	H	pab
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.			MDS	H	pab
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401			MDS	H	pab
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	H	pab
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: X the audit exam was systematically and randomly developed; or ___the audit exam was completed before the license exam was started; or ___the examinations were developed independently; or X the licensee certifies that there is no duplication; or ___other (explain)			MDS	H	pab
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: 24% / 12% 18 / 3	Modified: 28% / 16% 21 / 4	MDS	H	pab
		New: 48% / 72% 36 / 18				
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: 46.7% / 32% 35 / 8	C/A: 53.3% / 68% 40 / 17	MDS	H	pab
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.			MDS	H	pab
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	H	pab
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.			MDS	H	pab
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	H	pab

	Printed Name / Signature	Date
a. Author	MICHAEL D. GIBSON / Michael D. Gibson	4/30/12
b. Facility Reviewer (*)	DOUGLAS G. HAKENEWERTH / Douglas G. Hakenewerth	4-30-12
c. NRC Chief Examiner (#)	RICHARD S. BALDWIN / Richard S. Baldwin	5/2/2012
d. NRC Regional Supervisor	MARK FRANKE / Mark Franke	5/2/2012

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.

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Written Examination Review Worksheet

Form ES-401-9

BROWNS FERRY NUCLEAR PLANT 2012-301

50 – 259, 50 – 260, 50 - 296

45 Day Review, Submitted March 3/26/2012

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 the question source: Bank (B), Modified (M), or New (N). Check that Modified (M) 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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
1	H	2												M	S	295001AA2.03, Memory, Used on Dresden 04 exam, Modified 1. KA appears to match 2. Meets Modified requirements. 3. Question is OK Monday, April 23, 2012 ok
2	H	3												M	E	295003AK3.06, • IS it possible to have the question reference a procedure to accomplish this action? If so, add the appropriate procedure number, as well as, the noun name of the procedure? How are the applicants expected to know how to do this? 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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
															S	explain. • Meets the modified requirements • KA appears to be ok. Monday, April 23, 2012 • OK as changed, • Appears to be ok
3	M	3				X								M	U S	295004AK1.02, • States it is modified, do not believe that. Ask licensee to explain. • KA appears to match. • Previously used NRC 1108# 3, how was this selected? Was it under the same KA? • Package states this was on another exam, when? • The question was asked before, is this knowledge an RO is expected to know from memory? Have OPS accept if this is correct. • I am not sure that distractor C is totally INCORRECT. This needs to be discussed. The way it is worded is true. Discuss with licensee. • Considered a U because of two potential answers, even though it has been used before. Monday, April 23, 2012 • Exact same KA was used in this other examination idenitified above. • No other KAs that came up and was the only one the licensee had in their bank. • I miss-read this question, there was a # 3 and #2 in c and d respectively. Question should not have been identified as a U to begin with. • The question was not changed.
4	H	3												M	E S	295005G2.2.44, • Previously used NRC -0610 #43. How was this selected? What KA was it under in the other exam? AA104 • KA appears to match. • States this is CA, how is it CA? IF you have not memorized how this works how do you figure it out? Discuss with licensee. Not convinced that this is a CA question. • Discuss with licensee when this change was made, when was 0610 # 43 on an exam? How long has this DCN been in effect. Monday, April 23, 2012

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
																• The KA that was selected for the prior test was AA1.04. • 2006 exam #43. • DCN came into effect after 2006. • Licensee says there is a lot they have to think about. OK • Leave as a CA.
5	H	3												NEW	S	295006AA2.03, • Need the licensee to show me how the answer is identified. • Why is it necessary to identify the number of inches + 5 or + 10 have licensee explain. • Reference material, where does it come from? • KA appears to match Monday, April 23, 2012 • Understand how to do this now. • Material comes from EOI-1. • OK as is .
GENERIC COMMENTS: • The reference material does not show what procedures this information comes from, it only has information identified necessary to identify the answer. This while helps with the question, if more reference information is necessary the reviewer has no idea where the author obtained this information. • Need to ensure that all distractors have the same punctuation, for example, question #7, distractor B second part has a period. • The number of NRC previous examination questions for the first 8 questions, there are 3 previously used. • During the Atlanta review week, April 23, please bring the validation results for EACH question, not just the ones identified with comments.																
6	H	2				X								NEW	U	295016AA1.04, • KA appears to match • Do not believe that second part of Both distractors B and D make any sense. Why would anyone think that after all of the procedure was completed that a manual synchronization would be necessary? Ask licensee why this would be plausible. I do not believe it is plausible. • Discuss with licensee the results of the validation examinations, was either distractor B or D selected? How many people validated this exam and how many selected the incorrect

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
															S	answer. Monday, April 23, 2012 • Change the stem to have the terminology so that both AOI-100-2 procedures were used vice 1/2 • Removed the word appropriate actions • Also removed the reference to the Unit 1 and 2 DG to the operating DGs. • Changed minor
7	H	2-3				X								Bank	U S	3295018AK1.01, Previous NRC exam 1108 #7 • The information provided states that 3-FCV-070-048 will close with LESS than. The actual distractor states when pressure reaches 57 psig. This is different and needs to be resolved. Discuss with licensee how to write this. I do not want to use the SET POINT. • Answer explanation is not clear in that, it states that "need no RBCCW ....110F." What does this mean? • I do not buy the 100ºF as a distractor. • Why are you using the 57 psig instead of the 50 psig? The 57 psig is local at the discharge pressure gauge. Is this something that the OPERATIONS Supervisor, or his designee has approved or expects applicants to be required knowledge? It is very important to have the OPS Sup. Agree with the questions. • Question is being evaluated as a potential U due to the distractor issues. Discuss with licensee. • What are the stats for this question for validators? Monday, April 23, 2012 • Changed to 49 psig other 105.
8	F	1-2												Bank	S S	295019AA.102, Previous NRC 1006 #52 • This questions answer seems to POP out of the distractors. It is obvious based on the available distractors. How about making the meter read about 28 and ask which one of the following happens first. • KA appears to match. • Question Appears to be ok. Think about the above. Monday, April 23, 2012 • Was a 3000XXX not sure. But it was different. • The question was changed to suggestion • Also modified.

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Written Examination Review Worksheet

Form ES-401-9

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
9	H	2-3				X								Bank	S	295021AK3.01, Previous NRC 1108 #9 • How are these questions being selected? Are they the exact KA or are they other KAs that could fit into the sample plan? Discuss with licensee to see how there are so many questions so far from NRC exams. Need to ensure there are fewer than 4 on the RO and 2 on the SRO exam from the last 2 NRC exams. Some of the above questions came from older exams. (• KA appears to match • Is there someplace that ACTUALLY states that the reason that RWCU BLOWDOWN flow is to reduce less than 200 F. The reason in A states that the procedure takes steps to put Natural circulation in service IAW AOI-74-1. This is confusing to me. Have licensee explain. No procedures were sent to look at lesson plans. • Evaluated as Sat however, need to see more references Monday, April 23, 2012 • KA was 295021AK3.04 so it was different. • Licensee states there are 4 RO and 0 SRO repeat questions. • Agree with licensee that natural circulation does not occur.
10	F	2-3												Bank	S	295023AK2.05, Bank, Audit of 0707 # 48 • In each distractor the exact wording is used to describe WHAT happens to the Standby Gas Treatment System. Since it appears in all distractors it can be either put in the stem or removed. All this does, the way it is now, is to make the reading assignment harder. Recommend put in the stem. • KA appears to match • Question appears to be ok. Monday, April 23, 2012 • Standby gas statement removed from each distractor. • Ok as changed.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
11	H	3												NEW	S	295024EK2.05, NEW • KA appears to match • Take the word "has" in part 2 of each distractor and put it in the stem. Each should then read NOT occurred or occurred. • Should the T and S in technical specifications be caps in the stem? • Question appears to be ok Monday, April 23, 2012 • Removed has and put • Capitalized T and S.
12	M	2-3												Bank	E S	295025EK3.02, Previous NRC, 9 Mile 2007 #60, Bank • KA appears to match • Is there a procedure that we can link this to, i.e. TSs? If there is, need to add this IAW to the stem so the applicant is assured to where his standard is coming from. • I believe the entire first part of the question with the data could be removed because this can be covered up and just ask the question that would remain. Which one of the following is the reason or basis for the high pressure automatic recirculation pump tirp? Discuss with licensee. Monday, April 23, 2012 • Removed all the extra data, also started the stem with IAW TS, WOOTF is the reason for…… • OK as changed
13	F	2-3				X								NEW	E S	295026EK1.02, NEW, • KA appears to match • I believe if the applicants can eliminate distractor A then they will for the same reason eliminate for this reason, I do not believe this is plausible. We need to find some other distractor for A. Monday, April 23, 2012 • Changed distractor A. Was not creditable • OK as is.

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
14	F	2-3				X								Bank	U S	295028EK2.01, Bank, Previous NRC exam 1006 #14 • How many available questions in the KA are available? How was the NRC exam selected? Licensee to explain. • I am not sure which is correct when typing the degree symbol after a number. Do you put a space like this 280 °F? Or do you type the temperature like this 280° F? I think this is done as shown in the second case with the degree symbol next to the number and then a space. Just make it consistent in the test. • Is the answer TOTALLY correct? It does not seem so from the exam material. The references provided state is a combination of evaporative and convective heat transfer. • In the STEM, we are using teaching in that we TELL the applicants that the conditions are SUPERHEATED. This should not be in the stem. The applicants should have to determine it from the steam tables if they choose to identify that information. • In the first bullet, we tell the applicant that it is a high pressure steam leak, why is that necessary? We should ONLY say what they would see. They would see temp and pressure increasing and the actual numbers. Again there is a lot of teaching in this question. Remove what is teaching. • Do we need to change the stem to ask for the MAJOR type of heat transfer since both are occurring? Discuss with licensee. There are numerous issues with this question we need to remove all the information that teaches the applicants. • KA appears to match. Monday, April 23, 2012 • KA exactly the same. However, it is greater than 2 tests ago. • OPS rep wants Curve 5 of the EOI for this question. I do not believe it is necessary. • Teaching was removed from the stem. • Appears to be ok. • Superintendent Operations said does not need curve 5
15	H	3												Modified Bank NRC	E	295030G2.2.22, Previous NRC exams 2004 #74, Modified • Meets the modified criteria • KA appears to match • IS this a set point of a 2 hour TS that Operations Management EXPECTS an RO to have knowledge of? I want to make sure

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			that the OPS MGT. expects an RO to have this knowledge. Is there a learning objective? Discuss with licensee. This information is ABOVE the line. SO it should be ok. • I would like to have two numbers below and two numbers that cause you to be in the TS. • Underline the work or emphasize using bold or however you decide to do this. • Otherwise it will be ok. • Do not agree with analysis, this is memorization of a setpoint and matching to the answer. If it is a Higher level question it is a very low one. Monday, April 23, 2012 • Bolded earliest. • Changed to memory • YES it is RO knowledge. • Changes look good. • Ok as is.
16	H	3												NEW	S	295031EK 2.15. New C A • Stem has periods at end of information statements: be consistent. • KA appears to match • Question appears to be ok.
17	H	2-3				X								Mod Prior NRC	E U S	295037E2.06, Modified NRC 1102 # 17, • KA appears to match, however, would like another examiner to review this. • Ask licensee to explain how D is plausible. • Question appears to be ok • May be more memorization than higher level. Discuss with another examiner prior to having a discussion with licensee. Monday, April 23, 2012 • THIS does not meet the KA. Tuesday, April 24, 2012 • Replacement does not totally meet the test requirements. Wednesday, May 02, 2012 • Replace question meets the KA • Question appears to be ok.

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
18	H	3				X								NEW	U S	295038 G2.4.46, New, Memory • Change the stem to read like all of the other questions, Which one of the Following (WOOTF) • KA appears to match • Is this something you would expect an RO to have to know from memory, if you give the procedure it will be a direct look up. Have OPS Manager verify that this is RO expected knowledge. • System wise, why would anyone select this distractor? Is this Plausible? Do not believe so. • How would this be even remotely has a connection? Plausible? Not sure why! Monday, April 23, 2012 • YES, an RO is expected to know this. • ANALYSIS had applicants select only A and B. Pre and post OG • This did not discriminate anything with distractor C and D. • Changed C and D to read, • Changed to read, stack Gas Radiation High, and Stack Gas Radiation High High.
19	H	2-3												NEW	U	6000000 G2.2.40, New, • When answering this question is it NECESSARY that we provide the references the question calls for? This will cause this question to become a direct look up. • The just of this question is to determine how many fire pumps are available and what to do about it. If the applicants figure how many pumps are available then they can choose the correct answer based on that. • The information provided does not appear to identify that the DFP is not meeting its surveillance requirements, is an RO or SRO for that matter expected to identify that the discharge head of 200 is not 300 psig? What I just said was incorrect in that page 57 of the reference provided identifies this information. • The question as it sits is a direct look up and not acceptable. • Question needs to be changed or no reference material, then the applicants are guessing the second part, of what to do about the situation. • Discuss this with 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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
															S	• KA appears to match. Monday, April 23, 2012 • RO should know where to go and how to find. However, there are a number of RO and SRO applicants did not answer this correctly. This question did not take the time to answer it correctly. Validation 1 was 75% validation 2 was 20%. • Will ask Matt Rasmussen, Operations Superintendent. Tuesday, April 24, 2012 • Superintendent of Ops states ROs should be able to do this task.
20	H	3												NEW	E S	700000AA1.05, NEW • KA appears to match. • The initial conditions have a lot of systems in the A train running or being tested, is this something that is allowed or even done? Ask licensee to make sure we do not violate plant procedures. • A diagram of the electrical system would have been very helpful. Ask licensee to add one to this question that shows how the system will work. • What position is the 3A DG, local? • Was this event validated on the Simulator to ensure all the answers are incorrect? If not, please do so. • The stem states that a GRID disturbance causes the two indicated annunciators to alarm, is this totally true, is it necessary it was due to grid disturbance? It looks like the second alarm could be attributed to the Grid Disturbance. • I have a lot of questions above that need to be answered before I will approve the question. Discuss with licensee. Tuesday, April 24, 2012 • Changed the stem a little and removed extraneous information. • Would not have all that equipment running. See changes • OK as changed.
21	H	2												Bank	E/S	295007AA1.05, Bank • KA appears to match • Stem identifies a MSIV closure, results in Rx Scram, this is teaching, if someone did not know this. • The question does not identify a time element to identify which mode is in service. Is it necessary to have this in here? • The answer state when pressure decreases below 700 psig,

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
															S	well that is going to happen pretty fast with MSIVs going closed • Otherwise appears to be ok. Tuesday, April 24, 2012 • Removed MSIVs cause a scram. • Need to add the power level to begin with. NOT needed • Removed AT in end of second • Ok as changed.
22	F	2-3												NEW	S	295008AK2.10, New, F • KA appears to match • Question is considered sat.
23	H	2												NEW	E/S S	295022G2.4.1, New • KA appears to match. • Reminder that each distractor either has a period or not. The answer, Distractor C, and D in this case do not have a periods. Just be consistent. • The question does not appear to be very difficult, I knew it without even knowing the procedure. • Question appears to be ok Tuesday, April 24, 2012 • Changed ok
24	H	3												NEW	S	295029EK2.09, New, Higher • KA appears to match • A simple flow diagram could have been placed in the reference for this question. Have licensee show diagram so I can learn the system components. • Otherwise appears to be ok.
25	H	2-3												NEW	E/S	295003EK3.01, New, F • KA appears to match. • While distractor D appears to be the correct answer, I am not sure that A is totally incorrect. Have licensee explain why A is not correct, if you have two, just like D, or more, why would you not depressurize? I do understand that you would scram? Explain • Otherwise this may be ok.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
															S	Tuesday, April 24, 2012 • Changed A to add can be isolated from a primary system and look like D • Changed all the distractors to add in any one • Also changed the stem to add MINIMUM. • See question for complete change.
26	H	3												MOD BANK	E S	295034EK1.02, Modified Oyster Creek NRC exam 2008 # 26, Modified Bank • I really do not understand how if none of the systems are unchanged how can the plant stack flow rate go up or down if nothing in the control room changed. I know the flow rates of Fuel and Reactor zone isolate. Where do these two zones normally discharge to? • While question # 10 does not directly relate to this question, it does help identify what happens to the system when you get the refuel zone gets a high rad alarm. • This question could be a U if we count the first part of A and B not plausible. I need another Chief Examiner to review before I send to licensee. • Meets the modified requirements. Tuesday, April 24, 2012 • Question 10 Was changed and now is ok • The SBGT starts and adds to the Stack, • Changed increase to rise and lower for decreases. • Part A of A and B are ok. Didn't realize that SBGT did not affect the CR but did the stack. • Will take out the last annunciator and add an exact value of what number we want to have in there. The alarm value is 73 mr/hr and will have this as 85 mr/hr.
27	M	2-3												NEW	S	295036EA2.03, New, Memory • KA appears to match. • Question appears to be ok.
28	H	3												NEW	S	203000K2.01, NEW, • KA appears to match • Question appears to be ok.
29	H	3												MODIFIED BANK	S	203000K3.04, MODIFIED BFN 1102 #28, • KA appears to be

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
														NRC		• How was this question selected? Discuss with licensee. • The curve that is provided, is this the same as the Post Accident Range listed in the question? If it is, why not list it in the question that way? Ask Licensee. • Is the reference that is going to be provided going to be a color copy so the applicants know which line is which? • Otherwise appears to be ok. Tuesday, April 24, 2012 • The KA is an exact match. Do not know how many questions were in this area. • The handout will Be a color copy. Asked for a handout for table of contents. • Meets the modified requirements. Changed answer as well as the information in the stem.
30	H	3												Mod Bank	S	205000A2.06, Modified Bank • KA appears to match • Which section of the procedure is this referring to? • The question was modified however minimally • What is the question actually asking to just align Loop II and not start loop II? This is kind of confusing. What did validation identify any issues with this question? • Considered to be ok. Tuesday, April 24, 2012 • Group II isolation signal that causes the isolation. Have to realign the system. • Had to change the stem to establish the Minimum action(s) to establish injection.
31	F	2-3												NEW	S	206000A2.08, NEW, Memory • KA appears to match. • Appears to be ok.
32	H	3												Pre NRC Exam	S	209001G 2.4.46, Previous NRC Exam 1006 #32 • How was this selected? There a lots of NRC previous exam questions. Were these the same KA? • KA appears to match • Appears to be ok.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			Tuesday, April 24, 2012 • K1.08, was used for this. This is 3 exams ago. • Roman Numerals or Arabic numbers be consistent.
33	F	2-3												Bank	E S	211000K2.01, BANK BFN 0707 Audit #4 • KA appears to match • Is the statement redundant in the first line of the stem, in that you could say a lockout on the 4KV Shutdown Board A, has occurred. Is this correct? • Why is D plausible, when would a fault on one bus remove BOTH trains of SLC pumps? Tuesday, April 24, 2012 • be consistent with note about operator actions. Bold. Caps whatever? • Changed stem. • Look at the question for changes. • OK as changed.
34	H	3												NEW	S? S	212000A1.01, NEW, CA • KA appears to match • Need to have licensee explain how this works. • Is it necessary to say that voltage lowered to 107 Volts for 4 seconds, can you say that it was noted that motor Generator B • I do not remember enough about the system, need help to understand the answer. • Will consider the question ok until I understand the question better. Tuesday, April 24, 2012 • Want to change the 4 seconds to be greater than the TS value. Changed to 5 seconds, removed the word lower and added returned to normal. • Changed size of picture
35	H	3												NEW	E	215003G2.4.2, NEW. H • One of the other distractors A or B, I would like the second part of D to be the second part of one of those two. Not sure why you decided to group the second part of A and B the way you did. Need to discuss why not use the second part in D again? • What are the units for the IRM reading? In the stem it is just 40 to 80? Are these amps? I believe these units should be put in. • What is the power level at Range 5. Explain how the applicant

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
															S	will determine how this is obtained. • I wanted to make sure that Operations Management agrees with the decision that the RO is required to know this information. I agree it is information the RO needs to know however, just want verbal buy in from Operations. Tuesday, April 24, 2012 • Identified that a scram occurred occurred and did not. This is teaching. Added • Scale on IRMs no units just percent. • Changed the answer to continue from enter. This is the way it is directed.
36	H	2												BANK	S	215003K2.01, Bank, Higher, • While identified as a higher level question, it is minimally higher. The question can be answered from RPS knowledge initially. • DID ANYONE during the validation get this one incorrect? Licensee to provide data on question as well as ALL other questions. • Otherwise appears to be ok Tuesday, April 24, 2012 • There were a number of individuals that missed this question. They answered all over the board. • OK as is.
37	F	3												Bank Prior NRC	S	215004A1.04, Prior NRC 0801 #6, Fundamental • Question # 36 and #37 are very similar, in 36 the individual is required to identify from conditions what action. • I would like to ask the licensee to identify if there are any problems asking both of these questions. Does anyone else feel this is an issue? • Discuss with licensee • Trans fix our knives in the same direction?? • KA appears to match Tuesday, April 24, 2012 • One SRMs and one IRMs, no conflict. • Do not know what the statement concerning knives is referring to.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
38	H	2-3												Bank PRIOR NRC	S	215995K4.01,Bank NRC 1006 # 38, • KA appears to match • Question appears to be ok. Tuesday, April 24, 2012 • Exactly the same KA. •
39	H	2-3												Bank Perry NRC exam	U S	217000K5.07, Bank, Perry NRC 2010 # 49 • KA DOES NOT MATCH – the KA talks about RCIC assisting with CORE COOLING. • The question talks about an annunciator that would identify most immediate threat to RCICs ability to MAINTAIN REACTOR LEVEL. • Assist in core cooling does not equate to Maintain reactor water level. • Question needs to be replaced. Tuesday, April 24, 2012 • RCIC design is by submergence and does not have ECCS design • Assist in core cooling is maintaining level. • Should not have identified as a U to begin with. • KA does appear to match after discussion with the licensee. • Question appears to be ok. • Changed end of the stem to maintain adequate core cooling. Vice maintain reactor level.
40	H	2				X								NEW	E S	218000A4.07, NEW, Higher. • KA appear to match • Question the way it is written can be considered giving away the answer. In that, the distractors CYCLE ONLY ONE SRV Therefore, change the distractors to identify SRV(s). Attempt to close the SRV(s), VICE AN SRV. It really makes sense to do this for distractors C and D. Because they have three SRVs • Distractor analysis for distractor C is NOT correct, first part is NOT correct, but states it is correct. • Distractor D second part deals with a single open position the way it is written, this needs to be fixed. • Otherwise it appears to be ok. Tuesday, April 24, 2012 • Two validator's DID miss this question. This is surprising.

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
																• Rest is changed as above. • Question appears to be ok.
41	F	2-3												NEW	S	223002K6.03, NEW, MEMORY • KA appears to match • Question is ok. Very Easy
42	F	2												Bank Previous NRC exam	S	239002K1.07, Previous Brunswick Exam NRC 2007 #18, Fundamental • KA appears to match • Question is ok but easy. Very Easy
43	F	2-3				X								Bank	U S	239002K5.04, Modified Bank, Memory • KA appears to match • Distractors B 1 and D 1 do not make sense to me. Are there ANY systems that would get their isolation signal from the recorder? If so, it may be plausible, if not, needs to be changed. • I do not believe there are any systems that would work with the isolation being generated by the recorder • Need to replace distractor B 1 and D1. Tuesday, April 24, 2012 • YES, there are isolation signals that DO come from recorders. • ADDED that they are using UNIT 2. • Should not have been identified as a U. • OK as changed.
44	F	2-3												Bank	S	259002A1.05, modified, Memory, • KA appears to • In question 1 is it necessary to emphasis ***Initially?*** • Appears to be ok. Very Easy Tuesday, April 24, 2012 • OK as changed.
45	F	2												Bank	S	295002K4.02, Modified Bank, Memory • KA appears to match • Is it necessary to define in the question the LPAP • Otherwise appears to be ok. Very easy

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
																Tuesday, April 24, 2012 • OK as is
46	F	2												NEW	S	261000K1.03, New, Memory • KA appears to match • Question appears to be ok. Very easy. •
47															E S	262001A3.01, Previous BFN NRC 1006.# 47 • D is not plausible the way it is written SDB are NORMAL seeking board. And are SLOW transfer. Tuesday, April 24, 2012 4KV unit boards fast transfer on transformer faults. • D is not plausible the way it is written. • Changed D to alternate and normal will open. Alternate open and NORMAL will remain open. • OK changed. • Changed normal to Normal and alternate to Alternate.
48	H	2-3												NEW	S	262001 A3.01, New, CA
49	F	2-3												BANK	E E	263000K1.03, Prior NRC • Need to change NOT in stem from not. • Why is D expected to be known by the applicants. • Why is C required to be known by operators. Tuesday, April 24, 2012 • Changed to NOT. • D is not a concern it is an action. • Need to still look at it. Wednesday, May 02, 2012 • Changed D to a more plausible distractor. • Need to ensure that D is totally incorrect. I believe it could be argued that this could accomplish what it stated. Asked licensee to determine if comment is correct.
50	H	3												Modifie	E	264000A3.05, modified, CA

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
														d	S	One validator got this incorrect. He did select A, which was a concern of mine. Tuesday, April 24, 2012 • OK as is.
51	H	3												Bank	S	264000K5.06. \NRC 0801 #46 Does management want operator to memorize these numbers. Tuesday, April 24, 2012 • Changed A and B to be 0.1 and not 0 • OK as changed. • Yes operators are expected to know, iAW Ops Superintendent.
52	H	3												Bank	S	300000A4.01, Modified, CA Ka matched Question appears to be ok.
53	H													New	S	4000000K5.07, New, CA Appears to be ok..
54	H	3				X								New	E S	201002 G2.1.25 • KA appears to match • Did not find distractor D credible. It is the only one to not use a spiral format, but the provided reference illustrates the use of a spiral format for rod insertion. Tuesday, April 24, 2012 • Accepted the comment and made distractor spiral order

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
55	F	2	X	X		X								New	E S	201006 A3.01 • KA appears to match • Move the phrase "02-43 is indicated" out of each of the choices and make it the last of the stem. 02-43 is indicated.... • May have a subset issue with choices A, B, and C. The stem asks for indications of a withdraw error on the RWM. Since choices A and B contain indications that are part of the complete set of indications, then if these indications existed a withdrawal error would be indicated on the RWM. Suggest rephrasing the stem to ask for ALL the indication(s) that the applicant will see when a withdraw error occurs on the RWM. • In Distractor B, the use of different phrasing (i.e.,...from green to red...) for the withdrawal permissive than used in choices C and D could help rule out Distractor B. • The use of the word "indications" instead of "indication(s)" in the stem cues the applicant that Distractor A is not a possible answer. Tuesday, April 24, 2012 • OK for first comment. • Fixed the comments removed rod to top of question. • OK as changed.

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
56	F	2										X		New	U S	214000 A4.02 • Question doesn't address the KA. The KA concerns the ability to manually operate and/or monitor control rod position in the control room. The question focuses on the ability to monitor control rod selection. Tuesday, April 24, 2012 • KA appears that it does match. • Should not have been a U. Change to have a larger picture of half the core and a close up of the four rods • OK but will look at the new pictures.
57	F	2										X		M	U S	219000 K3.01 Modified Bank: BFN 0801 Audit #47 • Question doesn't address the KA. What loss or malfunction of the RHR Suppression Pool Cooling Mode is being tested? The question is supposed to be testing how a loss or malfunction of the RHR Suppression Pool Cooling mode will affect Suppression Pool temperature control. This question tests more along the lines of K1 or K4. • Take the headings "Unit 2 Loop 1" and "Unit 2 Loop 2" out of the question. Tuesday, April 24, 2012 • KA appears to match and should not have been considered an Unsatisfactory grade
58	H	3		X								X		M	U S	230000 K2.02 Modified Bank: BFN 0610 #32 • Great Question -- doesn't address the KA. It appears to be testing the load shed logic not the power supplies / flowpath to the pumps. • Add the word "ONLY" to Distractor D to mirror the phrasing of Distractor C. Tuesday, April 24, 2012 • KA did NOT match so therefore it will be counted in the number of unsats. • NEW question is SAT KA matches.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
59	H	2				X								M	U S	256000 K1.18 Modified Bank: OPL171.050 #23 • KA is a bit of a stretch, but I think we can defend it. • Distractors A and B – these are not credible based on a decrease in Hotwell temperature following a CCW pump trip. Any time a pump trip occurs a reasonable person would expect temperatures to increase. Tuesday, April 24, 2012 • DIstractors A and B are NOT plausible. • Licensee selected a new question. • Question's second part does not apply to the questions stem. This does not really show this in the question. • Will change the question to ask about the running discharge head will, ??? Lower or raise.
60	H	2												M	S	259001 A2.07 Modified Bank: BFN NRC 1108 #45 • KA appears OK. • Alarm 2-9-5 W24 is mislabeled. It should be MAIN STEAM LINE VS **MAIN TURBINE** STEAM FLOW MISMATCH. Tuesday, April 24, 2012 • Fixed the names. • Appears.OK
61	F	3												Bank	S	271000 A1.15 Bank: OPL171.030 #10 • KA appears OK. Tuesday, April 24, 2012 Appears.

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
62	F	2	X			X								New	E S	272000 K6.02 • KA appears OK. • Wording of the stem is awkward. Try focusing it on the "status" of control room ventilation. "WOOTF describes the status of the Control Room ventilation"? • Distractor D – rather than describe conditions that will cause an isolation, simply state "the control room ventilation remains unisolated." Don't bother trying to give a justification for why it's unisolated. Tuesday, April 24, 2012 • Distractor D was changed to just state unisolated • See question for changes. • Appears to be good.
63	F	3	X											New	E S	288000 K4.03 • KA appears OK. • Delete the sentence "Given that...". If nothing is said the applicant is supposed to assume that the DGs would be in their normal alignment. • Question asks for a description of the operation of the exhaust fans (pl). However, two of the choices (C and D) only describe the response of the 'A' Diesel Generator exhaust fan. Also, the question is looking for more than just the response of the fans, but response of the exhaust portion of the Diesel Generator ventilation system. Consider rewording the stem "WOOTF describes the response of the exhaust portion of the Diesel Generator ventilation system"? Move the statement concerning the automatic start into the conditions portion of the question. Tuesday, April 24, 2012 • Removed the first line completely. • Look at changes, • Question appears to be ok with change.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
64	F	2				X								Bank	E S	290001 K5.01 BFN NRC 0407 #18, OPL171.016 #45 • KA appears OK. • Choices A and B – A basic understanding of containment strategy make it implausible that the vacuum breakers are going to open through an unfiltered path from the Torus to the Reactor building. Tuesday, April 24, 2012 • Well, distractor B is correct. The above should have said C not B, it does not seem plausible to relieve torus to the Reactor Building. • The first statement is not required. This was removed. • The stem identifies Reactor Building to Torus and then distractors A and C identifies Torus to Reactor Building, so how can this be correct just from that.
65	F	2												M	S	290003 K1.03 Modified Bank: BFN Audit 0707 #27 • KA appears OK. • No comments.
66	F	1-2												New	E S	2.1.15 • KA appears OK. • Only the first part of this question meets the K/A. For this part of this two-part question couldn't we test a more discriminating aspect of temporary mgmt directives? Tuesday, April 24, 2012
67	F	2		X										New	E S	2.1.38 • KA appears OK. • Choices A and D – Only these choices have a capitalized word (MUST) in the sentence, while the other choices use lower-case "can". I couldn't find the listed SPP, but my guess is this is the same word used in the procedure. Since we're testing an understanding of a concept, consider using the synonym "shall" in choices A and D (lower-case). Tuesday, April 24, 2012 • Made changes ok

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
68	F	3												New	S	2.2.3 • KA appears OK. • No comments
69	H	2		X		X								New	U S	2.2.6 • KA appears OK. • The use of the phrase "…CRITICAL procedure steps…" cues the examinee that this is NOT a minor/editorial procedure change, which eliminates choices C and D as credible distractors. Delete the word "CRITICAL". • Choices C and D are not credible distracters under any circumstances given the conditions provided in the stem of the procedure. Tuesday, April 24, 2012 • Was unsat and accepted as unsat • Changed distractors to one time only and made this sat. • See question for changes. Ok as changed.
70	H	3												Bank	S	2.3.4 • KA appears OK. • No comments.
71	H	2												New	S	2.3.5 • KA appears OK. • "Chanel" is misspelled in choice 'A'.
72	F	2												Bank	S	2.3.15 • KA appears OK. • No comments.

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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
73	H	3						X	X		X			Bank	~~U~~ E S	2.4.2 • KA appears OK. • From an operational validity standpoint this question asks the applicant to determine power level based on an indirect method that would never be used in an operational situation unless all neutron monitoring were lost. Is there some link via training or objectives that ties Turbine Bypass Valve position to power level? With all other parameters normal, more than reactor power could be the cause of the current Turbine Bypass Valve configuration (e.g., low condenser vacuum). Tuesday, April 24, 2012 • Should not have been unsat to begin with. They are use of diverse indications. • See question for changes • OK as changed.
74	H	2	X											M	E S	2.4.6 • KA appears OK. • The opening statement is that an "ATWS has occurred" – past tense. The bulleted conditions are all in the present tense, which implies that some time has elapsed btwn the discovery of the ATWS and the present time. At the present time what is power level? Unless the applicant is provided with a specific power level (i.e., more than OR less than 5%) I can make a case for both A and B being correct. RR pumps are only required to be tripped if power still above 5%. Tuesday, April 24, 2012 • Made change • Ok as is.

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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	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
75	F	2	X			X						X		New	U S	2.4.22 • The initial conditions provided in the question are not required to answer the question. The question could be re formatted to simply state "Based on the attached steps from 1-EOI-3 which one of the following completes the statements below? • Distractor B & D – In an emergency situation, contamination of equipment necessary for safe shutdown of the reactor is not plausible as a concern for maintaining water levels below 20", especially when you compare this to the only other option provided in A & C which identifies the concern as inoperability of equipment necessary for safe shutdown of the reactor. • The question doesn't test the K/A. The K/A concerns the knowledge of the basis of **prioritizing safety functions** during abnormal/emergency operations. While, this question tests the basis for performing the level leg of 1-EOI-3, it doesn't address the basis for prioritizing safety functions. I'm not even sure this K/A is applicable to BWRs. Tuesday, April 24, 2012 • Made a new question because the question was UNSAT. Licensee agrees with the determination of this. • New question was developed, see exam for question. • Why is an operator expected an operator to remember the 20 inches. Need to ensure that we are testing the correct thing. So they identify that V.B. 7 of OP 171.204.r7 agree with ability to recognize the answer.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
SRO																The following questions were listed as "*new*" even though the conflicting phrase "*previous NRC*" was also listed. Consequently, a determination on whether the ES-401 number of required bank/modified/new items could not be made. Clarification is needed as to whether these questions were previously used NRC exam items (i.e. bank): Q#'s: 76, 78, 81, 85, 86, 88, 89, 90, 91, 92, 93, 94, 95, 96, and 97.
SRO																SRO-only portion of the exam was PRELIMINARILY determined to <u>not</u> meet the quality guidelines contained in NUREG-1021 based on 9/25 (36%) questions being unacceptable. [ES-401, Section E.3 and ES-501, Section E.3] The 9 questions were preliminarily determined to be unacceptable based on the following reasons: Cred Distracters: Q#'s 86 & 93 SRO Only: Q#'s 88, 89, & 99 K/A: Q#'s 79, 83, 85, & 91 Two questions (Q#'s 76 & 94) were graded as Level of Difficulty = 5 because a reference was not provided to the applicants. Consequently, applicants can (successfully) appeal these questions in the post-exam process. One question (Q#100) was graded as Level of Difficulty = 1 because it will not discriminate as written.
																The reference disk provided EOI Program Manual files (TIF?) which were unable to be used on NRC computers.

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.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
76	F	5	x	x										?	E	295001 AA2.04 1. LOD = 5: An applicant can successfully appeal this question because Tech Spec 3.4.1 was not provided as a reference for an action statement > 1 hour. This was graded as an enhancement, but must be repaired. Suggest re-working the 2nd part of the question such that the applicants are provided the reference (but the question does not become a direct lookup). This could involve testing some aspect of the Tech Spec Bases as follows: *Based on these current Jet Pump flows, in accordance with Tech Spec 3.4.1 Bases, if a LOCA were to occur, _____.* [Toggle choices between "*the core flow coast down and resultant core response may not be bounded by the LOCA analyses.*" (correct) vs. another plausible distracter from a different Tech Spec Bases" (incorrect).] 2. Cue: The phrase "*due to true positive flow from the idle loop being..*" in the 1st fill-in-the-blank statement is not necessary to elicit the correct response. Additionally, with this phrase wording, the 1st part of Choices "A" and "C" is borderline plausible. ("true positive flow" should always be added.) Suggest re-wording the 1st fill-in-the-blank statement as follows: *The total core flow indication on 2-XR-68-50 on Panel 2-9-5 _____.* [Toggle choices between "is accurate" (incorrect) vs "*may be inaccurate*" (correct)] 3. Stem Focus: Include Jet Pump A flow, 2-FI-68-46 as another bullet in the stem. 4. Ensure no overlap w/ SRO Q# 91 (202002 A2.03)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
77	H	3	x				x							B	E	295005 AA2.03 (Bank: Perry 2010 NRC Exam, Q#86) 1. Partial: Choice "A" appears to be the only correct answer. (answer key says Choice "C" is the only correct answer) Per OI-99, the required action to place the SV#4 in the tripped condition is to pull two fuses (one for the A2 channel and one for the B2 channel). After these two fuses are pulled, no half scram exists and compliance is restored in accordance with Action Statement A. Eight *channels* of Turbine Stop Valve – Closure (four channels in each trip system), are required to be OPERABLE. However, *each of the 8 channels has TWO stop valves*. Action Statement B is not required because the *#2* SV still remains operable [in Channel A2] and the *#3* SV still remains operable [in Channel B2]. None of the required channels in Trip System A or B are inoperable because another operable SV limit switch still exists in each channel. Ask the licensee whether Choice "A" is the only correct answer. 2. Partial: An applicant can (successfully) argue that Choice "D" is also correct since 1) the bases of MCPR safety limit is to preclude a cladding-water (zirconium-water) reaction and 2) one of the 10CFR50.46 ECCS design criteria is to preclude a zirc water reaction. (The 2nd part of Choices "C" and "D" both deal with protecting the fuel). [See Bases B 2.0-2]. Suggest picking another plausible bases for the 2nd part of the choices. 3. Stem Focus: The stem does not specify which unit is being tested. 4. References: Provide only Tech Spec pages 3.3-1, 3.3-2, 3.3-3, and the sliver of page 3.3-9 for Function 8 to the applicants as a reference.

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	Back-ward	Q= K/A	SRO Only			
78	F	2	x	x		x						x		?	E	295018 G2.4.9 Note to NRC: Because the BWR K/A Catalog does not contain a section for "service water", the Emergency Equipment Cooling Water (EECW) system is essentially a "component" cooling water (CCW) system at BFN. This system meets the intent of the K/A. Refer to FAQ 401.51. 1. Cue and/or Cred Dist: The only choice that lists one procedure is also the correct answer. The *specific steps* to perform an activity are rarely listed in multiple procedures. One procedure may refer to another procedure, but both procedures don't list the *specific steps* to perform an activity. The intent of the fill-in-the-blank statements is to test the SRO applicants' knowledge of the *location* of the specific steps to perform the listed activities. Because there is only one choice that has a single procedure listed, the applicant can (correctly) guess the answer. Suggest re-writing the choices (to target only one procedure) as follows: ***A. 0-AOI-57-1A; 0-AOI-57-1A*** *B. 0-AOI-57-1A; 0-OI-67* *C. 0-OI-57A; 0-AOI-57-1A* *D. 0-OI-57A; 0-OI-67* 2. Stem Focus: The words "specific steps" is missing from both of these fill-in-the-blank statements. Include the word "specific" in both of the fill-in-the-blank statements. 3. Q=K/A: In order to test how a low-power or shutdown condition affects the loss of offsite power mitigation strategy, suggest re-writing both fill-in-the-blank statements to target ONLY unit 2 since this unit is starting up.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
79	H	2	x	x								x	x	M	U	295021 AA2.05 (Mod Bank: 2011 BFN NRC Exam Q#9 & 2010 BFN NRC Exam Q#79) 1. SRO-only and/or Q=K/A: The ability to interpret reactor vessel metal temperatures is not being tested at the SRO level *because* the 2nd fill-in-the-blank statement TELLS the applicant that a mode change has occurred as a result of the loss of shutdown cooling. The SRO applicants don't have to deduce the mode change based on vessel temperatures. The 2nd part of the question is the SRO piece of the question; however, it doesn't require the applicant to interpret reactor vessel metal temperatures. The 1st part of the question *does* test the K/A; however, this is at the RO level. The SRO portion of the question must also test the K/A statement. Suggest providing all the parameter values [listed on the (two) ICS screens] and indicator names/numbers for vessel temperatures and shutdown cooling to test the applicants' ability to 1) determine whether or not natural circulation is occurring and 2) whether an E-plan classification exists. 2. Stem Focus: None of the bullets are necessary to elicit the correct response. The stem states that Recirc and RWCU pumps are off; however, the way the fill-in-the-blank statements are worded, none of this information is necessary to elicit the correct response. 3. Stem Focus: The 3rd bullet should be broken up into two pieces: 1) RHR Loop I was in Shutdown Cooling and 2) reactor vessel level subsequently lowered to X inches. 4. Cue: The 3rd bullet should not list a Group 2 isolation on low level because this could potentially provide the answer to other questions on the exam. 5. References: Provide the entire EPIP-1 procedure instead of only the page associated with the loss of decay heat removal.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
80	H	2		x			x							M	E	295026 G2.1.30 (Mod Bank: Cooper 2008 NRC Exam Q#6) Note to NRC: The K/A statement (The ability to *locate and operate components*, including local controls for a high torus water temperature) can be tested at the SRO-level because "operating components" is interpreted to mean placing the plant in Mode 4. Note to NRC: On Unit 1, four of the SRV's are electrically isolated at 1-LPNL-925-0658 (these four can also be *operated* from 925-0658). Of the remaining nine, all can be isolated at panel 25-32 and 4 (of the nine) can be *operated* from 25-32. (Total of 13 SRVs.) There is not one single specific SRV (on any unit) that can be operated from *BOTH* 25-32 and 925-0658. 1. Partial: An applicant can (successfully) argue that there is no correct answer because of the wording of the 1st fill-in-the-blank statement, i.e., the fill-in-the-blank statement uses the (plural form of the) acronym SRV*s*. There is not ONE SRV that can be manually cycled from BOTH 25-32 AND 925-0658 at BFN. If the applicant were to assume the question was referring to ONE specific SRV, he/she could argue that there is no correct answer. (Stem doesn't specify the exact #/name of the leaking SRV.) 2. Partial: Because the stem does not list the time when torus temperature *first exceeded* 110 °F, an applicant can (successfully) argue that there is no correct answer. In other words, IF torus temperature was 110.8 °F at 12:35 on August 5th, THEN the correct answer should be listed as 00:35 on August 7th. 3. Cue: The second sentence in the stem is a cue that Action Statement D.1 was implemented, which contains the information to answer the question. 4. References: The applicants should be provided with all of Tech Spec 3.6.2.1, not just the pages containing Action Statements "D" and "E." 5. Verify no overlap w/ SRO Q#84 (295013 AA2.02)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
81	F	2	x	x		x	x							?	E	295028 G2.2.25 1. Cue: The 2nd bullet includes the word "elevated", which is not necessary to elicit the correct response. Suggest re-wording as: • *RBCCW Pump Suction Header Temperature on 3-TIS-70-3 is 95° F and stable.* 2. Cred Dist: To enhance the plausibility of the 1st part of Choices "C" and "D", replace "*secure RWCU pumps*" with "*reduce RWCU flow rate.*" Because the 2nd bullet states that the RBCCW suction header is STABLE, the 1st part of Choices "C" and "D" may be borderline plausible. "Reducing RWCU flow rate" is a required action IF the 9-4C, W5 (HI RBCCW TEMP) alarm were received. 3. Partial: An applicant could potentially argue that there is no correct answer. The stem conditions indicate that the reactor is at power and drywell cooling has been lost and cannot be restored, i.e., a manual reactor scram could be required. The Bulk Volumetric Average Drywell Air Temp at 152° F and still slowly rising and the stem does not indicate the number of DW coolers *initially* operating. IF all the coolers were initially operating and DWT was continuing to rise, THEN a manual reactor scram is required. Therefore, an applicant could argue that none of the choices are correct. 4. Stem Focus: Re-word the 2nd fill-in-the-blank statement as: *In accordance with the Tech Spec 3.6.1.4 Bases, the LCO value for Drywell Average Air Temperature ensures that the peak temperature of _____ will not be exceeded during all postulated LOCAs.* 5. Stem Focus: Include a [normal] value for drywell pressure in the stem bullets. 6. Stem Focus: The 1st part of Choices "A" and "B" uses the term "blowers"; however, the procedures refer to fans and coolers.

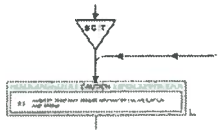
Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
82	H	2	x	x				x						M	E	295038 G2.2.12 (Mod Bank: Nine Mile 2008 NRC Exam Q#82) Note to NRC: The Tier 1, Group 1 High Offsite Release Rate topic is being tested by the 2nd fill-in-the-blank statement. 1. Stem Focus: The 2nd fill-in-the-blank statement can be streamlined as: *In accordance with Tech Spec Basis B 3.4.6, the RCS Specific Activity LCO limit was determined based on a design basis _____ not exceeding 10CFR50.67 dose limits at the site boundary.* [toggle between "*loss of coolant accident*" (incorrect) vs "*main steam line break*" (correct)] 2. Cue: The words "*outside containment*" in the 2nd part of Choices "C" and "D" are not needed to elicit the correct response. 3. Job-Link: 1-GOI-100-1A, Step 4.1 [106] requires that all surveillances needed for startup are complete (startup prerequisite). A copy of 1-SR-3.4.6.1 was not provided in the reference material. The 4 µCi activity sample may have precluded a unit startup. The stem indicates that the unit is already at 10% power. *Verify that the surveillance test results did not preclude control rod withdrawal*. May need to revise the stem to clarify why an additional surveillance was performed AFTER the startup had already commenced. 4. Job-Link: The caution on page 133 of 195 (1-GOI-100-1A Step 5.5 [1]) states: 8% RTP is the target power level to place the mode switch in the RUN position in order to prevent rod blocks below 5% RTP or above 10% RTP. The stem indicates that the mode switch is in Startup at 10% power. This may be a bit high. Suggest changing to 8% to align with GOI-100-1A.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
83	F	2	x									x		N	U	295008 G2.4.18 Note to NRC: The Tier 1 Group 2 topic is High Reactor Water Level. The intent of the proposed question is to target a condition when the RPV was intentionally flooded, i.e., when no valid RPV level indication exists, the reactor is required to be flooded. This is a tough K/A because RPV level is typically LOW in the EOPs. 1. Q=K/A: The SRO applicants' knowledge of the EOI bases (EOI Program Manual Section 0-V-J, Contingency #4 RPV Flooding Bases, is NOT being tested *because* the C-4 flowchart lists all the information necessary to answer the question. (K/A statement requires testing EOI bases knowledge.) 2. Stem Focus: The 1st fill-in-the-blank statement uses slang by naming the two legs in C-4 as 1) the "*reactor will remain subcritical w/o boron under all conditions*" leg and 2) "*it has NOT been determined that the reactor will remain subcritical w/o boron under all conditions*" leg. These names are slang and make makes the fill-in-the-blank statement confusing. Suggest re-working the question to test the applicants' knowledge of how long the RPV is required to be flooded (minimum core flooding interval) and the basis for this value. Alternatively, test the applicants' knowledge of the basis (in accordance with the EOI Program Manual) for why a minimum of 4 SRVs was established. 3. The reference disk provided TIF files of the EOI Program Manual, which were unable to be used on NRC computers. Suggest providing in pdf format.

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	Back-ward	Q= K/A	SRO Only			
84	H	2	x			x		x				x		B	E	295013 AA2.02 (Bank: BFN 2008 NRC Exam Q#84) 1. Cred Dist: The 1st part of Choices "C" and "D" is not plausible because 15 ft is extremely close to being within the Tech Spec Limit: Hi LCO limit is -1", which is equal to 15.08 ft. Suggest minor enhancement of raising the torus level in the stem. 2. Stem Focus: 2-SR-3.6.2.1.1* states that the implication of thermal stratification is that a valid temperature reading may not exist, which could lead to the SRO unnecessarily delaying the entry to Tech Spec Action Statements and/or EOI-2 until suppression pool cooling is placed in service. Clarify by re-wording the 1st part of Choices "B" and "D" to: "*for SUPPR POOL BULK TEMP on 2-TI-64-162 to become invalid*" 3. Stem Focus: The fill-in-the-blank statement should be broken up into two sentences. The 2nd fill-in-the-blank statement should include an "*in accordance with..*" statement associated with the document that tells the SRO to use 2-OI-74 to place torus cooling in service. Is AOI-1-1 telling the SRO to use 2-OI-74? Is EOI-2 telling him/her to use 2-OI-74? 4. Q=K/A: Suggest modifying the initial conditions to include a SRV leak instead of "inadvertently fully opening." This would be more representative of the K/A statement concern. 5. Stem Focus: The bullets in the stem should include the exact noun name and UNID# for the parameters provided. 6. Job-Link: Verify that 2-PCV-1-4 discharges to Bay 2. 7. Ensure no overlap w/ SRO Q#80 (295026 G2.1.130) **2-SR-3.6.2.1.1, Suppression Chamber Water Temperature Check: If RHR Suppression Pool Cooling is NOT in service, a potential for thermal stratification during ECCS component and relief valve testing exists. Monitoring the suppression pool using 2-TI-64-55B and 2-XR-64-52 (Red Pen) can give indication of potential thermal stratification. Rises in the difference between bulk temperature and these indicators may require Suppression Pool Cooling* ***to obtain a valid temperature reading***.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
85	H	2	x									x		?	U	295020 G2.2.37 Note to NRC: Tough K/A, which is typically satisfied by incorporating the trip of an RPS MG set trip, i.e., MG set trip causes many inadvertent containment isolations. 1. Q=K/A: The SRO applicants' ability to determine equipment operability or availability due to or during an inadvertent containment isolation is not being tested. Instead, the proposed question tests the applicants' ability to apply Tech Specs for instruments that feed the low level shutdown cooling isolation logic. The inadvertent containment isolation piece of the K/A is not being tested because 1) an inadvertent isolation did not occur and 2) the applicants' ability to determine equipment operability *as a result of the inadvertent isolation* is not being tested. Suggest modifying the question such that an RPS MG set trip occurs (inadvertent containment isolation). The question could be written to test the applicants' ability to then determine if Tech Spec equipment is still operable/available, including any required Tech Spec actions and NRC reportability requirements. 2. Stem Focus: The following information is missing from the stem: • Position of the Mode Switch • Instrument UNID# used for recirc temp at 140°F (Tech Specs says "average reactor coolant temperature") • Instrument UNID# used for RPV level at 155" rising • Procedure being implemented to floodup
86	H	2				x								?	U	206000 A2.17 1. Cred Dist: The 1st part of Choices "C" and "D" (HPCI initiation has NOT occurred) is not plausible because the 2nd fill-in-the-blank statement says "When an inadvertent initiation of HPCI occurs..." The 2nd fill-in-the-blank statement wording makes Choices "C" and "D" not plausible. Suggest re-working the question such that HPCI inadvertently initiates (causing the RPV Level alarm at 9-5 and auto-shift to 1-element FWLC). Test the applicants' knowledge of which procedure has the guidance to place the HPCI aux oil pump in P-T-L (BFN-ODM-4.20 vs 2-OI-73) and the NRC reportability requirements.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
87	H	2	x											B	S	211000 G2.2.38 (Bank: BFN 2011 Audit Exam Q#86) 1. Stem Focus: To eliminate any confusion about the breaker, modify the 2nd bullet to say: • *At 1300 on 3/3/12, SLC Pump is declared inoperable.* 2. Stem Focus: Modify the stem question by adding a phrase at the end of it (to eliminate any confusion): *WOOTF identifies the latest time that Unit 1 must enter Condition C if the 1B SLC Pump remains inoperable?*
88	H	2											x	?	U	215003 G2.1.27 Note to Licensee: This is a tough K/A to hit at the SRO level (i.e., knowledge of system purpose/function). Contact Chief Examiner to replace the K/A if a discriminating question at the SRO level cannot be written. 1. SRO-only: SRM/IRM overlap is an RO task. Lesson Plan OPL171.20 (IRM), HLT Objective 10 states: Describe the range for IRM/APRM overlap. Even though GOI-100-1A, Step 5.4 [18] requires a signature from the Reactor Engineer, the RO is required to know how to verify SRM/IRM overlap. The proposed question tests at the RO level and does not target one of the 7 topics listed in 10CFR55.43 (b).

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
89	C	2	x			x	x						x	?	U	223002 G2.4.20 Note to NRC: The intent of the question is to test the applicants' knowledge of the operational implication of Caution 1 located at the top of the EOI-3 SC/T leg (certain level instruments w/ vertical runs in the reactor building adversely aaffected by the high temperatures).  1. SRO-only: *Only* the overall mitigative strategy of the EOI-3 SC/T leg is being tested. The knowledges associated with Caution#1 in SC/T (Operate HVAC, control temps below Max Normal, effects on RPV level instruments) is RO knowledge. [See OPL171.204, HLT Objective #3: "*Explain the reasons why it is desirable to restore secondary containment ventilation during the execution of EOI-3.*" OPL171.206, HLT & NLO Objective #2: "*Describe when appendix performance is authorized.*] Suggest picking a Caution or Note to test the applicants' knowledge of the *specific BASES* listed in the EOI Program Manual, (Testing the EOI BASES may be analogous to guidance for Tech Spec BASES for SRO Clarification Guidance Document), & include procedure selection. 2. Partial: There may be no correct answer because EOI Program Manual, Section 0-V-E says this caution applies to Steps SC/T-3 & SC/T-4. The premise of the question is that Caution#1 applies to Steps SC/T-1 (Monitor/Control SC Temps) and SC/T-2 (Operate HVAC w/ App 8E & 8F). An applicant can argue that there is no correct answer because the EOI Program Manual doesn't support SC/T-1&2 for this caution. 3. Cred Dist: The last part of Choices "A" and "B" may not be plausible because stopping the SGT system (auto-start (+ 2") to maintain the Rx Bldg at negative pressure to prevent the release of airborne activity) when a pipe break exists in the Rx Bldg defeats the overall plant design. 4. Stem Focus: The wording in the stem question is confusing.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
90	H	3	x	x			x							?	E	239002 A2.04 Note to NRC: The basis document for the Site Emergency classification states: "*..RPV water level must have decreased or be trending to a value that, in the opinion of the Site Emergency Director, has resulted in or will result in some actual core uncovery. Additionally, the Site Emergency Director must have evidence that Reactor level has been or can be recovered to above TAF.*" 1. Cue: The applicants should be provided with all of EPIP-1, not just the page 19 of 205. 2. Partial: An applicant can successfully argue that Choice "C" is also correct (Reactor Water Level cannot be restored and maintained above -180" = General Emergency) because the stem does not provide any information that level won't continue to lower. The basis for 1.1-G states "*the control room operators should have progressed in the execution of the EOIs to the point that all high pressure and all low pressure systems that are available within a reasonable time frame have been attempted and are unsuccessful in reversing the adverse RPV water level trend*. Suggest including the word "*lowest*" in the 6th bullet to eliminate this possibility and/or replacing the 2nd part of Choices "C" and "D" with ALERT (incorrect). 3. Cue: The 4th bullet should be replaced with "*RX WTR LVL LOW LOW LOW ECCS/ESF INIT (9-3C, W28) alarmed.*" 4. Stem Focus: Use the past tense in all of the bullets, including the 1st sentence of the question.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
91	F	2	x	x								x		?	U	202002 A2.03 Note to NRC: The ICS UPS provides control power to both VFDs. The UPS is an inverter/rectifier and a regulating transformer. On Unit 3, the UPS feeds panels 3-LPNL-925-532 and -525; a breaker from these panels provides control power to the VFDs. The Unit 3 Inverter (AC)/ Rectifier (DC) Supplies are 480 VAC Common Bd 3, Compt 8B & Batt Bd 6,Bkr. 316, respectively. Because a UPS is involved, the premise of the question is that BOTH the AC and the DC power supplies (to the inverter) have been lost, which still satisfies intent of the K/A (loss of DC control power) at BFN. 1. Q=K/A: The K/A (*how a loss of control power will affect the VFDs*) isn't being tested because the stem *tells* the applicants that the RECIRC DRIVE I/O MODULE FAILED annunciator will alarm, VFD will remain running; and local operation is required to control speed. Because the stem tells the applicants how a loss of control power affected the VFDs, the intent of the K/A isn't being met. Suggest re-working the 1st part of the question as follows: *WOOTF predicts how a loss of control power will affect the 3A VFD?* *RECIRC DRIVE 3A I/O MODULE FAILED (9-4A, W33) will alarm (correct) vs will NOT alarm (incorrect)* 2. Stem Focus: In order to hit the K/A statement at the SRO level, include a bullet in the stem that says: • *While controlling the VFD speed locally in accordance with 3-AOI-68-3, Recirculation Loop A or B Speed Control Failure, the difference between the recirc pump speeds exceeded the allowable mismatch in SR 3.4.1.1.* Re-word the 2nd fill-in-the-blank statement as follows: *In accordance with Tech Spec Bases 3.4.1, With the flow limits specified in SR 3.4.1.1 not met, the _____.* [*recirculation loop with the lower flow must be considered not operating* (correct) vs. *jet pumps in the loop with the higher flow may be inoperable* (incorrect)] 3. Cue: The 1st fill-in-the-blank statement says "speed", which cues the applicant that AOI-68-3 is the correct AOI.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
92	H	2					x							?	E	214000 G2.2.42 Note to NRC: Panel 2-9-9, Cabinet 6 is the power supply to the Rod Position Indication System. Without this power supply, there is no method to determine the *current* rod positions at BFN. Note to NRC: This is a tough K/A to hit at the SRO level (entry level conditions for Tech Specs is RO knowledge). The premise for this being an SRO question is that an *operability determination* is being tested. 1. Partial: This is a gray area at BFN. An applicant can successfully argue that there is no correct answer because there are no appropriate methods to satisfy the requirements of SR 3.1.3.1 following a sustained loss of Panel 2-9-9 Cabinet 6. Furthermore, AOI-85-4 does not specifically state that 2 hours is an acceptable time for not meeting Tech Spec surveillance; it says that the rods need not be *immediately* declared inoperable. The intent of this statement in AOI-85-4 may be that another "appropriate" method of determining rod positions should be employed before declaring all rods inoperable. However, in the specific case of a loss of Panel 2-9-9 Cabinet 6, even the ICS is not a reliable method of determining *current* rod positions. The 2nd fill-in-the-blank statement is an excerpt from Tech Spec Basis page B 3.1-23; however, it does not apply to the specific case when Panel 2-9-9 Cabinet 6 is lost because rod motion is prohibited and there are no other appropriate methods of determining rod position. Because this is a gray area at BFN, this question could potentially be deleted from the exam following an appeal. Unless there is management approved documentation at BFN that a 2 hour loss of Panel 2-9-9 Cabinet 6 does not require entry to an action statement in Tech Spec 3.1.3.1 or TRM 3.3.5, THEN this question should be re-worked to test another aspect of RPIS that involves one of the 7 topics in 10CFR55.43(b).

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
93	F	2				x							x	?	U	233000 G2.2.39 Note to NRC: The licensee should have requested to have this K/A replaced before the draft submittal. This K/A (knowledge of ≤ 1 hour TS action statements for Fuel Pool Cooling) cannot be tested at the SRO level because ≤ 1 hour action statement is RO knowledge *and* the TS bases does not have any "non-system" related information to test. Discuss w/ the licensee. 1. Cred Dist: The 2nd part of Choices "A" and "C" (chlorides) is not because chlorides is already listed in the LCO information (above-the-line) in the TRM LCO 3.9.3. In other words, there are two parameters listed in the TRM LCO 3.9.3 for SFP Chemistry: conductivity and chlorides. (RO knowledge) The 2nd fill-in-the-blank statement asks the applicants for the reason why conductivity is controlled. (The two choices are for pH or chlorides.) Since chlorides is a parameter required to meet the LCO (above-the-line), then it cannot be the answer to why conductivity is controlled. 2. SRO-only: The proposed question is not linked to any of the 7 topics listed in 10CFR55.43(b).
94	H	5	x											?	E	G2.1.17 1. LOD = 5: An applicant can successfully appeal this question because NPG-SPP-03.5, Regulatory Reporting Requirements, is not provided as a reference even though the 2nd part of the question is testing reporting requirements. Unless the licensee can provide a learning objective stating that the 4 hour reporting requirements must be committed to memory, then this question is LOD=5. This was graded as an enhancement, but must be repaired. Suggest re-working the question to test the applicants' ability to determine the correct reporting requirements (for any given event) using a copy of NPG-SPP-03.5. 2. Stem Choices: The 2nd part of each choice is unique. Suggest making them parallel with the 2-part question format to ensure the 1st portion of the question is also being tested.

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			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
95				x			x							?	E	G2.2.14 1. Partial: An applicant can successfully argue that Choice "B", Choice "C", and Choice "D" are correct because the fill-in-the-blank statement contains the words "*authorized and documented.*" NPG-SPP-10.1, Section 3.5.1.B states: *When it is known that a procedure or work document will require the manipulation of plant components, those components shall be adequately identified and listed within the work document or procedure and properly dispositioned with applicable sign-offs **in accordance with NPG-SPP-10.3.**.* An applicant can appeal this question because the fill-in-the-blank statement says "authorized ***and*** documented." NPG-SPP-10.3 falls into the documentation realm and is also correct. Furthermore, NPG-SPP-10.1, Appendix B, Step 3.D states: *Performer: RECORD "As Found" condition, PERFORM verifications **as required by NPG-SPP-10.3**, e.g. independent (IV) or 2nd Party (concurrent).* It is not wrong to say that NPG-SPP-10.3 is part of the documentation "process"; therefore it is a correct part of Choices "B", "C", and "D." 2. Cue: The only Choice *without* SPP-10.3 listed is also the correct answer.

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	Back-ward	Q= K/A	SRO Only			
96	F	2	x			x						x		?	E	G2.2.4 Note to NRC: The *reason* for the Unit 2 DRYWELL/SUPPR CHAMBER RADIATION HIGH (9-7C, W15) alarm setpoint being different than the other units is the *same reason* that the Alert, Site, and General Emergency classification thresholds are different on Unit 2. The detector geometry and relative shielding differences for the 90-272A detector on Unit 2 is a systems knowledge item; however, since the emergency classification setpoint criteria is a SRO-only knowledge, this is an important knowledge for E-plan classifications. 1. Q=K/A: To ensure the 1st fill-in-the-blank statement hits the K/A, enhance the 1st fill-in-the-blank statement to test the applicants' knowledge of the differences between Unit 2 and Unit 3 9-54 and 9-55 locations or content. The 1st fill-in-the-blank of the proposed question isn't testing any unit differences. 2. Cred Dist: To enhance the plausibility of the 2nd part of Choices "A" and "B", re-word these as "the Atrium 10 fuel loading pattern." 3. Stem focus: To focus the applicants attention on 90-272A on Unit 2, re-word the stem statement as: *The reason that the emergency classification drywell radiation threshold value is different for the 90-272A rad monitor on Unit 2 (when compared to the other units) is because of _____ .* 4. Stem focus: The clip art in the stem is not necessary to answer the question because EPIP-1 will be provided (in its entirety) and because the stem statement already tells the applicant that there is a difference. 5. Stem Focus: The 1st fill-in-the-blank statement has slang ("*readout*" modules). Re-word as "*rad monitors.*"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
97	?	2	x											?	E	G2.3.12 1. Stem Focus: The stem needs to clarify that there are fuel assemblies seated in other core locations. 2. Stem Focus: Streamline the 2nd sentence as follows: *Control Rod 30-15 is being removed with no fuel assemblies located in its associated cell.* 3. Stem Focus: Add the phrase "*in accordance with Tech Specs.*" to the end of the 1st fill-in-the-blank statement. 4. This question was identified as a higher cog level question; however, it seems more appropriate as a fundamental knowledge classification.
98	H	2	x											M	E	G2.3.15 (Mod Bank: Perry 2010 NRC Exam Q#81) 1. Stem Focus: Enhance the 3rd bullet as follows to prevent confusion during the exam administration: *The Channel Check is required to be performed every 24 hours IAW Tech Spec surveillance requirement 3.3.7.1.1* 2. Stem Focus: Modify Choices "B" and "D" by including the word "still" before OPERABLE, i.e. still OPERABLE.

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	Back-ward	Q= K/A	SRO Only			
99	H	2											x	B	U	G2.4.31 (Bank: BFN 2010 NRC Exam Q#25) 1. SRO-only: The correct answer (Choice "A") can be deduced solely based on RO knowledge of the overall mitigative strategy associated with a Recirc Pump seal (or seal cooler) failure *and* AOP entry conditions. The overall strategy for a broken seal cooler or blown seal is to *isolate* the Recirc Pump to prevent the spread of radioactivity; this knowledge can be used to eliminate Choices "C" and "D." [These choices don't have the word "isolate" in them.] Once the choices are narrowed down to "A" and "B", the applicant can deduce that the correct answer is Choice "A" because Choice "B" doesn't state to enter AOI-68-1, [anytime a recirc pump is tripped, the AOI is entered.] which is RO knowledge. Suggest testing the applicants' knowledge of annunciators that may trigger an *assessment* of the E-plan thresholds [Valid MAIN STEAM LINE RADIATION HIGH-HIGH alarm OR Valid OG PRETREATMENT RADIATION HIGH alarm requires E-plan Unusual Event declaration 1.4-U (but must not be direct lookup since EPIP-1 is being provided).] Are there any requirements to maintain annunciators operable for E-plan classifications? What are the compensatory required actions when these annunciators are broken? Alternatively, test the SRO applicants' knowledge of the ECCS Bus Power Monitor annunciator and some aspect of TRM Surveillance Requirement 3.3.3.4 (but must not be a direct lookup). One way to target 10CFR55.43(b)(5) is to present the SRO applicants with only procedure choices (no accompanying actions listed), to test their ability to select procedures based on their assessment of plant conditions and knowledge of the procedure's content.

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	Back-ward	Q= K/A	SRO Only			
100	F	1		x										B	E	G2.4.37 (Bank: Grand Gulf NRC Exam (year?) Q#100 1. LOD=1: This question will not provide any discriminatory value on the exam because the only non-TVA organization listed in the choices is also the correct answer (Choice "D"). This was graded as an enhancement, but must be repaired. 2. Cue: The capitalized word "ORDER" is a cue that a TVA organization is not allowed to direct public evacuations. Suggest the following: *WOOTF completes the following statement in accordance with the Emergency Plan?* *The _____ evaluates plant and radiological conditions and develops protective action recommendations.* *The _____ has the final decision authority on any actual required public evacuations.* *A. TSC; NRC* *B. TSC; State of Alabama* *C. CECC; NRC* ***D. CECC; State of Alabama***

Facility: BROWNS Ferry Date of Exam: MAY 18 Exam Level: RO ☐ SRO ☒

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

	Printed Name/Signature	Date
a. Grader	MARK J RICHES / Mark J. Riches	06-14-12
b. Facility Reviewer(*)	N/A	
c. NRC Chief Examiner (*)	RICHARD S. BALDWIN / Richard S. Baldwin	06/19/2012
d. NRC Supervisor (*)	MARK E. FRANKE	6/29/12

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