Facility: BFN Date of Examination: 4/10/2017

Examination Level: SRO Operating Test Number: 1703

Administrative Topic (see Note)	Type Code *	Describe activity to be performed
Conduct of Operations	R, P	JPM 677, Determine Fuel Handling, fuel storage compliance - SRO K/A 2.1.40: Knowledge of refueling admin requirements.
Conduct of Operations	R, M	JPM 694, Minimum Staffing – SM personal emergency, immediately leaves site – SRO K/A 2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
Equipment Control	R, N	JPM 686, Maintenance activities effects on the status of LCOs. –SRO K/A 2.2.36: Ability to analyze the effects of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.
Radiation Control	R, N	JPM 688, Determine Emergency Radiation Exposure - SRO K/A 2.3.7: Ability to comply with radiation work permit requirements during normal or abnormal conditions.
Emergency Plan	R, D	JPM 623TC, EAL 2.1-S, Exceeding PSP Curve - SRO K/A 2.4.41: Knowledge of the emergency action level thresholds and classifications.

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

* Type Codes & Criteria:
(C)ontrol Room, (S)imulator, Class(R)oom
(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

Senior Reactor Operator

1. **Conduct of Ops** - Determine Fuel Handling, fuel storage compliance

   Using O-GOI-100-2 and a set of conditions for new fuel stored on the refueling floor, determine that some of the bundles are not in compliance with the GOI.

   2.1. 40: Knowledge of refueling administrative requirements. (SRO 3.9)

2. **Conduct of Ops** - , Minimum Staffing – SM personal emergency, immediately leaves site.

   Using the Shift Manning Sheet provided, Tech Specs and OPDP-1, the experience levels of the available SROs, determines the temporary SM for the Crew and Calls out a replacement SM.

   2.1.5: Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. (SRO 3.9)

3. **Equipment Control** - Maintenance activities effects on the status of LCOs.

   Using a copy of Unit 3 Tech Specs, and the set of Pilot Battery Cell parameters, determines the Operability of the Battery and the associated Diesel Generator.

   2.2.36: Ability to analyze the effects of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations. (SRO 4.2)

4. **Radiation Control** - Determine Emergency Radiation Exposure - SRO

   Using Radiation levels and transit times, determines best path for a worker going to do I very high rad job and then determines if Emergency Dose authorization is required.

   2.3.12: Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (SRO 3. 7)

5. **Emergency Plan** - Classify the Event, PSP Curve exceeded - 2.1-S

   The event is classified as a 2.1-S and the Initial Notification appendix is completed with correct information and within required times and notification is completed within required time.

   2.4.41: Knowledge of the emergency action level thresholds and classifications. (SRO 4.6)

Facility: Browns Ferry NPP Date of Examination: 4/10/16

Exam Level: ☐ RO ☒ SRO-I ☐ SRO-U Operating Test No.: 17-03

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.	JPM 80A Respond to a Rod Drift in (Multiple drifts)	A, P, S	1
b.	JPM 58 RFPT Trip Recovery	D, S	2
c.	JPM 333 EOI Appendix 8B Open MSIVs following Group 1 PCIS Isolation	D, L, S	4
d.	JPM 345A Place HPCI in reactor pressure control, faulted on Flow Controller failure	A, M, L, S	3
e.	JPM 55A EOI-Appendix 13 Emergency Venting Primary Containment Alt Path	A, EN, L, P, S	5
f.	JPM 602F Loss of RBCCW (Alternate Path)	A, D, S	8
g.	JPM 690 Respond to Off Gas Post-Treatment Radiation Hi	N, S	9
h.	N/A		
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i.	JPM 211A Shutdown at DG Control cabinet and emergency shutdown at DG	A, D, E	6
j.	JPM 691 Perform OI-85, Reactor Vessel Level Instrumentation System (RVLIS) Backfill System Operations	N, R	7
k.	JPM 8 EOI Appendix 1B Vent and repressurize scram pilot air header	E, P, R	1

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

Senior Reactor Operator Instant

Job Performance Measures

a. JPM 80A

Title: Respond To A Control Rod Drift In (Alternate Path)

Description: The Unit Supervisor directs you to perform Surveillance 3.1.3.3 step 7.3, Control Rod Exercise Test for Withdrawn Control Rods, for partially withdrawn control rods. When a rod is selected and driven the rod will start drifting in requiring the Unit Operator to respond per 2-AOI-85-5 and inserts control rod 02-31 to full in position as indicated by position 00 indication. Other rods start drifting in and the UO will scram the plant with multiple rods drifting.

K/A: 201002 Reactor Manual Control System A2.02; Ability to (a) predict the impacts of the following on the REACTOR MANUAL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Rod Drift Alarm

b. JPM 58A

Title: RFPT Trip Recovery

Description: The ATC Operator will recover from a feed pump trip using AOI-3-1.

K/A 295001 Reactor Feedwater System A4.01: Ability to manually operate and/or monitor in the control room: System flow (3.5)

c. JPM 333

Title: Open MSIVs following Grp 1 Isolation

Description: The BOP Operator will re-open MSIVs per EOI Appendix 8B.

K/A 239001 Main and Reheat Steam System A2.03: Ability to (a) predict the impacts of the following on the MAIN AND REHEAT STEAM SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: MSIV closure (3.9)

d. JPM 658A **Title:** Place HPCI in reactor pressure control, faulted on Flow Controller failure

Description: The BOP Operator will place HPCI in reactor pressure control in accordance with EOI Appendix 11 C. HPCI parameters will fail down as the HPCI Controller fails in AUTO, requiring the operator to take manual control of the Controller and restore parameters.

K/A 295025 High Reactor Pressure EA1.04: Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: HPCI

e. JPM 55A **Title:** EOI-Appendix 13 Emergency Venting Primary Containment Alt Path on valve failure.

Description: The operator will be tasked with performing EOI Appendix 13. Once venting has been started, the operator will note that the vent lineup has failed and the alternate method must be used to vent into the Reactor Building.

K/A 223001 Primary Containment System and Auxiliaries A2.07: Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High drywell pressure (4.3).

f. JPM 602F **Title:** Respond to Loss of Reactor Building Closed Cooling Water Pump.

Description: The BOP Operator will respond to a trip of an RBCCW pump. While performing his/her actions, a total loss of RBCCW will occur, forcing the operator to insert a core flow runback and a reactor scram.

K/A 400000 Component Cooling Water System A2.01: Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Loss of CCW pump (3.4).

g. JPM 690 **Title:** Respond to Off Gas Post Treatment Radiation Hi alarm

Description: Operator will respond to an Off Gas Post Treatment Radiation Hi alarm per ARP and AOI-66-2.

K/A 271000 Off-gas System A2.04: Ability to (a) predict the impacts of the following on the Off-gas 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 (3.7)

h. N/A

i. JPM 211A

Title: Shutdown at Diesel Engine Control Cabinet and Emergency Shutdown at Diesel Generator.

Description: The operator will be tasked with performing a Diesel Generator shutdown at the Diesel Control Cabinet. The Diesel will fail to shut down, requiring the operator to perform an emergency shutdown of the Diesel.

K/A

26400 Emergency Generators A4.04: Ability to manually operate and/or monitor in the control room: Manual start, loading, and stopping of emergency generator: Plant-Specific (3.7)

j. JPM 691

Title: Perform 0I-85, Reactor Vessel Level Instrumentation System (RVLIS) Backfill System Operations

Description: The operator has to evaluate which RVLIS Instrument Backfill Line flows and make adjustments to the throttle valves to bring them into spec.

K/A

216000 A2.07 Nuclear Boiler Instrumentation - Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reference leg flashing.

k. JPM 8

Title: Perform 1-EOI-Appendix 1B, Vent and repressurize scram pilot air header.

Description: The operator will be tasked with performing 1-EOI-Appendix 1B in the plant.

K/A

201001 Control Rod Drive Hydraulic System A2.04: Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Scram Conditions (3.8).

Facility: __BFN_____ Date of Examination: _4-10-17_____

Exam Level: RO ☐ SRO-I ☒ SRO-U ☐ Operating Test No.: ___17-03_____

Control Room Systems:* 8 for RO; 7 for SRO-I; 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a. JPM 80A Respond to a Rod Drift in (Multiple drifts)	A, P, S	1
b. JPM 58 RFPT Trip Recovery	D, S	2
c. JPM 333 EOI Appendix 8B Open MSIVs following Group 1 PCIS Isolation	D, L, S	4
d. JPM 345A Place HPCI in reactor pressure control, faulted on Flow Controller failure	A, M, L, S	3
e. JPM 55A EOI-Appendix 13 Emergency Venting Primary Containment Alt Path	A, EN, L, P, S	5
f. JPM 602F Loss of RBCCW (Alternate Path)	A, D, S	8
# g. JPM 695 Purge The Drywell With The Standby Gas Treatment	L,N,S	9
h. N/A		
In-Plant Systems* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. JPM 211A Shutdown at DG Control cabinet and emergency shutdown at DG	A, D, E	6
j. JPM 691 Perform OI-85, Reactor Vessel Level Instrumentation System (RVLIS) Backfill System Operations	N, R	7
k. JPM 8 EOI Appendix 1B Vent and repressurize scram pilot air header	E, P, R	1

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

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

REPLACEMENT JPM FOR ONE CANDIDATE. MISSED DUE TO FAMILY EMERGENCY.

Facility: Browns Ferry NPP Date of Examination: 4/10/16

Exam Level: ☐ RO ☐SRO-I ☒ SRO-U Operating Test No.: 17-03

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.	N/A		
b.	JPM 58 RFPT Trip Recovery	D, S	2
c.	N/A		
d.	JPM 345A Place HPCI in reactor pressure control, faulted on Flow Controller failure	A, M, L, S	3
e.	JPM 55A EOI-Appendix 13 Emergency Venting Primary Containment Alt Path	A, EN, L, P, S	5
f.	N/A		
g.	N/A		
h.	N/A		
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)			
i.	N/A		
j.	JPM 691 Perform 0I-85, Reactor Vessel Level Instrumentation System (RVLIS) Backfill System Operations	E, R	7
k.	JPM 8 EOI Appendix 1B Vent and repressurize scram pilot air header	E, P, R	1

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

Senior Reactor Operator Instant

Job Performance Measures

a. N/A.

b. JPM 58 **Title:** RFPT Trip Recovery

Description: The ATC Operator will recover from a feed pump trip using AOI-3-1.

K/A 295001 Reactor Feedwater System A4.01: Ability to manually operate and/or monitor in the control room: System flow (3 .5)

c. N/A

d. JPM 345A **Title:** Place HPCI in reactor pressure control, faulted on Flow Controller failure

Description: The BOP Operator will place HPCI in reactor pressure control in accordance with EOI Appendix 11 C. HPCI parameters will fail down as the HPCI Controller fails in AUTO, requiring the operator to take manual control of the Controller and restore parameters.

K/A 295025 High Reactor Pressure EA 1.04: Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: HPCI

e. JPM 55A **Title:** EOI-Appendix 13, Emergency Venting Primary Containment – Alt Path on valve failure.

Description: The operator will be tasked with performing EOI Appendix 13. Once venting has been started, the operator will note that the vent lineup has failed and the alternate method must be used to vent into the Reactor Building.

K/A 223001 Primary Containment System and Auxiliaries A2.07: Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High drywell pressure (4.3).

f. N/A

g. N/A

h. N/A

i. N/A

j.	JPM 691	**Title:** Perform 0I-85, Reactor Vessel Level Instrumentation System (RVLIS) Backfill System Operations **Description:** The operator has to evaluate which RVLIS Instrument Backfill Line flows and make adjustments to the throttle valves to bring them into spec.
	K/A	216000 A2.07 Nuclear Boiler Instrumentation - Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reference leg flashing
k.	JPM 8	**Title:** Perform 1-EOI-Appendix 1B, Vent and repressurize scram pilot air header. **Description:** The operator will be tasked with performing 1-EOI-Appendix 1B in the plant.
	K/A	201001 Control Rod Drive Hydraulic System A2.04: Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Scram Conditions (3.8).

Tier / Group	Randomly Selected K/A	Reason for Rejection
SRO 1 / 2	295002 G2.4.8	Loss of main condenser vacuum is never used in the EOI network therefore could not develop a question for this K/A. Newly selected K/A is 295010 BC 8-16-16
SRO 2 / 1	264000 A2.02	Diesel sooting concerns were the only consequence the Exam Group could write the question to, however there was no way to ask an SRO-only question because there are too many correct answers and too few distractors because the procedure caution did not definitely state when the DG would be inoperable. It came down to a judgment call. Newly selected K/A is 264000 A2.07 BC 12-06-16
SRO 2 / 2	215001 G 2.4.50	There are no SRO task associated with the Traversing In Core Probe and the ability to verify system alarm setpoints and operate controls identified in the alarm response manual. An SRO-only question could not be written. Newly selected K/A is 215001 G 2.240 BC 12-06-16
SRO 2 / 1	211000 G 2.4.41	No criteria for SLC in EALs. Randomly selected another Generic K/A for the SLC system. Newly selected K/A is 211000 G 2.4.21
SRO 1 / 1	295005 AA2.03	Unable to develop an SRO Only question on this K/A, it is inherently and RO task. Newly selected K/A is 295024 EA2.03 BC 3-2-17
RO 2 / 1	206000 K6.07	At BFN the HPCI system does not have a keepfill system, therefor unable to develop a question to this K/A. Newly selected K/A is 206000 K6.12 BC 3-6-17
SRO 1 / 2	295036 EA2.03	Could not develop an SRO Only question to this K/A this is an RO K/A. Newly selected K/A is 295034 EA2.01 BC 3-6-17

RO 2 / 1	259002 A1.03	Overlap with Scenario prevented development of a valid question for the RO. Newly selected K/A is 259002 A1.04 BC 3-16-17
SRO 3	2.4.2	Unable to develop a psychometrically valid question at the SRO level due to ambiguities in the EOI Program Manual concerning the entry condition into EOI-4. CR written (CR #1302543). Newly selected K/A is 2.4.16 BC 3-28-17

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

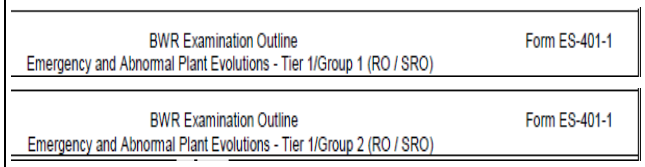
Facility: Browns Ferry Nuclear Station Date of Exam: 4/10/2017 Exam Level: RO [X] SRO [X]

Item Description					Initial a	Initial b*	Initial c*#
1.	Questions and answers are technically accurately and applicable to the facility.						
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.						
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401						
4	The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last two NRC licensing exams, consult the NRR/NRO OL program office).						
5.	Question duplication from the licensee 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 __ the licensee certifies that there is no duplication; or __ other (explain)						
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 **30 / 24**	Modified **2 / 16**	New **68 / 60**	--	--	--
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 **40 / 12**	C/A **60 / 88**		--	--	--
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.						
9.	Question content conforms to specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.						
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.						
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.						

	Printed Name / Signature	Date
a. Author	Michael Barton /	3-29-17
b. Facility Reviewer (*)	Keith Nichols /	3/29/17
c. NRC Chief Examiner (#)	BRUNO CABALLERO /	4-6-17
d. NRC Regional Supervisor	Eugene Guthrie /	4/12/17

Note: * The facility reviewer's initials or signature are not applicable for NRC-developed examinations.
Independent NRC reviewer initials items in Column "c"; chief examiner concurrence required.

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
																Received 10 sample questions on 12-9-16; provided feedback to licensee on 12-15-16. Sample question rows are lined out, followed by a new row, with new feedback on the repaired or replaced test items.
																Received 100 draft written exam submittal from the licensee on 2-6-17. Provided feedback (ES-401-9) to licensee on 2-15-17: • The preliminary review of the RO exam indicated there were 22 unacceptable test items (29%). • The preliminary review of the SRO exam indicated there were 10 unacceptable test items (40%). If it turns out that a test item, which was initially graded as unacceptable, eventually requires K/A replacement, then the unacceptable test item will be removed from the number of unacceptable test items, and the new replacement test item will be reviewed. Exam Report has final determination.
Gen																

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
																The draft RO exam Tier 1 category sample may be inadequate because several Tier 1 RO Test Items (#8, #9, #11, #14, #16, #17) don't test the Emergency/Abnormal ***EVOLUTION*** topic. That is, these test items don't test: • an immediate operator action, • a subsequent required manual operator action, • a long-range action, • procedure requirement, or • overall mitigative strategy from an off-normal annunciator, abnormal, or emergency operating procedure. Instead, Tier 1 RO test items #8, #9, #11, #14, #16, #17 can be answered solely based on the Plant Systems (Tier 2) aspect of a system or component, and in several of these test items solely test an ***automatic system response with no operator action***. For Tier 1 test items, the name at the top of Form ES-401-1 is Emergency and Abnormal Plant ***Evolutions***:  BWR Examination Outline Form ES-401-1 Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO) BWR Examination Outline Form ES-401-1 Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO) NUREG 1123 (K/A Catalog) defines an Emergency ***Evolution*** as any condition, event, or symptom which leads to entry into the plant-specific EOPs, and further defines an Abnormal Evolution as any degraded condition, event, or symptom not directly leading to an EOP entry condition, but, nonetheless, adversely affecting a safety function. The Plant Specific written exam is designed to test: Tier 1: Emergency/Abnormal Evolutions (or procedures) Tier 2: Systems features, indications, interlocks, limits, etc. (including A2 K/As that also further require using procedures to correct, control, or mitigate) Tier 3: Plant-wide generic topics that apply to any system or situation.

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
Gen																Test items 15, 19, 36, and 67 contain cues for the name of the item in the reference packet provided to the applicants. The stem for these items should be consistent with the SRO exam items, and only use the term "[REFERENCE PROVIDED]." The name of the reference is not required to elicit the correct response.
Gen																The licensee's visit to Atlanta week (week of March 6th) may be less productive than usual if the Chief Examiner doesn't have new replacement/repaired test items beforehand. I may need to take any new test items back to my office and review alone before making comments in our meeting.

Instructions

(Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts:

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question a 1(easy) to 5 (difficult); (questions with a difficulty between 2 and 4 are acceptable)
3. Check the appropriate box if a psychometric flaw is identified:
   - "Stem Focus": The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
   - "Cues": The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc.).
   - "T/F": The answer choices are a collection of unrelated true/false statements.
   - "Cred. Dist": The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
   - "Partial": One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
4. Check the appropriate box if a job content error is identified:
   - "Job Link": The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
   - "Minutia": The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
   - "# / Units": The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
   - "Backward": The question requires reverse logic or application compared to the job requirements.
5. Check questions that are sampled for conformance with the approved K/A and those K/As that are *designated SRO-only* (K/A and license level mismatches are unacceptable)
6. Enter question's source: (B)ank, (M)odified, or (N)ew. Verify that (M)odified questions meet the criteria of ES-401 Section D.2.f.
7. Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
8. At a minimum, explain any "U" Status 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
1	F	2	x											N	E	T1G1 295030 G2.4.1 1. Stem Focus: Suggest adding the number and title of EOI-2 to the stem question, and the word "set point", to ensure one and only one correct answer: "*The EOI-2, Primary Containment Control, Entry Condition set point for Low Suppression Pool Level is ___ inches.*"
1	F	2													S	T1G1 295030 G2.4.1 (Comments and/or Repairs rec'd 3-3-17)
2	F	2	x			x	x							N	U	T1G2 295008 G2.1.32 1. Cred Dist: The 1st part of Choices C/D (UO not expected to operate HPCI to stabilize level without US concurrence) is not plausible because: 1) no relevant plant conditions are provided in the stem (for example, HPCI initiated on valid low level, or HPCI inadvertently initiated on invalid low level signal, etc.) that could be misconstrued to be out of the ordinary, and 2) the way the fill-in-the-blank statement is worded ("expected to operate"…and "US direction", and "to stabilize level") has nothing out of the ordinary that would be outside conduct of operations. An RO is licensed to manipulate the controls and expected to operate and stabilize, etc. These two reasons, when combined, make the 1st part of Choices C/D not plausible. 2. Partial: Choice B is also correct because UO is expected to operate HPCI to prevent getting to 55 inches, since being at 55 inches will also exceed the HPCI 51 inch trip set point. 3. Stem Focus: The stem question has the word "In" capitalized (typo).

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
2																T1G2 295008 G2.1.32 (Comments and/or Repairs rec'd 3-1-17) 1. Partial: Choice D is also correct because: **BFN Operations Directive Manual** | **Strategies for Successful Transient Mitigation** | **BFN-ODM-4.20 Rev. 0003 Page 9 of 17** **4.3.3 Stabilizing Plant Parameters** Operator action to stabilize a critical plant parameter, without US direction, is expected provided that no contradicting order or direction has been given. For example, operator action to stabilize reactor pressure below the high pressure scram setpoint (1073 psig) by opening the MSRVs following an inadvertent closure of the MSIVs is appropriate. Similarly, operating the HPCI flow controller to minimize HPCI injection rate and limit the rate of rise of reactor water level is also appropriate and expected. The BFN procedure conflicts itself; an applicant can successfully appeal that Choice B and D are both correct during the post-exam appeal period. 2. The 2nd fill-in-the-blank statement has nothing to do with ODM 4.20. For example, if the phrase "~~Failure to control Reactor Water level will result in tripping~~" is stricken from the 2nd fill-in-the-blank statement, the RFPTs will still auto-trip on high water level at 55"). Suggest: *WOOTF completes both statements with respect to high reactor water level and HPCI?* *The HPCI high reactor water level trip set point is ___1)____ inches. (51 vs **55**)* *In accordance with ODM 4.20, Strategies for Successful Transient Mitigation, IF HPCI has a sealed in high water level trip when a high drywell pressure signal is received, THEN ___(2)____ the high water level trip. (reset vs **do NOT reset**)*
2	F	2													S	T1G2 295008 G2.1.32 (Comments and/or Repairs rec'd 3-6-17)

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			
3	F	2	x	x										N	E	T1G2 295013 AK2.01 1. Stem Focus: The 1st sentence should indicate that 1-EOI-2 was also entered. 2. Stem Focus: The 2nd sentence is not needed. 3. Cue: The 1st part of the first fill-in-the-blank statement is not needed to elicit the correct response. *Unit 1 entered 1-AOI-1-1, Relief Valve Stuck Open, and 1-EOI-2, Primary Containment Control, due to a partially open Main Steam Relief Valve.* *WOOTF completes both statements?* *In accordance with 1-OI-74, RHR System, it is preferable to operate __(1)___ in Suppression Pool Cooling* *In accordance with 1-EOI-2, when suppression pool temperature exceeds __(2)__, all available suppression pool cooling is required to be operated.*
3	F	2													S	T1G2 295013 AK2.01 (Comments and/or Repairs rec'd 3-6-17)
4	H	2	x				x							N	E	T1G2 295015 AA1.04 1. Partial: Any of the choices can be correct if Reactor Engineering determines the reactor will remain shut down. 2. Stem Focus: The fill-in-the-blank statement is not needed. 3. Stem Focus: The word "would" in the stem question is vague; re-word the stem question to ask: "*In accordance with EOI-1, WOOTF rod configurations, after a scram, confirms that the reactor will remain shut down under all conditions without boron, and without a Reactor Engineering evaluation?*"
4	H	2													S	T1G2 295015 AA1.04 (Comments and/or Repairs rec'd 3-6-17)

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			
5	H	2				x								N	U	T1G2 295033 EA2.01 1. Cred Dist: The 2nd part of Choices A/C (EOI-3 entry is required) is not plausible because the alarm light is Off for the RWCU Area, which is the only stem item located inside the secondary containment (reactor building). 2. Stem Focus: The 1st fill-in-the-blank statement is not at least somehow related to the K/A topic. The picture of the FW Heater area rad monitor is not necessary; the proposed test item could just as easily ask the applicant to identify the reading on the RWCU area rad monitor.
5																T1G2 295033 EA2.01 (Comments and/or Repairs rec'd 3-1-17) 1. Same Comment as before; the 2nd part of the question is essentially asking "Is EOI-3 required for an alarming or non-alarming state?" non-alarming is not plausible for an entry condition to EOI-3. Alternatively, the question is LOD=1. Suggest revising as *WOOTF completes both statements in accordance with EOI-3, Table SC-2, Secondary Cntmt Area Radiation:* *The Table SC-2 area that corresponds to this ARM is __(1)__ .* *(RHR sys I pumps vs **RHR sys II pumps**)* *The Max Normal radiation value ___(2)___ the same as this ARMs high alarm set point. (**Is**/ is NOT)*
5	H	2													S	T1G2 295033 EA2.01 (Comments and/or Repairs rec'd 3-6-17)
6	F	1.8												B	S	T2G1 205000 K2.01

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			
7	H	2	x			x	x							N	E	T1G1 295001 AA2.02 1. Partial: Choice D (insert rods < 74% load line) is also correct because the ARP is subjective on WHEN insertion of rods has become unsuccessful; the stem says the operator is only on the 2nd rod. Since the stem does not include the current rod line value, Step 4 of AOP-68-1A is also required to be performed at this time. 2. Cred Dist: Choice B is not plausible because the stem does not include a B Recirc Loop flow value that could be misconstrued, and also because lowering recirc flow makes the situation worse. 3. Stem Focus: The word "correct" in the stem question is always assumed; replace with "required." One possibility is to re-work the question to test whether a rod withdrawal block currently exists, and the AOP-68-1A requirement at Step 4.
7																T1G1 295001 AA2.02 (Comments and/or Repairs rec'd 3-3-17) 1. Same comment#1 and #2 above.

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
7																T1G1 295001 AA2.02 (Comments and/or Repairs rec'd 3-17-17) 1. Same Comment #2 above: the stem doesn't include a B Recirc Loop flow value that the applicants could misconstrue as being a reason to LOWER flow during thermal hydraulic instablity. 2. Cue: The 2nd paragraph includes information that also initially existed, but was not listed initially such as power oscillations continuing to rise, …several LPRMs are upscale and downscale, sentence that says the OPRM Pre-Trip Condition annunciator continues to be in alarm, power oscillations are continuing to rise….several LPRM upscale and downscale …. The strong wording of the 2nd paragraph points the applicants to the conservative decision of manually scramming the reactor. Instead, suggest the following: *At 15:00, U2 was operating at full power when the 2A Recirc Pump tripped and the following occurred:* • *OPRM TRIP ENABLED (2-9-5A, W30)* • *OPRM PRE-TRIP CONDITION (2-9-5A, W18)* • *OPRM growth algorithm exceeded the pre-trip alarm set point* • *LPRM upscale and downscale lights illuminating and extinguishing* *At 15:05, the Unit Operator completed inserting the first group of rods on the emergency shove sheet and the following conditions currently exist:* • *2A Recirc Pump Discharge Valve: Closed* • *2B Recirc Loop Flow: 47,500 gpm* • *Core Flow and Reactor Power displayed on the attached Power-to-Flow map (red asterisk).* • *OPRM and LPRM conditions are the same as 15:00* *WOOTF identifies the required operator action?*
7	H	3													S	T1G1 295001 AA2.02 Comments incorporated.

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			
8	F	2										x		N	~~U~~ E	T1G1 295003 AA1.01 1. Q=K/A: The proposed test item is not testing the Tier 1 Emergency/Abnormal EVOLUTION because it can be answered solely by knowing that the B D/G powers 4 KV Sd Bd B, which powers 480 V SD Bd 2A, which powers 480 V RMOV Bd 2A; when 4 KV Sd Bd B is transferred to alternate, the RMOV Bd will also be powered. [See Tier 2 K/As: 226001 AC Elect Distribution K4.06, K1.01, etc.] For Tier 1, the proposed test item should test the mitigative strategy, a required manual operator action, or procedure requirement, from an off-normal AOP, annunciator response procedure, etc.
8																T1G1 295003 AA1.01 (Comments and/or Repairs rec'd 3-1-17) 4KV SD BD B --→ 480 V SD BD 2A --→ 480 V RMOV BD 2A 1. In an effort to identify the mitigative strategy being tested, Is there any procedure that prohibits also placing RMOV Bd 2A on its alternate power supply in accordance with Table 2 on page 31 of 122? Other than the stem question says "minimum required actions", what's operationally wrong with also transferring 480 V RMOV BD 2A to its alternate? 2. The bullet should be clarified as: "*B" D/G fails to auto-start and cannot be manually started*"
8	H	2													S	T1G1 295003 AA1.01 (Comments and/or Repairs rec'd 3-6-17) 1. 0-OI-57B, P&L 3.0 T.4 prohibits the RMOV and SD BD from also being fed from alternate.
9	H	2										x		N	~~U~~ E	T1G1 295004 AA1.01 1. Q=K/A: The proposed test item is not testing the Tier 1 Emergency/Abnormal EVOLUTION because it can be answered solely by knowing the power supplies to ECCS logic. [See Tier 2 K/A: 206000 HPCI K1.07, K2.03, A2.05, etc.] For Tier 1, the proposed test item should test the mitigative strategy, a required manual operator action, or procedure requirement, from an off-normal AOP, annunciator response procedure, etc. As a further example, the stem of the question says "assume no operator actions have been taken", which means that the question is solely testing the Tier 2 aspect of system power supplies.

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			
9																T1G1 295004 AA1.01 (Comments and/or Repairs rec'd 3-1-17) 1. Same comment as above. The stem provides alarms and indications that require the applicant to DIAGNOSE the loss of 2A 250VDC RMOV BD. The Tier 1 (EVOLUTION) aspect of what the procedure requires is not being tested. Only the symptoms are being tested.
9																T1G1 295004 AA1.01 (Comments and/or Repairs rec'd 3-17-17) 1. Stem Focus: The stem does not state that the crew entered ½-AOI-57-10, and the stem doesn't clarify that the load shed signal cannot be reset. 2. The question reference sheet contains a typo (Appears the same K/A information that this question previously contained may have been retained even though it was swapped over to Tier 1.) Suggest the following <u>*to test the Tier 1 aspect*</u> and also to clarify the stem conditions: *An accident signal exists on Unit 2 and the crew has entered ½-AOI-57-10, 480 Volt Load Shed.* *The following conditions currently exist:* • *250 V REACTOR MOV BD 2A UNDERVOLTAGE (2-9-8C, Window 4) alarmed* • *The 480 V Load Shed signal cannot be reset.* *WOOTF completes both statements in accordance with ½-AOI-57-10?* *Place the battery charger back in service within ___(1)____ after loss of the charger to the battery.* *40 seconds;* ***30 minutes*** *The required operator action to place the battery charger back in service is to ____(2)_____.* ***place the charger EMER/OFF/ON Select to the EMERG position****; manually open and re-close the charger supply breaker*

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			
9	H	2													S	T1G1 295004 AA1.01 Comments incorporated.
10	F	2										x		B	~~U~~ E	SAMPLE QUESTION rec'd 12-9-16 295005 AK3.04 (2007 NRC Perry Question #4) 1. Q=K/A: The proposed test item does not test the emergency/abnormal ***EVOLUTION*** (Tier 1) aspect; the test item only tests the systems (Tier 2) aspect (e.g., 245000 K4.05, etc.) This Tier 1 K/A should test the applicants' knowledge of the abnormal/emergency ***EVOLUTION***, including the reason (direct reason or indirect reason—see last paragraph below for one way of indirectly testing a reason) why an off-normal procedure (EVOLUTION aspect) requires a manual turbine generator trip. For example, test the applicants' knowledge of why a manual action in an abnormal procedure or abnormal annunciator procedure is being performed. Possible abnormal procedures associated with the main turbine generator trip include: • ARPs – 9-8B, 9-8A • AOPs – 57-1A, -1B, -1C, -1E, -1F, -35-1, -47-1 One way to indirectly test the "reason" piece of the K/A may be to present the applicant with four answer choices that each have a main generator annunciator and ask which ARP contains guidance to manually trip the main turbine generator. In this case, the applicant is indirectly demonstrating his/her knowledge of the "reason" piece of the K/A because the applicant must know which annunciator warrants a reason that a manual main turbine generator trip is required. (9-8A, W2, W4, W9, and W6 are good starting points).

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			
10	F	2	x				x							B	U	295005 AK3.04 1. Cred Dist: Choices A/C are not plausible because they are the same; the field is DC current applied to the main generator rotor. "Excessive field current" (Choice A) is the same as "main generator over excitation" (Choice C). 2. Stem Focus: The stem is not clear with respect to whether the turbine automatically tripped due to high MSR level. 3. Stem Focus: The stem is not clear with respect to whether an automatic generator trip occurred as a result of the turbine trip (as designed), or as a result of the BOP operator's inaction. Any turbine trip is an automatic generator trip; 2-AOI-100-1, Attachment 5 (BOP hard card) requires the BOP operator to ENSURE the generator is tripped < 50 MW. The generator will automatically trip when the turbine automatically trips. If the premise of the question is that the automatic generator trip failed to occur, then the stem of the question should include a timeline of events that identify the output breaker failure, or tell the applicant that the auto-generator trip failed to occur. As written, the stem isn't clear with respect to the automatic turbine and generator trips. 4. Partial: Choices A/C can also be correct; reverse motoring the main generator can cause excessive field voltage and over excitation. 5. Stem Focus: The phrase "a short time later" is confusing based on the previous two comments listed above. 6. Stem Focus: Choice D doesn't need to include the acronym. 7. The exam item reference sheet indicated this is a bank item from Perry 2007, Q#4. However, the proposed test item looks a lot different than the original sample question. Is this a modified test item from Perry?

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
10																295005 AK3.04 (Comments and/or Repairs rec'd 3-1-17) 1. The proposed test item has the same issue that the SAMPLE QUESTION submitted on 12-9-16 had: Not testing the Tier 1 aspect. See Sample question comment above. Suggest the following way to indirectly test the REASON for tripping the main generator: *Unit 2 was operating at 100% when the following alarm was received at the Stator Coolant Control Panel (Panel 25-114A):* *STATOR CLG WATER HIGH COND (25-114A, Window 16)* *Chemistry verified that the conductivity was greater than the alarm setpoint (> 9.9 microsiemens/cm).* *WOOTF identifies the required action in accordance with the ARP?* ***A. Trip turbine generator*** *B. Raise Stator Cooling De-ionizer flow* *C. Isolate air supply to Stator Cooling Temperature Control Valve 2-TCV-35-54* *D. Makeup water to the Stator Cooling Water System per 2-OI-35A, Stator Cooling Water* Another idea is to test the required actions in accordance with AOI-35-1, Generator Condition Monitor. The REASON piece of the K/A because the applicant has to have knowledge of the REASON in order to select 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			
10																295005 AK3.04 (Comments and/or Repairs rec'd 3-17-17) 1. Partial: Choice D is also correct; flashover in the stator bars can also lead to insulation breakdown. 2. Partial: Choice A is also correct because the word "immediately" is subjective. Suggest the following: *Unit 2 is operating at 100% power and the following alarm was received:* *GEN CONDITION MONITOR ABNORMAL (2-9-8B, Window 28)* *The crew entered 2-AOI-35-1, Generator Condition Monitor Alarm, and determined the alarm was valid.* *WOOTF completes the following statement IAW 2-AOI-35-1?* *The first required action is to ___(1)____ because ___(2)___ .* ***(Reduce power until the alarm resets** vs immediately trip the turbine and remove the generator from service)* *(Hydrogen purity is less than 100% vs **the generator is overheating.)*** K/A is still being hit with this suggestion because applicant must have knowledge of when to trip the main generator (if power reduction doesn't reset alarm).
10	H	2													S	295005 AK3.04 Comments incorporated.

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			
11	H	2										x		B	~~U~~ E	T1G1 295006 AA1.06 1. Q=K/A: The proposed test item is not testing the Tier 1 Emergency/Abnormal EVOLUTION because it can be answered solely by knowing the CRD system automatic response following a scram. [See Tier 2 K/A: 201001 CRD K4.05, A3.08 A3.09, etc.] For Tier 1, the proposed test item should test the mitigative strategy, a required manual operator action, or procedure requirement, from an off-normal AOP, annunciator response procedure, etc. As a further example, the stem of the question says "assume no operator actions have been taken", which means that the question is solely testing the Tier 2 aspect of automatic system response. Suggest testing a required operator action from AOI-100-1 dealing with operating/monitoring the CRD hydraulic system.
11																T1G1 295006 AA1.06 (Comments and/or Repairs rec'd 3-1-17) 1. Same comment as above.
11																T1G1 295006 AA1.06 (Comments and/or Repairs rec'd 3-17-17) 1. Cred Dist: The 2nd fill-in-the-blank statement appears to imply the UO must wait before reporting all rods in, which injures plausiblity. Easy-fix, see below. 2. Cue: The last phrase in the 1st fill-in-the-blank statement (*"..prior to placing the switch in REFUEL."*) is not necessary. *Unit 2 was operating at 100% when an automatic scram occurred due to a high reactor pressure signal.* *WOOTF completes both statements IAW 2-AOI-100-1, Reactor Scram?* *The Unit Operator (UO) ___(1)____ to PAUSE for 5 seconds with the reactor mode switch in the START & HOT STBY position.* *(is vs **is not**)* *IF the REFUEL MODE ONE ROD PERMISSIVE light did NOT illuminate, the UO is allowed to report "All Rods In" ____(2)____ on the full core display.* *(only if each rod indicates "00" vs **if some rods indicate "- - " and the others indicate "00"**)*

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
11	H	2													S	T1G1 295006 AA1.06 Comments incorporated
12	F	2					x			x				N	E	T1G1 295016 AK3.02 1. Partial: Choices A, B, and C can also be successfully argued as correct because they are an "indirect" benefit from manually tripping the turbine before leaving the control room. This test item is vulnerable in the post-exam appeal period. • Choice A: tripping turbine conserves inventory and minimized level drop because steam flow will lower since reactor is also scrammed. • Choice B: tripping turbine will reduce steam flow for same reason as Choice A. • Choice C: tripping the turbine causes an automatic generator trip, which opens Bkr 224 and prevents "high side" PCBs from actuating. 2. #/units: The term "high side" should be accompanied with the UNID breaker number in Choice C. Suggest re-working to tell the applicants AOI-100-2 was entered due to toxic gas in the main control room and all IOAs were performed prior to leaving. Then test their ability to predict whether 1) the turning gear will/will not auto engage and 2) the means of reactor pressure control at the time the operators left the control room (SRVs/Bypass Valves). (The second part of this example is an "indirect" way of testing the *reason* for tripping the turbine: to place bypass system in service until pressure control established later on SRVs. Both parts are related to the main turbine – not two different topics.)
12	F	2													S	T1G1 295016 AK3.02 (Comments and/or Repairs rec'd 3-3-17)
13	H	2												B	S	T1G1 AK2.02 (2015 BFN NRC Exam, Q#7)

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			
14	H	2				x						x		N	~~U~~ E	T1G1 AK3.03 1. Q=K/A: The proposed test item is not testing the Tier 1 Emergency/Abnormal EVOLUTION because it can be answered solely by knowing the purpose and function of Control Air Xtie Valve 1PCV-032-3901[See Tier 2 K/A: 300000 Instrument Air System K3.03, A3.01, k4.01, etc.] For Tier 1, the proposed test item should test the mitigative strategy, a required manual operator action, or procedure requirement, from an off-normal AOP, annunciator response procedure, etc. Suggest testing a required operator action from 1AOI-32-2; the "reason" for the required operator action will be indirectly tested since the applicant must know the "reason" for why the operation action is required. 2. Cred Dist: The interplay between the 1st and 2nd parts of Choices B/C make them not plausible. • Choice B (xtie opens to prevent scram on adjacent unit) is not plausible because the stem says the leak is on Unit 1 and when the xtie opens, it makes the adjacent unit more vulnerable to loss of control air. • Choice C (xtie closes to prevent scram on affected unit) is not plausible because the stem says the leak is on Unit 1 and closing off a good supply of air from the adjacent unit will leave Unit 1 all by itself to lose control air. 3. LOK: The reference sheet for the question says this is a higher cog question; may be a lower cog, discuss.
14																T1G1 295019 AK3.03 (Comments and/or Repairs rec'd 3-3-17) 1. Same comment #1 above

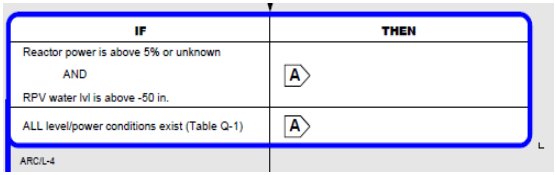
Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N	7. U/E/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
14																T1G1 295019 AK3.03 (Comments and/or Repairs rec'd 3-17-17) 1. Partial: Choice A is also correct because the 1st fill-in-the-blank statement doesn't specify the word "first." 2. Stem Focus: The stem doesn't identify the initial Unit 1 status. 3. Stem Focus: The 4th bullet doesn't include the UNID# of the meter being used in the control room, which is important because the manual scram required action is tied to a specific meter. *All three units are operating at 100% power and the "G" Air compressor trips.* *Current conditions:* • *AIR COMPRESSOR ABNORMAL (1-9-20B, Window 29) alarms* • *"A" and "B" compressors running* • *"C" and "D" compressors not running* • *Control Air Header Pressure (1-PI-32-20) lowering* *WOOTF completes both statements IAW 0-AOI-32-1, Loss of Control and Service Air Compressors?* *Service Air Crosstie to Control Air Valve (0-FCV-33-1) auto-opens when control air header pressure first lowers to ___(1)___ psig.* *A manual reactor scram is required if Control and Service Air Compressors cannot maintain Control Air Header pressure above ___(2)____ psig.*
14	H	2													S	T1G1 295019 AK3.03 Comments incorporated
15	H	2												M	E	T1G1 295021 AK1.01 (BFN 2015 NRC Q#9) 1. Cue: The stem of the question should only indicate "[REFERENCE PROVIDED]"; it is not necessary to provide the name of the reference to elicit the correct response. 2. Cue: The phrase in the stem question ("Based on Illustration 1") is not needed to elicit the correct response because the applicants will each receive a reference packet.

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
15	H	3													S	T1G1 295021 AK3.03 (Comments and/or Repairs rec'd 3-3-17)
16	H	2												N	U	T1G1 295023 AK2.02 1. Cred Dist: The 1st part of Choices C/D (don't assume iodine release when bubbles coming up from dropped fuel bundle) is not plausible because conservative decision making alone warrants the assumption that the bubbles may contain iodine.
16																T1G1 295023 AK2.02 (Comments and/or Repairs rec'd 3-17-17) 1. Cred Dist: 150 degrees is above the temperature that iodine comes out of solution; suggest changing the wrong answer to 125 degrees since this is the Fuel Pool Temperature High alarm set point, and is also the first temperature at which a time-to-boil calculation is required. 2. Stem Focus: To clarify the 1st fill-in-the-blank statement, and to re-order the fill-in-the-blank statements from "normal to abnormal", and to ensure no partially correct answer to the 2nd fill-in-the-blank statement, suggest the following enhancements: *Unit 1 is in a refueling outage with the fuel pool gates removed and the fuel pool cooling system in operation in accordance with 1-OI-78, Fuel Pool Cooling and Cleanup System.* *Subsequently, an accident occurred in the spent fuel pool (SFSP) and the crew entered 1-AOI-79-1, Fuel Damage During Refueling.* *WOOTF completes both statements?* *IAW 1-OI-78, the SFSP temperature that will minimize the release of soluble activity is ___(1)____ .* *IAW 1-AOI-79-1, if gas bubbles are identified at any time, ___(2)___ should be assumed until RADCON determines otherwise.*
16	F	2													S	T1G1 295023 AK2.02 Comments incorporated

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
17	H	2										x		N	~~U~~ E	T1G1 295024 EA1.14 1. Q=K/A: The proposed test item is not testing the Tier 1 Emergency/Abnormal EVOLUTION because it can be answered solely by knowing the automatic drywell blower load shed feature [See Tier 2 K/A: 223001 Primary Containment System & Auxiliaries K2.09, K6.11, A2.01, A4.12, etc.] For Tier 1, the proposed test item should test the mitigative strategy, a required manual operator action, or procedure requirement, from an off-normal AOP, annunciator response procedure, etc. As a further example, the stem of the question says "assume no operator actions have been taken", which means that the question is solely testing the Tier 2 aspect of automatic system response. Suggest testing a strategy, a required manual operator action, or procedure requirement from 9-3B W22, W23, W30, AOI-64-1, or EOI-2, DW/P, which is associated with the drywell ventilation (coolers) system.
17																T1G1 295024 EA1.14 (Comments and/or Repairs rec'd 3-3-17) 1. Same comment as above. Suggest the following: *WOOTF completes both statements regarding the drywell blowers?* *IAW 3-OI-64, Primary Containment System, normally ___(1)____ of the five cooling units are in service in each train. (three vs **four**)* *IAW the PC Press Leg of 3-EOI-2, Primary Containment Control, drywell blowers are required to be secured ____(2)_____ suppression chamber pressure rises to 12 psig. (before vs **when**)*

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
17																T1G1 295024 EA1.14 (Comments and/or Repairs rec'd 3-17-17) 1. Cred Dist: The 2nd part of Choices B/D (can spray the drywell with blowers running) is not plausible because wetting energized electrical equipment can lead to containment failure if hydrogen exists, and could also lead to electrical distribution system challenges. Suggest using the 2nd part of my suggestion listed above (3-3-17) because RO knowledge of the overall mitigative strategy is that drywell sprays are required after 12 psig is reached and drywell blowers must be stopped before drywell sprays because of the reason cited above in this comment..
17	F	2														T1G1 295024 EA1.14 Comments incorporated
18	F	2												N	S	T1G1 295025 G2.4.50
19	H	2	x	x										N	E	T1G1 295026 EA2.02 1. Stem Focus: To enhance plausibility, reword the 1st fill-in-the-blank statement as: *Interpolation is __(1)___ to be used on Curve 3.* *(required/not allowed)* 2. Cue: The stem of the question should only indicate "[REFERENCE PROVIDED]"; it is not necessary to provide the name of the reference to elicit the correct response.
19																T1G1 295026 EA2.02 (Comments and/or Repairs rec'd 3-3-17) 1. Same comment #1 above. Needs to be revised to eliminate grammar cueing to the correct answer. 2. What BFN procedure (not a lesson plan) states that interpolation is not allowed?

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			
19																T1G1 295026 EA2.02 (Comments and/or Repairs rec'd 3-17-17) 1. Stem Focus: The stem should say that the crew entered 2-EOI-2, Suppression Pool Temperature leg. 2. Stem Focus: The stem should say [REFERENCE PROVIDED] to be consistent with the remainder of the exam. 3. Cue: The name of the curve in the stem is not necessary; suggest streamlining the fill-in-the-blank statement. *A LOCA occurred on Unit 2 and the crew is implementing 2-EOI-2, Primary Containment Control, Suppression Pool Temperature leg.* *Suppression Pool temperature is 190 °F.* *WOOTF completes the following statement?* *Action is required if reactor pressure is ___(1)___ psig and suppression pool level is ___(2)___ feet.* *[REFERENCE PROVIDED]*
19	H														S	T1G1 295026 EA2.02 Comments incorporated
20	H	2	x											B	E	T1G1 295028 EA2.02 (BFN 2015 NRC Exam Q#14) 1. Stem Focus: To enhance plausibility, add context to the question, and be slightly different than the 2015 NRC exam, add the following items: *A steam line break inside the drywell occurred and the following conditions currently exist:* • *Reactor Pressure: 125 psig* • *(1st stem sentence)* • *(2nd stem sentence)* 2. Stem Focus: The 1st stem sentence should say *"…(MIL) listed in EOI Caution 1"* [instead of *"…(MIL) in accordance with EOI Caution 1"*]. 3. Stem Focus: Add the phrase "*..in accordance with EOI Caution 1*" to the stem question. 4. Stem Focus: Streamline the 2nd parts of Choices C/D to "*cold calibration conditions*".

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			
20	H	3													S	T1G1 295028 EA2.02 (Comments and/or Repairs rec'd 3-3-17)
21	H	2	x	x		x								N	E	295031 EK1.03 1. Cred Dist: Choice A (better mixing) is not plausible because the stem says water level is being lowered. 2. Cue: The plausibility for Choice D (MSIVs close) is less than effective because the stem provides the water level (-50") being lowered to. 3. Stem Focus: The 1st sentence in the stem is not specific to the step in the procedure. Suggest the following: *The crew has determined that the FIRST override listed below (Step ARC/L-4 in 2-EOI-1A, ATWS RPV Control) is NOT met:*  IF / THEN Reactor power is above 5% or unknown AND RPV water lvl is above -50 in. — A ALL level/power conditions exist (Table Q-1) — A ARC/L-4 *WOOTF identifies 1) the reason why the crew is required to STOP and PREVENT All injection to the RPV at Flow path A and 2) whether RCIC is allowed to continue to operate?* (Reduce core inlet Subcooling vs Limit Containment Heatup)
21	H	2													S	295031 EK1.03 (Comments and/or Repairs rec'd 3-6-17)
22	H	3												B	S	T1G1 295037 EK1.02

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			
23	F					x						x		N	U	SAMPLE QUESTION rec'd 12-9-16

1. Cred Dist: The 2nd part of Choices B/D (no alt method of obtaining data) is not plausible because wind speed, direction, & ambient temp can always be obtained; common sense can eliminate Choices B/D.

2. Q=K/A: The proposed test item does not test any knowledge of the integrated computer system (ICS) or the safety parameter display system (SPDS), which is required for the K/A.

   Previous discussion on ideas for this K/A dealt with ROs acquiring MET tower data during the E-plan. Your research indicated that no BFN RO task associated with obtaining or plotting MET Tower data *during high release rates*; however, there may be an RO task (U-100-NO-01) to use ICS to acquire MET tower data, which is indirectly related to the High Offsite Release topic by virtue that this data is used by other TSC personnel during E-plan:

TASK	DESCRIPTION
U-048-NO-07	Resetting a Failure on 2/3-PNL-9-96A(B)
S-048-NO-05	Resetting a Failure on 2/3-PNL-9-96A(B)
U-048-NO-04	Use ICS and SPDS
S-048-NO-01	Transfer of ICS computer Power Supplies
U-100-NO-01	Obtain Meteorological Data from the ICS

   Other ideas for test items (e.g., EOI-4/SPDS relationship) may lie in OPL171.099 which states:

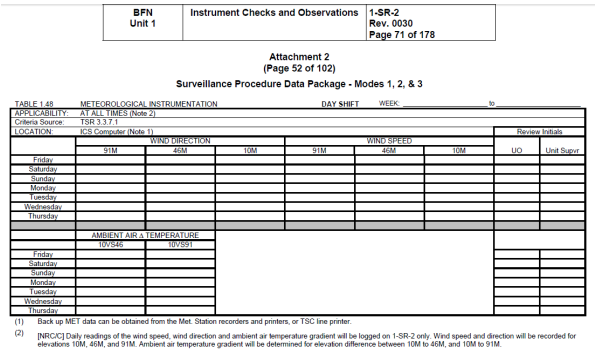
14. Meteorological Data (MET DATA) Met data is obtained off the BOP Summary menu. (Go to Dose Assessment). This will get you to the Wind Speed/ direction and stability class. There are also links to MET Tower data and river data. This info is utilized for Emergency Plan response

8. Radiation Menu (RAD): Each Units ARM. PRM,and CAM data is available. WRGERMS data is also accessed from this menu. — Obj.8.c

b. If EOI parameters meet EOI entry conditions or parameters reach bad quality status, the SPDS target will turn RED and flash. Clicking on the SPDS target will call up the SPDS overview display. To stop the flashing red SPDS target click on it to acknowledge. This will seal in the red target. — Obj.6

b. Can be accessed by typing "EOI1," EOI2S," "EOI2D," "EOI3", or "EOI4" (the turn-on-codes), by touching the EOI status boxes on any SPDS display, by touching the appropriate area on the SPDS Menu, or by pressing the marked function keys on the keyboards.

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			
23																Question #23 continued….. LOK: The question was listed as Higher Cog; however, may be Lower Cog/Memory.
23	F	5												B	E/U	T1G1 295038 EK2.08 1. Job-Link and/or LOD=5: During the post-exam appeal period, an applicant can successfully argue that this item is testing E-Plan determinations, including parameters to support the classification determinations, which is SRO knowledge. Even though the class consists of only SRO applicants, the exam must still sample 75 RO knowledge items. Suggest re-visiting sample question comment suggestions listed above for where MET data is obtained on ICS (BOP Menu), which is associated with RO Task U-100-NO-01 (Obtain MET Data from ICS). Another idea is to test what the Red Target means for EOI-4 on the SPDS display, including what entry condition/plant parameter/instrument is used to trigger the Red Target.
23	F	2													S	T1G1 295038 EK2.08 (Comments and/or Repairs rec'd 3-6-17)



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Attachment 2
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Surveillance Procedure Data Package - Modes 1, 2, & 3

TABLE 1.48 METEOROLOGICAL INSTRUMENTATION DAY SHIFT WEEK: _____ to _____

APPLICABILITY: AT ALL TIMES (Note 2)
Criteria Source: TSR 3.3.7.1
LOCATION: ICS Computer (Note 1)

	WIND DIRECTION			WIND SPEED			Review Initials	
	91M	46M	10M	91M	46M	10M	UO	Unit Supvr
Friday								
Saturday								
Sunday								
Monday								
Tuesday								
Wednesday								
Thursday								

	AMBIENT AIR Δ TEMPERATURE			
	10VS46	10VS91		
Friday				
Saturday				
Sunday				
Monday				
Tuesday				
Wednesday				
Thursday				

(1) Back up MET data can be obtained from the Met. Station recorders and printers, or TSC line printer.
(2) [NRC/C] Daily readings of the wind speed, wind direction and ambient air temperature gradient will be logged on 1-SR-2 only. Wind speed and direction will be recorded for elevations 10M, 46M, and 91M. Ambient air temperature gradient will be determined for elevation difference between 10M to 46M, and 10M to 91M.

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			
24	H	2		x		x								N	E/U	600000 G2.4.35 1. Cred Dist: The 1st part of Choices C/D (manually isolate the AHU) is not plausible because the stem says that the control switch did not work, which means that the motor is still running. Isolating an AHU with the motor running can cause additional issues with motor overheating, fire, etc. 2. Cred Dist: The 2nd part of Choices B/D (Halon system installed in the plant) is not plausible because there is no fixed halon system installed in the plant, there are only portable fire extinguishers. Easy Fix to change to CO2. 3. Cue: The phrase "…due to loss of air flow" is not necessary to elicit the correct response. One other idea for this question may be to test the procedure's strategy for removing smoke from the Aux Instrument Room: [20] **IF** smoke or CO_2 is present in Auxiliary Instrument Room No. 1, **THEN** **PERFORM** the following: [20.1] **PLACE** AUX INST RM NO 1 EMERGENCY EXHAUST, 0-HS-31-124, on 0-LPNL-925-0165 Panel A in EMERGENCY to ventilate affected room. ☐ [20.2] **WHEN** Auxiliary Instrument Room No. 1 smoke/CO2 removal has been completed, **THEN** **PLACE** AUX INST RM NO 1 EMERGENCY EXHAUST, 0-HS-31-124, on 0-LPNL-925-0165 Panel A in NORMAL. ☐
24	F	2													S	600000 G2.4.35 (Comments and/or Repairs rec'd 3-3-17)
25	H	2	x			x								N	E	T1G1 700000 AK3.02 1. Cred Dist: Choice A (lower reactor power) is not plausible because frequency is less than 60 hz. 2. Stem Focus: The current parameters listed in the stem should be listed as stable.
25	H														S	T1G1 7000000 AK3.02 (Comments and/or Repairs rec'd 3-3-17)

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			
26	F	2	x											N	E	T1G2 295007 AK2.03 1. Stem Focus: To ensure systems knowledge alone cannot be used to answer the question, re-word the stem question as: *WOOTF indicates the injection pressure listed on EOI-1, Table L-1, Preferred Injection Systems?*
26	F														S	T1G2 295007 AK2.03 (Comments and/or Repairs rec'd 3-3-17)
27	H	2	x			x								B	E	T1G2 295022 AK1.01 (BFN 2011 NRC Exam, Q#24) 1. Stem Focus: To modify the question from the 2011 NRC Exam, change Choices C/D as: *C. Manually SCRAM; enter AOI-85-7, Control Rod Misposition* *D. Manually SCRAM; do NOT enter AOI-85-7* 2. Stem Focus: To clarify the intent of Choice B, modify it as: *B. Immediately attempt one restart of 2A CRD Pump; manual SCRAM is NOT required.* 3. Stem Focus: The stem question can be streamlined as: "*What sequence of actions is required in accordance with…*"
27	H														S	T1G2 295022 AK1.01 (Comments and/or Repairs rec'd 3-3-17)

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
28	H	2				x	x							N	U	T1G2 295035 EK3.02 1. Cred Dist: The 2nd part of Choices A/C (potential loss of access to Rx Bldg exists) is not plausible because the stem does not contain anything that could potentially be misconstrued as a steam leak, temperature, fire, etc. Suggest changing the 2nd part of the question to test whether EOI-3 entry is/ is not required. This is an indirect way to test a "*reason*" associated with ventilation response. 2. Cred Dist: The 1st part of Choices A/B (fans are expected to be in service) is not plausible because the stem says that the ventilation is ABNORMAL and the Δ pressure is low (positive pressure). The way that the 1st fill-in-the-blank statement is worded doesn't require the applicant to know whether an auto-static pressure lockout has occurred. Easy fix: Re-word the 1st fill-in-the-blank statement as: *An automatic reactor zone static pressure lockout _(1)___ occurred. (has/ has not)* 3. Partial: Because the word "expected" is used in the 1st fill-in-the-blank statement, an applicant can argue that Choice B is also correct. The fans are "expected" to be in service at 100% power.
28	H	2													S	T1G2 295035 EK3.02 (Comments and/or Repairs rec'd 3-6-17)

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
29	H	2	x	x										N	E	T2G1 203000 A2.02 1. Cue: The words "the isolation" in the 2nd fill-in-the-blank statement could provide information to another question on the exam. 2. Stem Focus: The following items should be incorporated to enhance clarity, streamline, and be within AOI-74-1. • The 2nd sentence should be clarified as: *"Subsequently, reactor water level lowered to 0 inches due to a leak, and continues to slowly lower."* • The 3rd sentence should be clarified as: "*The US directs restoration of reactor water level using Loop II LPCI in accordance with 3-AOI-74-1, Loss of Shutdown Cooling*." • The 1st fill-in-the-blank statement should be clarified as: "*RHR Loop II pumps will automatically trip due to a __(1)__ signal*." • The 2nd fill-in the-blank statement can be streamlined as: "*In accordance with 3-AOI-74-1, the Unit Operator is required to depress the reset pushbutton(s) on Panel __(2)__*.
29	H														S	T2G1 203000 A2.02 (Comments and/or Repairs rec'd 3-6-17)
30	H	2												B	E	T2G1 206000 A3.02 1. Overlap with Simulator JPM D (JPM 345A Place HPCI in reactor pressure control, Alt path). Replace either the JPM or this test item.
30	F	2													S	T2G1 206000 A3.02 (Comments and/or Repairs rec'd 3-6-17)

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			
31	H	2					x					x		N	~~U~~ E	T2G1 206000 K6.07 1. Partial: Choice B (RCIC) is also correct because RCIC is operable from the torus and because the word "least likely" is subjective. 2. Q=K/A: The proposed test item does not test how a malfunction of the BFN keep fill methodology (SR 3.5.1.1) affects <u>*HPCI*</u>; the proposed test item tests how a loss of PSC affects CS and RHR. Suggest testing the strategy associated with how SR 3.5.1.1, Maintenance of HPCI Filled Discharge Piping, is performed, for example, the need and methodology used by the local operator to differentiate between all air flow, an occasional bubble, or a solid stream of water during venting. (If bubbles observed, then a 2nd stopwatch is started and vent line surface temperatures logged for 10 minutes).
31																T2G1 206000 K6.07 1. 3-6-17: Replaced K/A because BFN does not have a keepfill system for HPCI. Replaced with 206000 K6.12.
31																T2G1 206000 K6.12 (Comments and/or Repairs rec'd 3-17-17) 1. Partial: To be clear that the LIS will indeed be affected by the LT leak, suggest streamlining the stem so the applicants don't have to wonder whether the LIS will still perform its intended function at some other set point different than the level 8 set point. 2. Stem Focus: Include a stem question to be consistent with the remainder of the exam. *Unit 1 is operating at 100% power.* *The Instrument Mechanics discovered that LIS-208B, (Name/UNID) will not cause its associated automatic function(s.* *The Unit Supervisor declared LIS-208B inoperable.* *WOOTF completes both statements?*
31	H	3													S	T2G1 206000 K6.12 Comments incorporated

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
32	F	2	x											B	E	T2G1 209001 G2.1.23 1. Stem Focus: Re-word the stem question to say: *WOOTF completes both statements for the Unit 3 Core Spray system?*
32	F	2													S	T2G1 209001 G2.1.23 (Comments and/or Repairs rec'd 3-3-17)
33	H	2	x						x	x				N	E	T2G1 211000 K3.03 1. Minutia: One intent of the K/A may be to test the applicants' knowledge of how a *complete* loss of the SLC pipe-within-a-pipe affects the core plate Δp indication. The proposed test item may be testing an insignificant (very small) change to the core plate Δp indication, which may or may not be discernable, and not operationally significant. Does the simulator show any deflection on the Δp indication when a pump discharge relief valve fails open? If there is a discernable change in the Δp indication when a SLC pump is turned off and on, then the proposed test item may be acceptable; however, it seems like minutia (too small of a change to recognize on the Δp indication). 2. #/units: The 1st fill-in-the-blank statement should include the instrument/recorder where the indication is speaking of. For example: Core Plate Differential Pressure indicated on RECORDER #-###, XYZ, will ___(1)____ . 3. Stem Focus: It may be clearer to split up the one fill-in-the-blank statement into two separate sentences instead of having them run together. 4. Stem Focus: The stem question should be "*WOOTF completes the following statement?*"
33	H	2													S	T2G1 211000 K3.03 23 (Comments and/or Repairs rec'd 3-3-17) 1. Licensee said: At 100% power Core D/P is ~17 psid. When the SLC pump starts the Core D/P pegs out at 30 psid. We do not have a relief valve failing open malfunction but the discharge piping is 1.5 inches and the relief valve line is 1 inch. The relief valve line returns back to the SLC tank at atmospheric pressure so I would expect all of the pump flow to recirc. KN

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
34	F	2		x		x								N	E/U	T2G1 212000 G2.4.46 1. Cue: The list of windows provided in the stem is not necessary to elicit the correct response; the list contains two windows in column 4, which cues the applicants to the other alarms as described below. 2. Cred Dist: Choices A/B are not plausible because: Choice A contains 4, 11, and 18; if the Main Steam Line Ch A Flow High alarm (18) is in, then the Main Steam Line Ch A Press Low (25) would also be in. Choice B contains 4, 11, 25, and 32; if the Main Steam Line Ch A Press Low (25) is in, then the Main Steam Line Ch A Flow High alarm (18) would also be in. Suggest re-working the question to test whether W23 and W34 are in alarm. 3. We need to evaluate whether providing a picture of the 9-5B annunciator panel affects any other test item on the exam.
34	F	3													S	T2G1 212000 G2.4.46 (Comments and/or Repairs rec'd 3-3-17)
35	H	2												N	E	T2G1 212000 K3.06 1. This question overlaps with Q#55.
35	H	2													S	T2G1 212000 K3.06 (Comments and/or Repairs rec'd 3-3-17)
36	H	2	x											N	S	T2G1 215003 A4.02 1. Stem Focus: Modify the steam question to say "*Using the IRMS ICS Screen provided in the reference packet, WOOTF completes the statement below?*" 2. Stem Focus: To be consistent with the remainder of the exam, modify the bracketed information to say "[REFERENCE PROVIDED]". 3. (Comments and/or Repairs rec'd 3-3-17)

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			
37	H	2				x								N	E	T2G1 215003 K4.02 1. Cred Dist: Choice B (no rod block during a half scram) is not plausible because anytime a neutron monitoring half scram exists, there is always an accompanying rod withdrawal block. Suggest modifying the choices as: *A. Rod Block ONLY* *B. Rod Block and Half Scram RPS A* *C. Rod Block and Half Scram RPS B* *D. Full Scram*
37	H	2													S	T2G1 215003 K4.02 (Comments and/or Repairs rec'd 3-3-17)
38	F	2												B	E	T2G1 215004 K2.01 (BFN 2015 NRC Exam, Q#35) 1. This question can be easily modified from the 2015 NRC exam version as: *WOOTF completes both statements regarding the SRM power supply?* *Power to Panel 9-12 SRM drawer is from __(1)___.* *(RPS vs +/- 24VDC)* *Power to the SRM detector is from ___(2)___ .* *(+/- 24VDC vs 250 VDC)*
38	F	2													S	T2G1 215004 K2.01 (Comments and/or Repairs rec'd 3-6-17) 1. Licensee did not want to modify question.

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			
39	F	2				x	x								U	SAMPLE QUESTION rec'd 12-9-16 1. Cred Dist: The 2nd part of Choices B/D (bypass light is extinguished) is not plausible from a common sense standpoint; if the "bypass" light is OFF, common sense would question whether or not a component is "bypassed." Conservative decision making can be used to eliminate Choices B/D. 2. Partial: Choice C is also correct; "the associated voter" can be interpreted to mean all four voters because all voters receive input from each APRM. 3. The K/A link to LPRMs is weak; suggest asking about one of the LPRM displays.
39	F	2	x											N	E	T2G1 215005 A4.04 1. Operational Validity: 2-OI-92B, Section 6.3, Bypassing LPRM Detectors, only provides guidance for placing the LPRM in the Bypass/HV OFF mode. Although the precautions and limitations in 2-OI-92B describe the differences in modes (HV OFF or HV ON), there is no procedure step in OI-92B that directs the HV ON mode. If no procedure step to place the LPRM in HV ON mode exists, then the question can be deleted during the post-exam appeal period. Provide procedure *step* that directs placing LPRM in Bypass/HV ON mode. 2. Stem Focus and/or Partial: To enhance plausibility of the wording for the incorrect choices, and to ensure no partially correct answers, re-word the fill-in-the-blank statements as: *LPRM detector power output indication ___(1)___ be available at the APRM/LPRM drawer on Panel 9-14.* *(will/ will not)* *The Panel 9-5 Full Core Display ___(1)___ indicate which LPRM is bypassed.* *(will/ will not)* 3. LOK: Discuss whether this test item should be Higher or Lower Cog.

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
39	F	2													S	T2G1 215005 A4.04 (Comments rec'd/repairs 3-6-17) 1. 2-SR-3.3.1.1.13 (APRM Surveillance) directs bypass switch in HV/ON (Step 7.15 [23]).
40	F	2				x	x							N	U	T2G1 217000 K4.03 1. Cred Dist: The 2nd part of Choices B/D (bearings protected by a room cooler) is not plausible because bearings on mechanical equipment are protected with oil. 2. Cred Dist: The first phrase in the fill-in-the-blank statement makes the 1st part of Choices C/D (auto swap to torus on initiation of RCIC) not plausible because RCIC does not auto-swap to the torus *when it initiates*. Easy fix to delete the phrase "Upon initiation of RCIC..". 3. Partial: Choice C can also be correct because swapping to the torus could indirectly be considered another way to provide pump cooling when the CST level is too low.
40	F	2													S	T2G1 217000 K4.03 (Comments rec'd/repairs 3-7-17)
41	H	2												M	S	T2G1 218000 G2.4.35 (BFN 2015 NRC Exam, Q#39)

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			
42	H	2	x			x	x							N	E/U	T2G1 223002 A2.08 1. Partial: In the post-exam appeal period, an applicant can successfully contend there is no correct answer. There is no Caution in 2-SR-3.3.1.1.8(5) that says a High Steam Flow Isolation could occur; the procedure says if baseline testing is being performed (full valve stroke), having power less than 66% ensures the High Steam Flow Isolation will not occur. This is different than what the 1st fill-in-the-blank is saying, therefore, an applicant can appeal this question as having no correct answer. Suggest testing some aspect of the surveillance test methodology/procedure. For example, *When testing an MSIV, 2-SR-3.3.1.1.8(5) directs the operator to DEPRESS and HOLD the MSIV Test Push-Button until __(1)__.* 2. Cred Dist: The plausibility of 1st part of Choices C/D (high water level trip) only exists inside of AOI-1-3; *since the 1st fill-in-the-blank statement has nothing to do with AOI-1-3*, the 1st part of Choices C/D is not plausible. When testing an MSIV, high reactor water level is not the concern; the stem does not have anything that could be misconstrued as affect Auto reactor water level control. 3. Stem Focus: To be aligned with AOI-1-3, insert the phrase "such that the MSIV remains partially closed" in the 2nd fill-in-the-blank statement: *IF the Test Push-Button is released, and the MSIV remains partially closed, 2-AOI-1-3, MSIV Closure at Power, directs __(2)__ .* 4. Stem Focus: The stem question should be "*WOOTF completes both statements?*"
42	H	2													S	T2G1 223002 A2.08 (Comments and/or Repairs rec'd 3-6-17)

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			
43	F	2		x								x		B	E/U	T2G1 239002 A3.07 (BFN 2014 NRC Exam, Q#40) 1. Q=K/A: Two of the Reactor Pressure Control K/A topics are ADS (218000) and Relief/Safety Valves (239002). The proposed test item seems more appropriate for the ADS topic (See 218000 K1.03 relationship between ADS and nuclear boiler instrumentation and K4.01 design features/interlocks that prevent inadvertent initiation). The assigned K/A topic (Relief/Safety Valves 239002) says "ability to monitor automatic operations of the safety/relief valves….including reactor water level", which may be targeting the "automatic" *pressure relief function* and how that affects reactor water level. It may be more appropriate to test the relief valve lift setting, and how reactor water level responds when the first set of relief valves lift during a high reactor pressure event. 2. Cue: The NOTE is not needed to elicit the correct response; this is teaching in the stem.
43	F	2													S	T2G1 239002 A3.07 (Comments and/or Repairs rec'd 3-3-17)
44	H	2													E	SAMPLE QUESTION rec'd 12-9-16 1. This is the plant specific portion of the NRC written exam; the plant specific information being tested may be RPV pressure and Torus Pressure values at BFN; however, these values are standard for all BWRs in the southeast. Isenthalpic throttling process knowledge is generic fundamentals K/As 293002, Basic Energy Concepts, K1.04 and 293004, Thermo Processes, K1.16. Instead of testing the following plant specific information, the stem *tells* the applicants the plant specific information: • where BFN tail pipe temperatures can be monitored (at 1-TR-1-1 on Panel 1-9-47). • The name of the annunciator, including how it may be triggered (temperature vs acoustic) 2. #/units: The actual annunciator name and location, i.e., MAIN STEAM RELIEF VALVE OPEN (9-3C, W25) is missing from the stem.

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			
44	F	2	x			x						x		N	U	T2G1 239002 K5.04 1. Cred Dist: The 1st part of Choices A/B (SRV full open) is not plausible because MW are unchanged from the beginning of shift. 2. Q=K/A: The proposed test item does not test the applicants' knowledge of tail pipe temperature monitoring because it can solely be answer based on MW (not tailpipe temperature) not changing and the procedure AOI-1-1 requirement when an SRV is open. Suggest testing the applicants' knowledge of 1-SR-2 requirement (Page 41 of 178, Bulk Suppression Pool Temperature) that each SRV must have an acoustic monitor channel OR a tailpipe temperature detector; otherwise torus temperature is required to be monitored once per shift to observe any unexplained temperature rise which might be indicative of an open/leaking SRV. Or… test the applicants' knowledge that the recorder is required per the TRM, or that its range is 0 to 600°F, and it graphs ten levels of flow, and the implication (none) if it is not operable. 6. Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe — 1,2,3 — 1 per Valve (g) — D — TSR 3.3.5.5 TSR 3.3.5.11 — Multipoint Recorder 0-600°F Bar graph 10 levels of flow (g) Each relief valve is required to have one channel of Tailpipe Thermocouple Temperature or one channel of Acoustic Monitor. (4) If both the primary and secondary indication of any SRV tailpipe is inoperable, per Technical Requirements Manual 3.3.5, the Suppression Pool Water Temperat monitored at least once per shift to observe any unexplained temperature rise which might be indicative of an open SRV. 3. Stem Focus: The term "simmering" is not defined in any procedure and is subjective.
44	F	2													S	T2G1 239002 K5.04 (Comments and/or Repairs rec'd 3-6-17)

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			
45	H	2	x									x		N	U	T2G1 259002 A1.03 1. Q=K/A: The portion of the K/A related to predicting or monitoring reactor power changes while operating the RWLCS is not being tested because the question solely tests the RWLCS controller operation. Suggest adding another aspect to the question to test 3-GOI-100-1A reactor power requirement: *The first Reactor Feed Pump will be placed fully in service when the first Turbine Bypass Valve is ___(1)___.* *(between 10% and 50 % open vs. 100% open)* 2. Stem Focus: The fill-in-the-blank statement (The UO will adjust ___ selected.) and the 4 choices are disjointed; the four choices don't include the up/down arrows that the UO will adjust with column 3 selected. To become more precise, perhaps the fill-in-the-blank statement should be: "*The UO will adjust the up/down arrows on the ___ selected*. 3. Stem Focus: The 1st bullet in the stem should be more precise as "Speed Control Raise-Norm-Lower Knob: Pulled Up"
45																T2G1 259002 A1.03 (Comments and/or Repairs rec'd 3-3-17) 1. Q=K/A: Is the applicant required to monitor reactor power? It is better to test implication of feeding with the SULCV that may cause power to rise, etc. 2. Cred Dist: The 1st part of A/C (press ramp up) is not plausible because feed flow is higher than steam flow in the stem picture.

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
45																T2G1 259002 A1.04 (Comments and/or Repairs rec'd 3-17-17) 1. Licensee requested K/A replacement because could not come up with a DFWLC dependency on reactor power that was greater than LOD=1. New K/A 259002, A1.04. 2. Cue: The 2nd fill-in-the-blank implies that something changed with no operator action; therefore, it must mean that the parameter has gone above its normal range because the triangle wasn't illuminated already before when the parameter was being controlled by the controller. Suggest re-wording the 2nd fill-in-the-blank statement as: *IF a triangle at the top of the controller display column is illuminated, THEN this indicates the parameter ___(2)___ .*
45	H	3													S	T2G1 259002 A1.04
46	H	2												N	U	T2G1 261000 K1.03 1. Q=K/A: The proposed test item does not test the applicants' knowledge of anything associated with the SBGT. The test item tests which space is required to be vented (torus or drywell) based on ΔP and pressure values, and the valve used (84-19 or 84-20). Step [11] says in 1-OI-64, Section 8.6: [11] **IF** Drywell/Suppression Chamber DP is equal to or less than 1.15 psid **AND** Drywell pressure is greater than 1.15 psig, **THEN** **VENT** the Suppression Chamber until DP is greater than 1.15 psid. **REFER TO** Section 6.2 or 8.3 or 8.4. The test item should test something about the physical connection or relationship between the SBGT and the suppression pool. Suggest incorporating an aspect associated with whether the SBGT fan is/is not required to be running. Which Section of OI-64 is required to be used? Will the SBGT fan be started?
46	H	2													S	T2G1 261000 K1.03 (Comments and/or Repairs rec'd 3-3-17)

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			
47	H	2												N	E	T2G1 262001 A3.01 1. Cue: The last part of Choice D *("…..due to D 4KV SD Bd Normal Feeder breaker tripping"*) is not necessary to elicit the correct response. There is no "reason" provided in Choice A. 2. Stem Focus: Choices B/D need to have the word "output" as the first word. 3. Stem Focus: Choice C should be "output breaker trips and the Diesel trips and locks out." This makes Choice C plausible instead of having a controlled automatic shutdown. 4. Stem Focus: The stem question should be "WOOTF completes the following statement?" 5. Stem Focus: Add "The" as the first word in the fill-in-the-blank statement. 6. What load (kw) is the D D/G loaded to in 0-SR-3.8.1.1(D) for this question?? Is the D/G powering out past the SD Bd …or is the D/G only equal to the loads on the SD Bd. What is the normal loading (kw) on the SD Bd?
47	H	2													S	T2G1 262001 A3.01 (Comments rec'd/repairs 3-6-17)
48	H	2												B	S	T2G1 262002 A1.02
49	H	2	x											N	E/U	T2G1 263000 A1.01 1. Cred Dist: The 2nd part of Choices B/D (245 volts is acceptable) is not plausible because of the wording of the 2nd fill-in-the-blank statement. The word "acceptable" is subjective and the fill-in-the-blank statement refers to the 0-OI-57D, instead of referring to the real acceptance criteria in 2-SR-3.8.7.1, Weekly Check of Power Availability to Required AC and DC Power Distribution Subsystems. Since Battery Board 2 is a 250 VDC Battery, Choices B/D are not plausible because it's not "acceptable" to be less than 250 VDC. Suggest using the 2-SR-3.8.7.1 in the fill-in-the-blank statement and change to whether ACCEPTANCE CRITERIA is/is not met for 245 volts. 2. Stem Focus: The picture is hard to read. The two stem phrases *[BATTERY BD 2 Volts (2-EI-57-37)] indicates as shown below*] should include the values for volts and amps (245 volts, +120 amps).

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
49	H	2													S	T2G1 263000 A1.01 (Comments rec'd/repairs 3-6-17) 1. Plausible because Tech Spec surveillance requirement is 248 volts.
50	H	2	x											B	E	T2G1 263000 K4.02 1. Stem Focus: To be consistent with 1-2-AOI-57-1D, Step [15], revise the fill-in-the-blank statement to: *"__(2)__ is required to re-establish Battery Charger operation if the load shed logic cannot be immediately reset."*
50	F	2													S	T2G1 263000 K4.02 (Comments rec'd/repairs 3-6-17)
51	F	2												B	E	T2G1 264000 K1.04 1. Stem Focus: The 2nd fill-in-the-blank statement is confusing because it seems as though it poses a hypothetical scenario that doesn't exist. Were any EECW pumps running before the U3 D/G auto-start? If so, then the 2nd fill-in-the-blank statement may not be operationally valid. Clarify in the stem how we ended up with only the two pumps that auto-started running. Did a subsequent loss of other SD Bds occur? The applicants will ask the proctor what pumps were initially running.
51	H	2													S	T2G1 264000 K1.04 (Comments rec'd/repairs 3-6-17)
52	F	2												B	S	T2G1 300000 K5.01
53	F	2		x										B	E	T2G1 4000000 K6.05 (BFN 2014 NRC Exam, Q#7) 1. Cue: The only component in the drywell is also the correct answer. 2. Cue: The word "still" in the stem question is not needed to elicit the correct response. 3. LOK: The question reference sheet indicated this was Fundamental; however it may be Higher Cog. Discuss.
53	H	2													S	T2G1 300000 K5.01 (BFN 2014 NRC Exam, Q#7) 1. Changed Choice D to Recirc Pump Sample Coolers

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			
54	H	2	x	x										N	E	T2G2 201006 K5.07 1. Cue: The term “triple notches” in Choice C is not necessary to elicit the correct response. 2. Stem Focus: The word “Control” is not needed in the four choices; the word “A” is confusing - - see suggestion below. 3. Stem Focus: To make the choices consistent with one another, and to streamline, suggest the following: *A. One rod in Group 4 is inserted to position 06.* *B. One rod in Group 5 is selected.* *C. The second rod in Group 4 is withdrawn to position 14.* *D. The second rod in Group 4 is skipped and the third rod in Group 4 is selected.*
54	H	2													S	T2G2 201006 K5.07 (Comments rec’d/repairs 3-6-17)
55	F	2												N	E	T2G2 202001 K4.07 1. This question overlaps with Q#35.
55	F	2													S	T2G2 202001 K4.07 (Comments rec’d/repairs 3-6-17) 1. Changed Q#35 to test the ARI level setpoint (vs ARI pressure setpoint).
56	F	2	x											N	E	T2G2 202002 K2.02 1. Cue: The phrase “via 4KV Recirc Board 1” is not necessary to elicit the correct response. 2. Stem Focus: The stem question is not consistent with the remainder of the exam (“Which of…”).
56	F	2													S	T2G2 202002 K2.02 (Comments rec’d/repairs 3-6-17)

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
57	H	2	x											N	U	T2G1 215001 A3.03 1. Cred Dist: Choice A is not plausible because designing the system to ***automatically*** try and close the ball valve with the TIP probe is still in the core means that the cable is interfering with the valve. The question asks for how the system was designed to ***AUTOMATICALLY*** operate. 2. Cred Dist: Choice B is not plausible because designing the system to ***automatically*** actuate a shear valve means that the cable will be cut and remain inside the core. The question asks for how the system was designed to AUTOMATICALLY operate. 3. Cue: SRO Q#92 provides a cue to the answer of this question. 4. Stem Focus: Add the procedure name/number, including the Section of the procedure/name,that is being performed to the stem of the question.
57	H	2													S	T2G1 215001 A3.03 (Comments rec'd/repairs 3-6-17)
58	H	2										x		N	U	T2G2 226001 K3.02 1. Q=K/A: The proposed test item does not test the RHR Containment Spray Mode System (System 226001). The stem ***tells*** the applicant that sprays are unable to be initiated due to multiple logic failures; the K/A requires testing the applicants' knowledge of how a specific loss or malfunction (or a containment spray component, logic, etc) impacts the Containment Spray Mode, and the containment.
58	H	3												M	S	T2G2 226001 K3.02 (Comments rec'd/repairs 3-6-17) 1. Replaced with Modified version of BFN 2015 NRC Exam Q#58.

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			
59	H	2	x											N	E	T2G2 230000 A1.04 1. Stem Focus: The word "acceptable" in the 2nd fill-in-the-blank statement is vague; suggest using allowed vs not allowed. Also, the wording of the 2nd-fill-in-the-blank statement is cumbersome - - suggesting streamlining as: *Suppression Pool Cooling ___(2)___ allowed to be placed in service on the same RHR loop operating in the Suppression Pool Spray Mode. (is / is not)* 2. Stem Focus: The interplay between the 2nd fill-in-the-blank statement and the phrase "*in this configuration*" in the 1st fill-in-the-blank statement may confuse the applicants. Re-word the 1st fill-in-the-blank statement to be clear: *While operating solely in the suppression chamber spray mode, 1-FCV-74-30, RHR SYS II MIN FLOW VALVE, will ___(1)___ . (remain open vs. be closed)* 3. Stem Focus: The Unit # is missing in the first sentence, and the first sentence can be further streamlined: "*RHR Loop II has been placed in service on Unit 1 in accordance with 1-EOI-Appendix 17C, RHR System Operation Suppression Chamber Sprays*."
59	H	2													S	T2G2 230000 A1.04 (Comments rec'd/repairs 3-7-17)
60	H	2					x			x				N	E	T2G2 239001 K6.06 1. #/units: Provide Panel number in the stem, also provide exact control board wording/labeling for these lights in the stem. 2. Partial: "Lowering reactor water level" and "instrumentation failures" are vague; an applicant can argue there is no correct answer based on any subjective assumption of what "instrumentation failures" means. Provide more detail on "instrumentation failures", reactor water level should be provided. 3. Tell Chief Examiner where he can locate a picture of the lights so he can verify the solenoid power supply arrangement (AC vs DC). Will verify 2-730E927-7 during prep week.
60	H	2													S	T2G2 239001 K6.06 Verified power supply arrangement

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			
61	H	1	x			x				x				N	U	T2G2 245000 K6.04 1. Cred Dist: The 2nd part of Choices B/D (BFN Grid Operating Guide) is not plausible because only plant operating procedures contain guidance for operating equipment (main generator) inside the power block, i.e., normal operating parameter values for power block equipment. 2. Cred Dist: The 1st part of Choices A/B (normal hydrogen pressure 42-70 psig) is not plausible because a twenty-eight pound allowable band for hydrogen pressure in the generator when the plant is operating at 100% power is too large. 3. LOD=1: This test item will provide no discriminatory value on the exam. 4. #/units: Include the exact name/number of the procedures listed in the Choices; 2-OI-47, Illustration 7, Generator Kilovar Limitations (Capability Curve) and 0GOI-300-1, Switchyard Manual and/or TOPS-TO-SPP-30160, Power System Restoration. What is the name/number of the BFN Grid Operating Guide? 5. Stem Focus: None of the bulleted items are needed to answer the question; these items don't contribute plausibility to the 2nd part of Choices B/D for the reason listed in comment #1 above. 6. LOK: The question reference sheet listed this test item as higher cog; both fill-in-the-blank statements appear as lower cog memory items. Discuss.
61																T2G2 245000 K6.04 (Comments and/or Repairs rec'd 3-17-17) 1. Stem Focus: The word "lowered" in the 1st fill-in-the-blank statement should be "lowers." Also, a comma is missing after the 2-PI-35-17A. 2. Stem Focus: Suggest revising the 1st part of Choices C/D to be "remain the same" to avoid using NOT in the fill-in-the-blank statement.
61	F														S	T2G2 245000 K6.04 Comments incorporated

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
62	F	2	x				x							N	E	T2G2 268000 G2.1.32 1. Partial: Section 8.8 of 0-OI-77A requires the release to be performed in accordance with *0-SI-4.8.A.1-1*, Liquid Effluent Permit, which does not include the requirement that a minimum of two circulators in service on the discharge canal into which the liquid waste is to be discharged. The reference sheets provided with the proposed item cited *1-, 2-, 3-SI-4.8.A.3* as the document that contains the two-circulator-requirement; Section 8.8 of 0-OI-77A does not require 1-, 2-, 3-SI-4.8.A.3 to be performed. There may be no correct answer. 2. Stem Focus/Partial: To ensure only one correct answer, add the phrase add the procedure name/section number being used to align the waste sample tank for river release, for example *"….in accordance with 0-OI-77A, Waste Collector/Surge System Processing, Section 8.8, Waste Sample Tank Disposal*".
62	H														S	T2G2 268000 G2.1.32 (Comments rec'd/repairs 3-6-17) 1. Interlock feature precludes using FCV-77-61 w/o two circulators in service. (2-OI-27, P&L 3.0.D) 2. Changed Choice D to say "one pump from each unit."
63	H	2	x									x		N	U	T2G2 271000 A2.01 1. Q=K/A: The proposed test item does not test the applicants' ability to predict how low condenser vacuum affects the Offgas system. Instead, the proposed test item involves a situation where an Offgas System malfunction is causing condenser vacuum to lower, and the effect on the Main Turbine Bypass Valves. (OG Holdup Line Flow is lowering, which means an OG malfunction occurred, and is adversely affecting condenser vacuum - - not the other way around.) At BFN, does lowering condenser vacuum cause the standby SJAE to auto-start? (See page 37 of 69 in OPL171.030). 2. Stem Focus: The word "mercury" appears in all four choices, and the stem; this may not be necessary.
63	H														S	T2G2 271000 A2.01 (Comments rec'd/repairs 3-7-17) 1. Exit meeting comment: OPL171.030 needs to be corrected.

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			
64	F	2												N	E	T2G2 288000 A4.02 1. #/units: The reactor zone exhaust flow indicator name/# is missing from the 2nd fill-in-the-blank statement. 2. Stem Focus: The phrase "..can be monitored" can be tightened up to "…is located." 3. Stem Focus: The annunciator is not necessary in the stem is not necessary.
64	F														S	T2G2 288000 A4.02 (Comments rec'd/repairs 3-7-17)
65	F	2	x				x							N	E	T2G2 2900001 K1.04 1. Stem Focus/Partial: To be consistent with 0-OI-65, and ensure only one correct answer, mirror the wording of P&L 3.A by using a fill-in-the-blank statement: *In accordance with 0-OI-65, Standby Gas Treatment (SGT) System, upon a secondary containment isolation, the SGT is designed to maintain a negative ___ in secondary containment with an inleakage flow of 12,000 cfm.*
65	F														S	T2G2 2900001 K1.04 (Comments rec'd/repairs 3-7-17)
66	F	1.8												N	E	T3 G2.1.3 1. Partial: Choice B is also correct. 2. LOD=1: This question will provide no discriminatory value on the exam.

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			
66																T3 G2.1.3 (Comments and/or Repairs rec'd 3-17-17) 1. Partial: Choice B is also correct because shift personnel are also ultimately responsible for understanding the log entries during the previous 24 hours. Suggest replacing the 1st half of the question as follows: *WOOTF completes both statements IAW OPDP-1, Conduct of Operations?* *When temporary relief is necessary, the Operator being relieved briefs his/her relief on abnormal or unusual conditions existing, any evolutions in progress and actions anticipated during the relief period, and ___(1)____.* ***(where he/she may be reached in the plant during the absence** vs. also provides a Shift Turnover Checklist to his/her relief.)* *Unit Operator temporary reliefs of short duration ____(2)____ required to be logged in NOMS.* *(are vs **are NOT**)*
66	F														S	T3 G2.1.3 Comments incorporated
67	H	2	x			x								B	U	T3 G2.1.25 (BFN 2014 NRC Exam, Q#16) 1. This test item will overlap with the scenarios. 2. Cred Dist: The 1st part of Choices A/B (correction curves required for temperature compensated instruments) is not plausible because correction curves are required when instruments are <u>not</u> temperature compensated. 3. Stem Focus: To be consistent with the remainder of the exam, modify the bracketed information to say "[REFERENCE PROVIDED]".

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
67																T3 G2.1.25 (Comments and/or Repairs rec'd 3-17-17) 1. We previously discussed the possibility of developing a question that required the applicants to use a curve or graph; however, a Table may also be acceptable. 2. DLU: the 1st part of the proposed test item is a direct lookup for 81% (level exactly 35,500 gallons) when provided with the 0-OI-18, Illustration 1 Table. 3. Partial: The 2nd part of the question may have no correct answer if an applicant uses the discretionary option to fill the tank to 94% (to verify the fuel pumps auto-start feature). Suggest the following: *Unit 1 is refilling the 7-day tank for DG A in accordance with 0-OI-18, Section 6.1, Transfer Fuel Oil from Fuel Oil Storage Tank No. 2 to Diesel Generator 7-Day Storage Tanks.* *WOOTF completes both statements?* *All 7 Day Tanks on Unit 1 should be filled to ____(1)____ gallons during transfer operations unless the Unit Supervisor directs the tank to be filled an additional 2% to reset the low level alarm or verify the Fuel Transfer Pump High Level Trip set point. (**38,500** vs 39,000)* *Tech Spec 3.8.3 requires a minimum level of _____ gallons. (**35,500** vs 35,125)* [REFERENCE PROVIDED] 4. Ensure the question reference sheet identifies the only reference provided to the applicants is Page 5 of 5 of Illustration 1, DG Fuel Oil 7 Day Storage Tanks Level-to-Volume Table. (not all five pages).
67	H	2													S	T3 G2.1.25 Re-worked question to test ECCS NPSH graphs

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			
68	F	2					x							N	E	T3 G2.2.4 1. Partial: The term "full control" is subjective (slang); re-word the choices to be more specific in terms of what the phrase "full control" means. An applicant can successfully argue that none of the (or another) choice(s) are incorrect/correct in the post-exam appeal period.
68	F														S	T3 G2.2.4 (Comments rec'd/repairs 3-7-17)
69	F	2				x								N	U	T3 G2.2.43 1. Cred Dist: The 2nd part of Choices A/C (Disabled Alarm Index not used to track disabled annunciators) is not plausible because the stem question asks for how disabled annunciators are tracked; the obvious choice is the "Disabled Alarm Index." (no plant specific knowledge required).
69	F	2													S	T3 G2.2.43 (Comments rec'd/repairs 3-7-17)
70	F	2												B	S/E	T3 G2.1.19 (BFN 2015 NRC Exam, Q#66) 1. This question can be easily modified (to be different from the 2015 NRC exam) as: *WOOTF completes both statements in accordance with 0-OI-48, Integrated Computer System, regarding use of colors on SPDS displays?* *___(1)___ indicates a value that is above or below the normal operating range (exceeds the high or low alarm set point). (**Yellow** vs Red)* *__(2)___ indicates a radiological-related alarm limit has been exceeded. (Cyan vs **Magenta**)* 2. Overlaps RO Q#23.
70	F	2													S	T3 G2.1.19 (Comments and/or Repairs rec'd 3-17-17)

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
71	F	2	x												E	SAMPLE QUESTION rec'd 12-9-16 1. Stem Focus: To ensure the tie to RO responsibilities is clear, add the phrase "*in accordance with 1-SR-2, Instrument Checks and Observations*" at the end of the stem question. 2. Stem Focus: The ending phrase "*…to reduce the potential radioactivity release during a fuel handling accident*" is not necessary in the fill-in-the-blank statement.
71	F	2												N	S	T3 G2.3.12
72	H	2		x		x								N	E	T3 G2.3.15 1. Cred Dist: Choice A (nothing happens and neither CREV train will auto-start) is not plausible because the wording of the stem question and this Choice imply that the CREV trains are locked out forever. Surely if the *other rad monitor* were also to subsequently become upscale, then a CREV train would then auto-start. The Choices should be worded such that the applicants have to predict whether the CREV trains are on or off. 2. Cue: The stem should not tell the applicants that the 90-259B reading is "normal." Provide the reading. 3. Stem Focus: The phrase "starts and runs" is redundant and unnecessary; replace with "auto-starts." 4. Stem Focus: The stem question is not consistent with the remainder of the exam ("Which of…"). 5. Note: The Tier 3 aspect (plant-wide generic) of this test item is being met because the CREV is a shared system between all three units.
72	H	2													S	T3 G2.3.15 (Comments rec'd/repairs 3-7-17)

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
73	F	1				x								B	U	T3 G2.4.27 1. Cred Dist: • Choice B is not plausible because a worker reporting a fire may not know or understand what constitutes "emergency equipment." • Choice C is not plausible because a worker reporting a fire may not know or understand firefighting activities performed thus far. Choice C is also not plausible because at the time the call is received, no has been dispatched to fight the fire yet. • Choice D is not plausible because a worker reporting a fire may not know what time the fire began 2. LOD=1: This question will provide no discriminatory value on the exam. 3. Stem Focus: The use of quotation marks on the title of Appendix A is not consistent with the remainder of the exam.
73	F	2												N	S	T3 G2.4.27 (Comments rec'd/repairs 3-7-17)
74	F	5												N	E/U	T3 G2.4.37 1. Job-Link and/or LOD=5: During the post-exam appeal period, an applicant can successfully argue that testing SRO *responsibilities* is beyond RO knowledge of *lines of authority* during E-Plan implantation. Even though the class consists of only SRO applicants, the exam must still sample 75 RO knowledge items. Suggest re-working the question to test *who's in charge* of the OSC or TSC or EOF or Main Control Room during the implementation of the E-plan. The way the question is currently written tests SRO responsibilities vs generic lines of authority.
74	F	2													S	T3 G2.4.37 (Comments rec'd/repairs 3-7-17)

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
75	F	2	x			x	x							B	E	T3 G2.4.39 1. Partial: The reference sheet provided with the question did not provide proof that Unit Operators are responsible for initiating the emergency paging system. Please provide proof where a procedure states that Unit Operators are responsible for initiating the emergency paging system and add the phrase "'…in accordance with procedure xyz" to the 1st fill-in-the-blank. Otherwise, this question is vulnerable to post-exam appeals because Unit Operators are responsible for watching the control boards and implementing the EOPs during an emergency. 2. Cred Dist: The interplay between the 1st and 2nd part of Choice C make it not plausible. IF unit operators are NOT responsible for initiating the EPS, THEN why is the 2nd part of the question testing the applicants' knowledge of whether FFD questions are/are not required? Because of the 2nd part of the question, the applicants are cued that the answer to the 1st part of the question is "YES..Unit Operators ARE responsible for initiating the EPS." 3. Stem Focus: To clarify, and to be consistent with EPIP-3, Appendix H, re-word the 1st sentence as: "*After an Alert was declared, the ODS cannot be contacted within 5 minutes to activate the TVA Enterprise Emergency Notification System (TEENS).*" 4. Stem Focus: The sentence "All other means to contact the ERO have failed" is vague; does this mean that the Emergency Paging System (EPS) failed? If so, then modify this sentence to say that. This makes the stem of the question consistent with Appendix H. 5. Stem Focus: To be consistent with the remainder of the exam, re-work the wording in the stem to be third person, instead of talking to the applicants with the word "you."
75	H	2													S	T3 G2.4.39 (Comments rec'd/repairs 3-7-17)

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	H	3	x	x		x								N	~~U~~ E	T1G1 295003 G2.1.32 1. Cred Dist: The 1st part of Choices C/D (that A DG Aux Bd supplies more than one D/G) is not plausible because 1) there is no D/G Aux Bd at BFN that supplies another D/G, and 2) the stem does not contain any fans or compressors out of service that could be misconstrued to cause another D/G to be inoperable when the A D/G Aux Board is lost. 2. Partial: There is no correct answer to the 1st fill-in-the-blank statement because the most limiting Tech Spec is Tech Spec 3.8.1, Action B (Verify power availability within 1 hour). 3. Cue: The phrase "Section 3.8, ELECTRICAL POWER SYSTEMS" in the 1st fill-in-the-blank statement is not necessary to elicit the correct response. 4. Stem Focus: The 2nd fill-in-the-blank statement is disjointed because its premise is that the alternate breaker is working. Suggest re-wording the 2nd fill-in-the-blank statement with words like "*…was subsequently able to be re-energized via the alternate breaker, while the normal breaker was still broken….*" 5. Stem Focus: Provide procedure name/section number/title to the stem (and the Chief Examiner) for transferring A D/G Aux Board to Alternate at 100% power.

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			
76															E	T1G1 295003 G2.1.32 (Comments and/or Repairs rec'd 3-1-17) 1. Distracters were credible because there are only <u>two</u> 480 V Diesel Aux Boards for Units 1 and 2 even though there are <u>four</u> Unit 1 and 2 EDGs. Therefore, it is plausible that the loss of one Diesel Aux Board could affect more than one diesel. For example, the "A" Aux Board supplies the "A" and "B" EDG Oil Soakback Pumps. 2. Suggest the following wording to eliminate potential confusion with the word "it" (could mean EDG) in the 1st fill-in-the-blank statement, and eliminate the word "considered" (vague). *The "A" Diesel Auxiliary Board is ____(1)____ when being supplied by its alternate power supply.* *(**OPERABLE** vs INOPERABLE)* 3. Clarify the word "is" in the 2nd fill-in-the-blank statement, and change effected to affected: *IF the "A" Diesel Auxiliary Board subsequently fails to transfer, and remains de-energized, the most limiting Tech Spec required action to restore affected equipment to operable status is _____(2)_____.* *(**TS 3.8.7 Action D.1** or TS T.8.1 Action H.1)*
76															S	T1G1 295003 G2.1.32 (Comments rec'd/repairs 3-6-17)

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			
77	H	2	x										x	N	U	T1G1 295019 AA2.02 1. SRO-only: The question can be answered solely by knowing the systems knowledge associated with how a loss of control air affects HPCI, RCIC, MSIVs, and RWCU. The applicant does not need to know the contents of 11J, 11F, 11E, or 11D; the applicant needs to know: • HPCI/RCIC drains are air operated valves that fail closed on loss of air • Outboard MSIVs will be closed due to loss of air, which means RFPTs are not available • RWCU blowdown is unavailable due to loss of air. The K/A requires testing the applicants' ability for determining or interpreting how a partial (or complete) loss of instrument air affects a safety-related instrument air load *at the SRO level*, which could be an operability, Tech Spec required action, procedure selection, etc. 2. Stem Focus: EOI-1, RPV Control doesn't direct any of the choices one over the other; the wording of the stem question implies that EOI-1 directs the performance of Appendix 11D.
77														N		T1G1 295019 AA2.02 (Comments and/or Repairs rec'd 3-1-17) 1. Original question replaced with a NEW question. 2. Stem Focus: The 2nd fill-in-the-blank statement is a continuation of the stem time-line, and the reference provided to the applicants may make this a DLU. The stem should contain the entire time-line of events. Suggest adding another sentence to stem to say: *At 1520 RHR SYS I DISCH PRESS is restored to 55 psig.* and rewording the 2nd fill-in-the-blank statement to say: *At 1520, 2-SR-X.X.X.X, title, __(2)____ required.* *(is vs **is NOT**)* 3. Relocate the NOTE to a position below both fill-in-the-blank statements (just before the Choices). 4. Verify no overlap (or direct-lookup issues) with RO Q#31 as a result of providing the TRM Filled Discharge Piping reference.

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															S	T1G1 295019 AA2.02 (Comments and/or Repairs rec'd 3-17-17)
78	H	2				x							x	M	~~U~~ E	T1G1 295005 AA2.03 (BFN 2015 NRC Exam, Q#12) 1. SRO-only and/or Cred Dist: The knowledge required to answer the proposed question is the same knowledge that was required to answer the 2015 RO question #12, which is the overall mitigative strategy used to control RPV pressure during an ATWS when SRVs are cycling. Here's how an applicant can get to the correct answer Choice C using RO knowledge: Choices A/B can be eliminated using RO knowledge of the overall mitigative strategy to control RPV pressure during an ATWS when SRVs are cycling. This leaves Choices C/D. Since the overall mitigative strategy to control RPV pressure during an ATWS when SRVs are cycling *IS TO OPEN SRVS*, then the applicant can deduce the title of the correct procedure is Appendix 11A, *SRVs*.
78																T1G1 295005 AA2.03 (Comments and/or Repairs rec'd 3-1-17) 1. The proposed replacement question tested two unrelated topics (EOC-RPT and RPS Limit Switch Tech Specs). This K/A (see below) was too difficult to hit at the SRO Tier 1 level because this is inherently an RO task: 295005 AA2.03 MAIN TURBINE GENERATOR TRIP Ability to determine/interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Turbine Valve Position Replaced with 295024 EA2.03

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
78																T1G1 295024 EA2.03 (Comments and/or Repairs rec'd 3-17-17) 1. To avoid any operational validity issues with a LOCA allowing reactor pressure to remain at 800 psig, even though torus level is extremely high, eliminate the term "LOCA" and re-word the first sentence as below. 2. Providing Curve 4 may not be necessary to test the knowledge that the reactor pressure band is allowed to be lowered to avoid ED, even though currently in the required action range. See below: 3. Stem Focus: The stem should include [REFERENCE PROVIDED] to be consistent with the remainder of the exam. (only provide Curve 5) Suggest the following: *An event occurred on Unit 2 which resulted in the following conditions:* *(7 bullets)* *Subsequently, reactor pressure rose to 900 psig, which is in the action required area of Curve 4, SRV Tail Pipe Level Limit.* *WOOTF completes both statements in accordance with 2-EOI-2, Primary Containment Control?* *[REFERENCE PROVIDED]* *Implementation of RHR SYSTEM OPERATION DRYWELL SPRAYS, 2-EOI Appendix 17B, ___(1)___ allowed.* *(**is** vs is NOT)* *Lowering reactor pressure band to exit the required action area of Curve 4, to avoid emergency depressurization, ____(2)____ allowed. (**is** vs is NOT)*
78															S	T1G1 295024 EA2.03 Comments incorporated

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			
79															U	SAMPLE QUESTION rec'd 12-9-16 1. SRO-only: Knowledge of Tech Spec Bases is not the only way to answer the question. RO knowledge of daily surveillance requirement 3.7.2.1 can be used to answer the question; ROs are responsible for logging fore bay temperature per SR-2, including verifying the TS 3.7.2.1 acceptance criteria (<95°F) is met. 0-OI-67, EECW, Precaution & Limitation GG states: GG. Per TS Section 3.7.2, Ultimate Heat Sink (UHS) Operability is based on having a maximum water temperature of 95 degrees F. This SR (SR 3.7.2.1) is required every 24 hours. (This is fulfilled by SR-2). TABLE 2.42 ULTIMATE HEAT SINK (UHS) WATER TEMPERATURE **NIGHT SHIFT** WEEK: _____ to _____ APPLICABILITY: Any Unit in Mode 1, 2 & 3: Readings are required at all times. Surveillance Requirements: 3.7.1.2 and 3.7.2.1 (Note 1) LOCATION: TVA Computer and Panel 2-9-20 DAY | Forebay Temperature (°F) (Note 2) | | LIMITS (AC) (Note 3) | | Review Initials | | | | http://cegnet1/edscombined website (Note4) | 0-TI-27-144 | 3.7.1.2 | 3.7.2.1 | UO | Unit Supvr | | Friday | | | ≤ 91°F | ≤ 95°F | | | | Saturday | | | | | | | | Sunday | | | | | | | | Monday | | | | | | | | Tuesday | | | | | | | | Wednesday | | | | | | | | Thursday | | | | | | | (1) This Surveillance satisfies SR 3.7.1.2 for Unit 2 and Unit 3. This Surveillance also satisfies SR 3.7.2.1 for all three Units. Failure of this surveillance affects the applicable Units Tech Spec Requirements for LCO 3.7.1.2 and LCO 3.7.2. (2) The range of 0-TI-27-144 is 85°F to 95°F. When 0-TI-27-144 is utilized and indicating downscale of 86.2°F, reading should be recorded as ≤ 86.2°F and when indicating upscale of 95°F, reading should be recorded as > 95°F. Due to the instrument having a live 85°F, it cannot drive downscale of 85 degrees. The instrument also has an inaccuracy of "as found" ±1.2°F which would allow the instrument to read between 85 and 86.2°F when actual forebay temperature is known to be less than 85°F. For this reason, it is acceptable to record ≤ 86.2 degrees when the temperature indicator is reading 86.2 or less. The Tech Spec requirements are to verify the temperature is less than 91 degrees. Either functional indication may be used to verify the Tech Spec requirement. (3) Due to potential instrument inaccuracies, when indicated Forebay river temperature is > 91°F in conjunction with both FOREBAY TEMP HIGH-HIGH 0-TA-27-144C and FOREBAY TEMP HIGH-HIGH 0-TA-27-144E annunciators (2-XA-55-20B, Windows 7 and 14) in alarm, actions shall be initiated to verify the accuracy of the indications or to further evaluate the operability of the UHS. Notify Unit 3 to refer to Unit 3 Tech Spec 3.7.1.2 for required actions. 2-SR-3.7.1.2 and 3-SR-3.7.1.2 documents the Tech Spec monitoring requirements in the event the Tech Spec Limits are exceeded. Monitoring is required within one (1) hour of UHS temperature exceeding 91°F.

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	3		x			x							M	E	T1G1 295018 AA2.02 (2013 Peach Bottom NRC Exam, Q#82) 1. Partial: What BFN procedure permits/directs de-rating the Unit to exit LCO 3.7.1? Provide procedure to Chief Examiner. If there is no procedure, then this question is vulnerable to post-exam appeals and must be re-worked. The Bases for LCO 3.7.1 don't mention de-rating the Unit to exit the LCO. 2. Partial: Based on the 0-TI-27-144 +/- 1.2°F inaccuracy, modify the stem bullet to say *0-TI-27-44 Forebay Temperature is 95°F, and this temperature has been confirmed to be accurate.* 3. Partial: Re-word the stem question (to prevent subset plausibility issues) as: "*In accordance with Tech Specs, what is/are the minimum required action(s)?*" 4. Cue: The Choices do not need to refer to the Tech Spec Number to elicit the correct response. For example, Choice B can be: "*Declare the UHS INOPERABLE for RHRSW ONLY; de-rate Unit 2 to less than 99% power.*" 5. Cue: For Choices B, C, and D, replace the phrase "until Unit 2 is de-rated to" with "*de-rate Unit 2 to...*" This makes each choice consistent with Choice A.
79																T1G1 295018 AA2.02 (Comments and/or Repairs rec'd 3-1-17) 1. Cue: The phrase "*to restore the UHS to Operable status*", in Choices B/C, is not needed to elicit the correct response.
79															S	T1G1 295018 AA2.02 (2013 Peach Bottom NRC Exam, Q#82) (Comments rec'd/repairs 3-6-17)

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			
80	H	2	x												E	SAMPLE QUESTION rec'd 12-9-16 1. Stem Focus: Recommend the following enhancements: • The word "placed" in the second stem sentence is not necessary • In the 4th stem sentence, space missing after 20; the phrase "as indicated" is not necessary, applicants may or may not ask for LI noun names. • In the stem question, start with "*Given these conditions…WOOTF.*."; also, the phrase "*based on…current level and EOI-2*" is not necessary. • Modify the 2nd fill-in-the-blank as ___*(2)*___ *is required to be performed.*
80	H	3	x											N	E	T1G1 295030 G2.2.44 1. Stem Focus: After the modifications from the sample question comment, the phrase "*in accordance with EOI-2*" is needed the end of the stem question.
80															S	T1G1 295030 G2.2.44 (Comments and/or Repairs rec'd 3-1-17)
81	H	2	x			x	x							N	E	SAMPLE QUESTION rec'd 12-9-16 1. Cred Dist: Choice A (enter SAMGs) is not plausible because the stem does not include current RPV level/trend, and also because the stem says only a "leak" exists, vs a LOCA. 2. Partial: Choice D (Emerg Depress) is also correct because the stem doesn't specify how low RPV went/trend, etc; (-) 180" is below (-) 162 inches. Stem doesn't specify current RPV level. 3. Stem Focus: The stem should include plant conditions such as RPV Level, Pressure, Power, Containment Conditions, etc. 4. Stem Focus: The phrase "*reactor coolant leak*" almost implies the unit is still at power; the acronym "LOCA" is better because it provides at least some context for the initial plant conditions. 5. Stem Focus: The stem question is different from other test item stem questions; should be consistent throughout exam. This leads to having the word "enter" in all four choices. 6. LOK: This question was listed as Lower Cog/Memory; however, may be Higher Cog

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			
81	H	2	x	x		x								N	E	T1G1 295031 G2.4.31 1. Cred Dist: Choice A (SAMGs) is not plausible because nothing is being threatened. 2. Cue: The phrase "When the US addressed EOI-1, Step RC/L-3 he/she.." is not necessary to elicit the correct response. 3. Stem Focus: The fill-in-the-blank isn't necessary if the stem question is only: "*In accordance with EOI-1, WOOTF is required*?"
81															S	T1G1 295031 G2.4.31 (Comments and/or Repairs rec'd 3-1-17)

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			
82	H	2	x			x								N	U	T1G1 700000 AA2.07 1. Cred Dist: The premise of the 1st fill-in-the-blank statement (when is RHR required to be declared inoperable based on 500 KV system voltage) is not operationally valid because TRO-TO-SOP-30.128 provides guidance that if BFN bus voltage goes below the level required, and is not corrected within 15 minutes, the TOp shall inform the BFN Generator Operator within 30 minutes from the beginning of the event, that the *offsite power source* is disqualified. The crew would enter Tech Spec 3.8.1; the crew would NOT be required to enter Tech Spec 3.5.1, ECCS and RCIC for the RHR subsystems. Therefore, the first part of Choices A/B (declare RHR inoperable) is not plausible since LCO 3.5.1 wouldn't be entered even if 500KV switchyard voltage was below 510 KV because LCO 3.0.6 provides a way around cascading LCO entries. Suggest changing the 1st fill-in-the-blank statement to: *At 1445, the offsite power source __(1)____ operable.* 2. Q=K/A: The 1st part of the question is not testing the grid instability topic because Tech Spec 3.5.1 ECCS and RCIC would never be entered, even if 500 kV system voltage was below the level required. The 2nd part of the question has nothing to do with the Grid Instability topic. This is a "tack-on" SRO item; NUREG-1021 states that two unrelated topics cannot be tested in a single question. For 2 x 2 questions, one of the parts of the question must be a direct hit on the K/A; however, the second part of the question must be related to the K/A. The NRC 1 hour notification of an emergency declaration does not deal with the K/A topic. 3. Stem Focus: The bulleted format makes it a bit hard to discern the timeline of events.

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			
82																T1G1 700000 AA2.07 (Comments and/or Repairs rec'd 3-1-17) 1. The stem contains important events that aren't tied to the timeline. Suggest the following to clarify exactly when/what occurred: *14:45 500 KV system voltage is fluctuating between 515 and 525 KV; 0-AOI-57-1E, Grid Instability, entered* *15:00 Offsite power lost; all Diesel Generators supplying their 4 KV SD Bds. Transmission Operator notifies BFN that Off-Site power will not be restored for at least 2 hours.*
82															S	T1G1 700000 AA2.07 (Comments rec'd/repairs 3-6-17)
83	H	3	x	x		x						x		B	U	T1G2 295010 AA2.06 (BFN 2015 NRC Exam, Q#84) 1. Q=K/A: The proposed test item does not test the applicants' ability to determine or interpret drywell temperature in any way; if drywell temperature is removed from the stem (2nd bullet), the same actions are taken. One relationship between the High Drywell Pressure topic and drywell temperature is the drywell spray initiation limit at step PC/P-7. 2. Cred Dist: The 2nd part of Choices C/D (Use Appendix 13, which will cause the Reactor Building ductwork to fail, and vent irrespective of release rate) is not plausible because the plant is still operating at 100%. Probably more appropriate for the initial conditions to place the plant in a scram condition. 3. Cue and/or Cred Dist: The stem does not include a bullet stating that the crew entered 2-EOI-2, which is relevant to the procedure selection aspect of the question and enhances plausibility of Choices C/D.
83															S	T1G2 295010 AA2.06 (Comments and/or Repairs rec'd 3-1-17)

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
84	H	3	x	x		x								B	E	T1G2 295033 EA2.03 (BFN 2008 NRC Exam, Q#85) 1. Cue and/or Cred Dist: The stem does not include a bullet stating that the crew declared an ALERT (EAL designator 6.1-A1), which is relevant to the procedure selection aspect of the question and enhances plausibility of Choices C/D. 2. Stem Focus: To make the fill-in-the-blank statement tighter, add a bullet to the stem stating that the crew entered 1-EOI-3, and then modify the fill-in-the-blank statement with SC-2 and the word "the": *In accordance with Table SC-2, Secondary Containment Radiation, the crew is required to enter __(1)___ and the potential isolation source is the ___(2)___ .*
84																T1G2 295033 EA2.03 (Comments and/or Repairs rec'd 3-1-17) 1. Cred Dist: The stem conditions (Unit operating at 100% power), combined with the wording of the 1st part of the fill-in-the-blank statement (*EOI-3 directs entry to..*) make the 1st part of Choices C/D not plausible when given a choice between EOI-1 or EOI-4. Suggest splitting the fill-in-the-blank statement into two separate sentences and modifying the first fill-in-the-blank statement to be: *0-EOI-4, Radioactivity Release Control, __(1)___ required to be entered. (is vs **is NOT**)*
84															S	T1G2 295033 EA2.03 (Comments rec'd/repairs 3-6-17)
85	H	2	x			x								N	~~U~~ E	T1G2 295036 EA2.03 1. Cred Dist: The 1st part of Choices A/B (evaluation of whether a primary system is discharging into Secondary Containment depends on what type of pipe it is) is not plausible because EOI implementation never depends on the code category piping. 2. Stem Focus: The 2nd fill-in-the-blank statement contains too many "NOTs"; the way the statement is worded is unacceptable.
85																T1G2 295036 EA2.03 1. 3-6-17: Overlap with Scenario 5, Event 7. Replaced K/A with 295034 EA2.01 (3.8/4.2)

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																T1G2 295034 EA2.01 (Comments and/or Repairs rec'd 3-20-17) 1. Stem Focus: The 1st part of the question is really just asking whether a Refuel Zone Isolation occurred (since all choices include Reactor Zone). 2. Partial: To avoid any post-exam appeals with Choice C also being correct (EOI-3 contains an override that says to restore ventilation if below 72 mr/hr, which is technically the case since the initiating signal was invalid), suggest the following: *[Everything in stem stays the same]* *WOOTF completes both statements?* *An automatic Refuel Zone Ventilation Isolation ___(1)___ occur. (**will** vs will NOT)* *IF the isolation is determined to be invalid, and 90-142 remains upscale, the procedure that contains the steps to immediately inhibit the 90-142 trip signal and clear the isolation is ___(2)____ .* *2-EOI-Appendix 8F, Restoring Refuel Zone and Reactor Zone Ventilation Fans Following Group 6 Isolation vs **2-OI-90, Radiation Monitoring***
85															S	T1G2 295034 EA2.01 Comments incorporated
86	H	2	x			x								N	U	T2G1 206000 A2.08 1. Cred Dist: The 2nd part of Choices A/C (ODM-4.20 contains steps to jumper out Hi Torus Transfer Logic) is not plausible because the Operations Directive Manual is a policy document that contains no steps to install jumpers in any logic, and because EOI Appendices, when implemented, include procedure steps to jumper out logic when necessary. 2. Stem Focus: It may be better to add another bullet to the stem that indicates torus level is rising; this may provide the basis to the applicant about why the 2nd fill-in-the-blank statement exists. 3. LOK: The question reference sheet indicated this was high cog; however, it appears to be memory level. Discuss.

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
86															S	T2G1 206000 A2.08 (Comments and/or Repairs rec'd 3-6-17) 1. Instead of ODM, replaced 2nd part with EOI-2 vs EOI-1.
87	H	3					x					x		N	~~U~~ E	T2G1 211000 G2.4.41 1. Q=K/A: The 2nd fill-in-the-blank statement is the only part of the question that deals with the SLC topic; however, the 2nd fill-in-the-blank statement does not test the applicants' knowledge of EAL thresholds/classifications associated with SLC. The only part of the question that tests EAL thresholds/classifications is the 1st fill-in-the-blank statement, which has nothing to do with the SLC topic. 2. Partial: Since the stem contains a timeline, and the 1st fill-in-the-blank statement does not specify what time, then there may be no correct answer. Add the phrase "*At 0600…the highest required emergency classification is*.."
87															S	T2G1 211000 G2.4.41 (Comments and/or Repairs rec'd 3-1-17) 1. There was no link between SLC and EAL thresholds that could be tested at the SRO level. K/A randomly replaced with 211000 G2.4.21, which met the originally proposed test item.

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
88	H	3	x				x							N	E	T1G2 215000 G2.4.47 1. Stem Focus: This is a good test item to incorporate the Action Statement designators instead of writing out each action statement. This accomplishes several purposes: • Minimizes words in the choices • Enhances plausibility of Choice D • Makes the stem question consistent with the remainder of the exam Suggest modifying the question as: *If one of the pictured IRMs is declared inoperable, WOOTF identifies the minimum required action, if any, required by Tech Spec 3.3.1.1, RPS Instrumentation?* *A. Condition A* *B. Condition B* *C. Condition G* *D. No action required* 2. Partial: An applicant can successfully argue that Choice A is also correct if the trend is deemed acceptable for IRM B. Suggest adding the phrase "*If one of the pictured IRMs is subsequently declared inoperable…*" to the stem question. 3. Stem Focus: The 4th and 5th bullets are not necessary. 4. Stem Focus: The "Subsequently" portion of the question can be modified to be consistent with the remainder of the exam as: *When the UO ranged all IRMs from Range 4 to Range 5, the attached IRM recorder response was noted.*
88															S	T1G2 215000 G2.4.47 (Comments and/or Repairs rec'd 3-6-17) 1. Modify the fill-in-the-blank statement to: "*If the IRM with the abnormal trend was declared inoperable……then WOOTF…*"

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			
89	H	2				x						x		N	U	T2G1 217000 A2.15 1. Q=K/A: The stem of the question *tells* the applicants the impact of a steam line break on RCIC; the first portion of the K/A requires testing the applicants' ability to PREDICT the impact of a steam line break on RCIC. 2. Cred Dist: The 1st part of Choices C/D (AOI-64-2C is not required even though stem says 20,000 lbs/hr steam flow exists) is not plausible because the stem provides all indications of an unisolated RCIC steam line break.
89																T2G1 217000 A2.15 (Comments and/or Repairs rec'd 3-1-17) 1. Cue and/or Cred Dist: The THREE indications of a steam line break are not needed to elicit the correct response to the 1st fill-in-the-blank statement. Suggest re-working the 1st part of the question to solely test the applicants' ability to predict whether an auto-isolation will/ will not occur if 9-3B, W21 alarms (Steam Flow Excessive). 2. Choice A (RCIC auto-isolated but ED still required) may not be plausible due to interplay between the two portions of the question. 3. Stem Focus: None of the instrument numbers/names in the 2nd fill-in-the-blank statement are necessary to elicit the correct response. The same knowledge can be tested by asking the applicant whether ED is / is NOT required when one area reaches max safe temperature and the same area reaches its max safe radiation. 4. Ensure the final version of this question doesn't overlap the same knowledge associated with the unisolable HPCI steam leak in Scenario 2, Event 7 (which also involves like-kind annunciators 9-3F, W18 and W10). 5. Stem Focus: The 2nd fill-in-the-blank statement is a continuation of the stem bullets; the stem should contain the area temperature and radiation information.
89															S	T2G1 217000 A2.15 (Comments rec'd/repairs 3-6-17)

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			
90A	H	3					x							M	E	T2G1 264000 A2.07 (BFN 2015 NRC Exam, Q#89) 1. Partial: Choice B is also correct because the word "directs" in the 2nd fill-in-the-blank statement is subjective. 0-AOI-57-1A, Step [5] directs the operator to refer to AOI-78-1, which is an "indirect" way of restarting the fuel pool cooling pumps. 2. There was also a second version of this test item submitted in the draft submittal package, which is labeled 90B in this ES-401-9 form.
90A																T2G1 264000 A2.07 (Comments and/or Repairs rec'd 3-1-17) 1. Partial: An applicant could argue during the post-exam appeal period that there is no correct answer to the 2nd part of the question because the Attachment 12 is itself a subsequent action. Suggest revising the 2nd part of the question as: *The Unit 3 Unit Supervisor <u>is / is NOT</u> required to perform 0-AOI-57-1A, Attachment 12, Station Blackout Flowchart.* 2. Stem Focus: The phrase "continue performing" in the 2nd part of Choices A/C is confusing because the stem never says the crew entered 0-AOI-57-1A.
90A															S	T2G1 264000 A2.07 (Comments rec'd/repairs 3-6-17)
90B	H	3		x			x							N	E	T2G1 264000 A2.07 1. Partial: The phrase "return to service time" is undefined; an applicant can successfully argue that this applies to the offsite power availability verification time or to the declaration of 4 KV SD Bd inoperable time. "Return to service time" is somewhat subjective. 2. Cue: The last portion of the 2nd fill-in-the-blank statement is not necessary to elicit the correct response. ("…of Tech Spec Section 3.8.1")
91	H	2											x	N	U	T2G2 201001 A2.03 1. SRO-only: The 2nd part of the question is the procedure selection SRO portion of the test item; however, RO knowledge of power supplies can be used to determine whether AOI-85-4 (Loss of RPIS) is/ is not required. Panel 9-9, Cabinet 6 is the power supply to control rod position.

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																T2G2 201001 A2.03 (Comments and/or Repairs rec'd 3-1-17) 1. SRO-only: Both parts of the replacement test item can be answered solely with RO knowledge. • 1st portion: RO knowledge of CRD Flow Controller power supply • 2nd portion: RO knowledge of RPIS power supply
91																T2G2 201001 A2.03 (Comments and/or Repairs rec'd 3-17-17) 1. To avoid providing two more references on the SRO exam, the question can be streamlined to test the applicants' knowledge of whether the rod is or is not required to be declared inoperable. Operability is an SRO determination. Knowledge of Tech Spec Bases is required to know that the operability of a rod is based on scram time + coupling integrity + rod position. Suggest the following: *The Unit 3 Unit Operator was inserting Control Rod 34-57 from position 48 to 00, using continuous insert and the Unit Preferred MMG set tripped.* *The following conditions currently exist:* • *Panel 9-9, Cabinet 6 failed to transfer.* • *The final position of Control Rod 34-57 cannot be determined directly or indirectly.* • *No rod positions are indicated on the full core display* *WOOTF completes both statements in accordance with 3-AOI-85-4, Loss of RPIS?* *(1st fill-in-the-blank statement still good)* *CRD 34-57 ___(2)____ required to be declared inoperable.* *(**is** vs is NOT)*
91															S	T2G2 201001 A2.03 Comments incorporated

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			
92	H	2		x		x								N	E/U	T2G2 215001 G2.2.40 1. Cue and/or Cred Dist: The 1st part of Choices C/D (Action A.1 ONLY), when provided Tech Spec 3.6.1.3, cue the applicant that these Choices are not correct because the second portion of the action statement is not included. In other words, the 1st part of Choices C/D is not plausible because the reference provided to the applicant contains the capitalized word ***AND*** in between A.1 and A.2. The applicants' knowledge of the fact that the SLC penetration only contains one PCIV is not being tested because the 1st part of Choices C/D don't contain the accompanying A.2 required action like Choices A/B do. Suggest modifying the wording of the 1st fill-in-the-blank statement, and each Choice, to flow with the modified wording for each Choice as: *A. Condition A* *B. Condition A* *C. Condition C* *D. Condition C* 2. Cred Dist: The 2nd part of Choices A/C (OI-94 contains steps to fire shear valve) is not plausible because of the title of AOI-64-2E. Suggest modifying the 2nd fill-in-the-blank statement as: *3-OI-94, TIP System, __(2)__ contain the steps to fire the shear valve. (does/ does not)* 3. This question provides a cue to the answer for RO Q#57.
92															S	T2G2 215001 G2.2.40 (Comments and/or Repairs rec'd 3-1-17) 1. All comments incorporated; verify this test item does not provide a cue to the final version of RO Q#57.

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	H	2				x								N	E/U	T2G2 272000 A2.04 1. Cred Dist: Choice C is not plausible because none of the required actions for the reference provided to the applicants (ODCM 1/2.1.2, Rad Gas Eff Monitoring Instrumentation, Function 5,) require closing 1-FCV-66-28. 2. Cred Dist: The question reference sheet indicated that the plausibility for Choice B was Tech Spec 3.3.1.1 Required Action F; however, nothing in the stem can be misconstrued to mean that Required Actions A, B, or C completion times were not met. Suggest modifying the choices and stem question as: *WOOTF identifies the minimum required actions, if any?* *A. Tech Spec 3.3.1.1, Required Action A.1 or A.2 only* *B. Tech Spec 3.3.1.1, Required Action A.1 or A.2 AND C.1* *C. ODCM 1/2.1.2, Required Actions A, B, C, D* ***D. No Tech Spec or ODCM actions are required***
93															S	T2G2 272000 A2.04 (Comments and/or Repairs rec'd 3-1-17)
94	F	2	x				x							N	E	SAMPLE QUESTION rec'd 12-9-16 1. Overlap w/ Op Exam: The knowledge being tested (Initial Notification Form Line Item #4, "radiological conditions", is required to be communicated) overlaps Admin JPM A.4 (Classify Event-PSP Curve Exceeded 2.1-S) because the applicant is also required to complete Initial Notification Form Line Item #4 during the JPM. 2. Partial: Choice D (PAR) is also correct because Line Item #6 on the Initial Notification Form requires checking NONE for PAR; therefore, Choice D can be successfully argued as correct. 3. Stem Focus: The stem question should include the phrase *"…in accordance with Procedure XYZ, Attachment ABC*" to ensure only one correct answer. 4. LOK: The question is listed as Higher Cog; however, may be Lower Cog/Memory item. 5. Stem Focus: The 2nd sentence in the stem has a semi-colon instead of a comma.

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			
94	H	2		x		x								B	E	T3 G2.1.17 1. Cue: The 4 bullets are not necessary to elicit the correct response. 2. Cue: The phrase "…to the State within 15 minutes" is not necessary to elicit the correct response. Suggest the following: *WOOTF items is required on EPIP-3, Alert, Appendix A, Alert Notification Form?* 3. Cred Dist: Choice D (escalation criteria) is not plausible because escalation criteria is not included on any notification forms. 4. LOK: The question reference sheet indicated this was a higher cog question; however, it appears to be memory level. Discuss.
94															S	T3 G2.1.17 (Comments and/or Repairs rec'd 3-1-17)
95	F	2		x		x							x	B	U	T3 G2.1.26 1. SRO-only: The proposed test item does not test the applicants' knowledge of clearance requirements beyond the RO level. One example of SRO knowledge for this test item is whose approval is required to implement a clearance on a high energy system without double valve isolation? 2. Cue and/or Cred Dist: The 1st part of Choices A/B (SPP-10.0, Plant Ops, provides guidance on isolation requirements) is not plausible because the fill-in-the-blank statement contains the word "energy" and the title of SPP-10.2 also contains the word "energy."

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
95																T3 G2.1.26 (Comments and/or Repairs rec'd 3-1-17) 1. Stem Focus: To be fair to the applicants, the stem question should be clear that "working on energized equipment" is a classification used only when the NPG-SPP-10.2 requirements don't result in safely controlling hazardous energy. Suggest the following: *WOOTF completes the following statement IAW NPG-SPP-10.2, Clearance Procedure to Safely Control Energy?* *For any task where hazardous energy cannot be safely controlled by implementing NPG-SPP-102 requirements, the work is considered "working on energized equipment" and must be approved by _____ .* 2. Cred Dist: Choices A/B are basically the same thing; therefore, an applicant can (correctly) discard these choices.
95															S	T3 G2.1.26 (Comments rec'd/repairs 3-6-17) 1. SPP-10.2 specifically lists 5 categories of people with respect to clearances: Responsible Employee, Qualified Employee, Primary Authorized Employee, Clearance Writer, and Authorized Employee.

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											B	E	SAMPLE QUESTION rec'd 12-9-16 G2.2.25 (Hatch 2012, Q#96) 1. Stem Focus: Choice B (50.59 screening) may muddy the water as to the context of the question, as well as the supporting reference material provided with the question was the screening review questions. Which process is the question dealing with – 50.59 evaluation or screening review? **50.59 Evaluation** - is the documented evaluation against the eight criteria in 10 CFR 50.59(c)(2) to determine if a proposed change, test or experiment requires prior NRC approval via license amendment under 10 CFR 50.90. **50.59 Screening Review** - is an assessment to determine whether an activity requires evaluation in accordance with 10 CFR 50.59. The intent of the question was probably to test the 50.59 evaluation process, but Choice B (50.59 screening) and the supporting reference material provided with the question cause me to ask for an enhancement to the stem so the applicants don't become confused about which stage of the process the question is asking about. 2. Stem Focus: Clarify the stem question to say *"…requires prior NRC approve via a license amendment?*" Also change the fill-in-the-blank statement to say "*modification…must ALWAYS have prior NRC approval via a license amendment.*" 3. Stem Focus: Clarify the stem question by adding the phrase *"…in accordance with SPP-X, Attachment A, Title.*" 4. Stem Focus: The stem question is different from other test item stem questions; should be consistent throughout exam. This leads to having the word "enter" in all four choices.

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							B	E	T3 G2.2.5 (Hatch 2012 NRC Exam, Q#96) 1. Stem Focus: Comments 3 and 4 (listed above in the sample question comments) weren't incorporated even though you indicated (on the ES-401-9 you enclosed with the draft submittal) these comments were incorporated in the draft submittal version. 2. Stem Focus: My initial comment on the sample question was "What is the premise of the question the screening process or the 50.59 evaluation?" Based on the question reference sheet you provided, it appears the premise of this question is NPG-SPP-09.4, Attachment 7, 50.59 Evaluation Form. 3. Partial: There is no correct answer because Choice A is missing the phrase "…for a fission product barrier." An applicant can successfully argue that there are several design basis limits, but Attachment 7, Question 7 is specific: • Does the proposed activity result in a design basis limit *for a fission product barrier* as described in the UFSAR being exceeded or altered? Yes □ No □ The problem becomes that when you add "for a fission product barrier" an applicant can use conservativism alone to dismiss any of the other plausible choices. (Choice A becomes too strong). 4. Stem Focus: The stem question is not consistent with the remainder of the exam ("What cases.…."). 5. Stem Focus: Choice B is redundant to the fill-in-the-blank statement because it also includes the word "modification." Suggest re-wording Choice B as change to a Tech Spec system.

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																T3 G2.2.5 (Comments and/or Repairs rec'd 3-1-17) 1. Cue: The only choice which does not begin with "change to" is also the correct answer. 2. Stem Focus: The bolded word "**always**" appears twice. Refine the stem question and fill-in-the-blank statement to eliminate redundancy and streamline choices: *WOOTF completes the following statement IAW NPG-SPP-09.4, Attachment 7, 50.59 Evaluation Form?* *A proposed plant modification must always have prior NRC approval via a license amendment if it involves a change to _____ .* *A. design basis limit for Primary Containment* *B.* a Tech Spec system *C. the Technical Requirements Manual Bases* *D. IST (In-Service Testing) Program acceptance criteria*
96															S	T3 G2.2.5 (Comments rec'd/repairs 3-6-17)
97	F	3				x								N	E	T3 G2.2.38 1. Stem Focus: The stem question is not consistent with the remainder of the exam ("Which of....."). No reference to fill-in-the-blank statement. 2. Cred Dist: Choice B is not plausible because it includes the phrase "returning inoperable equipment to service to demonstrate operability", which is always a good thing; therefore, the applicant can always eliminate this choice. Suggest removing the reasons from all four choices (knowing the LCO numbers is not minutia), and reworking the stem question to be consistent with the remainder of the exam. *WOOTF completes the following statement in accordance with Tech Specs?* *Upon entry into LCO ____, an evaluation shall be made to determine if loss of safety function exists.* *A. 3.0.4* *B. 3.0.5* ***C. 3.0.6*** *D. 3.0.7*
97															S	T3 G2.2.38 (Comments and/or Repairs rec'd 3-1-17)

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
98	H	3		x										B	E	T3 G2.3.15 (BFN 2015 NRC Exam, Q#98) 1. Cue: Most of the wording in the stem and in the four choices is not needed to elicit the correct response. The question should be re-worded as: *All three units are operating at 100% power.* *The 1A & 1B Control Bay Supply Fans tripped and cannot be restarted.* *WOOTF identifies the minimum required Tech Spec actions, if any?* *[REFERENCE PROVIDED]* *A. There are no Tech Spec required actions* ***B. Tech Spec 3.3.7.1, CREV Instrumentation, Required Action A.1 and D.1*** *C. Tech Spec 3.3.7.1, Required Action A.1, D.1 and D.2* *D. Tech Spec 3.7.3, CREV System, Required Action A.1*
98																T3 G2.3.15 (Comments and/or Repairs rec'd 3-1-17) 1. Cue: Same comment; the NOTE in the stem is not needed to elicit the correct response. Specifically, 0-RM-090-259B is unnecessarily embedded in the stem and also embedded in the correct choice.
98															S	T3 G2.3.15 (Comments rec'd/repairs 3-6-17)
99	H	3												N	S	T3 G2.4.2
99	H	3													S	T3 G2.4.2 Licensee validation concerns with EOI Program Manual guidance for EOI-4 entry did not specify whether the <u>duration</u> threshold was also required for EOI-4 entry or just the release rate threshold. Licensee unable to determine correct answer to question. Since there was no other way to test EOP entry conditions at the SRO level, K/A was changed to G2.4.16 and licensee initiated CR to clarify EOI Program Manual.

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
100	H	2	x				x							B	E	T3 G2.4.40 1. Partial: The stem question should specify the earliest time that the emergency declaration is required to be made, and the earliest time that agencies are required to be notified. 2. Stem Focus: The stem question is not consistent with the remainder of the exam ("When is......").
100															S	T3 G2.4.40 (Comments and/or Repairs rec'd 3-1-17)