Facility: HATCH Date of Examination: 6/20/2016

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

Target Date*		Task Description (Reference)	Chief Examiner's Initials
-180	1.	Examination administration date confirmed (C.1.a; C.2.a and b) 1/11/2016	
-150	2.	NRC examiners and facility contact assigned (C.1.d; C.2.e) 1/20/2016	
-150	3.	Facility contact briefed on security and other requirements (C.2.c) 1/20/2016	
-150	4.	Corporate notification letter sent (C.2.d) 2/2/2016	
[-120]	5.	Reference material due (C.1.e; C.3.c; Attachment 3)	N/A
{-90}	6.	Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1, ES-401-1/2, ES-401N-1/2, ES-401-3, ES-401N-3, ES-401-4, and ES-401N-4, as applicable (C.1.e and f; C.3.d) 5/2/2016	
{-85}	7.	Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	
{-60}	8.	Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, ES-401N-6, and any Form ES-201-2, ES-201-3, ES-301-1, or ES-301-2 updates), and reference materials due (C.1.e, f, g and h; C.3.d) 5/3/2016	
-45	9.	Written exam and operating test reviews completed. (C.3.f)	
-30	10.	Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202) 5/12/16	
-21	11.	Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	
-21	12.	Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	
-14	13.	Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202) 6/3/16	
-14	14.	Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	
-7	15.	Facility licensee management queried regarding the licensee's views on the examination. (C.2 j)	
-7	16.	Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.j; Attachment 5; ES-202, C.2.e; ES-204) Audit - 5/24/2016	
-7	17.	Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k) 5/25/2016	
-7	18.	Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	

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

ES-201 **Examination Outline Quality Checklist** Form ES-201-2

Facility: **E. I. Hatch** Date of Examination: **06/20/2016**

Item	Task Description	Initials a	Initials b*	Initials c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401 or ES-401N.	NA	N/A	✓
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 or ES-401N and whether all K/A categories are appropriately sampled.	NA	N/A	✓
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	NA	N/A	✓
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	NA	N/A	✓
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	AB	EL	✓
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.	AB	EL	✓
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	AB	EL	✓
3. WALK THROUGH	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	AB	EL	✓
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations	AB	EL	✓
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.	AB	EL	✓
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	AB	EL	✓
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	AB	EL	✓
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	AB	EL	✓
	d. Check for duplication and overlap among exam sections.	AB	EL	✓
	e. Check the entire exam for balance of coverage.	AB	EL	✓
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	AB	EL	✓

	Printed Name/Signature	Date
a. Author	Anthony Ball / Anthony Ball	5/31/2016
b. Facility Reviewer (*)	Ed Jones / Ed Jones	05/31/2016
c. NRC Chief Examiner (#)	J. Vieco /	6/9/2016
d. NRC Supervisor	Gerald McCoy / Gerald McCoy	6/10/2016

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

- WRITTEN EXAM SAMPLE PLAN ONLY -

ES-201 **Examination Outline Quality Checklist** **Form ES-201-2**

Facility: HATCH Date of Examination: JULY 2016

Item	Task Description	Initials a	Initials b*	Initials c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401 or ES-401N.	M	N/A	[illegible]
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 or ES-401N and whether all K/A categories are appropriately sampled.	M	N/A	[illegible]
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	M	N/A	[illegible]
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	M	N/A	[illegible]
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.			
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity, and ensure that each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s), and that scenarios will not be repeated on subsequent days.			
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.			
3. WALK THROUGH	a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form.	N		A
	b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations			
	c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days.			
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	M	N/A	
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	M	N/A	[illegible]
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	M	N/A	[illegible]
	d. Check for duplication and overlap among exam sections.	N/A	N/A	N/A
	e. Check the entire exam for balance of coverage.	M	N/A	[illegible]
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	M	N/A	[illegible]

	Printed Name/Signature	Date
a. Author	MICHAEL MEEKS / Michael K. Meeks	06/01/2015
b. Facility Reviewer (*)	N/A	N/A
c. NRC Chief Examiner (#)	Joseph Viera / David Lang (DRL)	6/4/2015
d. NRC Supervisor	GERALD McCoy / JJ McCoy	6/18/2015

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

- WRITTEN EXAM SAMPLE PLAN ONLY -

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16 → 7/7/16 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/20/16 → 7/7/16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1	Anthony Ball	OPS Instructor / Exam Author	Anthony Ball	7/23/15	Anthony Ball	7/7/16	
2	Richard A. Greenhouse	OPS Instructor / Exam Author	Richard A. Greenhouse	10/26/15	Richard A. Greenhouse	7/7/16	
3	GARY Olmstede	Fleet Exam Mgr		11/2/15	See page (4) ARB	7/12/16	**
4	ED JONES	OPS INSTRUCTOR		12/07/15	Ed Jones	7/7/16	
5	JOHN C. RICHTER	SIMULATOR COORDINATOR / SIMULATOR	John C. Richter	12/14/15	John C. Richter	7/8/16	
6	Donald Gene Gibbs	SIM Engineer		12/14/15		7/12/16	
7	Neal E. White	SR. IRC Tech / Simulator	Neal White	12/14/15	Neal White	7/11/16	
8	Jeff Lockhart	Sim Engineer		12/15/15		7/12/16	
9	Willie Johnston	SIM MAINT / INST		1/12/16		7/13/16	
10	Arthur Generenx	OPS Instructor		2/4/16		7/7/16	
11	MATTHEW STORKAMP	SHIFT SUPPORT SUPERVISOR	Matthew D. Storkamp	3/12/16	Matthew D. Storkamp	7/25/16	
12	Steven M. Mills	NPO		3/12/16		7/11/16	
13	Russell Lewis	OPS Support Mgr	DR Lewis	3/12/16	DR Lewis	7/7/16	
14	Ron Wheeler	NPO		3/12/16		7/7/16	
15	JEREMY TAYLOR	SSS	Jeremy Taylor	3/13/16	Jeremy Taylor	7/11/16	

NOTES:

** See page (4)

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

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16 → 7/7/16 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/20/16 → 7/7/16 From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Clifton Long	SSS/STA		3/14/16		7/8/16	
2.	SZABO, A.W.	SSS		3/14/16		7/7/16	
3.	Van Hayes	NPO	Van Hayes	3/14/16	Van Hayes	7/12/16	
4.	Scott Tolson	NPO		3/19/16		7/8/16	
5.	M.J. Gonica	NPO		4/4/16		7/11/16	
6.	Preston Shaw	NPO		4/4/16		7/11/16	
7.	ARJUN CHATTERJEE	SSS & STA		4-4-16		7-12-16	
8.	W.R. Berry	SS	W.R. Berry	4-4-16	W.R. Berry	7/11/16	
9.	Ryan Fannin	NPO		5/19/16		7/11/16	
10.	R.L. BURNS	SSS		5/19/16		7/10/16	
11.	TERRELL MILLER	NPO		5/19/16		7/15/16	
12.	James Westberry	SS		5/20/16		7/18/16	
13.	PAT MILES	NPO		5/23/16		7/19/16	
14.	Gary Covington	NPO		05/23/16		07/09/16	
15.	B.K. WAINWRIGHT	OTM		5/24/16		7/11/16	

NOTES:

(2)

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

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16 → 7/7/16 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6-20-16 → 7-7-16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Jerry Thomas	OPS Training	Jerry Thomas	7/7/16	Jerry Thomas	7/7/16	
2.	Chuck Goodman	OTC	Chuck Goodman	7/7/16	Chuck Goodman	7/7/16	
3.							
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NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16 → 7/1/16 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/20/16 → 7/1/16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1	Anthony Ball	OPS Instructor / Exam Author	Anthony Ball	7/23/15	Anthony Ball	7/1/16	*
2	[illegible]	OPS Instructor / Exam Author	[illegible]	[illegible]	[illegible]	[illegible]	*
3	GARY Ohmstede	Fleet Exam Mgr	[illegible]	10/2/15	[illegible]	7/12/16	
4	ED JONES	OPS INSTRUCTOR	[illegible]	12/07/15	Ed Jones	7/7/16	*
5	JOHN C. RICHTER	Simulator Coordinator / Simulator	[illegible]	12/14/15	John C. Richter	7/8/16	*
6	Donald Gene Gibbs	SIM Engineer	[illegible]	12/14/15	See sheet one	*	*
7	Neal E. White	SR. IRC Tech / Simulator	[illegible]	12/14/15		*	*
8	Jeff [illegible]	SIM Engineer	[illegible]	[illegible]		*	*
9	Mike Johnston	SIM MAINT. TECH	[illegible]	1/12/16		*	*
10	Arthur Lineweaver	OPS Instructor	[illegible]	2/4/16	[illegible]	7/7/16	
11	MATTHEW STEELMAN	SHIFT SUPPORT SUPERVISOR	[illegible]	2/12/16	See sheet one	*	*
12	Stephen Mills	NRC	[illegible]	3/12/16		*	*
13	Russell Lewis	OPS Support Mgr	[illegible]	3/12/16	[illegible]	7/7/16	
14	[illegible]	NRC	[illegible]	[illegible]	[illegible]	*	*
15	JEREMY TAYLOR	SSS	[illegible]	3/13/16	See sheet one	*	*

NOTES:

* See sheet one for signatures + dates

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

1. Pre-Examination Operating Exam only

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 6/20/16 → 7/1/16 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 6/20/16 → 7/1/16. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	JE White	NOPI		6/20/16		6/20/16	
2.	Lonnie Luhmer	OPS TRAINER		6/24/16		6/24/16	
3.	Daniel Miller	OPS Training		6/20/16		6/24/16	
4.	Shane Courson	OPS TRAINER		6/20/16		7/5/2016	
5.	Jerry Thomas	OPS Training		6/20/16		6/29/16	
6.							
7.	John Campbell	OPS TRAINER		6/20/16		6/29/16	
8.	DAN STOREY	OPS TRAINER		6.20.16		6/30/16	
9.							
10.							
11.							
12.							
13.							
14.							
15.							

NOTES:

(5)

Facility: **PLANT E. I. HATCH ILT 10** Date of Examination: 06/20/2016
Exam Level: RO ☑ SRO-I ☐ SRO-U ☐ Operating Test No.: 2016-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations **Admin 1**	M, R	Determine if plant conditions allow a "Quick Restart" of a Recirc Pump. **(G2.1.20) (ALL)**
Equipment Control **Admin 2**	N, R	Determine the effect of the failure of a relay on system performance. (**G2.2.41)** (**ALL)**
Conduct of Operations **Admin 4**	D, R	Determine Bulk Average DW temperature per 34SV-SUV-019-1, and then determine if any additional DW cooling requirements. (**G2.1.7) RO ONLY**
Radiation Control **Admin 5**	N, R	Evaluate a Radiation Work Permit (RWP) and Survey Map. **(G2.3.7) ALL**

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, or Class(R)oom
(D)irect from bank (≤ 3 (**1**) for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1) (**3**)
(P)revious 2 exams (≤ 1; randomly selected) (**0**)

Facility: **PLANT E. I. HATCH ILT 10** Date of Examination: 06/20/2016
Exam Level: RO ☐ SRO-I ☑ SRO-U ☐ Operating Test No.: 2016-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations **Admin 1**	M, R	Determine if plant conditions allow a "Quick Restart" of a Recirc Pump. **(G2.1.20) (ALL)**
Equipment Control **Admin 2**	N, R	Determine the effect of the failure of a relay on system performance. (**G2.2.41)**
Conduct of Operations **Admin 3**	N, R	Verify Fuel Movements **(G2.1.35)**
Radiation Control **Admin 5**	N, R	Evaluate a Radiation Work Permit (RWP) and Survey Map **(G2.3.7)**
Emergency Procedures/Plan **Admin 6**	M, S, R	Given Plant Conditions, Determine the Emergency Classification and complete NMP-EP-110 Checklist 1 (**G2.4.29)**

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, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 (**0**) for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1) (**5**)
(P)revious 2 exams (≤ 1; randomly selected) (**0**)

Facility: **PLANT E. I. HATCH ILT 10** Date of Examination: 06/20/2016
Exam Level: RO ☐ SRO-I ☐ SRO-U ☑ Operating Test No.: 2016-301

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations **Admin 1**	M, R	Determine if plant conditions allow a "Quick Restart" of a Recirc Pump. **(G2.1.20) (ALL)**
Equipment Control **Admin 2**	N, R	Determine the effect of the failure of a relay on system performance. (**G2.2.41)**
Conduct of Operations **Admin 3**	N, R	Verify Fuel Movements **(G2.1.35)**
Radiation Control **Admin 5**	N, R	Evaluate a Radiation Work Permit (RWP) and Survey Map. **(G2.3.7)**
Emergency Procedures/Plan **Admin 6**	M, S, R	Given Plant Conditions, Determine the Emergency Classification and complete NMP-EP-110 Checklist 1 (**G2.4.29)**

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, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 (**0**) for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1) (**5**)
(P)revious 2 exams (≤ 1; randomly selected) (**0**)

Facility: **PLANT E. I. HATCH ILT 10** Date of Examination: 06/20/2016

Exam Level: RO ☑ SRO-I ☐ SRO-U ☐ Operating Test No.: 2016-301

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
CR/SIM 1 – Withdraw control rods (Rod Stuck) (Alt Path)	A, D, S	SF-1 Reactivity Control 201003A2.03
CR/SIM 2 – Perform RC-2, HPCI Injection (Alt Path)	A, EN, L, M, S	SF-2 Reactor Water Inventory Control 206000A2.14
CR/SIM 3 – Open the MSIVs In An Emergency	D, L, S	SF-3 Reactor Pressure Control 239001A4.01
CR/SIM 4 – Press Control EHC Fail (Alt Path)	A, D, L, S	SF-4 Heat Removal From Reactor Core 239001A2.01
CR/SIM 5 – Initiate Drywell Sprays (Alt Path)	A, D, L, S	SF-5 Containment Integrity 226001A4.03
CR/SIM 6 – Transfer an Emergency 4160 VAC Bus from Emergency to Normal Power Supply	D, EN, S	SF-6 Electrical 264000A4.04
CR/SIM 7 – Conduct A RWM Functional Test (Failure)	D, L, S	SF-7 Instrumentation 201006A3.02
CR/SIM 8 – Perform 34IT-T45-001-2, Sump Isol Surv	N, S	SF-9 Radiation Release 268000K1.04
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
PLANT 1 – U1 From Outside the MCR, Insert a Manual Reactor Scram (Alt Path)	A, D, E, R	SF-1 Reactivity 295006AA1.05
PLANT 2 – From the RSD, Start RHR and Inject Into the Reactor	D, R	SF-2 Reactor Water Inventory Control 203000A1.01
PLANT 3 – Transfer Unit 2 Vital AC from Alternate to Normal	D, R	SF-6 Electrical 262002A4.01

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 (**5**) / 4-6 (**x**) / 2-3 (**x**)
(C)ontrol room	
(D)irect from bank	≤ 9 (**9**) / ≤ 8 (**x**) / ≤ 4 (**x**)
(E)mergency or abnormal in-plant	≥ 1 (**1**) / ≥ 1 (**x**) / ≥ 1 (**x**)
(EN)gineered safety feature	≥ 1 (**2**) / ≥ 1 (**x**) / ≥ 1 (**x**) (control room system)
(L)ow-Power / Shutdown	≥ 1 (**5**) / ≥ 1 (**x**) / ≥ 1 (**x**)
(N)ew or (M)odified from bank including 1(A)	≥ 2 (**2**) / ≥ 2 (**x**) / ≥ 1 (**x**)
(P)revious 2 exams	≤ 3 (**0**) / ≤ 3 (**x**) / ≤ 2 (**x**) (randomly selected)
(R)CA	≥ 1 (**1**) / ≥ 1 (**x**) / ≥ 1 (**x**)
(S)imulator	

Facility: **PLANT E. I. HATCH ILT 10** Date of Examination: 06/20/2016

Exam Level: RO ☐ SRO-I ☑ SRO-U ☐ Operating Test No.: 2016-301

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
CR/SIM 1 – Withdraw control rods (Rod Stuck) (Alt Path)	A, D, S	SF-1 Reactivity Control 201003A2.03
CR/SIM 2 – Perform RC-2, HPCI Injection (Alt Path)	A, EN, L, M, S	SF-2 Reactor Water Inventory Control 206000A2.14
CR/SIM 3 – Open the MSIVs In An Emergency	D, L, S	SF-3 Reactor Pressure Control 239001A4.01
CR/SIM 4 – Press Control EHC Fail (Alt Path)	A, D, L, S	SF-4 Heat Removal From Reactor Core 239001A2.01
CR/SIM 5 – Initiate Drywell Sprays (Alt Path)	A, D, L, S	SF-5 Containment Integrity 226001A4.03
CR/SIM 6 – Transfer an Emergency 4160 VAC Bus from Emergency to Normal Power Supply	D, EN, S	SF-6 Electrical 264000A4.04
CR/SIM 8 – Perform 34IT-T45-001-2, Sump Isol Surv	N, S	SF-9 Radiation Release 268000K1.04
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
PLANT 1 – From Outside the MCR, Insert a Manual Reactor Scram (Alt Path)	A, D, E, R	SF-1 Reactivity 295006AA1.05
PLANT 2 – From the RSD, Start RHR and Inject Into the Reactor	D, EN, R	SF-2 Reactor Water Inventory Control 203000A1.01
PLANT 3 – Transfer Unit 2 Vital AC from Alternate to Normal	D, R	SF-6 Electrical 262002A4.01

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 (**x**) / 4-6 (**5**) / 2-3 (**x**)
(C)ontrol room	
(D)irect from bank	≤ 9 (**x**) / ≤ 8 (**8**) / ≤ 4 (**x**)
(E)mergency or abnormal in-plant	≥ 1 (**x**) / ≥ 1 (**1**) / ≥ 1 (**x**)
(EN)gineered safety feature	≥ 1 (**x**) / ≥ 1 (**2**) / ≥ 1 (**x**) (control room system)
(L)ow-Power / Shutdown	≥ 1 (**x**) / ≥ 1 (**4**) / ≥ 1 (**x**)
(N)ew or (M)odified from bank including 1(A)	≥ 2 (**x**) / ≥ 2 (**2**) / ≥ 1 (**x**)
(P)revious 2 exams	≤ 3 (**x**) / ≤ 3 (**0**) / ≤ 2 (**x**) (randomly selected)
(R)CA	≥ 1 (**x**) / ≥ 1 (**2**) / ≥ 1 (**x**)
(S)imulator	

Facility: **PLANT E. I. HATCH ILT 10** Date of Examination: 06/20/2016

Exam Level: RO ☐ SRO-I ☐ SRO-U ☑ Operating Test No.: 2016-301

Control Room Systems[@] (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
CR/SIM 2 – Perform RC-2, HPCI Injection (Alt Path)	A, EN, L, M, S	SF-2 Reactor Water Inventory Control 206000A2.14
CR/SIM 5 – Initiate Drywell Sprays (Alt Path)	A, D, L, S	SF-5 Containment Integrity 226001A4.03
CR/SIM 8 – Perform 34IT-T45-001-2, Sump Isol Surv	N, S	SF-9 Radiation Release 268000K1.04
In-Plant Systems[@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
PLANT 1 – From Outside the MCR, Insert a Manual Reactor Scram (Alt Path)	A, D, E, R	SF-1 Reactivity 295006AA1.05
PLANT 3 – Transfer Unit 2 Vital AC from Alternate to Normal	D, R	SF-6 Electrical 262002A4.01

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 (**x**) / 4-6 (**x**) / 2-3 (**3**)
(C)ontrol room	
(D)irect from bank	≤ 9 (**x**) / ≤ 8 (**x**) / ≤ 4 (**3**)
(E)mergency or abnormal in-plant	≥ 1 (**x**) / ≥ 1 (**x**) / ≥ 1 (**1**)
(EN)gineered safety feature	≥ 1 (**x**) / ≥ 1 (**x**) / ≥ 1 (**1**) (control room system)
(L)ow-Power / Shutdown	≥ 1 (**x**) / ≥ 1 (**x**) / ≥ 1 (**2**)
(N)ew or (M)odified from bank including 1(A)	≥ 2 (**x**) / ≥ 2 (**x**) / ≥ 1 (**2**)
(P)revious 2 exams	≤ 3 (**x**) / ≤ 3 (**x**) / ≤ 2 (**0**) (randomly selected)
(R)CA	≥ 1 (**x**) / ≥ 1 (**x**) / ≥ 1 (**2**)
(S)imulator	

Facility: **E. I. Hatch** Date of Examination: **06/20/2016** Operating Test Number: **2016-301**

	1. General Criteria	Initials a	b*	c#
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	AB	EJJ	✓
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	AB	EJJ	✓
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	AB	EJJ	✓
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	AB	EJJ	✓
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	AB	EJJ	✓
	2. Walk-Through Criteria	--	--	--
a.	Each JPM includes the following, as applicable: • initial conditions • initiating cues • references and tools, including associated procedures • reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee • operationally important specific performance criteria that include: – detailed expected actions with exact criteria and nomenclature – system response and other examiner cues – statements describing important observations to be made by the applicant – criteria for successful completion of the task – identification of critical steps and their associated performance standards – restrictions on the sequence of steps, if applicable	AB	EJJ	✓
b.	Ensure that any changes from the previously approved systems and administrative walk-through outlines (Forms ES-301-1 and 2) have not caused the test to deviate from any of the acceptance criteria (e.g., item distribution, bank use, repetition from the last 2 NRC examinations) specified on those forms and Form ES-201-2.	AB	EJJ	✓
	3. Simulator Criteria	--	--	--
The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.		AB	EJJ	✓

		Printed Name / Signature	Date
a.	Author	Anthony Ball / Anthony Ball	5/31/2016
b.	Facility Reviewer(*)	Ed Jones / Ed Jones	05/31/2016
c.	NRC Chief Examiner (#)	J. Viera /	06/09/2016
d.	NRC Supervisor	Gerald McCoy / Gerald J. McCoy	6/10/2016

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

Facility: **E. I. HATCH** Date of Exam: **06-20-2016** Scenario Numbers: **1 / 2 / 3 / 4 / 5** Operating Test No.:**2016-301**

QUALITATIVE ATTRIBUTES	Initials a	b*	c#
1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	AG	EW	✓
2. The scenarios consist mostly of related events.	AG	EW	✓
3. Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) or conditions that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)	AG	EW	✓
4. The events are valid with regard to physics and thermodynamics.	AG	EW	✓
5. Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	AG	EW	✓
6. If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	AG	EW	✓
7. The simulator modeling is not altered.	AG	EW	✓
8. The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	AG	EW	✓
9. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.	AG	EW	✓
10. All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	AG	EW	✓
11. The scenario set provides the opportunity for each applicant to be evaluated in each of the applicable rating factors. (Competency Rating factors as described on forms ES-303-1 and ES-303-3.)	AG	EW	✓
12. Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	AG	EW	✓
13. The level of difficulty is appropriate to support licensing decisions for each crew position.	AG	EW	✓

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

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

Facility: **E. I. Hatch** Date of Exam: **06/20/2016** Operating Test No.: **2016-301**

APPLICANT	EVENT TYPE	Scenarios 1 CREW POSITION SRO	1 ATC	1 BOP	2 CREW POSITION SRO	2 ATC	2 BOP	3 CREW POSITION SRO	3 ATC	3 BOP	TOTAL	MINIMUM(*) R	I	U
RO X SRO-I ☐ SRO-U ☐	RX		2			2			6		3	1	1	0
	NOR			1			1			1	3	1	1	1
	I/C		4,6	3,5		4,6	3,5		3,5	2,4	12	4	4	2
	MAJ		7	7		7,8	7,8		7	7	4	2	2	1
	TS		N/A	N/A		N/A	N/A		N/A	N/A	N/A	0	2	2
RO ☐ SRO-I X SRO-U ☐	RX	2			2				6		3	1	1	0
	NOR	1			1				1		3	1	1	1
	I/C	3,4, 5,6			3,4, 5,6				2,3, 4,5		12	4	4	2
	MAJ	7			7,8				7		4	2	2	1
	TS	3,5,6			4,6				3,4,5		8	0	2	2
RO ☐ SRO-I ☐ SRO-U X	RX	2			2				6		3	1	1	0
	NOR	1			1				1		3	1	1	1
	I/C	3,4, 5,6			3,4, 5,6				2,3, 4,5		12	4	4	2
	MAJ	7			7,8				7		4	2	2	1
	TS	3,5,6			4,6				3,4,5		8	0	2	2
RO ☐ SRO-I ☐ SRO-U ☐	RX											1	1	0
	NOR											1	1	1
	I/C											4	4	2
	MAJ											2	2	1
	TS											0	2	2

Instructions:

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

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

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

4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: **E. I. Hatch** Date of Exam: **06/20/2016** Operating Test No.: **2016-301**

APPLICANT	EVENT TYPE	Scenarios 4 CREW POSITION SRO	4 ATC	4 BOP	5 CREW POSITION SRO	5 ATC	5 BOP	TOTAL	MINIMUM(*) R	I	U
RO **X** SRO-I ☐ SRO-U ☐	RX		2			2		2	1	1	0
	NOR			1			1	2	1	1	1
	I/C		3,6	4,5		4,7	3,6	8	4	4	2
	MAJ		7	7		9	9	2	2	2	1
	TS		N/A	N/A		N/A	N/A	N/A	0	2	2
RO ☐ SRO-I **X** SRO-U ☐	RX	2				2		2	1	1	0
	NOR	1				1		2	1	1	1
	I/C	3,4, 5,6				3,4, 6,7		8	4	4	2
	MAJ	7				7		2	2	2	1
	TS	2,5,6				5,6,8		6	0	2	2
RO ☐ SRO-I ☐ SRO-U **X**	RX	2				2		2	1	1	0
	NOR	1				1		2	1	1	1
	I/C	3,4, 5,6				3,4, 6,7		8	4	4	2
	MAJ	7				7		2	2	2	1
	TS	2,5,6				5,6,8		6	0	2	2
RO ☐ SRO-I ☐ SRO-U ☐	RX								1	1	0
	NOR								1	1	1
	I/C								4	4	2
	MAJ								2	2	1
	TS								0	2	2

Instructions:

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

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

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

4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: **E. I. Hatch** Date of Examination: **06/20/2016** Operating Test No.: **2016-301**

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

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

Instructions:

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

Facility: **Hatch** Date of Exam: **July 2016**

Tier	Group	RO K/A Category Points											SRO-Only Points						
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G*	Total	A2		G*		Total	
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			4	3	N/A		4	20	4		3		7	
	2	1	1	1				1	2			1	7	2		1		3	
	Tier Totals	4	4	4				5	5			5	27	6		4		10	
2. Plant Systems	1	3	2	3	2	2	2	3	3	2	2	2	26	3		2		5	
	2	1	1	1	1	2	1	1	1	1	1	1	12	0	2	1		3	
	Tier Totals	4	3	4	3	4	3	4	4	3	3	3	38	5		3		8	
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7	
		2			3			3			2			1	2	2	2		

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

G* Generic K/As

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO)						Form ES-401-1		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A2	G*	K/A Topic(s)	IR	#
295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4			X				AK3.04: Knowledge of the reasons for a Reactor SCRAM as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION	3.4	
					X		AA2.02: Ability to determine and/or interpret Neutron monitoring as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION	3.2	
295003 Partial or Complete Loss of AC / 6		X					AK2.03: Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the A.C. electrical distribution system	3.7	
					X		AA2.04: Ability to determine and/or interpret System lineups as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER	3.7	
295004 Partial or Total Loss of DC Pwr / 6				X			AA1.03: Ability to operate and/or monitor A.C. electrical distribution as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER	3.4	
						X	G2.1.20: Ability to interpret and execute procedure steps as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER	4.6	
295005 Main Turbine Generator Trip / 3						X	G2.2.37: Ability to determine operability and/or availability of safety related equipment as they apply to MAIN TURBINE GENERATOR TRIP	3.6	
						X	G2.2.44: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions as they apply to MAIN TURBINE GENERATOR TRIP	4.4	
295006 SCRAM / 1	X						AK1.02: Knowledge of the operational implications of Shutdown margin as they apply to SCRAM	3.4	
295016 Control Room Abandonment / 7					X		AA2.01: Ability to determine and/or interpret Reactor power as they apply to CONTROL ROOM ABANDONMENT	4.1	
295018 Partial or Total Loss of CCW / 8				X			AA1.01: Ability to operate and/or monitor Backup systems as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER	3.3	
295019 Partial or Total Loss of Inst. Air / 8						X	G2.1.32: Ability to explain and apply system limits and precautions as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR	3.8	
295021 Loss of Shutdown Cooling / 4				X			AA1.06: Ability to operate and/or monitor Containment/ drywell temperature as they apply to LOSS OF SHUTDOWN COOLING	2.8	
295023 Refueling Acc / 8	X						AK1.01: Knowledge of the operational implications of Radiation exposure hazards as they apply to REFUELING ACCIDENTS	3.6	
295024 High Drywell Pressure / 5		X					EK2.13: Knowledge of the interrelations between HIGH DRYWELL PRESSURE and Suppression pool spray	3.8	
295025 High Reactor Pressure / 3					X		EA2.01: Ability to determine and/or interpret Reactor pressure as they apply to HIGH REACTOR PRESSURE	4.3	
295026 Suppression Pool High Water Temp. / 5			X				EK3.05: Knowledge of the reasons for Reactor SCRAM as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE	3.9	
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5						X	G2.4.31: Knowledge of annunciator alarms, indications, or response procedures as they apply to HIGH DRYWELL TEMPERATURE	4.1	

295030 Low Suppression Pool Wtr Lvl / 5			X				EK3.01: Knowledge of the reasons for Emergency depressurization as they apply to LOW SUPPRESSION POOL WATER LEVEL	3.8	
					X		EA2.03: Ability to determine and/or interpret Reactor pressure as they apply to LOW SUPPRESSION POOL WATER LEVEL	3.9	
295031 Reactor Low Water Level / 2		X					EK2.11: Knowledge of the interrelations between REACTOR LOW WATER LEVEL and Reactor protection system	4.4	
					X		EA2.01: Ability to determine and/or interpret Reactor water level as they apply to REACTOR LOW WATER LEVEL	4.6	
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.10: Ability to operate and/or monitor Alternate boron injection methods as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN	3.7	
						X	(Revised from 295019 G2.4.41, 1/20/16) G2.4.41: Knowledge of the emergency action level thresholds and classifications as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	4.6	
295038 High Off-site Release Rate / 9	X						EK1.02: Knowledge of the operational implications of Protection of the general public as they apply to HIGH OFF-SITE RELEASE RATE	4.2	
600000 Plant Fire On Site / 8					X		AA2.14: Ability to determine and interpret Equipment that will be affected by fire suppression activities in each zone as they apply to PLANT FIRE ON SITE	3.0	
700000 Generator Voltage and Electric Grid Disturbances / 6						X	G2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES	4.5	
K/A Category Totals:	3	3	3	4	3/4	4/3	Group Point Total:		20/7

ES-401 BWR Examination Outline Form ES-401-1
Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO)

E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A2	G*	K/A Topic(s)	IR	#
295002 Loss of Main Condenser Vac / 3									
295007 High Reactor Pressure / 3					X		AA2.02: Ability to determine and/or interpret Reactor power as they apply to HIGH REACTOR PRESSURE	4.1	
295008 High Reactor Water Level / 2					X		(Revised from 295008AA2.02, 3/21/16) AA2.01: Ability to determine and/or interpret Reactor Water Level as it applies to HIGH REACTOR WATER LEVEL	3.9	
295009 Low Reactor Water Level / 2						X	G2.4.30: Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator as they apply to LOW REACTOR WATER LEVEL	4.1	
295010 High Drywell Pressure / 5			X				AK3.01: Knowledge of the reasons for Drywell venting as they apply to HIGH DRYWELL PRESSURE	3.8	
295011 High Containment Temp / 5									
295012 High Drywell Temperature / 5					X		AA2.01: Ability to determine and/or interpret Drywell temperature as they apply to HIGH DRYWELL TEMPERATURE	3.9	
295013 High Suppression Pool Temp. / 5									
295014 Inadvertent Reactivity Addition / 1						X	G2.1.28: Knowledge of the purpose and function of major system components and controls as they apply to INADVERTENT REACTIVITY ADDITION	4.1	
295015 Incomplete SCRAM / 1									
295017 High Off-site Release Rate / 9				X			AA1.05: Ability to operate and/or monitor SPDS/ERIS/CRIDS/GDS as they apply to HIGH OFF-SITE RELEASE RATE	2.7	
295020 Inadvertent Cont. Isolation / 5 & 7		X					AK2.01: Knowledge of the interrelations between INADVERTENT CONTAINMENT ISOLATION and the Main steam system	3.6	
295022 Loss of CRD Pumps / 1									
295029 High Suppression Pool Wtr Lvl / 5									
295032 High Secondary Containment Area Temperature / 5					X		EA2.01: Ability to determine and/or interpret Area temperature as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE	3.8	
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9									
295035 Secondary Containment High Differential Pressure / 5									
295036 Secondary Containment High Sump/Area Water Level / 5									
500000 High CTMT Hydrogen Conc. / 5	X						EK1.01: Knowledge of the operational implications of Containment integrity as they apply to HIGH CONTAINMENT HYDROGEN CONCENTRATIONS	3.3	
K/A Category Point Totals:	1	1	1	1	2/2	1/1	Group Point Total:		7/3

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO)												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G*	K/A Topic(s)	IR	#
203000 RHR/LPCI: Injection Mode					X							K5.01: Knowledge of the operational implications of Testable check valve operation as they apply to RHR/LPCI: INJECTION MODE	2.7	
205000 Shutdown Cooling			X									K3.02: Knowledge of the effect that a loss or malfunction of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) will have on Reactor water level K6.04: Knowledge of the effect that a loss or malfunction of Reactor water level will have on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE)	3.2 3.6	
206000 HPCI								X			X	G2.4.50: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual as they apply to HIGH PRESSURE COOLANT INJECTION SYSTEM A2.11: Ability to (a) predict the impacts of Low reactor water level on the HIGH PRESSURE COOLANT INJECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations	4.2 4.2	
207000 Isolation (Emergency) Condenser														
209001 LPCS									X			A3.02: Ability to monitor automatic operations of the LOW PRESSURE CORE SPRAY SYSTEM including Pump start	3.8	
209002 HPCS														
211000 SLC											X	G2.2.36: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations as they apply to STANDBY LIQUID CONTROL SYSTEM	3.1	
212000 RPS	X							X				K1.03: Knowledge of the physical connections and/or cause-effect relationships between REACTOR PROTECTION SYSTEM and Recirculation system A2.05: Ability to (a) predict the impacts of Nuclear boiler instrument system failure on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations	3.4 3.7	
215003 IRM		X										K2.01: Knowledge of electrical power supplies to IRM channels/detectors	2.5	
215004 Source Range Monitor			X									K3.04: Knowledge of the effect that a loss or malfunction of the SOURCE RANGE MONITOR (SRM) SYSTEM will have on Reactor power and indication	3.7	
215005 APRM / LPRM	X											K1.08: Knowledge of the physical connections and/or cause-effect relationships between AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM and the Display control system	3.0	

217000 RCIC						X						K6.01: Knowledge of the effect that a loss or malfunction of Electrical power will have on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC)	3.4	
218000 ADS								X				A2.06: Ability to (a) predict the impacts of ADS initiation signals present on the AUTOMATIC DEPRESSURIZATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations A3.09: Ability to monitor automatic operations of the AUTOMATIC DEPRESSURIZATION SYSTEM including Reactor vessel water level	4.2 4.1	
223002 PCIS/Nuclear Steam Supply Shutoff							X			X		A1.04: Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF controls including Individual system relay status A4.04: Ability to manually operate and/or monitor System indicating lights and alarms in the control room	2.6 3.5	
239002 SRVs								X			X	A2.06: Ability to (a) predict the impacts of Reactor high pressure on the RELIEF/SAFETY VALVES ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations G2.4.31 Knowledge of annunciator alarms, indications, or response procedures as they apply to RELIEF/SAFETY VALVES	4.1 4.1	
259002 Reactor Water Level Control				X								K4.14: Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and/or interlocks which provide for Selection of various instruments to provide reactor water level input	3.4	
261000 SGTS										X		A4.01: Ability to manually operate and/or monitor Off-site release levels in the control room	3.2	
262001 AC Electrical Distribution							X					A1.04: Ability to predict and/or monitor changes in parameters associated with operating the A.C. ELECTRICAL DISTRIBUTION controls including Load currents	2.7	
262002 UPS (AC/DC)				X							X	K4.01: Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for Transfer from preferred power to alternate power supplies G 2.2.36: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations as they apply to UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.)	3.1 4.2	
263000 DC Electrical Distribution							X					A1.01: Ability to predict and/or monitor changes in parameters associated with operating the D.C. ELECTRICAL DISTRIBUTION controls including Battery charging/discharging rate	2.5	

264000 EDGs	X				X						K1.05 Knowledge of the physical connections and/or cause-effect relationships between EMERGENCY GENERATORS (DIESEL/JET) and Emergency generator fuel oil supply system K5.05: Knowledge of the operational implications of Paralleling A.C. power sources as they apply to EMERGENCY GENERATORS (DIESEL/JET)	3.2 3.4	
300000 Instrument Air		X						X			K2.01: Knowledge of electrical power supplies to the Instrument air compressor A2.01: Ability to (a) predict the impacts of Air dryer and filter malfunctions on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation	2.8 2.8	
400000 Component Cooling Water			X					X			K3.01: Knowledge of the effect that a loss or malfunction of the CCWS will have on Loads cooled by CCWS A2.04: Ability to (a) predict the impacts of Radiation monitoring system alarm on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation	2.9 2.9	
K/A Category Point Totals:	3	2	3	2	2	2	3	3/3	2	2	2/2	Group Point Total:	26/5

ES-401	BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO)												Form ES-401-1	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A2	A 3	A 4	G*	K/A Topic(s)	IR	#
201001 CRD Hydraulic						X						K6.06: Knowledge of the effect that a loss or malfunction of Component cooling water systems will have on the CONTROL ROD DRIVE HYDRAULIC System	2.8	
201002 RMCS								X				A2.04: Ability to (a) predict the impacts of Control rod block 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	3.2	
201003 Control Rod and Drive Mechanism											X	G2.1.30: Ability to locate and operate components, including local controls as they apply to CONTROL ROD AND DRIVE MECHANISM	4.0	
201004 RSCS														
201005 RCIS														
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control														
204000 RWCU				X								K4.07: Knowledge of REACTOR WATER CLEANUP SYSTEM design feature(s) and/or interlocks which provide for Draining of reactor water to various locations	2.9	
214000 RPIS								X				A2.03: Ability to (a) predict the impacts of Overtravel/in-out on the ROD POSITION INFORMATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations	3.6	
215001 Traversing In-Core Probe														
215002 RBM	X											K1.06: Knowledge of the physical connections and/or cause-effect relationships between ROD BLOCK MONITOR SYSTEM and Control rod selection	3.0	
216000 Nuclear Boiler Inst.														
219000 RHR/LPCI: Torus/Pool Cooling Mode														
223001 Primary CTMT and Aux.														
226001 RHR/LPCI: CTMT Spray Mode														
230000 RHR/LPCI: Torus/Pool Spray Mode														
233000 Fuel Pool Cooling/Cleanup											X	G2.2.22: Knowledge of limiting conditions for operations and safety limits as they apply to FUEL HANDLING EQUIPMENT	4.7	
234000 Fuel Handling Equipment									X			A3.01: Ability to monitor automatic operations of the FUEL HANDLING EQUIPMENT including Crane/refuel bridge movement	2.6	
239001 Main and Reheat Steam														

239003 MSIV Leakage Control													
241000 Reactor/Turbine Pressure Regulator									X		A4.08: Ability to manually operate and/or monitor Control/governor valves (operation) in the control room	3.5	
245000 Main Turbine Gen. / Aux.													
256000 Reactor Condensate													
259001 Reactor Feedwater							X				A1.04: Ability to predict and/or monitor changes in parameters associated with operating the REACTOR FEEDWATER SYSTEM controls including RFP turbine speed: Turbine-Driven-Only	2.8	
268000 Radwaste													
271000 Offgas													
272000 Radiation Monitoring					X						K5.01: Knowledge of the operational implications of Hydrogen injection operation's effect on process radiation indications as they apply to RADIATION MONITORING SYSTEM	3.2	
286000 Fire Protection		X									K2.02: Knowledge of electrical power supplies to Pumps	2.9	
288000 Plant Ventilation													
290001 Secondary CTMT								X			A2.04: Ability to (a) predict the impacts of High airborne radiation on the SECONDARY CONTAINMENT ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations	3.7	
290003 Control Room HVAC			X								K3.02: Knowledge of the effect that a loss or malfunction of the CONTROL ROOM HVAC will have on Computer/instrumentation	3.3	
290002 Reactor Vessel Internals					X						(Revised from 290002 K5.04, 1/20/16) K5.01: Knowledge of the operational implications of Thermal Limits as they apply to REACTOR VESSEL INTERNALS	3.5	
K/A Category Point Totals:	1	1	1	1	2	1	1	1/2	1	1	1/1	Group Point Total:	12/3

Facility:		Date of Exam:				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.44	Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation	3.9			
	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc	2.9			
	2.1.3	Knowledge of shift or short-term relief turnover practices			3.9	
	Subtotal		2		1	
2. Equipment Control	2.2.38	Knowledge of conditions and limitations in the facility license	3.6			
	2.2.40	Ability to apply Technical Specifications for a system	3.4			
	2.2.43	Knowledge of the process used to track inoperable alarms	3.0			
	2.2.20	Knowledge of the process for managing troubleshooting activities			3.8	
	2.2.5	Knowledge of the process for making design or operating changes to the facility			3.2	
	Subtotal		3		2	
3. Radiation Control	2.3.11	Ability to control radiation releases	3.8			
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc	2.9			
	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions	3.5			
	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions			3.7	
	2.3.13	Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc			3.8	
	Subtotal		3		2	
4. Emergency Procedures / Plan	2.4.17	Knowledge of EOP terms and definitions	3.9			
	2.4.42	Knowledge of emergency response facilities	3.8			
	2.4.27	Knowledge of “fire in the plant” procedures			3.9	
	2.4.5	Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions			4.3	
	Subtotal		2		2	
Tier 3 Point Total			10	10	7	7

Tier / Group	Randomly Selected K/A	Reason for Rejection
2/2	290002K5.04 RO QUESTION	ORIGINAL K/A: 290002 Reactor Vessel Internals K5. Knowledge of the operational implications of the following concepts as they apply to REACTOR VESSEL INTERNALS : (CFR: 41.5 / 45.3) K5.04 †PCIOMR Plant-Specific . . . . . 3.1 3.7 Difficulty in writing a discriminatory question to this K/A. **AFTER PHONE CONVERSATION WITH CHIEF EXAMINER JOE VIERA ON 1/20/2016, REPLACED K/A WITH THE FOLLOWING K/A:** NEW K/A: 290002 Reactor Vessel Internals K5. Knowledge of the operational implications of the following concepts as they apply to REACTOR VESSEL INTERNALS : (CFR: 41.5 / 45.3) K5.01 †Thermal limits 3.5 3.9

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/2	295008AA2.02 SRO QUESTION	ORIGINAL K/A: 295008 High Reactor Water Level AA2. Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL : (CFR: 41.10 / 43.5 / 45.13) AA2.02 Steam flow/feedflow mismatch . . . . . 3.4 3.4 Difficulty in writing a discriminatory question to this K/A. **AFTER PHONE CONVERSATION WITH CHIEF EXAMINER JOE VIERA ON 3/21/2016, REPLACED K/A WITH THE FOLLOWING K/A:** NEW K/A: 295008 High Reactor Water Level AA2. Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL : (CFR: 41.10 / 43.5 / 45.13) AA2.01 Reactor water level 3.9 3.9

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	295037G2.4.41 SRO QUESTION	ORIGINAL K/A: 295019 Partial or Complete Loss of Instrument Air G2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11) . . . . . 2.9 4.6 Plant Hatch does not have EALs related to a partial/complete loss of air. **AFTER PHONE CONVERSATION WITH CHIEF EXAMINER JOE VIERA ON 1/20/2016, REPLACED K/A WITH THE FOLLOWING K/A:** 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown G2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11) 2.9 4.6

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

Facility: **E. I. HATCH** Date of Exam: **6/20/2016** Exam Level: RO ☑ SRO ☑

	Item Description	Initial a	Initial b*	Initial c*#
1.	Questions and answers are technically accurate and applicable to the facility.	AB	CLG	✓
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	AB	CLG	✓
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401	AB	CLG	✓
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).	AB	CLG	✓
5.	Question duplication from the licensee screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate __ The audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or ✓ the licensee certifies that there is no duplication; or __ other (explain)	AB	CLG	✓
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 18 / 3 — 21 / 5 — 36 / 17 Bank: 24%/12% — Modified: 28%/20% — New: 48%/68%	AB	CLG	✓
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 32 / 5 — C/A 43 / 20 43% / 20% — 57% / 80%	AB	CLG	✓
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.	AB	CLG	✓
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.	AB	CLG	✓
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.	AB	CLG	✓
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.	AB	CLG	✓

		Printed Name / Signature	Date
a.	Author	Anthony Ball / Anthony Ball	5/31/2016
b.	Facility Reviewer (*)	Ed Jones / Ed Jones	05/31/2016
c.	NRC Chief Examiner (#)	J. Vera /	6/9/2016
d.	NRC Regional Supervisor	Gerald McCoy / Gerald J McCoy	6/10/2016

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.

Hatch (2016-301)

ES-401 **Written Examination Review Worksheet** **Form ES-401-9**

Instructions

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

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

Revision 0 – comments following pre-submittal review
Revision 1 – comments following 3/21/16 pre-submittal phone review with licensee
Revision 2 – comments following 4/13/16 SRO written draft submittal review (questions 15, 19, 36, 51, 61, 79, 80, 87, 93, and 100 remain in pre-submittal phase)
Revision 3 – comments following 4/21/16 draft submittal review
Revision 4 – comments following 5/3/16 SRO written (76-100) phone review with licensee
Revision 5 – comments following 5/9-16/16 written phone reviews with licensee
Revision 6 –
Revision 7 –
Revision 8 –

Q#	1. LOK (F/H) (H%) (50-60% H% RO)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. B/M/N (Prev used)	7. U/S	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only			
																100 Questions Total
	37/38 (51%)	1				7						4	1	19(1)/18(5)/38 (6 RO)	13/62	RO – #2, 4, 5, 8, 17, 22, 26, 48, 49, 50, 53, 56, 70 (17% Unsat)
	8/17 (68%)	1				1						1		4/5(1)/16 (1 SRO)	3/22	SRO – #81, 89, 94 (12% Unsat)

Hatch (2016-301)

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	H	3												N	S	**4/21 Review comments** T2G2 Answer choice B contains teaching in the statement, “b/c the CRD Pump Room Area Coolers have lost their cooling medium”. Additionally, this answer statement is implausible as area coolers are not addressed in 34AB-P42-001-2. (credible distractor) Revise answer choice B. For the situation presented in the as-given question (no APRM condition), the correct answer is answer choice ‘A’ (partially correct). Additionally, there is no significance to being provided with Main Condenser vacuum for this question as this is not an abnormal indication for the current plant condition (stem focus). Revise to indicating answer choice ‘A’ as correct and remove the MC vacuum indication. **5/9 Review comments** Will revise answer choice A and will revise given power level to ensure ATWS conditions exist. Will remove Main Condenser Vacuum indication from question. **5/10 Review comments** **Question is SAT.**

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	H	3												B (2011 Hatch)	S	**4/21 Review comments** T2G2 First half question tests knowledge of K/A (part a). Second half tests knowledge of plant impact to drifting rod. Procedural knowledge component of this question does not hit K/A (part b) (Q=K/A). Ref ES-401, D.2.a: When selecting or writing questions for K/As that test coupled knowledge or abilities (e.g., the A.2 K/A statements in Tiers 1 and 2 and a number of generic K/A statements, such as 2.4.1, in Tier 3), try to test both aspects of the K/A statement. If that is not possible without expending an inordinate amount of resources, limit the scope of the question to that aspect of the K/A statement requiring the highest cognitive level (e.g., the (b) portion of the A.2 K/A statements) or substitute another randomly selected K/A. The procedural requirement dictating when control rod blocks actuate/enforce could be a knowledge area used to hit part (b) of the K/A. **5/10 Review comments** What is the power level at which the RWM no longer enforces control rod blocks? Revise second bullet of initial conditions to indicate that the 30-31 is currently at position 04. Revise second half question statement to read, “IAW …, the RWM is/is NOT REQUIRED to be BYPASSED to correct the control rod 30-31 misposition.” **5/12 Review comments** **Question is SAT.**

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
3	H	3												B (2015 Hatch)	S	**4/21 Review comments** T2G2 Justification states that this question is modified, however, both half answers remain correct between the original and proposed version (only difference is plant condition). This question is a bank question. Ref ES-401, D.2.f: • Select the remaining questions for the examination (nominally 11 for the RO and 4 for the SRO-only) from the facility licensee's or ***any*** other bank, but significantly modify each question by changing at least one pertinent condition in the stem and at least one distractor. Changing the conditions in the stem such that one of the three distractors in the original question becomes the correct answer would also be considered a significant modification. The intent or objective of the question does not necessarily have to be changed. Adding or deleting irrelevant information and making minor changes (e.g., the unit number, component train, or power level when it makes no difference) would not be considered a significant modification to the question. **Question is SAT.**
4	H	3												M (2011 Hatch)	S	**4/21 Review comments** T2G1 Normal valve nomenclature is not being used in this question (i.e. inboard is F015 and outboard is F017). Justification states that this is being tested with this exam item, yet has nothing to do with the K/A. Knowledge tested by second half question (K/A match portion) does not test 2E11-F050 valve location due to it sticking in the OPEN position (i.e. regardless of F050 position – since it is open, F015 will always isolate F017 from Rx side => knowledge of F015/F017 positions, not F050) (Q=K/A). There doesn't appear to be an aspect of the testable feature of F050 present in this question. **5/9 Review comments** Question is now modified. Revise 3rd bullet to break out from Initial Conditions, e.g. "Subsequently, all RHR loop 2B pumps are secured." (stem focus) **5/10 Review comments** **Question is SAT.**

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
5	F	3												N	S	**4/21 Review comments** T2G2 Answer choices A, C, and D rely on multiple misconceptions to justify plausibility. For answer choice A, both RWCU pump flow and the setpoint value must both be misconstrued to justify this as an incorrect answer. Answer choice C is justified due to being based on the corresponding pressure value for a max flow rate. Answer choice D relies on the misconception of both differential flow value and the fact that it increases to justify this as an incorrect answer. Due to the unnecessary complexity involved by using these multiple misconceptions, the plausibility of these answer choices is greatly diminished (credible distractors). Revise answer choices to read: A. RWCU system flow increases to 150 gpm B. RWCU Pump discharge flow decreases to 25 gpm *C. 2G31-F033 upstream pressure decreases to 3 psig D. 2G31-F033 downstream pressure increases to 120 psig **5/9 Review comments** Will revise question. **5/10 Review comments** **Question is SAT.**
6	H	3												M (2015 Hatch)	S	**4/21 Review comments** T2G1 **Question is SAT.**
7	H	3												M (2012 Hatch)	S	**4/21 Review comments** T2G1 RPV pressure indication provided by bullet in initial conditions is not required to answer this question and can be removed. (stem focus) Verify that F015A requires a *subsequent* LOCA signal to re-open the valve (coincident with F008/F009 closure). Question could be construed as having multiple correct answers due to re-opening capability of F015 (partially correct). **5/9 Review comments** **Question is SAT.**

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
8	F	3												N	S	**4/21 Review comments** T2G1 Why are the alarm tiles present in this question? I have seen no other instances of this being the case elsewhere on the exam. Remove the first bullet from the 10:03 initial condition information. HPCI flow parameter evaluation is not necessary to answer this question (stem focus). Revise spelling of “conditions” in question statement. Potential overlap with Question #55 (HPCI suction from CST). Justification statement specifies that CRD pumps have trip setpoint of 12 inches Vac to justify C.1/D.1 distractors. There is no CRD pump information provided for evaluation. (credible distractors) There are two separate concepts being tested by this question (as opposed to using the 2x2 format to strengthen plausibility). Revise one of the 2x2 question/answer choices to remove the second tested concept. **5/9 Review comments** No overlap with Question #55. **Question is SAT.**

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
9	H	3												N	S	**4/21 Review comments** T2G1 Initial condition information at 13:00 (surveillance in progress) and 13:15 (TS value for level 1) is not needed to answer the question. (stem focus) Remove both bullet points. Single implausible distractor at RO level that is based on TS allowable value for instrument actuation (credible distractors). Answer choices ask when the pump "will have" automatically restarted, yet the A and B answer choices specify exact times when the pump "will" automatically restart (credible distractors). Question/answer choice revision required to conform to question statement. Revise question statement to read, "The EARLIEST listed time that Core Spray Pump 2A will be in operation is _____. Revise answer choices to read, A. 13:01 B. twelve (12) seconds after 13:01 *C. 13:10 D. twelve (12) seconds after 13:10 **5/9 Review comments** **Question is SAT.**
10	H	3												M (2010 Oyster Creek)	S	**4/21 Review comments** T2G1 **Question is SAT.**
11	H	3												N	S	**4/21 Review comments** T2G1 **Question is SAT.**
12	F	3												B	S	**4/21 Review comments** T2G2 **Question is SAT.**

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
13	F	3												M (2015 Hatch)	S	**4/21 Review comments** T2G1 **Question is SAT.**
14	F	3												N	S	**4/21 Review comments** T2G1 **Question is SAT.**
15	F	3												N	S	**Pre-Submittal Review comments** Are there other SPDS color's available (substitute for red)? **3/21/16 Review comments** Facility will change answer choice D from "red" to "magenta". **4/21 Review comments** T2G1 **Question is SAT.**
16	F	3												N	S	**4/21 Review comments** T2G1 Extraneous information contained in the question stem (stem focus). Revise opening statement to read, "RCIC is injecting into Unit 2 following a transient." Remove two bullet points in initial conditions. Second half question contains cueing of RCIC isolation, i.e. answer is implied due to wording of the question (cueing). Revise second half question to read, "2E41-F008, xxx, will/will NOT* remain energized." **5/9 Review comments** Will revise second half question to read, "E51-F008 has*/has NOT lost power." **5/10 Review comments** **Question is SAT.**

Hatch (2016-301)

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	3												N	S	**4/21 Review comments** T2G1 Extraneous information exists in stem of question. EOP situation (T2G1 K/A) is not needed to ask for 102.5 second timer operation. (stem focus) Since the first half question is specifically asking about operation of the 102.5 second timer, usage of this number as an initial condition (RWL is -102") and in the second half answer choices (depress the 102.5 second timer RESET pushbuttons) results in a greatly diminished plausibility of the first half answer choices (12:03 and 12:05). (credible distractors) When controlling SRV's during an EOP network entry, there is no instance found where use of the RESET pushbuttons would be performed over using the ADS inhibit switches (i.e. ADS is always inhibited when in EOP network) (SRO LOK?). (credible distractors) Answer choices A.2 and C.2 are implausible since there is no occasion with the conditions stated specifying their use (credible distractors). Potential overlap with Question #18 (testing of timer and RWL initiation signal). **5/10 Review comments** What does the phrase "ALL Key Parameters are NORMAL" mean? Are we trying to imply, in the first half question, that "a" SRV timer has inadvertently actuated and which one is indicated on the SPDS Primary Display screen? "Unit 1 is operating at 100% RTP when the ADS timer associated with the SPDS Primary Display screen inadvertently actuates." "All plant parameters are normal" No overlap with Question #18. **5/12 Review comments** **Question is SAT.**

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
18	H	3												N	S	**4/21 Review comments** T2G1 Extraneous information provided in question stem (2.5 psig DW#, LOCA signal, and RHR/CS pumps in conjunction with 602-306). Only the third listed bullet is necessary to state initial condition of system. (stem focus) Remove all initial condition information except for the third bullet (annunciation of 602-306). Since there are timers involved in the ADS logic scheme (affecting RWL, CS/RHR, INHIB sw relays), a time component must be added to the question. (stem focus) However, with addition of a time component, there is a potential to overlap Question #17. Potential overlap with Question #17 on RWL initiation signal (correct answer to this question). Revise question initial conditions and question statement to read, “A LOCA has occurred on Unit 2.” “AUTO B/D TIMERS INITATED, xxx, has just ILLUMINATED” “One (1) minute after the above condition, the AUTO B/D TIMERS INITIATED annunciator will automatically clear if _____.” **5/10 Review comments** No overlap with Question #17. **Question is SAT.**

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
19	H	3												M (2008 Hatch)	S	**Pre-Submittal Review comments** There are multiple correct answers based on timeline. For example, at 10:02, prior to 90% open on F022C, answer choice D is correct (due to ½ Scram 'A' side). Justification for A.1 and B.1 specifies that combination of TCV relays could be confused with MSIV relays, yet question only specifies MSIV valve closure (TCV relay relevance?). Additionally, given stem information provides the number of K14 relays (i.e. A -> H or 8 total), which cues half of correct answer. **3/21/16 Review comments** Facility will perform following revisions: 1) Revise opening statement timeline to: 10:00, 10:02, and 10:04 2) Revise question statement to: "Based only on the above conditions with respect to MSIV position input to the RPS Logic," 3) Revise question statement times to: 10:03 and 10:05 4) Remove "A thru H" from question statements 5) Answer choice A is now correct answer **4/21 Review comments** T2G1 No overlap with Question #48 (MSIV position relationship with RPS p/s). **Question is SAT.**
20	F	3												M (2015 Hatch)	S	**4/21 Review comments** T2G1 Justification statement for answer choices A and B specify application of "29 minute" timer associated with the Torus Ambient Temperature reading. However, based on the timeline provided (i.e. t=0 at 10:00 and t=1 at 10:15), there is no evaluation performed for this situation. (credible distractors) Revise question statement to read, "RCIC ISOLATION VLV F007/F008 NOT FULLY OPEN, 602-336, will ILLUMINATE based on exceeding _____ setpoint, followed by a _____ minute time delay." Revise answer choices to read, A. RCIC Equipment Room Temp High / 14 B. RCIC Equipment Room Temp High / 29 C. Suppression Chamber Area Air Temp High / 14 D. Suppression Chamber Area Air Temp High / 29 **5/9 Review comments** **Question is SAT.**

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
21	F	3												B (2012 Hatch)	S	**4/21 Review comments** T2G2 **Question is SAT.**
22	H	3												N	S	**4/21 Review comments** T2G1 The procedural portion piece of the as-written second half question (PC flowchart) is at the SRO LOK (procedural transition to 34SO-E11-010 for max SPC). (license level mismatch) Additionally, with the plant condition specified (SRV actuation with MSIV closure and EOP entry), answer choices A.2/C.2 are implausible. (credible distractors) A way to revise the as-written question to remain within the RO LOK is to incorporate CAUTION of 34SO-B21-001-2 (Section 7.2.2, page 12) into this question. **5/9 Review comments** Question to be revised. **5/10 Review comments** **Question is SAT.**

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
23	H	3												M (2012 Hatch)	S	**4/21 Review comments** T2G2 First half of this question can be answered with an unstated assumption (MT should be tripped on vibration). Knowledge of TCV modified partial arc admission not required to answer. (stem focus) Second half question can be answered with the same unstated assumption (MT should be tripped on vibration). Knowledge of TCV controls not required to answer. (stem focus) Unsure why the vibration situation presented in this question is needed to hit the provided K/A. Why is the 2H11-P650 panel mentioned for the second half question? (stem focus) Revise opening statement to read, “Unit 2 is in operation with the Main Generator loaded to 500 MWe. Based on the plant conditions above,” Revise first half question to state, “TCV #4 will be _____.” Revise second half question to state, “If necessary to close all TCV’s, the NPO will _____.” Answer choices remain the same. **5/9 Review comments** What is the plausibility for the A.2 and C.2 distractors? Based on justification provided, it appears that the Turbine Trip pushbuttons will ALWAYS close the TCV’s? (credible distractors) Revise second half question to read, ‘If the “CLOSE VALVES” button on the “Control” -> “Speed” screen is selected, All/None of the TCV’s will close.” **5/10 Review comments** **Question is SAT.**
24	H	3												N	S	**4/21 Review comments** T2G2 Revise “developes” in initial conditions. **5/10 Review comments** **Question is SAT.**
25	H	3												B	S	**4/21 Review comments** T2G1 **Question is SAT.**

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
26	F	3												M (2012 Hatch)	S	**4/21 Review comments** T2G1 It appears that the opening statement information concerning the "Unit 2 refueling hatch installed" is not necessary to answer the question and can be removed. (stem focus) Cueing of first half question present in initial conditions in conjunction with 10:15 statement (secondary containment isolation is provided in question due to providing RWCU leak, ARM reading, and SBGT operation). Do SBGT's automatically start for any other reason than 2º containment isolation? (cueing) Since the Secondary Containment isolation is given due to cueing, answer choices C.1 and D.1 are implausible (credible distractors). What is the basis for a U1 SBGT securing on low flow during operation of all four SBGT's (justification for B.2/D.2 answers)? Justification states that "it has been determined that…" Is this SBGT behavior contained in a NOTE or CAUTION? Is the 10 minute timeframe codified anywhere? As written, there appear to be multiple correct answers to second half question. (partially correct) **5/9 Review comments** Will revise question to test NOTE in 34SO-T46-001-1 on page 13 (i.e. SBGT 1A/2A after 5/10 minutes fan will shutdown). **5/10 Review comments** 34SO-T46-001-1 needs to be cited in question statement. (will refer to both unit procedures to eliminate cueing of correct answer) **5/12 Review comments** **Question is SAT.**
27	H	3												M (2015 Hatch)	S	**4/21 Review comments** T2G1 No overlap with CR-SIM 6 JPM (Transfer 4kV E-Bus from Emer to Normal supply). **Question is SAT.**
28	H	3												B (2012 Hatch)	S	**4/21 Review comments** T2G1 No overlap with In-plant 3 JPM (Transfer the Vital AC System from Alternate Power to the Inverter) **Question is SAT.**

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	F	3												M (2015 Hatch)	S	**4/21 Review comments** T2G1 **Question is SAT.**
30	H	3												B (2009 Hatch)	S	**4/21 Review comments** T2G1 **Question is SAT.**
31	F	3												N	S	**4/21 Review comments** T2G1 Answer choices A.1/B.1 do not read correctly with the as-given first half question statement (reduce the probability of excessive VAR's?). Since the VAR setting is operator selectable, this option doesn't fit with the as-written question as a valid answer choice. (credible distractors) Revise answer choices A.1/B.1 to read, "a differential current trip". Cueing of correct answer due to wording of second half question "exceeds its **trip** setpoint". (cueing) Revise second half question to read, "After the EDG 2A output breaker is closed, exceeding the Crankcase pressure setpoint will/will NOT automatically trip EDG 2A." **5/9 Review comments** **Question is SAT.**
32	H	3												B	S	**4/21 Review comments** T2G1 Second half question needs a time component added, as immediately after the H2 flow isolation, MSL radiation could be perceived to briefly "remain the same" (i.e. half life of N-16). (stem focus) **5/9 Review comments** B.2 and D.2 distractors are implausible since the question is directly asking for the effect of stopping Hydrogen flow. Can correct by revising answer choices to read, "have INCREASED". **5/10 Review comments** **Question is SAT.**

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
33	F	3												N	S	**4/21 Review comments** T2G2 There are no examples of Unit 2 4kV buses that power Unit 1 pumps/components of the Fire Protection system per 34SO-X43-001-1. (credible distractors) Revise answer choices C and D to be 1R25-S051 and 1R25-S034. **5/9 Review comments** **Question is SAT.**
34	H	3												N	S	**4/21 Review comments** T2G2 Second half question requires revision due to the current answer being cued by information provided in first half question (i.e. "… 1 or 2 of the thermal limits **have been EXCEEDED**") (cueing) Revise given information to only provide MFLCPR and MFLPD information. Revise first half question to read, "At this time, the MFLCPR/MFLPD thermal limit has been exceeded." Revise second half question to read, "The basis for the thermal limit identified above is to avoid the potential for fuel rod transition boiling/avoid the potential for fuel cladding plastic strain." **5/9 Review comments** **Question is SAT.**

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
35	H	3												N	S	**4/21 Review comments** T2G2 As worded, there is only one possible answer to the first half question (i.e. given LCO does apply to both units). It appears that the intent of this question is to ask if the mode of applicability is met for LCO 3.7.5. Revise first half question to ask this if intended. (credible distractors) Revise first half question statement to read, "The LCO 3.7.5, xxx, Mode of Applicability is/is NOT met for BOTH Units." Does the second half question ask if the MCR instruments themselves would increase in temperature or if they would indicate increased temperatures based on the load losses? (stem focus) Revise second half question statement to read, "Main Control Room instrumentation cooling has/has NOT been lost." Additionally, do the Unit 1 load losses affect instrumentation cooling for both unit MCR's or just a single MCR? **5/9 Review comments** Revise to cue answer choice C as being the correct answer. **5/10 Review comments** Revise first half question statement for readability. **5/12 Review comments** **Question is SAT.**

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
36	F	3												M (2008 River Bend)	S	**Pre-Submittal Review comments** 3 part question submitted by facility. First half to question is testing immediate operator action on loss of both RR pumps. N/F map is not needed as a reference to answer this question. Marking of N/F map with "Safety Limit" (on left hand of map) provides cueing for A.2 and C.2 second half answers. There doesn't appear to be a correct answer for the second half question based on the immediate operator action to SCRAM IAW 34AB-B31-001-2. Actual reason for SCRAM based on TS bases (B3.4-2) is that "Operation of Reactor Coolant Recirculation System is an initial condition assumed in the design basis LOCA", i.e. prevent power operation during an unanalyzed design accident configuration. **3/21/16 Review comments** Facility will perform following revisions: 1) Revise Reactor Power value in initial conditions to: 45% 2) Revise second-half question statement to read: "The reason for the above action is to avoid EXCEEDING the limit for … " 3) Revise second-half answer statements to read "MCPR or MAPRAT" Following discussion on K/A match, facility will change question to consist of a single RR pump trip and to notify applicant that OPRM oscillations are in progress. First half question will be modified to ask when a Reactor SCRAM condition is met (based on oscillations). Answer choices for first half question will be "oscillations of 2-4%" or "oscillations of 6-8%" Second half question for basis of SCRAM on oscillations will remain as-is (technically correct for revised question). N/F map to be removed as a reference. **4/19 Review comments (pre-submittal)** T1G1 **Question is SAT.**
37	F	3												N	S	**4/21 Review comments** T1G1 **Question is SAT.**
38	H	3												B (2009 Hatch)	S	**4/21 Review comments** T1G1 **Question is SAT.**

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	3												M (2012 Hatch)	S	**4/21 Review comments** T1G1 What is basis for providing: 1) That the Main Turbine tripped on Generator Differential Overcurrent (initial conditions) 2) The information that the RR pumps prevent thermal stratification in the RPV Do these knowledge points need to remain in the question? (stem focus) **5/12 Review comments** **Question is SAT.**
40	F	3												B	S	**4/21 Review comments** T1G1 First half question appears to be testing the RWM shutdown confirmation screen. Should this be stipulated in the first half question statement? (stem focus) First half question addresses the K/A. Are “ALL RODS IN” lights lit for the rods stated in the question (i.e. at position 02)? Per 34AB-C71-001-2, using the configuration stated in the question (and making an unstated assumption of power <5%), operators would be directed to perform Step 4.3 which directs performance of 31EO-EOP-103-2. This procedure path could be construed as correct based on the as-written question and would result in multiple correct answers for the second half question (i.e. A.2/C.2). (partially correct) **5/12 Review comments** Will revise first half question, “Based ONLY on the current control rod positions the Rx is/is NOT in a cold s/d rod configuration.” **5/16 Review comments** **Question is SAT.**

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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
41	F	3												N	S	**4/21 Review comments** T1G2 Providing the initial condition information concerning ATWS status provides the answer to the second half question (based on EOP entry conditions). (cueing) Second half question addresses the K/A. (procedural tie?) Second half question can be revised to remove the initial condition information and ask the knowledge requested. Remove mention of ATWS situation and MSIV status from opening statement. Revise second half question to read, “Based on LLS SRV valve positions at 10:11, reactor power is approximately 6% RTP/11% RTP.” **5/10 Review comments** Is there a procedural tie to the knowledge elicited in the second half question (i.e. knowledge of 8% RTP steam equivalent/SRV in a NOTE/CAUTION)? (only concern remaining for this question) **Question is SAT.**

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
42	H	3												N	S	**4/21 Review comments** T1G2 This question would be a good candidate for conversion to a 1x4 format (using first half question). Since answer choices A.1 and B.1 are only plausible on Unit 2, revise opening statement to indicate that the current unit is Unit 2. (credible distractors) Second half answer is cued by first half answer. (cueing) Revision required to remove Hi DW setpoint/Hi DW Scram tie from second half question. **5/12 Review comments** Will revise first half question to test basis for venting wrt reactor scram signal. Will revise second half question to test the CAUTION of 34SO-T48_002-1, to read, "xxx, operation of F336A/B greater than 100% is/is NOT permitted." **5/16 Review comments** Plausibility issue with answer choices A.2/C.2. Insert a NOTE to include the nomenclature for 1T48-F336A/B. Revise second half question to read, "The reason for limiting demand signal to 1T48-R615A and R615B is to prevent damaging 1T48-R615A/B / 1T48-F336A/B. **5/16 Review comments** **Question is SAT.**
43	F	3												N	S	**4/21 Review comments** T1G2 A majority of the question stem information is not needed to answer this question. (stem focus) Remove all question stem information above the question statement and revise to read, "34SO-E41-001-2, xxx, has been entered following an inadvertent HPCI initiation on Unit 2." "The NPO has just depressed the HPCI Trip pushbutton" Rest of the question and answer choices can remain the same. **5/10 Review comments** **Question is SAT.**

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
44	F	3												M (2009 Hatch)	S	**4/21 Review comments** T1G1 The second half question, as written, has two implausible distractors (answer choices A.2/C.2). (credible distractors) Per revision 6.24 of 31RS-OPS-001-2, there is no mention that the TSC is an acceptable location to confirm a reactor shutdown. Justification mentions that this information is contained in Step 4.6. Revise second half question to read, "Based on the above conditions and IAW 31RS-OPS-001-2, xxx, an operator stationed at the TSC will utilize ERFIS/SPDS* to verify automatic actions, isolations and initiations will occur." (see NOTE) **5/12 Review comments** First half question is plausible due to unit difference between the RSDP's. Will revise second half question. **5/16 Review comments** Editorial changes. **Question is SAT.**
45	H	3												N	S	**4/21 Review comments** T1G2 Elevated/Ground level release knowledge overlap with Question #50. **Question is SAT.** No overlap with Question #50.
46	H	3												N	S	**4/21 Review comments** T1G1 PSW is mentioned as the basis for the first half question distractors (A.1/B.1). Yet no PSW evaluation performed. (stem focus) Revise the initial condition information to read, "Subsequently, one (1) RBCCW pump and one (1) PSW pump trips. Both RBCCW Header and PSW Header pressures stabilize at 93 psig." **5/10 Review comments** Remove quotation mark following 93 psig in question initial conditions. **5/12 Review comments** **Question is SAT.**

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
47	F	3												N	S	**4/21 Review comments** T1G1 **Question is SAT.**
48	H	3												B	S	**4/21 Review comments** T1G2 The first half question is testing a concept completely unrelated to the K/A or to the adjoining question. (tests PCIS group 2 response to a loss of power) There are two separate concepts being tested by this question (as opposed to using the 2x2 format to strengthen plausibility). Revise one of the 2x2 question/answer choices to remove the second tested concept. One option to correct could read: Given that 2R22-S017 de-energizes, An inadvertent inboard/outboard Group 1 isolation would occur upon a loss of RPS A/RPS B. Verify no overlap with Question #19 (MSIV position relationship with RPS p/s). **5/12 Review comments** No overlap with Question #19. **Question is SAT.**

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	F	3												N	S	**4/21 Review comments** T1G1 The first half question is a direct lookup based on the indications provided. (Mode 4, F003/F004 head vent status, information in references below "Case") (cueing) Cueing present in the question opening statement (Mode 4). This cue alerts the applicant that the reactor head is still installed. Since the data sheets contain an explanation governing their use (i.e. Normal RPV water level vs. Cavity flooded and gates installed), the correct data sheet to be used is a given. (cueing) Remove the information concerning Mode status from the opening statement. Cueing present in question stem (2B21-F003/F004 valve status). These cue's alert the applicant that the reactor head is still installed. Since the data sheets contain an explanation governing their use (i.e. Normal RPV water level vs. Cavity flooded and gates installed), the correct data sheet to be used is a given. (cueing) Remove the amplifying information below "Case" on the data sheets Remove the F003/F004 valve information from the question stem. The status of these valves is not necessary to answer the question asked. (stem focus) The second page of the references is not needed to answer the question and can be removed as part of the reference package. (pages 16 and 18) To provide consistency among answer choices, revise C.1 and D.1 answer choices to read, "3 hours 21 minutes". Remove the Case 3 attachment as a reference as it is not required to answer the question. The as-written question is LOD=1. **5/10 Review comments** Have the references been altered for this question? The first half question is still at a very low LOD based on the given information. Do the 2B21-F003/F004 operate on an automatic closure signal? Why are multiple failures present in this question (i.e. failure of SDC and failure of F003/F004 to close). Bullets 6 through 9 (second set) do not appear to provide any meaningful amplifying information to this question. Justification statement states that the 2B21-F005 is an additional flowpath providing plausibility for the second half question. For the plant conditions indicated in this question, what is the status of the F005? Could improve plausibility of second half question by stating that this valve is CLOSED. What is the basis for providing the following information following the loss of SDC in the question initial conditions, "(highest achievable)"? What is basis for 250F reading in the second half question?

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
49																**5/12 Review comments** Is Attachment 1 the only reference provided for the as-written question? All that needs to be removed is the NOTE section below the table. Remove bullets related to Temperature and RWL from initial conditions (bullets 2 and 3). Insert bullet to read, "The Drywell has been opened to support Outage related activities." Revise first half question to read, "IAW 34AB…, Reactor bulk coolant temperature is expected to reach 212ºF in approximately ___". Revise answer choices C.1 and D.1 to read, "5 hours 54 minutes" **5/16 Review comments** **Question is SAT.**
50	H	3												B	S	**4/21 Review comments** T1G1 Revise 1D11-K611 A-D, RF Vent Exhaust Radiation reading to read, "17 mR/hr" (addresses plausibility of C.1/D.1 distractors). (credible distractors) Knowledge that the Main Stack is the release point following a valid Secondary Containment signal is provided in Question #45. Evaluation of whether the Main Stack is an elevated or ground level source is also performed in Question #45. Revise second half question to remove knowledge overlap on this issue. Elevated/Ground level release knowledge overlap with Question #45. **5/10 Review comments** Revise 13:00 initial condition information to read, "At 13:00, a malfunction results in a refuel bridge report of visible gas bubbles rising from the currently latched fuel bundle." Add bullet following 13:00 initial condition information that states, "In the Main Control Room, there are no lit annunciators on either unit." No overlap with Question #45. Facility will revise 13:00 statement. **5/12 Review comments** **Question is SAT.**

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
51	H	3												N	S	**Pre-Submittal Review comments** As written, there is no Torus pressure rate information (although specified as a justification), the first half question is asking for the F028A interlock pressure (i.e. LOCA pressure value). Same concept as above for second half question. The justification states that there is a time in the EOP's when Torus Spray is not allowed yet SP level information is not included. **3/21/16 Review comments** Facility will perform following revisions: 1) Add in information at 13:02 concerning receipt of the DW Hi Pressure Alarm (alarms at 1.2 psig) 2) Revise first half answer choices to read, "13:03" and "13:05" 3) Will provide a new second half question (related to THINK switch operation, pressure override function) New second half question to read, "At 13:10, to return Torus Spray to svc, the Containment Spray valve CS is/is NOT required to be placed in the manual position. **4/21 Review comments** T1G1 Editorial change to "service" next to Torus Cooling. **Question is SAT.**
52	H	3												N	S	**4/21 Review comments** T1G1 Remove "**REVISE DESCRIPTION**" from question stem. **Question is SAT.**

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
53	H	3												B	S	**4/21 Review comments** T1G1 Answer choices C.1 and D.1 are justified based on entry into 34GO-OPS-013-2. However, the question initial conditions state that an EOP is actively in use. (credible distractors) The procedural portion piece of the as-written first half question (PC flowchart) is at the SRO LOK (procedural transition to RC point A based on plant parameters). (license level mismatch) Revise answer choices A.1/B.1 to read “106F” and C.1/D.1 to read “111F” Revise second half question to ask the reason for SCRAM performance. **5/10 Review comments** Will revise opening statement. **5/12 Review comments** **Question is SAT.**
54	H	3												N	S	**4/21 Review comments** T1G1 With two separate DW Hi Temperature alarms provided in the initial conditions, there is virtually no plausibility to answer choices A.2 and C.2. (credible distractors) Is justification statement for second half question correct? What is tie to PC entry? Revise Bulk Average Drywell temperature indication in question initial conditions to read, “146F” To retain first half answer choice, revise RWL indication to be -20 inches and steady. Revise to indicate that answer choice A is now correct. **5/12 Review comments** Will develop new half question (to replace EOP entry condition) that ties knowledge of annunciator to use of 34AB-B21 procedure. **5/16 Review comments** **Question is SAT.**
55	H	3												N	S	**4/21 Review comments** T1G1 No overlap with Question #8 (HPCI suction from CST). **Question is SAT.**

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
56	H	3												N	S	**4/21 Review comments** T1G1 First half question is not SRO-only as procedure transition to RC-2 is an IA of 34AB-C71-001-1. Justification statement states that answer choices C.2/D.2 distractors are correct. I don't understand this basis. (partially correct?) First half question justification states that 0" indicated on R606A is a plausible distractor, yet 0" would also result in the same condition (i.e. SCRAM required) and is not specified in the as-written question for evaluation. What is the significance of +9 and +18 inches wrt the low level SCRAM setpoint? (credible distractors) Second half question states that reset of 603-141 would be plausible due to receipt of 603-117/118. There is no evaluation of these additional annunciators in the question statement and all indicated levels remain well below normal values. (credible distractors) There doesn't appear to be any reason for the 10:02 information provided in the initial conditions. (stem focus) To correct the credibility issues above, revise initial condition and question information to read, Time RWL 10:00 +40" (steady), 10:01 +5" (decreasing), 10:02 -5" (decreasing), 10:15 +35" (steady) Based on the above conditions, The NPO is first REQUIRED to perform RWL control actions per Placard RC-2 at 10:01/10:02. At 10:15, the REACTOR VESSEL WATER LEVEL HI/LO, 603-141, alarm will be ILLUMINATED/EXTINGUISHED. Potential knowledge overlap with Question #77 (RWL Scram value). **5/10 Review comments** Remove the following statement, "without a manual scram being inserted". The question is bounded by use of the word "REQUIRED" in the first half question. Can revise question statement to read, "Based on the above indications and ONLY on automatic plant response" Will revise question #77 to remove overlap issue with Question #56 (revise 08:01 data to read at -5 inches or state low RWL setpoint). **5/12 Review comments** No overlap with Question #77. **Question is SAT.**

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	F	3												N	S	**4/21 Review comments** T1G2 Revise 01:00 and 01:10 initial condition statements to use the word “exists”. What is the basis for providing the information that “HPCI is in a Standby lineup” in this question? This information is not contrary to normal plant configuration (100% RTP) and is not necessary to answer the question. (stem focus) The first half question is requesting an evaluation of B005B at 01:00. Justification statement uses information at 01:10 to justify answer choices C.2 and D.2 (not asked for in question). (credible distractors) Revise first half question to read, “The EARLIEST time that HPCI Pump Room Cooler B will automatically start is 01:00/01:10. There are multiple correct answers to the second half question. At 01:10, due to no failures indicated with PCIS, HPCI should auto isolate on the high room temperature condition => manual isolation is not required. (partially correct) **5/12 Review comments** Will revise both halves of question statement. “The EARLIEST listed time that HPCI Pump Room Cooler B will automatically start is 0100/0110.” “The EARLIEST listed time that HPCI will have received an automatic isolation signal is 0100/0110.” **5/16 Review comments** **Question is SAT.**
58	H	3												N	S	**4/21 Review comments** T1G1 Addition of elevations into the question answer statements makes this a three part question. Since the valve being asked is the focal knowledge point for this question, the valve locations can be removed. (stem focus) Revise all answer choices to remove 185’ and 203’ elevation references. Would nomenclature used in second half question be more correct if revised to read, “CRD Pump Minimum Flow valves”? **5/10 Review comments** Remove reactor power information supplied in first bullet. Not required to answer the question. **5/12 Review comments** **Question is SAT.**

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
59	F	3												B	S	**4/21 Review comments** T1G1 Revise opening statement to read, "Unit 2 was operating at 100% RTP when a radiological event occurred resulting in an automatic start of the SBGT system." Remove first bullet. The second half question is testing detailed procedural knowledge of a specific step and could be construed as being minutiae. (minutiae) Revise second half question to test the NOTE immediately preceding step 4.2.1.4 to read, "IAW 34SO-T46-001-2, xxx, operation with ONLY one SBGT train/BOTH SBGT's will increase offsite release rates." **5/10 Review comments** As written, the second half question has only one answer (i.e. complete the sentence). Can test the same concept a different way by stating, "IAW 34SO…, operation of ONLY one SBGT train is/BOTH SBGT's are normally REQUIRED to maintain adequate negative RB pressure." **5/12 Review comments** **Question is SAT.**
60	F	3												B	S	**4/21 Review comments** T2G1 Remove the phrasing "600 VAC" from answer statements. Relocate this information to both question statements. (stem focus) **5/12 Review comments** **Question is SAT.**

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
61	F	3												M (2011 Hatch)	S	**Pre-Submittal Review comments** Editorial revisions required. Address plausibility of second half question (use Unit 1). **3/21/16 Review comments** Facility will perform following revisions: 1) Revise opening statement to occur on "Unit 1" 2) Revise opening statement to remove, "for 2D11-K605, Service Water Liquid Radiation Monitor". 3) Revise "conditions" to "condition" in question statement 4) Revise 1) the word "for" to "containing" and 2) remove "due to this High radiation signal" in first half question statement. 5) Revise the word "are" to "have been" in A.2 and C.2 answer choices. **4/21 Review comments** T2G1 **Question is SAT.**
62	H	3												B (2009 Hatch)	S	**4/21 Review comments** T2G1 Revise second half question to read, "This isolation signal will result in automatic closure of ONLY the _____." Remove "ONLY" from all four answer statements. **5/10 Review comments** **Question is SAT.**
63	H	3												M (2011 BFN)	S	**4/21 Review comments** T1G2 In the first half question statement, remove the phrase "due to Primary Containment Hydrogen concentration". (this is stated immediately prior to its location in the same sentence) Justification statement for first half answer states that answer choices C.1 and D.1 are plausible based on performance of operator rounds (not tested in this question) (credible distractor). Revise C.1/D.1 answer choices to read "1.9%". **5/12 Review comments** Revisions to be performed as stated above. **5/16 Review comments** **Question is SAT.**

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
64	F	3												M (2010 Grand Gulf)	S	**4/21 Review comments** T1G1 **Question is SAT.**
65	H	3												N	S	**4/21 Review comments** T1G1 Provided initial condition information (i.e. 3 lit annunciators on low 4kV voltage, a listed low 4kv voltage (3700V), and entry into 34AB-S11-001-0) severely detracts from plausibility of answer choices A.1 and B.1. (credible distractors) A minutiae argument can also be made for the first half question due to the specificity asked for by the first half question (step 4.4.3). (minutiae) Second half question cannot be used to meet the K/A (no annunciator to evaluate). Is there an annunciator tied to use of the Generator Capability Curve? A potential way to correct the above issue would be to revise question to ask 1) at what voltage would 652-122 annunciate (i.e. 3900V/3800V) and 2) the reason why sustained low voltage conditions are to be avoided is/is NOT due to tripping of LOSP degraded voltage relaying (or other plausible bus related relay). Reference note in 34-AB-S11-001-0, page 3. **5/10 Review comments** Revise second half question to include “the respective”. **5/12 Review comments** **Question is SAT.**
66	F	3												N	S	**4/21 Review comments** T3 **Question is SAT.**
67	F	3												M (2011 Hatch)	S	**4/21 Review comments** T3 Revise second half question to read, “The Reactor Mode Switch is/is NOT REQUIRED to be locked in the REFUEL position.” **5/10 Review comments** **Question is SAT.**

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
68	F	3												N	S	**4/21 Review comments** T3 Answer choices C and D do not originate as MWth values in 34GO-OPS-022-0 (i.e. correspond to data table 100.5% and 101% equivalent MWth values), limiting their plausibility as answer choices. (credible distractors) Revise these answer choices to read “2790 MWth” and “2800 MWth” as these numbers are provided in 34GO-OPS-022-0 (Attachment 2). **5/10 Review comments** **Question is SAT.**
69	F	3												B (2010 Hatch)	S	**4/21 Review comments** T3 Justification states that this question is modified, however, both half answers remain correct between the original and proposed version (only difference is question wording and operating RR pump). This question is a bank question. Ref ES-401, D.2.f: • Select the remaining questions for the examination (nominally 11 for the RO and 4 for the SRO-only) from the facility licensee’s or ***any*** other bank, but significantly modify each question by changing at least one pertinent condition in the stem and at least one distractor. Changing the conditions in the stem such that one of the three distractors in the original question becomes the correct answer would also be considered a significant modification. The intent or objective of the question does not necessarily have to be changed. Adding or deleting irrelevant information and making minor changes (e.g., the unit number, component train, or power level when it makes no difference) would not be considered a significant modification to the question. Revise spelling of “MINIMUM” in first half question statement. **5/10 Review comments** **Question is SAT.**

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
70	F	3												N	S	**4/21 Review comments** T3 The justification statements for this question are unclear. What are the opposing answers used for (i.e. yellow magnetic "R" tile, white magnetic "P" dot, and white magnetic "R" dot)? The justification statement reads that the only items available for use are either yellow magnetic "P" tiles or white dots. How are answer choices B, C, and D plausible? (credible distractors) **5/10 Review comments** **Question is SAT.**
71	F	3												B	S	**4/21 Review comments** T3 There is a potential for multiple correct answers to this question. If 62RP-RAD-044-0 is invoked due to discovery of a Hot Spot, then an RWP could be required to implement corrective actions. Since Hot Spots aren't addressed in the question statement and the question is asking if Hot Spot DR information could be found in the appropriate RWP category, answer choices A.2/C.2 could be construed as a correct answer. Revision of second half question/answer choices required. **5/10 Review comments** A.2 and C.2 distractors require revision. Revise second half question to read, "If the exact same steam leak were to occur in the 2B SJAE room, use of the same/a different RWP is REQUIRED." **5/12 Review comments** **Question is SAT.**
72	F	3												B	S	**4/21 Review comments** T3 **Question is SAT.**
73	F	3												N	S	**4/21 Review comments** T3 **Question is SAT.**
74	F	3												N	S	**4/21 Review comments** T3 **Question is SAT.**

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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	3												N	S	**4/21 Review comments** T3 **Question is SAT.**
76	H	3												N	S	**4/14 Review comments** **Question is SAT.**
77	H	3												N	S	**4/14 Review comments** Remove the statement, “and will not provide a trip signal” from the initial conditions at 0800 (provides answer for first half question statement). **5/3 Review comments** Potential knowledge overlap with Question #56 (RWL Scram value). Will revise question #77 to remove overlap issue with Question #56 (revise 08:01 data to read at -5 inches or state low RWL setpoint). **5/12 Review comments** **Question is SAT.**
78	H	3												B (2012 Hatch Audit)	S	**4/14 Review comments** It appears that initial condition information concerning CR 26-27 is to strengthen the B.2/D.2 distractors. Revise the wording of this bullet to read “Control Rod 26-27 is inop with all required TS actions complete” **5/3 Review comments** **Question is SAT.**

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												N	S	**Pre-Submittal Review comments** Address cueing and plausibility of first half question due to title of references. **3/21/16 Review comments** Will provide a new first half question statement. **4/14 Review comments (pre-submittal)** Revise opening statement to read, “Unit 2 is in Mode 5 with RHR in SDC.” Keep fuel movement bullet. Remove other initial condition information. Remove SFP temp initial condition information. **4/19/16 Review comments** Facility will perform changes as indicated above. **4/21 Review comments** **Question is SAT.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
80	F	3												N	S	**Pre-Submittal Review comments** Address implausible distractor "B" and revise answer choices to be consistent. Potential overlap with Scenario 10-1, Event 3 **3/21/16 Review comments** Facility will perform following revisions: 1) Revise initial condition bullets from "becomes alarmed" to "is illuminated" 2) Will revise answer choices as follows: A. SR 3.6.2.1, verify Torus average temperature is within the applicable limits B. SR 3.4.4.1, Verify RCS unidentified & total leakage and unidentified leakage increase are within limits C. SR 3.6.1.6.2, verify the LLS system actuates on an actual or simulated automatic initiation signal D. SR 3.6.1.8.2, perform a functional test of each required vacuum breaker **4/14 Review comments (pre-submittal)** Remove the first two annunciators from the question initial conditions (603-122 and 602-311), redundant to stated plant conditions. Add in the words "increase are within limits" to answer choice B. Remove the words "Torus-to-Drywell" from answer choice D. **4/19/16 Review comments** Facility will perform changes as indicated above. **4/21 Review comments** Remove spurious "s" from last word of answer choice D ("breaker"). **Question is SAT.** No overlap with Scenario (based on auto SRV re-closure specified in question).

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
81	H	3												M (2009 Hatch)	S	**4/14 Review comments** As written question is a direct lookup based on SR 3.3.8.2.1 surveillance information provided as a reference. Additionally, due to invoking a 1 hour or less T.S. action statement, the as-written question does not rise above the RO LOK. Justification provides that the RO LOK is exceeded in this question due to requiring knowledge of TS Bases to successfully answer. There are no TS Bases concepts tested. One option is to remove the SR 3.3.8.2.1 surveillance information as a reference, however, the question would then be considered minutia LOK (acceptance value criteria for EPM breakers). If the question were re-stated to be in Mode 1, 2, or 3, use of TS 3.3.8.2 may be conducive to having the applicant answer a question related to completion times (TS 1.3) following multiple breaker inoperabilities/return to service. **5/3 Review comments** Initial condition information states that breaker 52-3B will **not trip** due to the failure of the Overvoltage relay, how are B.2 and D.2 plausible distractors? (credible distractors) Is RPS alternate power supply asked for in another written exam question? Facility may request a new K/A. **5/10 Review comments** Insert a “, (comma)” after the word request. What is Ops perspective as to LOD of second half question (i.e. without a reference)? **5/12 Review comments** **Question is SAT.**
82	H	3												M (2009 Hatch)	S	**4/14 Review comments** Remove all initial condition information/bullets after opening statement (none of this information is needed to answer the question). Revise first half question to read, “A Secondary Containment signal will be received on ____. It appears that second half of this question is asking which shutdown procedure to use when Max Safe is exceeded in one area. Revise second half question to read, “IAW 31EO-EOP-014-1, SC EOP flowchart, exceeding the Max Safe Operating Value in one area requires shutdown IAW _____ . **5/3 Review comments** **Question is SAT.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
83	H	3												N	S	**4/14 Review comments** First half question tests above the line (RO LOK) T.S. knowledge of LCO 3.4.1. Knowledge requested by the question does not cover which OPRM algorithm is required per T.S Bases (due to the following information, "will NOT provide an OPRM Upscale Trip" in conjunction with the title of the answer choice B.2/D.2 procedure). Remove question opening statement and two bullet points. Revise opening statement to read: "Unit 2 is operating at 90% RTP with APRM 1 inoperable and bypassed." It appears that 34GO-OPS-005-2, Attachment 1 is anticipated to be provided as a reference. Should this question be marked as "REFERENCE PROVIDED"? Remove the question statement procedure cited (34AB-B31-001-2) as it is not relevant to the actual question statements and can be removed. Cueing this procedure removes plausibility from A.2/C.2 answer choices (AOP network entry). Verify answer choice B remains correct. **5/3 Review comments** APRM/OPRM relationship in revised question contains a procedural subset issue due to procedure in effect with stated conditions. APRM/OPRM relationship does not induce a valid procedure choice at the SRO level. Revised question may have strayed from K/A match. Facility will revise question to test the OPRM algorithm required by T.S. bases. N/F map portion of this question may be removed. **5/10 Review comments** **Question is SAT.**
84	H	3												N	S	**4/14 Review comments** Cueing/teaching present in initial conditions. Revise first bullet to read, "Upstream power supply to Instrument Bus 2A is lost and cannot be recovered." Insert 34AB-R25-002-2 entry as the second bullet in the initial conditions, "34AB-R25-002-2, Loss of Instrument Buses, is entered by the crew". Remove this information from the second half question statement. Revise opening question statement to read, "Based on the above conditions and after power is restored," Revise first half question statement to read, "Instrument Bus 2A _____ OPERABLE, IAW TS 3.8.7 Bases. Revise second half statement to read, "Operator action will be directed to transfer RFPT _____ to the M/A station." **5/3 Review comments** **Question is SAT.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
85	H	3												N	S	**4/14 Review comments** Since the 34AB procedural entry is required to justify both question statements, relocate this as the second bullet to the initial conditions, "34AB-R22-001-2, Loss of DC Buses, is entered by the crew" There are no instances in 34AB-R22-001-2 where a normal plant shutdown is required (single implausible). To maintain the K/A match with this concept, revise first half question statement to read, "A 34GO-OPS-014-2, Fast Reactor Shutdown is/is NOT required." Since 4160V Bus 2C and 2D remain energized (Section 4.1.4, Step 4.c. and question initial conditions), either answer choice location could be construed as a suitable place to trip the RFPT's. This results in the potential for multiple correct answers (pre-fast transfer swap). Revise second half question to read, "Upon a trip of the Main Turbine, RFPT 2A must be tripped locally at the front standard due to _____." A.2/C.2 de-energization of 4160V Bus 2C B.2/D.2 de-energization of panel 2H11-P650 **5/3 Review comments** **Question is SAT.**
86	H	3												N	S	**4/14 Review comments** Remove Reactor Power from initial conditions as this information is not needed to answer either half-question. **5/3 Review comments** **Question is SAT.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
87	H	3												N	S	**Pre-Submittal Review comments** As written question does not match the K/A at SRO license level. **3/21/16 Review comments** Request new K/A. K/A revised to 295008AA2.02 **4/14 Review comments (pre-submittal)** As written question does not match the K/A: 1) To differentiate between the two second half distractors only requires knowledge of EOP entry conditions (i.e. if an ATWS has occurred or not), this knowledge does not match the intended K/A knowledge at the SRO level. 2) EOP entry conditions are within the RO body of knowledge Remove Reactor Power initial condition as it is not required to answer the question. Second half question statement can be revised to read: Steps containing the operator actions to terminate all RPV injection except CRD are located in _____ . A.2/C.2 34AB-C71-001-2, Scram Procedure B.2/D.2 34AB-C32-001-2, Reactor Water Level Above +60 Inches **4/19/16 Review comments** Facility will perform changes as indicated above. **4/21 Review comments** **Question is SAT.**
88	F	3												N	S	**4/14 Review comments** Answer choices (+ 28 minutes), provide cueing of notification time requirement (which isn't tested by this question). Since this question is focused on the condition requiring EAL notification itself, revise question/answer choices to ask when the condition requiring state notification is met. Revise question statement to read, "The EARLIEST listed time that initiated operator action to perform State and Local Government notifications is _____. A. 11:30 B. 12:00 *C. 12:30 D. 13:00 **5/3 Review comments** **Question is SAT.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
89	H	3												M (2015 Hatch)	S	**4/14 Review comments** SRO LOK procedure selection portion (which shutdown procedure to use) found in first half question does not match the K/A. **5/3 Review comments** Should the procedure used be 34AB-T47-001-2? Overlap between available answer choices. 1) Answer choices B and C both rely on the same temperature exceedance value 2) Answer choice B mathematically lines up with both N002 and N003 3) Answer choice D adds the 30 minutes after the table exceedance value Answer choice revision required. Revise initial conditions to only supply N003 and N004 data. Revise answer choices to read, A. 1343 B. 1414 C. 1421 D. 1451 **5/10 Review comments** Revise answer choice D to read, “1452” **5/12 Review comments** **Question is SAT.**
90	H	3												N	S	**4/14 Review comments** **Question is SAT.**
91	H	3												N	S	**4/14 Review comments** Teaching in the stem. Remove all initial condition information and substitute the following, “An ATWS is in effect on Unit 1. Reactor Power remains at 33% RTP.” “An ALL RODS IN condition is met following initiation of Alternate Rod Insertion (ARI)” **5/3 Review comments** **Question is SAT.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
92	H	3												B (2012 Hatch)	S	**4/14 Review comments** Since the initial conditions provide no information to the contrary, the information concerning low pressure injection sources is not required. Remove the line "ALL Low Pressure Injection Systems are available." Second half question asks which procedure is controlling based on plant conditions (ED required). Answer choices A.2/C.2 do not specify a procedure (RC/P vs. RC). Revise A.2/C.2 answer choices to "RC". **5/3 Review comments** **Question is SAT.**
93	H	3												M (2010 BNP)	S	**Pre-Submittal Review comments** Editorial comment and justification question for 34AB-P51-001-2 procedure (justified based on entry condition in question initial conditions). **3/21/16 Review comments** Facility will perform following revisions: 1) Revise opening statement word "with" to "when" **4/14 Review comments (pre-submittal)** **Question is SAT.**
94	F	3												N	S	**4/14 Review comments** There is only one plausible answer based on the 'Modes' supplied in the as-given question (in this case, the correct answer). Since the intention of this question is to test detailed knowledge of this license condition, all that needs to be changed is the stem information for Unit 2. Revise Unit 2 Modes as follows: 10:00 Mode 3 11:00 Mode 4 17:00 Mode 4 20:00 Mode 5 The correct answer is now answer choice B. **5/3 Review comments** **Question is SAT.**
95	F	3												B (2011 Hatch)	S	**4/14 Review comments** **Question is SAT.**

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
96	F	3												N	S	**4/14 Review comments** Is the second line of information provided, "Troubleshooting will be performed near "PROTECTED" equipment," necessary given the question opening statement? Is answer choice 'C' a position held by a licensed operator? Historically yes, although not at present. This watch position is manned 24/7. **5/3 Review comments** **Question is SAT.**
97	F	3												M (2011 Hatch Audit)	S	**4/14 Review comments** Subset issue with answer choices B.2/D.2. Since an emergency is present in the question, it is implausible that the RP Supervisor would be able to exercise more authority than the Emergency Director (single implausible requires repair). Can re-word second half question to state, "IAW NMP-EP-110, xxx, the Emergency Director is/is NOT REQUIRED to authorize exceeding this exposure limit." **5/3 Review comments** **Question is SAT.**
98	F	3												B (2012 Hatch)	S	**4/14 Review comments** Since both answer choices to the first half question are at the same license level, both answers are correct.(partially correct) Additionally, a role subset issue exists between the first half answer choices (i.e. an SM can perform the exact same duties that an SS can perform). These issues contribute to making the A.1/B.1 answer choice implausible (credible distractors). **5/3 Review comments** Will revise question to a 1x4 using the second half question (radiological hazards CFR match). **5/10 Review comments** Revise reading at 11:00 to be 7 mR/hr and 12:00 to be 70 mR/hr. **5/12 Review comments** **Question is SAT.**
99	H	3												N	S	**4/14 Review comments** **Question is SAT.**

Hatch (2016-301)

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	3												N	S	**Pre-Submittal Review comments** Address plausibility of second half question statement. **3/21/16 Review comments** Will provide a new second half question statement (SRO level). **4/14 Review comments (pre-submittal)** Second half question tests knowledge of a precaution/limitation present in the 34SO-S22-001-2 procedure. No direct tie to the K/A at the SRO license level with the as-written question. Will revise SAT on fire to be the 2D SAT (to ensure a plant effect covered by second half question). Second half question statement can be revised to read: 34AB-X43-001-2, Fire Procedure, does/does NOT contain guidance to startup and tie an EDG to an affected emergency bus. **4/19/16 Review comments** Facility will perform changes as indicated above. **4/21 Review comments** **Question is SAT.**

ES-403 | **Written Examination Grading Quality Checklist** | Form ES-403-1

Facility: **Hatch** Date of Exam: **07/07/2016** Exam Level: RO ☒ SRO ☒

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

	Printed Name/Signature	Date
a. Grader	JASON D. BUNDY	7/18/2016
b. Facility Reviewer(*)	N/A	N/A
c. NRC Chief Examiner (*)	Joseph Viera	7/19/2016
d. NRC Supervisor (*)	GERALD J. McCoy	7/22/2016

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

March 03, 2016

Mr. Joseph Viera
US NRC, Region II Chief Examiner
Marquis One Tower
245 Peachtree Center Ave., NE
Suite 1200
Atlanta, GA 30303-1257

Subject: Transmittal of preview exam items for the 2016-301 Written and Operating exam.

Dear Mr. Viera:

The following items are enclosed:

5 – RO written exam questions with descriptive notes
5 – SRO written exam questions with descriptive notes
1 – Operating exam JPM
1 – Operating exam scenario

Note: All of these items have been combined into one (1) password protected Adobe .pdf document.

As you know these documents are confidential and should not be released to the public until after our License Exam has been administered.

Sincerely,

Ed Jones

Ed Jones
Plant Instructor, Nuclear Operations – Lead
Edwin I. Hatch, SNC
(912)537-5843
eljones@southernco.com

Date: March 21, 2016 **LR-TR-003-0316**

Mr. Joseph Viera
US NRC, Region II Chief Examiner
Marquis One Tower
245 Peachtree Center Ave., NE
Suite 1200
Atlanta, GA 30303-1257

Subject: Transmittal of SRO/RO Operating Examination Outlines

Dear Mr. Viera:

As required by NUREG 1021, "Operator Licensing Examination Standards", Revision 10, form ES-201-1, "Examination Preparation Checklist", issued for Plant E. I. Hatch's upcoming Initial Operator Licensing Exam, enclosed are the following forms and items:

1 – ES-201-2, Examination Outline Quality Checklist
1 – ES-201-3, Examination Security Agreement
3 – ES-301-1, Administrative Topics Outline Form
3 – ES-301-2, Control Room/In-Plant Systems Outline
2 – ES-301-5, Transient and Event Checklist
1 – ES-301-6, Competencies Checklist
1 – ES-401-4, Record of Rejected K/As
5 – ES-D1-1, Scenario Outlines

As you know these documents are confidential and should not be released to the public until after our License Exam has been administered.

If you have any questions regarding this material, please contact Anthony Ball, Richard Greenhouse or Ed Jones at (912) 366-2000, ext. 3123.

Sincerely,

Ed Jones

Date: April 13, 2016 **LR-TR-006-0416**

Mr. Joseph Viera
US NRC, Region II Chief Examiner
Marquis One Tower
245 Peachtree Center Ave., NE
Suite 1200
Atlanta, GA 30303-1257

Subject: Transmittal of Hatch 2016-301 SRO Only DRAFT written exam questions

Dear Mr. Viera:

This cover letter documents that the following items will be transferred via the secure FTP website today:

1 - Cover letter (NOT encrypted)
1 - Document containing 25 SRO Only questions, including description and plausibility statements for each question (Encrypted)

As you know these documents are confidential and should not be released to the public until after our License Exam has been administered.

If you have any questions regarding this material, please contact Anthony Ball, Richard Greenhouse or Ed Jones at (912) 366-2000, ext. 3123.

Sincerely,

Ed Jones
Plant Instructor, Nuclear Operations – Lead
Plant E. I. Hatch
Baxley, Ga. 31513

Date: April 14, 2016 **LR-TR-007-0416**

Mr. Joseph Viera
US NRC, Region II Chief Examiner
Marquis One Tower
245 Peachtree Center Ave., NE
Suite 1200
Atlanta, GA 30303-1257

Subject: Transmittal of Hatch Reference Disc

Dear Mr. Viera:

This cover letter documents that the following items will be transferred via the secure FTP website today:

1 - Cover letter
1 - Reference Disc (DVD)

As you know these documents are confidential and should not be released to the public until after our License Exam has been administered.

If you have any questions regarding this material, please contact Anthony Ball, Richard Greenhouse or Ed Jones at (912) 366-2000, ext. 3123.

Sincerely,

Ed Jones
Plant Instructor, Nuclear Operations – Lead
Plant E. I. Hatch
Baxley, Ga. 31513

David R. Vineyard
Vice President – Hatch

Southern Nuclear Operating Company, Inc.
Plant Edwin I. Hatch
11028 Hatch Parkway North
Baxley, Georgia 31513

Tel 912.537.5859
Fax 912.366.2077

NL-16-0591

SOUTHERN NUCLEAR
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April 20, 2016

Mr. Joseph Viera
US NRC, Region II Chief Examiner
Marquis One Tower
245 Peachtree Center Ave., NE
Suite 1200
Atlanta, GA 30303-1257

Subject: Transmittal of 2016-301 Draft Written and Operating Examinations and associated forms.

Dear Mr. Viera:

As required by NUREG 1021, Operator Licensing Examination Standards for Power Reactors, Revision 10, form ES-201-1, Examination Preparation Checklist, issued for Plant E. I. Hatch's upcoming Initial Operator Licensing Exam, enclosed is one (1) Computer DVD containing the following forms and items:

- ES-201-2, Examination Outline Quality Checklist
- ES-201-3, Examination Security Agreement
- ES-301-1, Administrative Topics Outline Form
- ES-301-2, Control Room/In-Plant Systems Outline
- ES-301-3, Operating Test Quality Checklist
- ES-301-4, Simulator Scenario Quality Checklist
- ES-301-5, Transient and Event Checklist
- ES-301-6, Competencies Checklist
- ES-401-4, Record of Rejected K/As
- ES-401-6, Written Examination Quality Checklist
- Five (5) ES-D-1/ES-D-2, Scenario Outlines and Scenarios
- One (1) Draft SRO/RO Written Exam (100 questions)
- 17 Job Performance Measures (JPMs)
- One (1) set of plant reference material

As you know these documents are confidential and should not be released to the public until after our License Exam has been administered.

If you have any questions regarding this material, please contact Anthony Ball, Richard Greenhouse or Ed Jones at (912) 366-2000, ext. 3123.

Sincerely,

Richard A. Spring for
David R. Vineyard
Vice President Nuclear Plant Site