ES-201	Examination Preparation Checklist	Form ES-201-1

Facility: Brunswick Date of Examination: 12/16

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)	DL 1/25/16
-150	2.	NRC examiners and facility contact assigned (C.1.d; C.2.e)	DL 6/1/16
-150	3.	Facility contact briefed on security and other requirements (C.2.c)	DL 6/1/16
-150	4.	Corporate notification letter sent (C.2.d)	DL 6/7/16
[-120]	5.	Reference material due (C.1.e; C.3.c; Attachment 3)	DL 9/25/16
{-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)	DL 8/25/16
{-85}	7.	Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)	DL 8/31/16
{-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)	DL 9/25/16
-45	9.	Written exam and operating test reviews completed. (C.3.f)	DL 11/11/16
-30	10.	Preliminary license applications (NRC Form 398's) due (C.1.l; C.2.g; ES-202)	DL 10/27/16
-21	11.	Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f)	DL 11/18/16
-21	12.	Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g)	DL 11/18/16
-14	13.	Final license applications due and Form ES-201-4 prepared (C.1.l; C.2.i; ES-202)	DL 11/14/16
-14	14.	Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h)	DL 11/18/16
-7	15.	Facility licensee management queried regarding the licensee's views on the examination. (C.2 j)	DL 11/18/16
-7	16.	Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 5; ES-202, C.2.e; ES-204)	DL 11/17/16
-7	17.	Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	DL 11/14/16
-7	18.	Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i)	DL 11/30/16

* 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: **Brunswick** Date of Examination: **December, 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.		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.			
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.			
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.			
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.	N/A		N/A
	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.			
	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.			
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.			
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.			
	d. Check for duplication and overlap among exam sections.			
	e. Check the entire exam for balance of coverage.			
	f. Assess whether the exam fits the appropriate job level (RO or SRO).			

	Printed Name/Signature	Date
a. Author	J. Vien	1/22/16
b. Facility Reviewer (*)	N/A	N/A
c. NRC Chief Examiner (#)		1/22/16
d. NRC Supervisor		2/5/2016

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

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

Facility:		Date of Examination:		
Item	Task Description	Initials		
		a	b*	c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401 or ES-401N.	RB	Y	DL
	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.	RB	Y	DL
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	RB	Y	DL
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	RB	Y	DL
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.	RB	Y	DL
	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.	RB	Y	DL
	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.	RB	Y	DL
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.	RB	Y	DL
	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	RB	Y	DL
	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.	RB	Y	DL
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	RB	Y	DL
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	RB	Y	DL
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	RB	Y	DL
	d. Check for duplication and overlap among exam sections.	RB	Y	DL
	e. Check the entire exam for balance of coverage.	RB	Y	DL
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	RB	Y	DL

	Printed Name/Signature	Date
a. Author	Robert Bolin Robert Bolin	11-8-16
b. Facility Reviewer (*)	Craig Oliver	11-9-16
c. NRC Chief Examiner (#)	David R. Lanyi:	11/17/16
d. NRC Supervisor	Gerald J McCoy	11/17/2016

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

NRC Initial

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 11-28 & 12-13 2016 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 11-28 / 12-13-16 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.	Robert Bolin	Exam Author		11/15/16		12/15/16	
2.	Dan Hajek	Exam Writer		2/24/16		1/3/17	
3.	Jeffrey Deboer	Sim Support		3/16/16		12/15/16	
4.	Eddie Rau	Exam Supervisor		3/15/16		1/3/2017	
5.	Chris Oliver	Facility Reviewer		4/4/16		12-15-16	
6.	Brian Mosher	SRO reviewer		4-5-16		1-10-17	
7.	Greg McClendis	RO review		4/21/16		1/3/17	
8.	Aaron Forshay	Fleet NRC Exam Spec		9/25/16	signed off via	email	N-1
9.	Dwayne Wolf	SRO Review		5-21-16		1-5-17	
10.	SHARON ZALDIVER	R.O. Review		5-24-16		1-16-17	
11.	Kyle Cooper	SRO		5-25-16	Kyle Cooper via telecom	1-10-17	RB 1-10-17
12.	HUNTER MORRIS	RO REVIEW		5-31-16		1-5-17	
13.	RICHARD [illegible]	NUCLEAR OPS INSTRUCTOR		6/9/16	signed off via	email	N-1
14.	Clark Fletcher	MNS NRC Exam Team		6/7/16	signed off via	email	N-1
15.	MARK SIMILEY	OTM - BNP		10/5/16		12/16/16	

NOTES:
N-1 see attached email

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 11-28 thru 12/13 2016 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 11-28/12-13-16 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.	TODD BIEBELL	RO / RO VALIDATION		7-12-16		1-3-17	
2.	Alan Schultz	SRO / SRO VALIDATION		7/12/16		1/6/17	
3.	Jabara Smith	SRO / SRO VALIDATION		7/18/16		1-3-17	
4.	Kimberly Embrey	RO/RO Validation		7/19/16		1/3/17	
5.	MICHAEL NORRIS	SRO INSTRUCTOR		9/15/16		12/16/16	
6.	Grant Newton	RO / VALIDATION		9-5-16		1-5-17	
7.	Chris Michaels	SRO Instructor		9/6/16		12/19/16	
8.	Leann Spencer	Sr Admin Specialist / Auditing		9/8/16		12/15/16	
9.	Laura Rohrbaugh	Sr admin Specialist / Auditing		9/8/16		12/21/16	
10.	BRYAN WOOTEN	AOM-SUPP		9/9/16		1/03/17	
11.	JOHN BIGGS	SM SUPPORT		9/13/16		1/4/17	
12.	JASON WITTE	SRO VALIDATION		9-15-16		1-5-17	
13.	JASON WILLIAMSON	RO / VALIDATION		9-15-16		1.5.17	
14.	JEFF WHEELER	RO / VALIDATION		9/15/16		1/5/17	
15.	DEREK PICKETT	RO / VALIDATION		11/1/16		1/7/17	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 11-28-2016 → 12-13-2016 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 _____. 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.	DAVID S. RUTLAND	REACTOR OPERATOR		11-1-16		1-3-17	
2.	Rob MEHS	SRO		11-1-16	Rob Mehs	1-6-17	
3.	US ROSS	SRO/STA		11/2/16		12-12-16	
4.	T. Bunnell	RO		11/2/16		12/15/16	
5.	ASPAY	SRO		11-8-16		12-16-16	
6.	L. Hagood	SRO		11-8-16		12-16-16	
7.	R. LAX	RO		11/9/16		12/16/16	
8.	J. CARROLL	SRO		11.9.16		1.7.17	
9.	J. Bush	RO		11.9.16		1/7/17	
10.	R. Busse/MMC	SRO		11/9/16		12/15/16	
11.	KEN KAMEN	SHIFT MANAGER		11/29/16		12/20/16	
12.	ANDY PADLECKAS	AOM-T		12.2.16		12-15-16	
13.	STEVE COTTON	SURROGATE		12-8-16	12-6-16		
14.	ROGER [illegible]	RO		1-5-17		1-5-17	
15.	JASON WILLIAMSON	RO					

NOTES:

Bolin, Bob

From: Bolin, Bob
Sent: Tuesday, January 03, 2017 7:07 AM
To: Forsha, Aaron; Horton, J R; Fletcher, Clark
Subject: Exam Security Agreement Signoff

Tracking:

Recipient	Response
Forsha, Aaron	Confirmation: 1/3/2017 7:42 AM
Horton, J R	Confirmation: 1/3/2017 7:18 AM
Fletcher, Clark	Confirmation: 1/3/2017 7:22 AM

Since you are not on site to sign off of the security agreement please confirm using the voting buttons the following:

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during 11/28/2016 – 12/14/2016 . 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.

Thank you for your support of the 2016 BNP Initial NRC Exam.

Bob Bolin

Nuc Station Instctr-Ops
Duke Energy - Progress
Brunswick Nuclear Plant
Bob.Bolin@duke-energy.com
910-457-3078

Facility: Brunswick		Date of Examination: 11/28/2016
Examination Level: RO SRO		Operating Test Number: Final
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations #1 (RO, then SRO)	R, N	2.1.25 Perform SJAE Off-Gas Radiation Monitors Channel Check Calculation
Conduct of Operations #2 (All)	R, D	2.1.07 Determine Primary Containment Water Level and Evaluate PCPL-A.
Equipment Control (RO, then SRO)	R, N	2.2.12 Calculate Drywell Leakage Rate.
Radiation Control (All)	R, P,D	2.3.07 Determine Stay Time Limitations in High Radiation Areas.
Emergency Plan (SRO Only)	R, M	2.4.29 Classify An Emergency per PEP-02.1.

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes & Criteria:
(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

Conduct of Operations #1
Perform SJAE Off-Gas Radiation Monitors Channel Check Calculation
RO, then SRO

2.01.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.
3.9/4.2

This is a new JPM developed for the 2016 NRC Initial Exam. The examinee will perform item 108, SJAE Off-Gas Radiation Monitors Channel Check, of 2OI-03.2, Reactor Operator Daily Surveillance Report, and state the status of the channel check. Then the SRO examinees will determine any required actions.

Conduct of Operations #2
Determine Primary Containment Water Level and Evaluate PCPL-A
All

2.01.07 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
4.4/4.7

This is a bank JPM. The examinee will determine Primary Containment water level per EOP-01-UG, Attachment 11. Determine the current region of operation (Safe/Unsafe) on Primary Containment Pressure Limit A (PCPL-A).

Equipment Control
Calculate Drywell Leakage Rate
RO, then SRO

2.2.12 Knowledge of surveillance procedures
3.7/4.1

This is a new JPM developed for the 2016 NRC Initial Exam. The examinee will determine the 24 hour leak rate for the equipment and floor drains, and the 24 hour total leak rate to the drywell IAW Attachment 1, Drywell Leakage Calculation, of 2OI-03.2, Reactor Operator Daily Surveillance Report, for Sunday Nightshift at time 2000.. Then the SRO examinees will determine if TS LCO 3.4.4 is met and if it is not met identify the latest time the Unit is required to be in MODE 3.

Radiation Control
Determine Stay Time Limitations in High Radiation Areas.
All

2.3.07 Ability to comply with radiation work permit requirements during normal and abnormal conditions.
3.5/3.6

This was a randomly selected JPM that was on the 2015 NRC exam. The examinee will determine the total dose accumulated for both workers and determine if any Brunswick administrative dose limitations will be exceeded.

Emergency Plan
Classify An Emergency per PEP-02.1
SRO Only

2.4.29 Knowledge of the Emergency Plan
3.1/4.4

This is a modified JPM that was used on the 2012 NRC Initial Exam. Changed EAL from Site Area Emergency to an Alert. The SRO examinees will determine the highest required classification and its EAL Identifier. This JPM is time critical (15 minutes).

Facility: Brunswick			Date of Examination: 11/28/2016
Exam Level: RO	SRO-I	***SRO-U***	Operating Test No.: Final

Control Room Systems:* 8 for RO; 7 for SRO-I; 2 or 3 for SRO-U		
System / JPM Title	Type Code*	Safety Function
a. ***Reset Recirc Pump Runback, Both Recirc Pumps trip***	S, N, A	1
b. ***Mechanical Trip Valve Oil Trip Test***	S, N	4
c. ***Operate the H2/O2 Monitor using the Hard Card.***	S, D, EN	5
d. Reduce RPV Water Level using RWCU to Radwaste	S, M, A	2
e. Vent Drywell w/ Stack Rad Mon >50% increase	S, D, A	9
f. Shifting Caswell Beach Lube Water Pumps From The RTGB	S, N	8
g. Substitute Control Rod Position	S, D, L	7
h. RO ONLY - Test the Main Steam Isolation Valves	S, P	3
In-Plant Systems* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. LEP-01, Heater Drain Pumps	R, D, E, L	2
j. ***LEP-05, SRV operation from RSDP***	R, N, E, L	7
k. ***Rack in E6 Crosstie Breaker***	D, A, E	6

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

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

a. Reset Recirc Pump Runback with both Recirc Pumps Tripping

202002 A2.01 — Ability to predict the impacts of recirculation pump trip and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations. 3.4/3.4

RO/ISRO/USRO — This is a simulator alternate path JPM that will have the examinees resetting a Recirc Pump runback signal. When the runback is reset both recirc pumps will trip, this will require an immediate operator action to insert a manual reactor scram. This JPM is a new alternate path JPM.

b. Mechanical Trip Valve Oil Trip Test

245000 A3.01 — Ability to manually operate and/or monitor in the control room: Turbine Trip. 3.6/3.6

RO/ISRO/USRO — This is a new simulator JPM that will require the examinee to perform the Mechanical Trip Valve Oil Trip Test.

c. Operate The Hydrogen And Oxygen Monitor Using The Hard Card

223001 A4.04/.05 — Ability to manually operate and/or monitor containment drywell hydrogen/oxygen concentrations. 3.5/3.6 3.6/3.6

RO/ISRO/USRO — This is a simulator JPM that will require the examinee to start up and align the containment H2&O2 monitors per the Hard Card. Combustible Gas Monitoring is an Engineered Safety Feature IAW USFAR 6.2.5.2.2.

d. Reduce RPV Water Level Using RWCU To Radwaste

204000 A4.08 — Ability to manually operate and/or monitor in the control room: Reactor Water Level. 3.4/3.4

RO/ISRO — This is a modified alternate path simulator JPM that will require the examinee to reduce RPV water level using RWCU drain path to Radwaste. While lowering level, the RWCU Reject FCV will fail to close automatically on inadequate discharge pressure .The examinee will have to close the FCV.

e. Vent Drywell w/ Stack Rad Mon >50% increase

261000 A4.04 — Ability to manually operate and/or monitor Primary Containment Pressure. 3.3/3.4

RO/ISRO — This is a banked simulator JPM that will require the examinee to vent the Drywell via Standby Gas Treatment. This JPM is alternate path in that Main Stack Rad will rise requiring the examinee to isolate the system.

f. Shifting Caswell Beach Lube Water Pumps From The RTGB

400000 A4.01 — Ability to manually operate and/or monitor in the control room: CCW indications and control. 3.1/3.0

RO/ISRO — This is a new simulator JPM that will require the examinee to perform shift Caswell Beach Lube Water Pumps From The RTGB.

g. Substitute Control Rod Position

201006 A4.06 — Ability to manually operate and/or monitor in the control room: Selected rod position indication. 3.2/3.2

RO/ISRO — This is a banked JPM that will require the examinee to substitute in the Rod Worth Minimizer the indicated rod position.

h. Test the Main Steam Isolation Valves

239001 A4.01 — Ability to manually operate and/or monitor the MSIVs in the Control Room. 4.2/4.0

RO — This is a new JPM that will require the examinee to perform post-maintenance testing of a MSIV. This JPM was randomly selected from the previous exam (2015).

i. LEP-01, Heater Drain Pumps

295031 EA1.08 — Ability to operate alternate injection system systems as they apply to Reactor Water Level Low. 3.8/3.9

RO/ISRO — This is a banked in-plant JPM that will require the examinee to simulate the Auxiliary Operator actions for Alternate Coolant Injection, Heater Drain Pump Injection per 0EOP-01-LEP-01. This JPM is performed in the RCA.

j. LEP-05, SRV operation from RSDP

295016 AA1.08 — Ability to operate and/or monitor Reactor Pressure as it applies to Control Room Abandonment. 4.0/4.0

RO/ISRO/USRO — This is a new in-plant JPM that will require the examinee to simulate the actions associated with performing the field actions for pressure control from the RSDP (Remote Shutdown Panel)

k. Rack in E6 Crosstie Breaker

295003 AA1.01 — Ability to operate and/or monitor AC Electrical Distribution System as it applies to a partial or complete loss of A.C. power. 3.7/3.8

RO/ISRO/USRO — This is a banked in-plant alternate path JPM that will require the examinee to simulate manually racking in the crosstie breaker. The charging springs on the breaker will not automatically re-charge and will have to be manually charged.

Facility: Brunswick Date of Examination: Dec 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).	RB	✓	JL
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	RB	✓	JL
c.	The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.)	RB	✓	JL
d.	Overlap with the written examination and between different parts of the operating test is within acceptable limits.	RB	✓	JL
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	RB	✓	JL
	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	RB	✓	JL
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.	RB	✓	JL
	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.		RB	✓	JL

	Printed Name / Signature	Date
a. Author	Robert Bolin Robert Bolin	11-8-16
b. Facility Reviewer(*)	Craig Oliver	11-9-16
c. NRC Chief Examiner (#)	David R Lanyi	11/17/16
d. NRC Supervisor	Gerald J. McCoy	1/23/2017

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

Facility: Brunswick Date of Exam: 11/28/16 Scenario Numbers 1 / 2 / 3 / 4 / 5 Operating Test No.: Final

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.	RB	Y	DL
2. The scenarios consist mostly of related events.	RB	Y	DL
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)	RB	Y	DL
4. The events are valid with regard to physics and thermodynamics.	RB	Y	DL
5. Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	RB	Y	DL
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.	RB	Y	DL
7. The simulator modeling is not altered.	RB	Y	DL
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.	RB	Y	DL
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.	RB	Y	DL
10. All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	RB	Y	DL
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.)	RB	Y	DL
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).	RB	Y	DL
13. The level of difficulty is appropriate to support licensing decisions for each crew position.	RB	Y	DL

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

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

Facility: Brunswick Nuclear Plant		Date of Exam: 11/ 28/2016										Operating Test No.: Final					
APPLICANT	EVENT TYPE	Scenarios														MINIMUM(*)	
		2			3			4			5			TOTAL			
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SRO-I1	RX	1							6					2	1	1	0
	NOR	2					1							2	1	1	1
	I/C	3,4,5,6, 8,9					5,6,7		2a,4,8					12	4	4	2
	MAJ	7					7,8		7,8					5	2	2	1
	TS	3,5												2	0	2	2
SRO-I2	RX		1		4									2	1	1	0
	NOR				1					1				2	1	1	1
	I/C		3,5,8		2,3,5,6,7 ,8					4,6,7				12	4	4	2
	MAJ		7		7,8					7,8				5	2	2	1
	TS				3,5									2	0	2	2
SRO-I3	RX					4		6						2	1	1	0
	NOR			2				1						2	1	1	1
	I/C			4,6,9		2,3,8		2,2a,3, 4,5,7,8						13	4	4	2
	MAJ			7		7,8		7,8						5	2	2	1
	TS							2,4						2	0	2	2
SRO-I4	RX	1							6					2	1	1	0
	NOR	2					1							2	1	1	1
	I/C	3,4,5,6, 8,9					5,6,7		2a,4,8					12	4	4	2
	MAJ	7					7,8		7,8					5	2	2	1
	TS	3,5												2	0	2	2
SRO-I5	RX		1		4									2	1	1	0
	NOR				1					1				2	1	1	1
	I/C		3,5,8		2,3,5,6,7 ,8					4,6,7				12	4	4	2
	MAJ		7		7,8					7,8				5	2	2	1
	TS				3,5									2	0	2	2
SRO-I6	RX					4		6						2	1	1	0
	NOR			2				1						2	1	1	1
	I/C			4,6,9		2,3,8		2,2a,3, 4,5,7,8						13	4	4	2
	MAJ			7		7,8		7,8						5	2	2	1
	TS							2,4						2	0	2	2

Facility: Brunswick Nuclear Plant | Date of Exam: 11/ 28/2016 | Operating Test No.: Final

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		2			3			4			5						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SRO-I7	RX	1							6					2	1	1	0
	NOR	2					1							2	1	1	1
	I/C	3,4,5,6,8,9					5,6,7		2a,4,8					12	4	4	2
	MAJ	7					7,8		7,8					5	2	2	1
	TS	3,5												2	0	2	2
SRO-I8	RX		1		4									2	1	1	0
	NOR				1					1				2	1	1	1
	I/C		3,5,8		2,3,5,6,7,8					4,6,7				12	4	4	2
	MAJ		7		7,8					7,8				5	2	2	1
	TS				3,5									2	0	2	2
SRO-I9	RX							6				2		2	1	1	0
	NOR							1						1	1	1	1
	I/C							2,2a,3,4,5,7,8				3,5,7		10	4	4	2
	MAJ							7,8				7,8		4	2	2	1
	TS							2,4						2	0	2	2
SRO-U1	RX										2			1	1	1	0
	NOR										1			1	1	1	1
	I/C										3,4,5,6,7			5	4	4	2
	MAJ										7,8			2	2	2	1
	TS										5,6			2	0	2	2
RO-1	RX					4								1	1	1	0
	NOR			2										1	1	1	1
	I/C			4,6,9		2,3,8								6	4	4	2
	MAJ			7		7,8								3	2	2	1
	TS													0	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: Brunswick Date of Examination: 11/28/16 Operating Test No.: Final

Competencies	APPLICANTS															
	RO-1 ■ SRO-I □ SRO-U □				RO □ SRO-I7 ■ SRO-U □				RO □ SRO-I8 ■ SRO-U □				RO □ SRO-I9 ■ SRO-U □			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5
Interpret/Diagnose Events and Conditions	4,6, 7	2,3, 4,8			3-9	5,6, 7	2a, 2,3, 5,7, 8		3,5, 7,8, 9	2-8	4,6, 7,8				2-8	2,3, 5,7, 8
Comply With and Use Procedures (1)	2,4, 6,7	2,3, 4,7, 8			all	1,5, 6,7, 8	2a, 2,3, 5,7, 8		1,3, 5,7, 8,9	all	1,4, 6,7, 8				all	2,3, 5,7, 8
Operate Control Boards (2)	2,4, 6,7	2,3, 4,7, 8			n/a	1,5, 6,7, 8	2a, 2,3, 5,7, 8		1,3, 5,7, 8,9	n/a	1,4, 6,7, 8				n/a	2,3, 5,7, 8
Communicate and Interact	all	all			all	all	all		all	all	all				all	all
Demonstrate Supervisory Ability (3)	n/a	n/a			all	n/a	n/a		n/a	all	n/a				all	n/a
Comply With and Use Tech. Specs. (3)	n/a	n/a			3, 5	n/a	n/a		n/a	3, 5	n/a				2,3	n/a

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: Brunswick Date of Examination: 11/28/16 Operating Test No.: Final

Competencies	APPLICANTS															
	RO ☐ SRO-I ☐ SRO-U1 ■				RO ☐ SRO-I1 ■ SRO-U ☐				RO ☐ SRO-I2 ■ SRO-U ☐				RO ☐ SRO-I3 ■ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5
Interpret/Diagnose Events and Conditions				2-8	3-9	5,6,7	2a,2,3,5,7,8		3,5,7,8,9	2-8	4,6,7,8		4,6,7	2,3,4,8	2-8	
Comply With and Use Procedures (1)				all	all	1,5,6,7,8	2a,2,3,5,7,8		1,3,5,7,8,9	all	1,4,6,7,8		2,4,6,7	2,3,4,7,8	all	
Operate Control Boards (2)				n/a	n/a	1,5,6,7,8	2a,2,3,5,7,8		1,3,5,7,8,9	n/a	1,4,6,7,8		2,4,6,7	2,3,4,7,8	n/a	
Communicate and Interact				all	all	all	all		all	all	all		all	all	all	
Demonstrate Supervisory Ability (3)				all	all	n/a	n/a		n/a	all	n/a		n/a	n/a	all	
Comply With and Use Tech. Specs. (3)				5,6	3,5	n/a	n/a		n/a	3,5	n/a		n/a	n/a	2,3	

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

Instructions:

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

Facility: Brunswick	Date of Examination: 11/28/16				Operating Test No.: Final											
Competencies	APPLICANTS															
	RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I4 ■ SRO-U ☐				RO ☐ SRO-I5 ■ SRO-U ☐				RO ☐ SRO-I6 ■ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	2	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5
Interpret/Diagnose Events and Conditions					3-9	5,6,7	2a,2,3,5,7,8		3,5,7,8,9	2-8	4,6,7,8		4,6,7	2,3,4,8	2-8	
Comply With and Use Procedures (1)					all	1,5,6,7,8	2a,2,3,5,7,8		1,3,5,7,8,9	all	1,4,6,7,8		2,4,6,7	2,3,4,7,8	all	
Operate Control Boards (2)					n/a	1,5,6,7,8	2a,2,3,5,7,8		1,3,5,7,8,9	n/a	1,4,6,7,8		2,4,6,7	2,3,4,7,8	n/a	
Communicate and Interact					all	all	all		all	all	all		all	all	all	
Demonstrate Supervisory Ability (3)					all	n/a	n/a		n/a	all	n/a		n/a	n/a	all	
Comply With and Use Tech. Specs. (3)					3,5	n/a	n/a		n/a	3,5	n/a		n/a	n/a	2,3	

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

Instructions:

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

Facility: **Brunswick** Date of Exam: **December, 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	4	N/A			4	3	N/A		3	20	4	3	7
	2	1	1	1				2	1			1	7	2	1	3
	Tier Totals	4	4	5				6	4			4	27	6	4	10
2. Plant Systems	1	3	2	3	2	3	2	2	3	2	2	2	26	3	2	5
	2	1	1	1	1	1	2	1	1	1	1	1	12	0 2	1	3
	Tier Totals	4	3	4	3	4	4	3	4	3	3	3	38	5	3	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1 2 3 4		7
		3			3			2			2			2 2 1 2		

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	G2.2.12; Knowledge of surveillance procedures.	3.7	
					X		AA2.05; Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Jet pump operability.	3.4	
295003 Partial or Complete Loss of AC / 6	X						AK1.03; Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Under voltage/degraded voltage effects on electrical loads.	2.9	
295004 Partial or Total Loss of DC Pwr / 6		X					AK2.01; Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: Battery charger.	3.1	
295005 Main Turbine Generator Trip / 3			X				AK3.04; Knowledge of the reasons for the following responses as they apply to MAIN TURBINE GENERATOR TRIP: Main generator trip.	3.2	
295006 SCRAM / 1				X			AA1.06; Ability to operate and/or monitor the following as they apply to SCRAM: CRD hydraulic system.	3.5	
295016 Control Room Abandonment / 7			X				AK3.03; Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT: Disabling control room controls.	3.5	
295018 Partial or Total Loss of CCW / 8		X					AK2.02; Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: Plant operations.	3.4	
295019 Partial or Total Loss of Inst. Air / 8					X		AA2.02; Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Status of safety-related instrument air system loads.	3.6	
295021 Loss of Shutdown Cooling / 4		X					AK2.05; Knowledge of the interrelations between LOSS OF SHUTDOWN COOLING and the following: Fuel pool cooling and cleanup system.	2.5	
					X		AA2.03; Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING : Reactor water level.	3.5	
295023 Refueling Acc / 8				X			AA1.04; Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS: Radiation monitoring equipment.	3.4	
						X	G2.2.25; Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	
295024 High Drywell Pressure / 5				X			EA1.05; Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: RPS.	3.9	
295025 High Reactor Pressure / 3			X				EK3.02; Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE: Recirculation pump trip: Plant-Specific.	3.9	

295026 Suppression Pool High Water Temp. / 5						X X	G2.4.50; Ability to verify system alarm setpoints and operate controls identified in the alarm response manual. G2.1.23; Ability to perform specific system and integrated plant procedures during all modes of plant operation.	2.7 4.4	
295027 High Containment Temperature / 5									
295028 High Drywell Temperature / 5					X		EA2.01; Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell temperature.	4.0	
295030 Low Suppression Pool Wtr Lvl / 5						X	G2.4.50; Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.	4.2	
295031 Reactor Low Water Level / 2	X						EK1.03; Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Water level effects on reactor power.	3.7	
295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X					 X	EK1.03; Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Boron effects on reactor power (SBLC). G2.4.21; Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	4.2 4.6	
295038 High Off-site Release Rate / 9				X	 X		EA1.01; Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Stack-gas monitoring system: Plant-Specific. EA2.01; Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: †Off-site.	3.9 4.3	
600000 Plant Fire On Site / 8			X		 X		AK3.04; Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE: Actions contained in the abnormal procedure for plant fire on site. AA2.07; Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Whether malfunction is due to common-mode electrical failures.	2.8 3.0	
700000 Generator Voltage and Electric Grid Disturbances / 6					X		AA2.03; Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Generator current outside the capability curve.	3.5	
K/A Category Totals:	3	3	4	4	3/4	3/3	Group Point Total:		20/7

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (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	#
295002 Loss of Main Condenser Vac / 3									
295007 High Reactor Pressure / 3									
295008 High Reactor Water Level / 2									
295009 Low Reactor Water Level / 2		X					AK2.04; Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: Reactor water cleanup.	2.6	
295010 High Drywell Pressure / 5									
295011 High Containment Temp / 5									
295012 High Drywell Temperature / 5									
295013 High Suppression Pool Temp. / 5									
295014 Inadvertent Reactivity Addition / 1									
295015 Incomplete SCRAM / 1						X	G2.4.31; Knowledge of annunciator alarms, indications, or response procedures.	4.1	
295017 High Off-site Release Rate / 9					X		AA2.03; Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: †Radiation levels: Plant-Specific.	3.1	
295020 Inadvertent Cont. Isolation / 5 & 7				X			AA1.02; Ability to operate and/or monitor the following as they apply to INADVERTENT CONTAINMENT ISOLATION: Drywell ventilation/cooling system.	3.2	
295022 Loss of CRD Pumps / 1					X		AA2.02; Ability to determine and/or interpret the following as they apply to LOSS OF CRD PUMPS : CRD system status	3.4	
295029 High Suppression Pool Wtr Lvl / 5				X			EA1.01; Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: HPCI: Plant-Specific.	3.4	
295032 High Secondary Containment Area Temperature / 5			X				EK3.01; Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: Emergency/normal depressurization.	3.5	
295033 High Secondary Containment Area Radiation Levels / 9									
295034 Secondary Containment Ventilation High Radiation / 9						X	G2.4.8; Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	3.8	
295035 Secondary Containment High Differential Pressure / 5					X		EA2.01: Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment pressure: Plant-Specific.	3.9	
295036 Secondary Containment High Sump/Area Water Level / 5	X						EK1.02; Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Electrical ground/ circuit malfunction.	2.6	
500000 High CTMT Hydrogen Conc. / 5									
K/A Category Point Totals:	1	1	1	2	1/2	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		A4.04; Ability to manually operate and/or monitor in the control room: Heat exchanger cooling flow.	3.6	
205000 Shutdown Cooling					X							K5.03; Knowledge of the operational implications of the following concepts as they apply to SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): Heat removal mechanisms.	2.8	
206000 HPCI	X											K1.10; Knowledge of the physical connections and/or cause/effect relationships between HIGH PRESSURE COOLANT INJECTION SYSTEM and the following: Condensate storage and transfer system.	3.4	
207000 Isolation (Emergency) Condenser														
209001 LPCS			X								X	K3.03; Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on following: Emergency generators. G2.4.35; Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	2.9 4.0	
209002 HPCS														
211000 SLC	X											K1.01; Knowledge of the physical connections and/or cause/effect relationships between STANDBY LIQUID CONTROL SYSTEM and the following: Core spray line break detection: Plant-Specific.	3.0	
212000 RPS		X									X	K2.01; Knowledge of electrical power supplies to the following: RPS motor-generator sets. 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.	3.2 4.4	

215003 IRM								X				A2.06; Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Faulty range switch. K6.04; Knowledge of the effect that a loss or malfunction of the following will have on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM : Detectors.	3.0 4.0	
215004 Source Range Monitor					X							K5.03; Knowledge of the operational implications of the following concepts as they apply to SOURCE RANGE MONITOR (SRM) SYSTEM: Changing detector position.	2.8	
215005 APRM / LPRM		X			X							K2.02; Knowledge of electrical power supplies to the following: APRM channels. K5.04; Knowledge of the operational implications of the following concepts as they apply to AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM: LPRM detector location and core symmetry.	2.6 2.9	
217000 RCIC						X						A1.01; Ability to predict and/or monitor changes in parameters associated with operating the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) controls including: RCIC flow.	3.7	
218000 ADS	X		X									K1.03; Knowledge of the physical connections and/or cause/effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: Nuclear boiler instrument system. K3.01; Knowledge of the effect that a loss or malfunction of the AUTOMATIC DEPRESSURIZATION SYSTEM will have on following: Restoration of reactor water level after a break that does not depressurize the reactor when required.	3.7 4.4	
223002 PCIS/Nuclear Steam Supply Shutoff						X						A1.01; Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF controls including: System indicating lights and alarms.	3.5	

239002 SRVs				X				X				K4.03; Knowledge of RELIEF/SAFETY VALVES design feature(s) and/or interlocks which provide for the following: Prevents siphoning of water into SRV discharge piping and limits loads on subsequent actuation of SRV's. A2.01; Ability to (a) predict the impacts of the following 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: Stuck open vacuum breakers.	3.1 3.3	
259002 Reactor Water Level Control									X			A3.08; Ability to monitor automatic operations of the REACTOR WATER LEVEL CONTROL SYSTEM including: FWCI system initiation: FWCI.	4.0	
261000 SGTS								X		X		A4.02; Ability to manually operate and/or monitor in the control room: Suction valves. A2.09; Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Plant air system failure.	3.1 2.6	
262001 AC Electrical Distribution										X	X	G2.2.40; Ability to apply Technical Specifications for a system. A2.01; Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Turbine/generator trip	3.4 3.6	
262002 UPS (AC/DC)									X			A3.01; Ability to monitor automatic operations of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) including: Transfer from preferred to alternate source.	2.8	
263000 DC Electrical Distribution											X	G2.2.37; Ability to determine operability and/or availability of safety related equipment.	3.6	
264000 EDGs						X						K6.03; Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET) : Lube oil pumps.	3.5	

300000 Instrument Air			X					X				A2.01; Ability to (a) predict the impacts of the following on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Air dryer and filter malfunctions. K3.01; Knowledge of the effect that a loss or malfunction of the Containment air system.	2.9 2.7	
400000 Component Cooling Water				X				X				A2.01; Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Loss of CCW pump. K4.01; Knowledge of CCWS design feature(s) and or interlocks which provide for the following: Automatic start of standby pump.	3.3 3.4	
K/A Category Point Totals:	3	2	3	2	3	2	2	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						K6.02; Knowledge of the effect that a loss or malfunction of the following will have on the CONTROL ROD DRIVE HYDRAULIC System: Condensate storage tanks.	3.0	
201002 RMCS														
201003 Control Rod and Drive Mechanism											X	G2.4.49; Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.6	
201004 RSCS														
201005 RCIS														
201006 RWM														
202001 Recirculation														
202002 Recirculation Flow Control						X						K6.03; Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION FLOW CONTROL SYSTEM: Recirculation system.	2.8	
204000 RWCU														
214000 RPIS														
215001 Traversing In-Core Probe											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.	4.4	
215002 RBM	X											K1.02; Knowledge of the physical connections and/or cause/effect relationships between ROD BLOCK MONITOR SYSTEM and the following: LPRM.	3.2	
216000 Nuclear Boiler Inst.								X				A2.11; Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Heatup or cooldown of the reactor vessel.	3.2	
219000 RHR/LPCI: Torus/Pool Cooling Mode								X				A2.12; Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve logic failure: Plant-Specific	3.1	
223001 Primary CTMT and Aux.			X									K3.09; Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES will have on following: Nuclear boiler instrumentation.	2.8	

226001 RHR/LPCI: CTMT Spray Mode		X										K2.02; Knowledge of the physical connections and/or cause/effect relationships between RHR/LPCI: CONTAINMENTSPRAY SYSTEM MODE and the following: Pumps.	2.9	
230000 RHR/LPCI: Torus/Pool Spray Mode														
233000 Fuel Pool Cooling/Cleanup														
234000 Fuel Handling Equipment									X			A3.01; Ability to monitor automatic operations of the FUEL HANDLING EQUIPMENT including: Crane/refuel bridge movement: Plant-Specific.	2.6	
239001 Main and Reheat Steam														
239003 MSIV Leakage Control														
241000 Reactor/Turbine Pressure Regulator										X		A4.14; Ability to manually operate and/or monitor in the control room: Turbine trip.	3.8	
245000 Main Turbine Gen. / Aux.				X								K4.07; Knowledge of MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS design feature(s) and/or interlocks which provide for the following: Generator voltage regulation.	2.5	
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								X				A2.10; Ability to (a) predict the impacts of the following on the OFFGAS SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Offgas system high flow.	3.3	
272000 Radiation Monitoring					X							K5.01; Knowledge of the operational implications of the following concepts as they apply to RADIATION MONITORING SYSTEM: Hydrogen injection operation's effect on process radiation indications: Plant-Specific.	3.2	
286000 Fire Protection														
288000 Plant Ventilation														
290001 Secondary CTMT														
290003 Control Room HVAC														
290002 Reactor Vessel Internals														
K/A Category Point Totals:	1	1	1	1	1	2	1	1/2	1	1	1/1	Group Point Total:		12/3

Facility: **Brunswick**		Date of Exam: **December, 2016**				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements.	3.8			
	2.1.32	Ability to explain and apply system limits and precautions.	3.8			
	2.1.36	Knowledge of procedures and limitations involved in core alterations.	3.0			
	2.1.5	Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.			3.9	
	2.1.43	Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.			4.3	
	Subtotal					
2. Equipment Control	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.6			
	2.2.4	(multi-unit license) Ability to explain the variations in control | board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.	3.6			
	2.2.44	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.	4.2			
	2.2.15	Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. |			4.3	
	2.2.22	Knowledge of limiting conditions for operations and safety limits.			4.7	
	Subtotal					
3. Radiation Control	2.3.12	Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2			
	2.3.15	Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.	2.9			
	2.3.11	Ability to control radiation releases.			4.3	
	Subtotal					
4. Emergency Procedures / Plan	2.4.20	Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8			
	2.4.27	Knowledge of "fire in the plant" procedures.	3.4			
	2.4.30	Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.			4.1	
	2.4.35	Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.			4.0	
	Subtotal					
Tier 3 Point Total				10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/1	295024EA1.14	Too similar to 295020AA1.02. Reselected 295024EA1.05 as a replacement.
2/1	259002A3.05	Not representative of how plant operates. Reselected 259002A3.08 as a replacement.
2/1	262002K6.03	Too similar to 26002A3,01. Reselected 215003K6.04
1/1	295028G2.19	Cannot write at SRO level. Replaced by 295023G2.2.25.
1/1	700000AA2.08	Cannot write at SRO level. Replaced by 295021AA2.03.
1/1	295024G2.2.37	Cannot write at SRO level. Replaced by 295037G2.4.21.
2/1	217000A2.09	Cannot write operationally valid question. Replaced with 262001A2.01.
2/2	256000A2.17	Not in plant design. Reselected 219000A2.12.
2/2	268000A2.01	Unable to write a operationally valid and discriminating question. Reselected 216000 A2.11
2/2	2860000K2.03	Unable to write a discerning question. Reselected to 2260001K2.02.
1/2	295013.A2.02	Unable to write to the K/A. The plant doesn't really monitor stratification. Reselected with 295022A.2.02.

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

Facility: Brunswick Date of Exam: 11/28/16 Exam Level: RO ■ SRO ■

	Item Description	Initial a	Initial b*	Initial c*#
1.	Questions and answers are technically accurate and applicable to the facility.	RB	✓	DL
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	RB	✓	DL
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401	RB	✓	DL
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).	RB	✓	DL
5.	Question duplication from the licensee screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate X The audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or __ the licensee certifies that there is no duplication; or __ other (explain)	RB	✓	DL
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right Bank: 33/ 5 Modified: 1 / 2 New: 41/18	RB	✓	DL
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: 36 / 5 C/A: 39 / 20	RB	✓	DL
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.	RB	✓	DL
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.	RB	✓	DL
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.	RB	✓	DL
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.	RB	✓	DL

	Printed Name / Signature	Date
a. Author	Robert Bolin	11-8-16
b. Facility Reviewer (*)	Craig Oliver	11-9-16
c. NRC Chief Examiner (#)	David R. Laney	11/18/16
d. NRC Regional Supervisor	GERALD J. McCoy	11/17/2016

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.

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
1	H	2												N	S	201001 K6.02 K/A is met. drl 10/5/16
2	F	2												N	S	201003 G2.4.49 K/A is met. drl 10/5/16
3	F	2												N	S	202002 K6.03 K/A is met. drl 10/5/16
4	H	3												B/M if suggestio n used.	E	203000A4.04 K/A is met. You can get the right answer for the wrong reason. A possible modification would be to change the question to "2-E11-F048A can first be throttled ___(1)___ minutes after ___(2)___. The answer would be a toggle between 3 or 5 minutes AND RPV pressure dropping below 410# or RPV level dropping to LL3. Drl 10/5/16 Changed the time of the hi drywell pressure remove the possibility of getting it right for the wrong reason. 10/20 rsb
5	F	2		X										N	U	205000 K5.03 K/A is met. This is too closely related to the previous question. Perhaps we could go with a question about what happens if flows change. Since this is a systems related question, we don't need to stick with what procedural guidance is directing, we can go with system response. Drl 10/5/16 Changed the question conditions and the question to closing a valve which changed the answer to the F068 valve.10/20 rsb
6	H	3												B	S	206000 K1.10 K/A is met. drl 10/5/16
7	H	3												N	S	209001 K3.03 K/A is met. drl106/16
8	F	2												B	S	211000 K1.01 K/A is met. drl 10/6/16

9	F	>1				X								N	U	212000 K2.01 K/A is met. I'm not certain why someone would chose 2XC or 2XD. They have nothing to do with RPS or the MG sets. Perhaps you can rephrase for a two part question. Ask the PS to the B MG set (E7 or E8) and then if RPS can be powered from the other division. drl 10/6/16 Q21 Changed to 2 part question: Part 1 asks power supply to MG Set B Part 2 asks the normal alternate power supply 10/20 rsb
10	F	2												B	S	215002 K1.02 K/A is met. drl 10/6/16
11	H	3												N	S	215003 A2.06 K/A is met drl 10/6/16
12	H	2												N	E	215003 K6.04 K/A is met. Need to reword first question to avoid a subset issue. I know what you mean, but since 6.5 > 3 then 6.5 can never be wrong. In this case I think the easiest fix is to say "A-05 (1-4) IRM Downscale, states that the alarm setpoint is ..." drl 10/6/16 Added IAW prior to the annunciator. 10/20 rsb
13	F	2										X		N	E	215004 K5.03 K/A is kind of met. The K/A is asking about the operational implications of changing detector position. This appears to mean that they need to show knowledge of what happens when you move the switch. Could we make a two by two question? The question as written would be first with C and D as the answers. The second question could be how far to withdraw detectors: fully or to maintain 100 to 200000 cps. Drl 10/7/16 Cannot toggle on fully inserted or maintain 100 to 200,000 cps as a fully inserted detector may indicate between 100 to 200,000 cps. Knowing that you have to wait until overlap is established implies they know that this is needed to determine operability of the detectors. 10/20 rsb
14	F	2												M	S	215005 K2.02 K/A is met. Drl 10/7/16
15	F	2												N	S	215005 K5.04 K/A is met. Drl 10/7/16
16	H	3												N	S	216000 A2.11 K/A is met. Drl 10/7/16
17	H	3												N	S	217000 A101 K/A is met. Drl 107/16
18	F	2												N	S	218000 K1.03 K/A is met. Drl 10/7/16

19	H	3												B	E	218000 K3.01 K/A is met. Could we change the second question to state that RPV level will/will not be restored with both RHR loops? Drl 10/7/16 Made the change as requested. 10/20 rsb
20	H	2												B	S	223001 K3.09 K/A is met. This is a GFE question. Drl 10/7/16 It is plant specific rsb 10/20
21	H	2												N	E	223002 A1.01 K/A is met. Instead of stating that RPS Bus A has not been transferred to an alternate power supply, could we state that No operator actions have been taken? Drl 10/7/16 Made change as requested. 10/20 rsb
22	F	3												N	E	234000 A3.01 K/A is met. Are your ROs required to know this information? Is fuel movement within their job description? Drl 10/7/16 This is a trained topic for the RO's. 10/20 rsb
23	F	>1												N	S	239002 K4.03 K/A is met. C and D are weak. Drl 10/7/16
24	F	2												N	S	241000 A4.14 K/A is met drl 10/12/16
25	F	2												B	S	245000 K4.07 K/A is met drl 1012/16
26	F	2												N	S	2590001 A1.04 K/A is met. Drl 10/12/16
27	F	2												N	S	259002 A3.01 K/A is met. Drl 10/12/16
28	H	2												B	S	261000 A4.02 K/A is met. Drl 10/12/16
29	F	1				X								N	U	262001 G2.2.40 K/A is met. This is not very discerning. If all of your equipment is operable, do you meet TS? I would hope so. Could we make this a TS 3.8.2 question instead, Put one of the units in Mode 5 moving fuel. Give them 2 EDGs and 1 SAT on the S/D unit. The answer remains the same, but it is more discerning drl 10/12/16 The question was changed to make Unit 2 in MODE 5, do not believe it would be RO level if I asked TS 3.8.2 as it would have to get very specific, beyond the RO knowledge to ask a good question. rsb 10/24
30	H	3												N	S	262002 A3.01 K/A is met. Drl 10/12/16

31	H	2		X		X								N	U	263000 G2.2.37 K/A is met. The second question appears to answer the first question. If I know that either the inboard or outboard isolation logic has lost power, then why would I consider the system operable? Perhaps the second question could ask about the loss of power on another system (ADS or HPCI maybe)? drl 10/12/16 Changed to question conditions to a loss of 4A which makes RCIC available for injection. 10/20 rsb
32	H	3												B	S	264000 K6.03 K/A is met. Drl 10/12/16
33	F	2			X									N	E	272000 K5.01 K/A is met. Could we toggle on the answers from choice A and B and toggle if the setpoint will/will not require to be raised due to HWC being placed in service. Drl 10/12/16 2x2 will not work for plausibility. RB 10/20
34	F	2							X					N	E	286000 K2.03 K/A is met. Not very discerning. We could change this K/A if desired. Drl 10/13/16 226001 K2.02 - New K/A provided and question submitted. rsb 10/24
35	F	2												N	U	295001 G2.2.12 K/A is met. The first question does not seem discerning. Why would someone choose two loop? Perhaps we could give them the indications of a failed jet pump and then ask if there is a failed jet pump, what would the procedure have them do? Drl 10/12/16 The question conditions have a loss of a recirc pump, our power to flow maps are not changed from 2 loop to single loop until thermal limits are adjusted. Some of our validators applied this very logic to answering the question. rsb 10/20
36	H	3												B	S	295003 AK1.03 K/A is met. drl 10/13/16
37	F	3												N	S	295004 AK2.01 K/A is met. drl 10/13/16
38	H	4											X	B	E	295005 AK3.04 K/A is met. Is C really plausible? The front standard trip is pretty obvious. The correct answer is pretty deep in the basis. Are you certain it is required RO knowledge and not SRO knowledge? I would typically expect an RO to know that it is to prevent a reverse power of the main generator, but the rest of that is pretty detailed. Drl 10/13/16 A person off of the street would not know there is a trip device on the front standard. Changed the correct answer wording to reverse power. rsb 10/20

39	H	2												N	S	295006 AA1.06 K/A is met. drl 10/13/16
40	F	2												N	S	295009 AK2.04 K/A is met. drl 10/13/16
41	F	3												B	U	295016 AK3.03 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. Instead of giving them the whole Caution, only give them the first part and ask the last sentence as a before/after question. The second question could be "The purpose of this sequence is/is not to prevent a loss of …." Drl 10/13/16 Made changes as requested. rsb 10/20
42	H	2												B	S	295017 AA2.03 K/A is met. drl 10/13/16
43	H	3				x								B	E	295018 AK2.02 K/A is met. Although the question is OK, I'm not sure that C is a really good distractor. Could we modify this to have the answers as "A complete loss of RBCCW has/has not occurred" AND "A reactor scram is/is not required"? drl 10/13/16 Made the question a 2x2 as requested. rsb 10/20
44	F	2						X						N	U	295019 AA2.02 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. In this case I would suggest that you look at putting them in a situation where they may have to worry about maintaining a negative reactor building pressure. Could this affect the ATT 2 loads? Drl 10/13/16 Change one part to ask the action from the AOP rsb 10/24
45	H	3						X						B	U/E	295020 AA1.02 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. In this case, the correction would be to ask what procedure they should enter and then toggle on fans are tripped/running. Drl 10/13/16 To know that it can be over-ridden requires knowledge of the procedure steps for what conditions are over-ridden. Not all of the conditions given can be over-ridden. rsb 10/20

46	H	3						X						N	U/E	295021 AK2.05 This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. In this case, the question can be made acceptable by changing the second question to ask if "1-OP-17 can/cannot be used to align fuel pool cooling assist to SDC Loop A. Reword the first question to state "Fuel pool cooling assist is/is not in service". drl 10/17/16 Add IAW the procedure to the question. rsb 10/20
47	F	2						X						B	S	295023 AA1.04 K/A is met. drl 10/13/16
48	F	2						X						N	U	295024 EA1.05 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. drl 10/13/16 Changed part 2 to be if the scram procedure is/is not required to be entered. rsb 10/20
49	H	2												B	S	295025 EK3.02 K/A is met. This does not really meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. However since the proposed question gives a choice of a manual action, I will consider this a SAT question. drl 10/13/16
50	H	3						X						N	E	295026 G2.4.50 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. In this case, add the procedure name prior to the second question. drl 10/13/16 Add IAW the procedure to the question. rsb 10/20
51	F	2												B	S	295028 EA2.01 K/A is met. drl 10/13/16
52	F	2						X						N	U	295029 EA1.01 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. drl 10/13/16 Instead of telling them the level gave them the annunciator for them to determine the action based on level. rsb 10/24
53	H	3												N	S	295030 G2.4.50 K/A is met. drl 10/13/16
54	H	3												B	S	295031 EK1.03 K/A is met. drl 10/13/16

55	H	3				X								B	E	295032 EK3.01 K/A is met. How realistic is distractor B? drl 10/13/16 This would be correct for Max SafeRad Limits. Per UFSAR RBHVAC maintains occupied areas within temp limit for human occupancy. rsb 10/20
56	F	3												N	S	295034 G2.4.8 K/A is met. drl 10/13/16
57	F	3												N	S	295036 EK1.02 K/A is met. drl 10/13/16
58	F	2						X				X		B	U	295037 EK1.03 K/A is not met. The K/A is asking for the boration effect on power while power is above APRM downscale. We need to find a way to rewrite this using some kind of procedural knowledge. Drl 10/13/16 Re-wrote question as provided to meet the K/A better rsb 10/24
59	F	2												N	U	295038 EA1.01 K/A is met. This does not meet the Tier 1 category in that the operator does not need to use any procedural knowledge to answer the question. The easiest fix is to give more details and have the applicant pick the correct AOP. Use the second question to toggle on. Drl 10/13/16 Changed the first question to be if TBHVAC should be in once through or recirc mode IAW the procedure. rsb 10/24
60	H	2												N	S	300000 A2.01 K/A is met. drl 10/13/16
61	F	2												B	S	300000 K3.01 K/A is met. Drl 10/13/16
62	H	2												B	S	400000A2.01 K/A is met. drl 10/13/16
63	F	2												B	E	400000 K4.01 K/A is met. This could be written with many less words as a 2x2. Drl 10/14/16 Made a 2x2 question rsb 10/24
64	H	2												B	E	600000 AK3.04 K/A is met. This would be a better Tier 1 question by making it a 2x2 question. OASSD-02 requires that backup nitrogen is placed in service by placing RNA keylock switch in LOCAL / REMOTE and If this is not done correctly the unit could suffer Loss of Drywell Cooling / Inability to Operate SRVs. Drl 10/14/16 Cannot write as 2x2 as the keylock positions are Normal/Local, no one would pick normal for an ASSD procedure action. rsb 10/20

65	H	2												B	S	700000 AA2.03 K/A is met. drl 10/14/16
66	F	2				X								N	E	G2.1.1 K/A is met. Jet pump flow vs steam and feed flow is not very discerning. Why not ask if steam/feed flow is/is not one of the parameters that needs to be constantly monitored? Drl 10/14/16 Made change as requested. rsb 10/20
67	F	3												B	S	G2.1.32 K/A is met. drl 10/14/16
68	H	3												N	S	G2.1.36 K/A is met. drl 10/14/16
69	F	2												B	S	G2.2.2 K/A is met. drl 10/14/16
70	F	2												B	S	G2.2.4 K/A is met. drl 10/14/16
71	H	3												B	E	G2.2.44 K/A is met. Need to change second answer in A to "in the PUMP B RUN position". The choice of leaving it in A might make some think it was improbable. Drl 10/14/16 Made change as requested. rsb 10/20
72	F	2												B	S	G2.3.12 K/A is met. drl 10/14/16
73	H	2												B	S	G2.3.15 K/A is met. drl 10/14/16
74	H	2												B	S	G2.4.20 K/A is met. drl 10/14/16
75	F	2												N	E	G2.4.27 K/A is met. The word "is" needs to be added to the second line. Made change as requested. rsb 10/20

SRO ONLY																
76	H	3												N	E	209001 G2.4.35 K/A is met. This provides information that would make Question 55 distactor B even less plausible. Drl 10/17/16 Question 55 is dealing with temperature limits while this question deals with rad levels. No cueing is provided. rsb 10/20
77	H	2												N	E	212000 G2.2.44 K/A is met. In the "Explanation" section, I am confused why you state "Groups 2 and 4 remained lit,…". Diidn't all groups remain lit? It does not change anything. Drl 10/17/16. Made changes as requested. rsb 10/20
78	H	3												N	E	215001 G2.2.44 K/A is met. Would Condition A always be correct here? At some facilities, if two PCIVs inoperable they would enter both A and B. Obviously B is more limiting. If this is true at Brunswick , then the question 2 answers should be A only AND A and B. drl 10/17/16 Made changes as requested. rsb 10/20
79	H	3												N	S	219000 A2.12 K/A is met. drl 10/17/16
80	H	2												N	E	239002 A2.01 K/A is mostly met. This is ok as long as there are no other questions in which the mitigation portion is to determine the e-plan call. Drl 10/17/16 No other E-Plan calls on this topic. rsb 10/20
81	H	2												N	S	261000 A2.09 K/A is met. drl 10/17/16
82	H	2												N	S	262001 A2.09 K/A is met. drl 10/17/16
83	H	3												N	S	271000 A2.10 K/A is met. drl 10/17/16
84	H	2												B	E	295001 AA2.05 K/A is met. Could we modify this question to change the power level to 72%. That would change the correct answer to A. drl 10/17/16 Changed the power level and conditions for 72% power. rsb 10/20

85	F	2											X	N	U	295013 AA2.02 K/A is NOT met.. The K/A requires the question to test the ability to determine localized heating or stratification, not alternate locations of indications. Drl 10/17/16 295022 AA2.02, New K/A provided and question submitted. rsb 10/24
86	H	2				X								N	E	295015 G2.4.31 K/A is met. C is not plausible. You give them that the pumps are tripped already. Recommend asking "__(1)__ is required first followed by ___(2)___". Then the two answers can be "terminate and prevent" and "SLC". Drl 10/17/16 The Recirc pumps tripped was removed and the conditions for a tripped pump were provided so that the students will have to determine that the recirc pumps are tripped. rsb 10/20
87	H	3				X						X		N	U	295021 AA2.03 K/A is kind of met. I'm not certain how you determined the level for the UE. The way I read this EAL, the UE is required whenever you cannot maintain the required level band. I think a better question would be to tell them they were in GP-5 and that RWL was at 192" when all AC was lost 20 minutes ago. No recirc or SDC poumps have been started. AOP-15 has been entered. Then ask "RPV level is/is not adequate to support natural circulation AND IAW 0PEP-02.2.1, a UE is/is NOT required to be declared." If you make a statement that all level bands are designated in accordance with the controlling procedure, then I believe the lower limit would be 200" and a UE would be required. Drl 10/17/16 Provided the basis document that clearly states that LL1 is the lower limit. rsb 10/24
88	F	2												N	S	295023 G2.2.25 K/A is met. drl 10/17/16
89	H	2												N	S	295026 G2.1.23 K/A is met. drl 10/17/16
90	H	2												N	S	295035 EA2.01 K/A is met. drl 1017/16
91	H	3												N	S	295037 G2.4.21 K/A is met. dl 10/18/16
92	F	2												N	S	295038 EA2.01 K/A is met. drl 10/18/16
93	F	2												N	S	600000 AA2.07 K/A is met. drl 10/18/16
94	F	2												B	S	G2.1.5 K/A is met. drl 10/18/16

95	H	3												N	E/U	G2.1.43 K/A is met. I find the first question confusing. What does the term "implement thermal penalties" mean? If you're asking if they need too change power/flow maps, let's just ask that. The second question is strange and kind of provides clues to the first question. Instead could we ask if continued operation would be allowed if the B Recirc Pump tripped? Drl 10/18/16 The term "implement thermal penalties" is a common term here. No changes required. rsb 10/20
96	H	2												N	S	G2.2.15 K/A is met. drl 10/18/16
97	H	2												B	S	G2.2.22 K/A is met. drl 10/18/16
98	H	3												N	S	G2.3.11 K/A is met. dl 10/18/16
99	H	2												B	E/U	G2.4.30 K/A is met. A and D are really not plausible. A better question would be: An ENS report to the NRC must be made by ___1___. An LER ___2___ required. A. 1) 0400 2) is B. 1) 0400 2) is not C. 1) 0430 2) is D. 1) 0430 2) is not This would include adding NUREG-1022 (or other appropriate site procedure) to the reference list. Frl 10/18/16 Made changes as requested. rsb 10/20
100	F	2												N	S	G2.4.35 K/A is met. In the first question change "before" to "no later than". Drl 10/18/16 Made changes as requested. rsb 10/20

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

Facility: Brunswick Date of Exam: 12/14/16 Exam Level: RO ☒ SRO ☒

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

	Printed Name/Signature	Date
a. Grader	Robert Bolin RobertBol	12-15-16
b. Facility Reviewer(*)	Craig Oliver	12-15-16
c. NRC Chief Examiner (*)	David R. Lanyi DRL	1/9/2017
d. NRC Supervisor (*)	Gerald J. McCoy JJMcCoy	1/24/2017

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

Brunswick Nuclear Plant
P.O. Box 10429
Southport, NC 28461

SEP 2 2 2016

Serial: BSEP 16-0086

U. S. Nuclear Regulatory Commission, Region II
ATTN: Ms. Catherine Haney, Regional Administrator
245 Peachtree Center Ave, NE, Suite 1200
Atlanta, GA 30303-1257

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-71 and DPR-62
Docket Nos. 50-325 and 50-324
Operating Test, Written Exam, and Reference Materials for Licensed Operator Initial Examination 50-325/2016-301 and 50-324/2016-301

References:

1. Letter from Gerald J. McCoy (NRC) to William R. Gideon (Duke Energy), "Brunswick Steam Electric Plant – Notification of Licensed Operator Initial Examination 05000325/2016301 and 05000324/2016301," dated June 17, 2016, ADAMS Accession Number ML16173A365
2. Letter from Annette H. Pope (Duke Energy) to Catherine Haney (NRC), "Operating Test Outline for Licensed Operator Initial Examination 50-325/2016-301 and 50-324/2016-301," dated August 23, 2016

Dear Ms. Haney:

In accordance with the guidelines in Revision 10, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Duke Energy Progress, LLC, is providing the proposed examinations and reference material supporting the operating test, which is scheduled to be administered during the weeks of November 28, 2016, and December 5, 2016; and the written examination scheduled to be administered the week of December 12, 2016.

In accordance with the schedule contained in the NRC's letter dated June 17, 2016, a list of the examination materials is provided in Enclosure 1. Copies of Examiner Standard Forms and Checklists are provided in Enclosure 2. Copies of Forms ES-D-1 and ES-D-2, the simulator scenarios, and Job Performance Measures (JPMs) are provided in Enclosure 3. A copy of the written examination is provided in Enclosure 4. Copies of the reference materials are provided in Enclosure 5 (i.e., on 3 CD-ROMs), along with a Reference Materials Index.

In accordance with 10 CFR 55.40(b)(3), Mr. Craig Oliver, as the designated authorized representative of the Brunswick Steam Electric Plant, Units 1 and 2, has approved the enclosed Operating Test Quality Checklist, Simulator Scenario Quality Checklist, and Written Examination Quality Checklist (i.e., part of Enclosure 2).

Enclosures Contain Operator Examination Material
Withhold from public disclosure until
completion of examination

Enclosures 2, 3, 4, and 5 are being provided only to Mr. David R. Lanyi, the assigned NRC chief examiner. In accordance with Revision 10, of NUREG-1021, Section ES-201, "Initial Operator Licensing Examination Process," please ensure that the proposed examinations and associated forms and checklists are withheld from public disclosure until after the examinations are complete.

This document contains no regulatory commitments.

Please refer any questions regarding this submittal to Mr. Bob Bolin, Senior Nuclear Operations Instructor, at (910) 457-3078, or Mr. Craig Oliver, Control Room Supervisor, at (910) 454-2108.

Sincerely,

Annette H. Pope
Director – Organizational Effectiveness
Brunswick Steam Electric Plant

AHP/mkb

Enclosures:

1. List of Examination Materials
2. Examiner Standard Forms and Checklists **(Enclosure only being sent to Chief Examiner)**
3. Forms ES-D-1 and ES-D-2, Simulator Scenarios, and Job Performance Measures (JPMs) **(Enclosure only being sent to Chief Examiner)**
4. Written Examination Questions and Exam Keys **(Enclosure only being sent to Chief Examiner)**
5. Reference Materials (3 CD-ROMs) and Reference Materials Index **(Enclosure only being sent to Chief Examiner)**

cc (with Enclosures 1 through 5):

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. David R. Lanyi, Chief Examiner
245 Peachtree Center Ave, NE, Suite 1200
Atlanta, GA 30303-1257

cc (with Enclosure 1 only):

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Gerald J. McCoy, Chief
Operations Branch
245 Peachtree Center Ave, NE, Suite 1200
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U. S. Nuclear Regulatory Commission
ATTN: Mr. Andrew Hon (Mail Stop OWFN 8G9A) **(Electronic Copy Only)**
11555 Rockville Pike
Rockville, MD 20852-2738

U. S. Nuclear Regulatory Commission
ATTN: Ms. Michelle P. Catts, NRC Senior Resident Inspector
8470 River Road
Southport, NC 28461-8869

Chair - North Carolina Utilities Commission **(Electronic Copy Only)**
4325 Mail Service Center
Raleigh, NC 27626-0510
swatson@ncuc.net

List of Examination Materials

The following documents, developed in accordance with NUREG-1021, Revision 10, "Operator Licensing Examination Standards for Power Reactors," are provided in Enclosure 2:

Form ES-201-2	Examination Outline Quality Checklist
Form ES-201-3	Examination Security Agreement (Photocopy)
Form ES-301-1	Administrative Topics Outline (for RO and SRO positions)
Form ES-301-2	Control Room/In-Plant Systems Outline (for RO, SRO-U, and SRO-I positions)
Form ES-301-3	Operating Test Quality Checklist
Form ES-301-4	Simulator Scenario Quality Checklist
Form ES-301-5	Transient and Event Checklist
Form ES-301-6	Competencies Checklist
Form ES-401-4	Record of Rejected K/As
Form ES-401-6	Written Examination Quality Checklist

Enclosure 3 provides Forms ES-D-1 and ES-D-2 for each active scenario, and the Simulator and Job Performance Measures (i.e., Administrative, In-Plant, and Simulator).

Enclosure 4 provides the proposed written examinations (RO and SRO) with exam keys and a copy of all exam questions with corresponding distracter analysis.

Enclosure 5 provides the reference materials on 3 CD-ROMs and the Reference Materials Index.

DUKE ENERGY®

Enclosures Contain Operator Examination Material
Withhold from public disclosure until
completion of examination

William R. Gideon
Vice President
Brunswick Nuclear Plant
P.O. Box 10429
Southport, NC 28461
910.457.3698

DEC 15 2016

Serial: BSEP 16-0116

U.S. Nuclear Regulatory Commission, Region II
ATTN: Ms. Catherine Haney, Regional Administrator
245 Peachtree Center Ave, NE, Suite 1200
Atlanta, GA 30303-1257

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-71 and DPR-62
Docket Nos. 50-325 and 50-324
Reactor Operator and Senior Reactor Operator License Post-Examination Documentation and Comments

Reference: Letter from Gerald J. McCoy (NRC) to William R. Gideon (Duke Energy), "Brunswick Steam Electric Plant – Notification of Licensed Operator Initial Examination 05000325/2016301 and 05000324/2016301," dated June 17, 2016, ADAMS Accession Number ML16173A365

Dear Ms. Haney:

In accordance with the guidance contained in Revision 10 of NUREG-1021, "Operator Licensing Standards for Power Reactors," Section ES-402, "Administering Initial Written Examinations," and ES-501, "Initial Post-Examination Activities," Duke Energy Progress, LLC (Duke Energy), is providing the NRC the specified documentation for the reactor operator and senior reactor operator written examinations, which were administered at the Brunswick Steam Electric Plant on Wednesday, December 14, 2016. The examination documentation enclosures are being provided only to Mr. David R. Lanyi, with his copy of this letter. Duke Energy has post exam comments relating to the written examination included with this submittal letter as Enclosure 2.

The master examination and answer key are provided in Enclosure 6 of this letter, with annotations. All substantive comments made by the applicants following the written examination are included with Enclosure 2. Lastly, the original ES-201-3 forms, "Examination Security Agreement," with all the pre- and post-examination signatures will be provided via email, as previously discussed with the NRC chief examiner on December 7, 2016.

This document contains no regulatory commitments.

Enclosures Contain Operator Examination Material
Withhold from public disclosure until
completion of examination

Please refer any questions regarding this submittal to Mr. Lee Grzeck, Manager – Regulatory Affairs, at (910) 457-2487.

Sincerely,

William R. Gideon

WRG/mkb

Enclosures:

1. ES-403-1, "Written Examination Grading Quality Checklist"
2. Written Examination Performance Analysis Results (with recommended substantive changes)
3. Graded Written Examinations and Applicants' Answer Sheets
4. Applicants' Questions Asked and Answers Given During the Written Examination
5. Written Examination Seating Chart
6. Master Examination and Answer Key
7. ES-201-3, "Examination Security Agreement"

cc (with enclosures):

U.S. Nuclear Regulatory Commission, Region II
ATTN: Mr. David R. Lanyi, Chief Examiner
245 Peachtree Center Ave, NE, Suite 1200
Atlanta, GA 30303-1257

cc (without enclosures):

U.S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

U.S. Nuclear Regulatory Commission, Region II
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