Facility: McGuire Nuclear Station Date of Examination: 04/27/15

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

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

-WRITTEN EXAM SAMPLE PLAN ONLY-

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

Facility: McGuire Date of Examination: April 2015

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

	Printed Name/Signature	Date
a. Author	MICHAEL MEEKS / [signature]	09/11/2014
b. Facility Reviewer (*)	N/A	N/A
c. NRC Chief Examiner (#)	Daniel M. Bacon / [signature]	09/12/2014
d. NRC Supervisor	Eugene Guthrie / [signature]	9/12/14

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

Facility:	McGuire	Date of Examination:	4/2015		
Item	Task Description		Initials a	b*	c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.		SLM	N/A	CB
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all K/A categories are appropriately sampled.		SLM	N/A	CB
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.		SLM	N/A	CB
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.		SLM	N/A	CB
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.		SLM	✓	CB
	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 scenarios will not be repeated on subsequent days.		SLM	✓	CB
	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.		SLM	✓	CB
3. W/T	a. Verify that 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 alternate path, low-power, emergency and RCA tasks meet the criteria on the form.		SLM	✓	CB
	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		SLM	✓	CB
	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.		SLM	✓	CB
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.		SLM	✓	CB
	b. Assess whether the 10CFR 55.41/43 and 55.45 sampling is appropriate.		SLM	✓	CB
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.		SLM	✓	CB
	d. Check for duplication and overlap among exam sections.		SLM	✓	CB
	e. Check the entire exam for balance of coverage.		SLM	✓	CB
	f. Assess whether the exam fits the appropriate job level (RO or SRO).		SLM	✓	CB

		Printed Name / Signature	Date
a.	Author	Steven L. Mosteller / NRC Exam Author David Lazarony/Essential Training & Consulting, LLC	4/1/15 4/9/15
b.	Facility Reviewer (*)	Wiley Killette /	4/10/15
c.	NRC Chief Examiner (#)	Daniel M. Bacon / Daniel M Bacon	4/17/15
d.	NRC Supervisor	Eugene Guthrie / E Guthrie	4/23/15

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

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 04/27/2015 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.	Clark Fletcher	MNS Exam Team	H. Clark Fletcher	08/19/14	H. Clark Fletcher	05/07/15	
2.	Steven Mosteller	MNS Exam Team	Steven J. Mosteller	08/19/14	Steven J. Mosteller	05/07/15	
3.	Wiley Killette	MNS Exam Team	W. A. Killette	8/26/14	W. A. Killette	5/7/15	
4.	Aaron Fossing	Fleet NRC Exam Spec		10/30/14	Steven J. Mosteller	5/11/15	(1)
5.	Rusty Miller	Fleet NRC Exam Review		11/3/14	H. Clark Fletcher	5/11/15	(1)
6.	Doug Wakefield	SRO		12/4/14		5/12/15	
7.	Mark Shaft	MNS RO		12-9-14	Steven J. Mosteller	5/26/15	(1)
8.	Reggie Pickens	SRO		12-10-14		5-21-15	
9.	David O'Donnell	SRO		12-11-14	Steven J. Mosteller	5/26/15	(1)
10.	Tim O'Shea	RO		12/11/14		5/29/15	
11.	Will Baker	Sim Support		1/9/15		5/11/15	
12.	Robert C Adams	Sim Spt		1/12/15		5/26/15	
13.	Dennis Taylor	NUC Sim Spot Supervisor		1/12/15		5/11/15	
14.	Suthash Kumar	IT Prod Nuclear		1/12/15		5/11/15	
15.	John H. Sadler	Sim Support	John H. Sadler	01/12/2015	John H. Sadler	05/11/2015	

NOTES:

(1) Via phone. SLM Steven J. Mosteller

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 04/27/2015 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.	Cliff Witherspoon	Exam Author		1-13-15		5/11/15	(1)
2.	SAM LARK	EXAM AUTHOR		1-13-15		5/11/15	(1)
3.	Michael Darrell	RO Exam Validate		1-13-15		5-7-15	
4.	Tom Bernard	SRO EXAM VALIDATE		1-13-15		5-26-15	
5.	DAN SHOOK	RO Exam Validate		1-15-15		5/20/15	(1)
6.	SCOTT FENTIN	SRO EXAM VALIDATE		1-27-15		5/20/15	(1)
7.	RYAN SEVERNS	SRO EXAM VALIDATE		1-30-15		5/19/15	
8.	Steve Deis	RO Exam Validate		1-30-15		5-19-15	
9.	Stephen Gibson	Instructor		2-2-15		5/11/15	
10.	Ryan Ancens	Instructor		2/2/15		5/12/15	
11.	BRIAN JETTON	SRO		2/5/15		5/21/15	
12.	MICHAEL G. JOHNSON II	RO		2/11/15		5/21/15	
13.	John Bansse	RO Exam Validate		2/11/15		5/21/15	
14.	Stephen McKee	RO Exam Validator		2/20/15		5/20/15	(1)
15.	BRAD PRESSWOOD	RO Exam Validator		2-20-15		5-20-15	

NOTES:

(1) - via phone. SLM & MCB

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 04/27/2015 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.	Otto Jakubowicz	RO		3/30/15		5-21-15	
2.	Thad Reames	SRO	Thad C. Reames	3-30-15		5-7-15	
3.	~~MASTER SIGNER~~	~~ADM~~		3-27-15			
4.	Vickie McGinnis	Adm Spec.		3/30/15		5/11/15	
5.	GARY GRAHAM	LOR Supvr		4/1/15		5/12/15	
6.	RYAN WITHNANT	SRO		4-15-15		5-20-15	
7.	ED WORKMAN	IT		4-16-15		5/11/15	(1)
8.	BRENT BARE	SRO		4-17-15		5/12/15	
9.	Mike Weiner	OPS Prod.	per telcon	4/22/15		5/11/15	(1)
10.	Van Ford	OTM		4/23/15		5-7-15	
11.	Scott Moser	OPS Assistant Mgr		4-27-15		5-12-15	
12.	JASON MCALLISTER	INST.		4-27-15		5/19/15	(1)
13.	STEVEN HELMS	ILT SUPER		4-27-15		05-07-15	
14.	ROBBY POPE	ADM - TRAINING		4-27-15		5-8-15	
15.	Casey Davis	Adm Spec		4/27/15		5-8-15	

NOTES:

(1) via phone. SM

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 4/27 : 5/4/15 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 Lazarony	Exam Author		10/30/14		5/19/15	(1)
2.	Robin J. Bell	Instructor		4.27.15		5-19-15	
3.	Tracy Rhodes	OG OPS Support		4/27/15		5/18/15	
4.	Jim Dain	AOM Online		4/27/15		5/11/15	
5.	D Connell	AOM - Shift		4/29/15		4/14/15	
6.	Scott Nordland	Instructor		4/30/15		5/19/15	(1)
7.	Chris Paulsen	Instructor		4/30/15		5/4/15	
8.	Larry Sarratt	Instructor		4/29/15			
9.							
10.							
11.							
12.							
13.							
14.							
15.							

NOTES: (1) via phone - for

Facility: McGuire		Date of Examination:	4/2015
Examination Level:	RO	Operating Test Number:	N15-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	M, R	2.1.37 (4.3)	Knowledge of procedures, guidelines or limitations associated with reactivity management
		JPM:	Perform an Estimated Critical Boron Concentration
Conduct of Operations	M, R	2.1.25 (3.9)	Ability to interpret reference materials, such as graphs, curves, tables, etc.
		JPM:	Perform a Manual NC Leakage Calculation
Equipment Control	D, P, R	2.2.43 (3.0)	Knowledge of process used to track inoperable alarms.
		JPM:	Partial Loss of Annunciators
Radiation Control	M, R	2.3.7 (3.5)	Ability to comply with radiation work permit requirements during normal or abnormal conditions.
		JPM:	Evaluate Stay Time with Lowered SFP Level

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

*Type Codes & Criteria:

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

RO Admin JPM Summary

A1a This is a modified Bank JPM. The operator will be told that a Unit 1 startup in progress per OP/1/A/6100/001 (Controlling Procedure for Unit Startup), that all steps are complete up to determining the desired estimated critical rod height, and that the performance of the estimated critical rod height determination has resulted in the need to perform Enclosure 4.1 (Estimated Critical Boron Concentration) of OP/0/A/6100/006 (Reactivity Balance Calculation). The operator will be provided with an initial set of plant /reactor conditions; and directed to perform an Estimated Critical Boron Concentration per Enclosure 4.1 of OP/0/A/6100/006 (Reactivity Balance Calculation). The operator will be expected to determine that the Measured Critical Boron is 1810.5 PPM±1% (See provided KEY).

A1b This is a modified Bank JPM. The operator will be told that Unit 1 is at 100% power, the Unit 1 OAC point M1L4554 is out of service, and that PT/1/A/4200/040 (Reactor Coolant Leakage Detection) has been completed showing that NCS Leakage is 1.6 gpm. The operator will be given Enclosure 13.2 (NC Leakage Determination Using Manual Calculations) of PT/1/A/4150/001B (Reactor Coolant Leakage Calculation) with the necessary raw data compiled on a Data Sheet; and directed to complete the calculations within the Enclosure. The operator will be expected to complete all calculations in accordance with the provided KEY, and identify that the Unidentified RCS Leakage Technical Specification has been exceeded.

A2 This is a Bank JPM. The operator will be told that while Unit 1 was operating at 100% power, a lightning strike caused several of the Unit 1 Control Room Annunciators to fail requiring entry into PT/1/A4600/033 (Loss of Control Room Annunciators). The operator will be provided with a list of failed annunciators; and directed to continue with Enclosure 13.2 (Partial Loss of Annunciator Panels), and identify the affected Annunciators, if any, that have an Alternate Method for Surveillance that are applicable. The operator will be expected to determine that 11% of the Annunciators have failed in accordance with the provided Key, and identify five (5) specific annunciators that have an identified Alternative Method for Surveillance. This JPM was randomly selected from among the JPMs on the previous two NRC exams. It appeared on the 2013 NRC Exam.

A3 This is a modified Bank JPM. The operator will be told that a station wide accident has occurred due to an Earthquake, that Unit 1 is Mode 6 with a full core off-load, that the Unit 1 Spent Fuel Pool level has lowered to 12.5 feet above the top of the fuel, and has stabilized at this level, and that the crew is implementing AP/1/A/5500/41 (Loss of Spent Fuel Cooling or Level) and EP/1/A/5000/G-1 Generic Enclosures), Enclosure 32 (Monitoring Unit 1 SFP Level and Temperature). They will also be told that there are no installed radiation monitors are operable in the Spent Fuel Building, that an RWP limit of 25 mrem has been placed on all personnel performing emergency tasks within the building, and that the operator has been assigned a repetitive task within Generic Enclosure 32 which will require them to enter the Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 3 minutes, before exiting the building. The operator will be directed to use Enclosure 13 (Spent Fuel Pool Radiation Level Vs. Water Level Above Fuel) of AP/1/A/5500/41 (Loss of Spent Fuel Cooling or Level), and determine the number of times they will be able to perform this repetitive task before they must be replaced by another operator. The operator will be expected to use Enclosure 13 of AP/1/A/5500/41 to determine that the dose rate around the Spent Fuel Pool area is 25.2

mrem/hour and based on this the operator will determine that the repetitive task can be performed 19 times before another operator will need to perform the task. This JPM is identical to the N15 A3 SRO JPM.

Facility: McGuire		Date of Examination:	4/2015
Examination Level:	SRO	Operating Test Number:	N15-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	D, P, R	2.1.37 (4.6)	Knowledge of procedures, guidelines or limitations associated with reactivity management
		JPM:	Perform an ECP
Conduct of Operations	M, R	2.1.25 (4.2)	Ability to interpret reference materials, such as graphs, curves, tables, etc.
		JPM:	Perform/Review a Manual NC Leakage Calculation
Equipment Control	M, R	2.2.18 (3.9)	Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.
		JPM:	Perform a Thermal Margin Determination
Radiation Control	M, R	2.3.7 (3.6)	Ability to comply with radiation work permit requirements during normal or abnormal conditions.
		JPM:	Evaluate Stay Time with Lowered SFP Level
Emergency Procedures/Plan	N, R	2.4.44 (4.4)	Knowledge of emergency plan protective action recommendations.
		JPM:	Provide an updated PAR

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

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

SRO Admin JPM Summary

A1a This is a Bank JPM. The operator will be told that Reactor Startup is an hour away, and provided with a set of initial conditions. The operator will be asked to perform an Estimated Critical Position (ECP) in accordance with OP/0/A/6100/06, "Reactivity Balance Calculation," Enclosure 4.2, "Estimated Critical Rod Position." During the course of the ECP, the operator will be given a set of power history conditions, and asked to perform a Shutdown Fission Product Correction calculation in accordance with OP/0/A/6100/06, "Reactivity Balance Calculation," Enclosure 4.8, "Shutdown Fission Product Correction Calculation," in support of the ECP. The operator will be expected to calculate the Estimated Critical Rod Position Bank for No and Peak Xenon at time of Criticality per the provided KEY. This JPM was randomly selected from among the JPMs on the previous two NRC exams. It appeared on the 2013 NRC Exam.

A1b This is a modified Bank JPM. The operator will be told that Unit 1 is at 100% power, the Unit 1 OAC point M1L4554 is out of service, and that PT/1/A/4200/040 (Reactor Coolant Leakage Detection) has been completed showing that NCS Leakage is 1.6 gpm. The operator will be given Enclosure 13.2 (NC Leakage Determination Using Manual Calculations) of PT/1/A/4150/001B (Reactor Coolant Leakage Calculation) with the necessary raw data compiled on a Data Sheet; and directed to complete the calculations within the Enclosure. The operator will be expected to complete all calculations in accordance with the provided Key, identify any Technical Specification Limits that have been exceeded, and identify with all Technical Specification ACTION.

A2 This is a modified Bank JPM. The operator will be told that Unit 1 was shutdown 13 days ago for a mid-cycle outage after 200 days of operation, that Unit 1 is currently in Mode 5 with the NC system is 125°F and "A" Train ND in service; and that preparations are being made to lower NC system level to 67 inches above Hot Leg Centerline per Enclosure 4.1 (Draining the NC System) of OP/1/A/6100/SD-20 (Draining the NC System). The operator will be directed to complete Attachment 12.6 of OMP 5-8 (Shift Supervision Turnovers) to determine the new thermal margin with NC system level at 67 inches above Hot Leg Centerline and make the appropriate notifications (Complete all paperwork). The operator will be expected to complete Attachment 12.6 (Thermal Margin Determination) of OMP 5-8 (Shift Supervision Turnovers) with a new thermal margin calculated and documented on Attachment 12.7 (Shutdown Assessment Status) in accordance with the provided KEY.

A3 This is a modified Bank JPM. The operator will be told that a station wide accident has occurred due to an Earthquake, that Unit 1 is Mode 6 with a full core off-load, that the Unit 1 Spent Fuel Pool level has lowered to 12.5 feet above the top of the fuel, and has stabilized at this level, and that the crew is implementing AP/1/A/5500/41 (Loss of Spent Fuel Cooling or Level) and EP/1/A/5000/G-1 Generic Enclosures), Enclosure 32 (Monitoring Unit 1 SFP Level and Temperature). They will also be told that there are no installed radiation monitors are operable in the Spent Fuel Building, that an RWP limit of 25 mrem has been placed on all personnel performing emergency tasks within the building, and that the operator has been assigned a repetitive task within Generic Enclosure 32 which will require them to enter the Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 3 minutes, before exiting the building. The operator will be directed to use Enclosure 13 (Spent Fuel Pool Radiation Level Vs. Water Level Above Fuel) of AP/1/A/5500/41 (Loss of Spent Fuel Cooling or Level), and determine the number of times they will be able to perform this repetitive task before they

must be replaced by another operator. The operator will be expected to use Enclosure 13 of AP/1/A/5500/41 to determine that the dose rate around the Spent Fuel Pool area is 25.2 mrem/hour and based on this the operator will determine that the repetitive task can be performed 19 times before another operator will need to perform the task. This JPM is identical to the N15 A3 RO JPM.

A4 This is a new JPM. The operator will be placed in a post-accident condition with a Large Break LOCA with a release from the Containment. The operator will be told that a General Emergency has been declared, and provided with the initial Protective Action Recommendation (PAR). The operator will be given a subsequent set of plant conditions and meteorological data, and asked to provide an updated PAR in accordance with Enclosure 4.4 (Offsite Protective Recommendations) of RP/0/B/5700/029 (Notifications to Offsite Agencies from the Control Room), and then to complete the Emergency Power Plant Emergency Notification Form. The operator will be expected to determine the PAR for the current conditions and complete the Emergency Power Plant Emergency Notification Form as reflected on the provided KEY within 15 minutes.

Facility:	McGuire	Date of Examination:	4/2015
Exam Level (circle one):	*RO (only)* / SRO(I) **/ SRO (U)**	Operating Test No.:	N15-1

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

	System / JPM Title	Type Code*	Safety Function
A.	**061 Auxiliary/Emergency Feedwater System [061 A2.04 (3.4/3.8)]** **Operate the Turbine Driven CA Pump from the Control Room**	**S, D, A, EN**	**4S**
B.	**010 Pressurizer Pressure Control System [010 A4.03 (4.0/3.8)]** **Place LTOP in Service and Respond to a Failed PORV**	**S, N, A, L**	**3**
C.	EPE 074 Inadequate Core Cooling [074 EA1.01 (3.7/3.8)] Align Alternate Makeup During Inadequate Core Cooling Conditions	S, N	4P
D.	013 ESF Actuation System [013 A4.01 (4.5/4.8)] Respond to Failed ESF Actuation	S, P, D, A	2
E.	**APE 003 Dropped Rod [APE 003 AA1.02 (3.6/3.4)]** **Retrieve a Dropped Control Rod**	**S, M, A**	**1**
F.	APE 026 Loss of Component Cooling Water [026 AA1.02 (3.2/3.3)] Respond to High VCT Temperature	S, D, A	8
G.	073 Process Radiation Monitoring System [073 A4.02 (3.7/3.7)] Respond to the 1EMF-35 Trip 2 Alarm	S, M	7
H.	*APE 056 Loss of Off-Site Power [056 AA1.02 (4.0/3.9)]* *Restore Normal Power to 1ETB and Unload the 1B EDG*	*S, D*	*6*

In-Plant Systems[@] (3 for RO; 3 for SRO-I; 3 or 2 for **SRO-U**)

I.	**APE 069 Loss of Containment Integrity [069 AA1.03 (2.8/3.0)]** **Start the Hydrogen Analyzers**	**D, P, R, E**	**5**
J.	**EPE 055 Station Blackout [055 EA2.04 (3.7/4.1)]** **Transfer of 1EMXA4 To SSF During A Loss Of All AC on Unit 1**	**M, R, E**	**6**
K.	EPE E05 Loss of Secondary Heat Sink [E05 EA1.1 (4.1/4.0)] Manually Fail Open 2SA-48ABC and 2SA-49AB	D, E	4S

@	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.
* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 (5) /4-6 (5) / 2-3 (3)
(C)ontrol room	
(D)irect from bank	≤ 9 (6) /≤ 8 (5) / ≤ 4 (2)
(E)mergency or abnormal in-plant	≥ 1 (3) /≥ 1 (3) / ≥ 1 (2)
(EN)gineered Safety Feature	- / - / ≥ 1 (1) (Control Room System)
(L)ow-Power / Shutdown	≥ 1 (1) /≥ 1 (1) / ≥ 1 (1)
(N)ew or (M)odified from bank including 1(A)	≥ 2 (5) / ≥ 2 (5) / ≥ 1 (3)
(P)revious 2 exams	≤ 3 (2) / ≤ 3 (2)/ ≤ 2 (1) (Randomly Selected)
(R)CA	≥ 1 (2)/≥ 1 (2) / ≥ 1 (2)
(S)imulator	

JPM Summary

JPM A This is a Bank JPM. The operator will be told that Unit 1 is operating at 98% power, that Maintenance has requested Operations to run the TD CA Pump to allow them to check vibration for pump retest, and that a normal start of the TD CA Pump is desired. The operator will be directed to run the TD CA Pump per OP/1/A/6250/002 Enclosure 4.4 (Manual Operation of #1 TD CA Pump) from the Control Room to support Maintenance. During the pump run a bearing failure will occur **(Alternate Path)**. The operator will be expected to start the #1 TD CA Pump in recirc from the Control Room and then diagnose a bearing failure has occurred, and stop the pump immediately.

JPM B This is a new JPM. The operator will be told that Unit 1 is in a cooldown and depressurization in accordance with OP/1/A/6100/SD-4, (Cooldown to 240 Degrees F), that the 1B, 1C and 1D NCPs are operating, and that conditions have been established for placing LTOPs in service. The operator will be directed to place the LTOP System in operation beginning with Step 3.13.2 - of Enclosure 4.1 of OP/1/A/6100/SO-10 (Controlling Procedure for LTOP Operation) and monitor for proper operation. The operator will be expected to place LTOP in service by first placing 1NC-32B in service per procedure; and then respond to a failed open Pzr PORV (1NC-34A) by closing the failed open Pzr PORV Block Valve **(Alternate Path)**.

JPM C This is a new JPM. The operator will be told that Unit 1 has had a LOCA, that all NV, NI and ND Pumps are either OOS, unavailable or have failed, that a Red Path exists on Core Cooling and that the crew has entered EP/1/A/5000/FR-C.1, Response to Inadequate Core Cooling; and that they are an available operator in the Control Room. The operator will be directed to try to establish flow from all available sources per Enclosure 3 (Alternate Makeup Sources) of FR-C.1, while the crew continues in the body of the procedure. The operator will be expected to perform Enclosure 3 of FR-C.1 and coordinate with the AO to start the Standby Makeup Pump; and then start the PD Pump in accordance with Generic Enclosure 17.

JPM D This is a Bank JPM. The operator will be told that Unit 1 has experienced an ATWS and an inadvertent Train A Safety Injection actuation, and that the crew is presently performing EP/1/A/5000/FR-S.1 (Response to Nuclear Power Generation/ATWS). The operator will

be directed to perform Enclosure 3 (Subsequent S/I Actions) of EP/1/A/5000/FR-S.1 (Response to Nuclear Power Generation/ATWS), while the crew continues with the actions of EP/1/A/5000/FR-S.1. The operator will be required to manually actuate the B Train of SI which is expected to start the 1B RN Pump, the operator will observe that the 1B RN Pump has tripped **(Alternate Path)**. The operator will be expected to complete the required actions of Enclosure 3 including manually actuating the Train B of SI and Phase A CIS, reset the Train B SIS and Sequencer and dispatch an operator to stop the B Diesel Generator using the Emergency Stop Pushbutton. This was previously used on the 2013 NRC Exam, randomly selected for use on the 2015 Exam.

JPM E This is a modified Bank JPM. The operator will be told that Unit 1 is operating at 30% power with $T_{Avg} = T_{REF}$, that Control Rod H-8 in "D" Control Bank has dropped to the bottom of the core, that AP/1/A/5500/14 (Rod Control Malfunction) has been implemented and completed through step 17 of Enclosure 1 (Response to a Dropped Control Rod), and that IAE has repaired the cause of the dropped rod and has determined that rod realignment is permissible. The operator will be directed to complete Enclosure 1 of AP/1/A/5500/14 (Rod Control Malfunction), beginning at step 26, and recover the dropped rod. The operator will be expected to start to recover Control Rod H-8 such that when the operator is withdrawing Control Rod H-8, it is the only Control Rod in Bank D moving, and approaching indicated Control Bank D position; and then manually trip the reactor **(Alternate Path)** when a second dropped rod occurs.

JPM F This is a Bank JPM. The operator will told that Unit 1 was at 100% power when a leak developed in the KC System, that the crew entered AP/1/A/5500/21 (Loss of KC or KC System Leakage) and has completed the actions through Step 12. They will be told that MCB Annunciator 1AD-7, D1, VCT HI TEMP, has just alarmed, making Foldout Page item #5 applicable. The operator will be directed to perform the actions of Enclosure 4.6 of AP/1/A/5500/21 (Loss of KC or KC System Leakage), while the crew continues with the AOP. The operator will be expected to isolate Letdown, and attempt to start the PD Pump. When the PD Pump fails to start **(Alternate Path)**, and the operator will ultimately align the suction of the NV Pumps to the FWST

JPM G This is a modified Bank JPM. The operator will be told that Unit 1 is at 100% power. The operator will be directed to respond to plant conditions. Shortly after the JPM is initiated MCB Annunciator 1RAD2 A1, 1EMF-35 UNIT VENT PART HI RAD, will alarm. The operator will be expected to respond to MCB Annunciator 1RAD-2, A-1, using the Annunciator Response Procedure and place the Aux Building Filtered Exhaust System in operation and the Train B Outside Air Pressure Filter Train in service (The Outside Air Pressure Filter Train will be initially aligned with each of the Outside Air Intake Valves CLOSED).

JPM H This is a Bank JPM. The operator will be placed in a situation with both Unit 1 and Unit 2 involved in a Loss of Offsite Power. The operator will be told that both the 1A and 1B, as well as the 2A and 2B Diesel Generators automatically started and re-powered their respective essential busses. With the Off-Site power now restored, the operator will be directed to restore 1ETB to normal power and unload the D/G from the Control Room per OP/1/A/6350/002 (Diesel Generator), Enclosure 4.4 (1B D/G Shutdown). While 1ETB is being powered by the 1B D/G, the operator will be expected to parallel 1ETB, with 1ATD, and then unload the DG.

JPM I This is Bank JPM. The operator will be told that Unit 1 has tripped from 100% power due to an accident, that the crew is currently in EP/1/A/5000/FR-Z.1 (Response to High Containment Pressure), and that the crew is currently checking Containment Hydrogen Concentration. The operator will be directed to place the Hydrogen Analyzers in service in accordance with Enclosure 5 (Placing H_2 Analyzers In Service) of EP/1/A/5000/G-1 (Generic Enclosures). The operator will be expected to place the 1A Hydrogen Analyzer in service. This was previously used on the 2013 NRC Exam, randomly selected for use on the 2015 Exam.

JPM J This is a modified Bank JPM. The operator will be told that a Station Blackout has occurred at Unit 1, that the crew is currently in EP/1/A/5000/ECA-0.0 (Loss of All AC Power), and that the CRS has dispatched an operator to the SSF to complete Enclosure 2 (Unit 1 SSF ECA-0.0 Actions). The operator will be directed to perform Enclosure 3 (Unit 1 ETA and ETB Rooms - ECA-0.0 Actions). The operator will be expected to transfer 1EXMA-4 to its alternate power supply within 4 minutes from dispatch (Start of the JPM), and identify that the 1ETA-2 Lockout Relay has tripped.

JPM K This is a Bank JPM. The operator will be told that Unit 2 was at 100% power when a spurious Feedwater Isolation signal caused a Reactor trip, that the 2A CA pump is tagged out for motor replacement, that the 2B CA pump started and tripped on overload, that the crew has transitioned from EP/2/A/5000/E-0 to EP/2/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink), that the TDCA Pump is not running, and that both 2SA-48ABC and 2SA-49AB are closed. The operator will be directed to fail the air supplies to 2SA-48ABC and 2SA-49AB per EP/2/A/5000/FR-H.1, RNO's 7.d.1 and 7.d.2. The operator will be expected to fail the air supplies to 2SA-48ABC and 2SA-49AB per EP/2/A/5000/FR-H.1, RNO's 7.d.1 and 7.d.2.

Facility: McGuire	Date of Examination: 4/2015	Operating Test Number: N15-1

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

	Printed Name / Signature	Date
a. Author	Steven L. Mosteller / NRC Exam Author David Lazarony, Essential Training & Consulting, LLC	4/10/15 4/9/15
b. Facility Reviewer (*)	Wiley Killette	4/10/15
c. NRC Chief Examiner (#)	Daniel M. Bacon	4/17/15
d. NRC Supervisor	Eugene Guthrie	4/28/15

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

Facility: McGuire	Date of Exam: 4/2015	Scenario Numbers: 1, 2, 3	Operating Test No.: N15-1

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

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

Facility: McGuire	Date of Exam: 4/2015	Scenario Numbers: 4, 5	Operating Test No.: N15-1

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

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

Facility: McGuire		Date of Exam: 4/2015												Operating Test No.: N15-1			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		N015-1-5			N015-1-2			N15-1-3			N15-1-4 (Spare)						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
SROU-1	RX													0	1	1	0
	NOR	4			1									2	1	1	1
	I/C	1, 2, 3, 5, 9			2, 3, 4, 5, 7									10	4	4	2
	MAJ	6			6									2	2	2	1
	TS	1, 3			3, 4									4	0	2	2
SROU-2	RX													0	1	1	0
	NOR	4						1						2	1	1	1
	I/C	1, 2, 3, 5, 9						2, 3, 4, 5, 6, 8						11	4	4	2
	MAJ	6						9						2	2	2	1
	TS	1, 3						4, 5						4	0	2	2
SROU-3	RX													0	1	1	0
	NOR				1			1						2	1	1	1
	I/C				2, 3, 4, 5, 7			2, 3, 4, 5, 6, 8						11	4	4	2
	MAJ				6			9						2	2	2	1
	TS				3, 4			4, 5						4	0	2	2
SROI-1	RX								1					1	1	1	0
	NOR	4			1									2	1	1	1
	I/C	1, 2, 3, 5, 9			2, 3, 4, 5, 7				2, 4, 6,					13	4	4	2
	MAJ	6			6				9					3	2	2	1
	TS	1, 3			3, 4									4	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 service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

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

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

Facility: McGuire										Date of Exam: 4/2015						Operating Test No.: N15-1			
APPLICANT	EVENT TYPE	Scenarios																	
		N015-1-5			N015-1-2			N15-1-3			N15-1-4 (Spare)			TOTAL	MINIMUM(*)		
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO-1	RX		4											1	1	1	0
	NOR						1							1	1	1	1
	I/C		2, 5				3, 4, 5, 7							6	4	4	2
	MAJ		6				6							2	2	2	1
	TS													0	0	2	2
RO-2	RX					1								1	1	1	0
	NOR			4										1	1	1	1
	I/C			1, 3, 9		2, 5								5	4	4	2
	MAJ			6		6								2	2	2	1
	TS													0	0	2	2
RO-3	RX		4											1	1	1	0
	NOR									1				1	1	1	1
	I/C		2, 5							3, 7, 8				5	4	4	2
	MAJ		6							9				2	2	2	1
	TS													0	0	2	2
RO-4	RX								1					1	1	1	0
	NOR			4										1	1	1	1
	I/C			1, 3, 9					2, 4, 6,					6	4	4	2
	MAJ			6					9					2	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 service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

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

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

Facility: McGuire								Date of Exam: 4/2015							Operating Test No.: N15-1			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)			
		N015-1-5			N015-1-2			N15-1-3			N15-1-4 (Spare)							
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U	
RO-5	RX		4											1	1	1	0	
	NOR						1							1	1	1	1	
	I/C		2, 5				3, 4, 5, 7							6	4	4	2	
	MAJ		6				6							2	2	2	1	
	TS													0	0	2	2	
RO-6	RX					1								1	1	1	0	
	NOR			4						1				1	1	1	1	
	I/C			1, 3, 9		2, 5				3, 7, 8				8	4	4	2	
	MAJ			6		6				9				3	2	2	1	
	TS													0	0	2	2	
RO-7	RX					1								1	1	1	0	
	NOR									1				1	1	1	1	
	I/C					2, 5				3, 7, 8				5	4	4	2	
	MAJ					6				9				2	2	2	1	
	TS													0	0	2	2	
RO-8	RX								1					1	1	1	0	
	NOR						1							1	1	1	1	
	I/C						3, 4, 5, 7		2, 4, 6,					7	4	4	2	
	MAJ						6		9					2	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 service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

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

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

Facility: McGuire	Date of Examination: 4/2015								Operating Test No.: N15-1			
Competencies	APPLICANTS											
	SRO (U/I)				RO/ATC				BOP			
	SCENARIO				SCENARIO				SCENARIO			
	5	2	3	4	5	2	3	4	5	2	3	4
Interpret/Diagnose Events and Conditions	1-10	1-7	1-9	1-8	1-10	1-7	1-9	1-8	1-10	1-7	1-9	1-8
Comply With and Use Procedures (1)	1-10	1-7	1-9	1-8	1-10	1-7	1-9	1-8	1-10	1-7	1-9	1-8
Operate Control Boards (2)	NA	NA	NA	NA	2,4,5 ,6	1,2,5 ,6,	1,2,4 ,6,9	1,3,6 ,7	1,3,4 ,6,9, 10	1,3,4 ,5,6, 7	1,3,7 ,8,9	1,2,5 ,7,8
Communicate and Interact	1-10	1-7	1-9	1-8	1-10	1-7	1-9	1-8	1-10	1-7	1-9	1-8
Demonstrate Supervisory Ability (3)	1-10	1-7	1-9	1-8	NA	NA	NA	NA	NA	NA	NA	NA
Comply With and Use Tech. Specs. (3)	2,3	3,4	4,5	2,4,5	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(1) Includes Technical Specification compliance for RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Instructions:

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

ES-401 **PWR Examination Outline** **Form ES-401-2**

Facility: MCGUIRE Date of Exam: APRIL 2015

Tier	Group	RO K/A Category Points												SRO-Only Points						
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2		G*		Total		
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A		3	18	3		3		6		
	2	~~1~~ 2	1	~~2~~ 1				2	1			2	9	2		2		4		
	Tier Totals	~~4~~ 5	4	~~5~~ 4				5	4			5	27	5		5		10		
2. Plant Systems	1	~~3~~ 2	2	3	3	~~2~~ 3	2	3	3	3	2	2	28	3		2		5		
	2	1	1	1	1	1	1	1	1	0	1	1	10	0	2	1		3		
	Tier Totals	~~4~~ 3	3	4	4	~~3~~ 4	3	4	4	3	3	3	38	5		3		8		
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7		
		2			2			3			3			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).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/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 other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
007EA1.03	Reactor Trip - Stabilization - Recovery / 1	4.2	4.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	RCS pressure and temperature
008AK2.01	Pressurizer Vapor Space Accident / 3	2.7	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Valves
009EA2.02	Small Break LOCA / 3	3.5	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Possible leak paths
022AA1.07	Loss of Rx Coolant Makeup / 2	2.8	2.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Excess letdown containment isolation valve switches and indicators
025AK2.01	Loss of RHR System / 4	2.9	2.9	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RHR heat exchangers
027AG2.4.46	Pressurizer Pressure Control System Malfunction / 3	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify that the alarms are consistent with the plant conditions.
029EG2.4.21	ATWS / 1	4.0	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the parameters and logic used to assess the status of safety functions
038EK3.01	Steam Gen. Tube Rupture / 3	4.1	4.3	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Equalizing pressure on primary and secondary sides of ruptured S/G
040AK3.04	Steam Line Rupture - Excessive Heat Transfer / 4	4.5	4.7	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in EOPs for steam line rupture
054AA2.03	Loss of Main Feedwater / 4	4.1	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Conditions and reasons for AFW pump startup
055EK1.01	Station Blackout / 6	3.3	3.7	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Effect of battery discharge rates on capacity

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
056AG2.4.47	Loss of Off-site Power / 6	4.2	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.
057AA1.05	Loss of Vital AC Inst. Bus / 6	3.2	3.4	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Backup instrument indications
058AA2.03	Loss of DC Power / 6	3.5	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	DC loads lost; impact on ability to operate and monitor plant systems
077AK1.03	Generator Voltage and Electric Grid Disturbances / 6	3.3	3.4	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Under-excitation
WE04EK3.4	LOCA Outside Containment / 3	3.6	3.8	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.
WE05EK1.3	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.9	4.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Secondary Heat Sink).
WE11EK2.1	Loss of Emergency Coolant Recirc. / 4	3.6	3.9	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

ES-401, REV 9	T1G2 PWR EXAMINATION OUTLINE													FORM ES-401-2
KA	NAME / SAFETY FUNCTION:	IR		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
		RO	SRO												
005AA1.01	Inoperable/Stuck Control Rod / 1	3.6	3.4	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	CRDS
028AK3.03	Pressurizer Level Malfunction / 2	3.5	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	False indication of PZR level when PORV or spray valve is open and RCS saturated
032AG2.2.36	Loss of Source Range NI / 7	3.1	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions of operations
033~~AK1.01~~ AK3.01	Loss of Intermediate Range NI / 7	~~2.7~~ 3.2	~~3~~ 3.6	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	~~Effects of voltage changes on performance~~ Termination of startup following loss of intermediate range instrumentation
060AA1.01	Accidental Gaseous Radwaste Rel. / 9	2.8	3	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Area radiation monitors
067~~AA2.10~~ AA2.03	Plant Fire On-site / 8	~~2.9~~ 3.3	~~3.6~~ 3.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	~~Time limit of long term breathing air system for control room~~ Fire alarm
076AG2.4.50	High Reactor Coolant Activity / 9	4.2	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
WE08EK1.1	RCS Overcooling - PTS / 4	3.5	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components, capacity, and function of emergency systems.
WE10EK2.1	Natural Circ. With Seam Void/ 4	3.3	3.5	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003K4.04	Reactor Coolant Pump	2.8	3.1	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Adequate cooling of RCP motor and seals
003K6.14	Reactor Coolant Pump	2.6	2.9	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Starting requirements
004A1.09	Chemical and Volume Control	3.6	3.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	RCS pressure and temperature
005A2.02	Residual Heat Removal	3.5	3.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Pressure transient protection during cold shutdown
005K5.02	Residual Heat Removal	3.4	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Need for adequate subcooling
006A4.08	Emergency Core Cooling	4.2	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	ESF system, including reset
006K5.04	Emergency Core Cooling	2.9	3.1	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Brittle fracture, including causes and preventative actions
007~~K5.02~~ K1.03	Pressurizer Relief/Quench Tank	~~3.1~~ 3.0	~~3.4~~ 3.2	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	~~Method of forming a steam bubble in the PZR~~ RCS
008~~A1.03~~ A1.01	Component Cooling Water	~~2.7~~ 2.8	~~2.8~~ 2.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	CCW ~~pressure~~ flow rate
010A4.02	Pressurizer Pressure Control	3.6	3.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	PZR heaters
012K2.01	Reactor Protection	3.3	3.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RPS channels, components and interconnections

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
013K3.03	Engineered Safety Features Actuation	4.3	4.7	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Containment
022A3.01	Containment Cooling	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Initia tion of safeguards mode of operation
025A2.02	Ice Condenser	2.7	2.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	High/low floor cooling temperature
026K1.01	Containment Spray	4.2	4.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	ECCS
039K4.06	Main and Reheat Steam	3.3	3.6	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Prevent reverse steam flow on steam line break
059K3.04	Main Feedwater	3.6	3.8	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	RCS
061K6.01	Auxiliary/Emergency Feedwater	2.5	2.8	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Controllers and positioners
062A1.01	AC Electrical Distribution	3.4	3.8	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Significance of D/G load limits
062K3.01	AC Electrical Distribution	3.5	3.9	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Major system loads
063~~G2.4.34~~ G2.4.11	DC Electrical Distribution	4.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	~~Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects~~ Knowledge of abnormal condition procedures
064A3.07	Emergency Diesel Generator	3.6	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Load sequencing

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
064K1.02	Emergency Diesel Generator	3.1	3.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	D/G cooling water system
073A2.02	Process Radiation Monitoring	2.7	3.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Detector failure
076K2.01	Service Water	2.7	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Service water
078G2.1.30	Instrument Air	4.4	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate and operate components, including local controls.
078K4.01	Instrument Air	2.7	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Manual/automatic transfers of control
103A3.01	Containment	3.9	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Containment isolation

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001~~K6.09~~ K6.11	Control Rod Drive	2.9	3.2	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	~~Purpose and position switch of alarm for high flux at shutdown~~ Location and operation of CRDS fault detection (trouble alarms) and reset system, including rod control annunciator
002K4.07	Reactor Coolant	3.1	3.5	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Contraction and expansion during heatup and cooldown
011K2.02	Pressurizer Level Control	3.1	3.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	PZR heaters
014K5.01	Rod Position Indication	2.7	3.0	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Reasons for differences between RPIS and step counter
017A1.01	In-core Temperature Monitor	3.7	3.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Core exit temperature
027A4.04	Containment Iodine Removal	2.8	2.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Filter temperature
029G2.1.31	Containment Purge	4.6	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup.
033K3.02	Spent Fuel Pool Cooling	2.8	3.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Area and ventilation radiation monitoring systems
035A2.05	Steam Generator	3.2	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Unbalanced flows to the S/Gs
068K1.07	Liquid Radwaste	2.7	2.9	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Sources of liquid wastes for LRS

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.37	Conduct of operations	4.3	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of procedures, guidelines or limitations associated with reactivity management
G2.1.42	Conduct of operations	2.5	3.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of new and spent fuel movement procedures
G2.2.39	Equipment Control	3.9	4.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of less than one hour technical specification action statements for systems.
G2.2.4	Equipment Control	3.6	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.
G2.3.14	Radiation Control	3.4	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities
G2.3.15	Radiation Control	2.9	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation monitoring systems
G2.3.4	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiation exposure limits under normal and emergency conditions
G2.4.19	Emergency Procedures/Plans	3.4	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of EOP layout, symbols and icons.
G2.4.26	Emergency Procedures/Plans	3.1	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage.
G2.4.39	Emergency Procedures/Plans	3.9	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the RO's responsibilities in emergency plan implementation.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
007EG2.4.20	Reactor Trip - Stabilization - Recovery / 1	3.8	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of operational implications of EOP warnings, cautions and notes.
009EG2.1.7	Small Break LOCA / 3	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.
011EG2.4.21	Large Break LOCA / 3	4.0	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the parameters and logic used to assess the status of safety functions
026AA2.06	Loss of Component Cooling Water / 8	2.8	3.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	The length of time after the loss of CCW flow to a component before that component may be damaged
056AA2.73	Loss of Off-site Power / 6	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	PZR heater on/off
062AA2.04	Loss of Nuclear Svc Water / 4	2.5	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	The normal values and upper limits for the temperatures of the components cooled by SWS

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003AA2.03	Dropped Control Rod / 1	3.6	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Dropped rod, using in-core/ex-core instrumentation in-core or loop temperature measurements
036AG2.2.37	Fuel Handling Accident / 8	3.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to determine operability and/or availability of safety related equipment
037~~AA2.09~~ AA2.14	Steam Generator Tube Leak / 3	~~3.8~~ 4.0	~~3.10~~ 4.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	~~System status, using independent readings from redundant Condensate air ejector exhaust monitor~~ Actions to be taken if S/G goes solid and water enters steam lines
067AG2.1.23	Plant Fire On-site / 8	4.3	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform specific system and integrated plant procedures during all modes of plant operation.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
006G2.4.9	Emergency Core Cooling	3.8	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.
022G2.4.35	Containment Cooling	3.8	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects
059A2.01	Main Feedwater	3.4	3.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Feedwater actuation of AFW system
064A2.02	Emergency Diesel Generator	2.7	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Load, VARS, pressure on air compressor, speed droop, frequency, voltage, fuel oil level temperatures
073A2.01	Process Radiation Monitoring	2.5	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Erratic or failed power supply

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001~~A2.08~~ A2.01	Control Rod Drive	~~2.9~~ 3.1	~~3.6~~ 3.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loss of CCW ~~to CRDS~~ or fan cooling
072A2.02	Area Radiation Monitoring	2.8	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Detector failure
086~~G2.4.30~~ G2.4.41	Fire Protection	2.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	~~Knowledge of events related to system operations/status that must be reported to internal orginizations or outside agencies.~~ Knowledge of the emergency action level thresholds and classifications

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.13	Conduct of operations	2.5	3.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of facility requirements for controlling vital / controlled access.
G2.1.42	Conduct of operations	2.5	3.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of new and spent fuel movement procedures
G2.2.12	Equipment Control	3.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of surveillance procedures.
G2.2.44	Equipment Control	4.2	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	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
G2.3.6	Radiation Control	2.0	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to aprove release permits
G2.4.28	Emergency Procedures/Plans	3.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of procedures relating to emergency response to sabotage.
G2.4.50	Emergency Procedures/Plans	4.2	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Tier / Group	Randomly Selected KA	Reason for Rejection
2 / 1	SYS007 K5.02	Q(8) K/A rejected due to inability to write discriminating, operationally valid question. New K/A SYS007 K1.03 randomly selected by Chief Examiner. HCF 04-10-15
2 / 1	SYS008 A1.03	Q(9) K/A Rejected due to inability to write an operationally valid question for MNS. Chief Examiner randomly selected new K/A SYS008 A1.01. HCF 04-10-15
2 / 1	SYS063 2.4.34	Q(21) K/A rejected due to ROs not having any related actions. New K/A (SYS063 G2.4.11) randomly selected by Chief Examiner. HCF 10/15/14
2 / 2	SYS001 K6.08	Q(29) K/A rejected because not related to CRDS at MNS. New K/A (SYS001 K6.11) randomly selected by Chief Examiner. HCF 10/15/14
1 / 2	APE033 AK1.01	Q(60) K/A rejected due to it not being applicable to new NIs. New K/A (APE033 AK3.01) randomly selected by Chief Examiner. HCF 10/15/14
1 / 2	APE067 AA2.10	Q(62) K/A rejected due to not being applicable at MNS. New K/A (APE067 AA2.03) randomly selected by Chief Examiner. HCF 10/15/14
1 / 2	APE037 AA2.09	Q(84) K/A rejected because MNS does not have redundant monitors for this system. New K/A (APE037 AA2.14) randomly selected by Chief Examiner. HCF 10/15/14
2 / 2	SYS001 A2.08	Q(91) K/A rejected because MNS does not have CCW supply to CRDS. New K/A (SYS001 A2.01) randomly selected by Chief Examiner. HCF 10/15/14
2 / 2	SYS086 2.4.30	Q(93) K/A rejected due to inability to write a question that matches the K/A at the SRO level. New K/A SYS086 G2.4.41 randomly selected by Chief Examiner. HCF 04-20-15

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

Facility: McGuire Nuclear Station Date of Exam: 4/27/2015 Exam Level: RO ☐ SRO ☑

Item Description			Initial a	Initial b*	Initial c*
1.	Questions and answers are technically accurate and applicable to the facility.				
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.				
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401				
4.	The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office).				
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: __ the audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or ✓ the licensee certifies that there is no duplication; or __ other (explain)				
6.	Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank: 24 / 10; Modified: 18 / 0; New: 33 / 15			
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: 35 / 12; C/A: 40 / 13			
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.				
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.				
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.				
11.	The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.				

	Printed Name / Signature	Date
a. Author	H. Clark Fletchee / H Clark Fletchee	04-24-15
b. Facility Reviewer (*)	Wiley Killette / Wiley Killette	4/24/15
c. NRC Chief Examiner (#)	Daniel M. Bacon / Daniel M Bacon	4/24/15
d. NRC Regional Supervisor	Eugene Guthrie / Eugene Guthrie	4/29/15

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

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
1	F	2	X											M	E	**SYS003 K4.04 - Reactor Coolant Pump System (RCPS)** Recommend specifying motor stator coolers in the stem question because KC appears to supply the motor bearing oil coolers. An applicant could legally argue that cooling the motor bearings is cooling the motor. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
2	H	3	X											N	E	**SYS003 K6.14 - Reactor Coolant Pump System (RCPS)** For the first part question, need to state something to the effect of "In accordance with OP/1/A/6150/002 (Procedure Name)…". For the second part question, need to specify something to the effect of, "If the NC pump switch is placed in the start position…" Throughout the exam, when asking requirements, need to tie it to the specific procedure, TS, etc. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
3	H	3	X											B	E	**SYS004 A1.09 - Chemical and Volume Control System** I believe the word "throttle" should be added after the "OR" in each of the answer choices. An applicant could believe that each or the choices would have 2NV-121 either fully opened or fully closed. I do not believe that would be a correct answer in any situation. Need to work on the wording of the stem question. The OP does not directly require any of these valve manipulations in particular. It just has an enclosure that explains what each of these manipulations would do. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
4	H	3				X								M	E	**SYS005 A2.02 - Residual Heat Removal System (RHRS)** The distractor analysis for B.1 and D.1 does not make sense. If the applicant incorrectly believed the LCO allowed one NV and one NI pump (vice one NV or one NI pump) the LCO would still be met for LTOP if you tagged one of them out. Those distractors are not plausible. There are several other ways to ask the first part and test the same knowledge that would have plausible distractors. Revised question submitted on 4/08/15: **The revised question is Satisfactory.** Another revised question was submitted on 4/20/15, based on validation comments: **The new revised question is also Satisfactory.**
5	H	3												M	S	**SYS005 K5.02 - Residual Heat Removal System (RHRS)** Question is Satisfactory.
6	F	2	X	X										B	E	**SYS006 A4.08 - Emergency Core Cooling System (ECCS)** The second part question needs to be more specific. One could assume that Safety Injection RESET includes cycling the applicable trip breakers. The “Assume No Other Actions” could potentially be a cue. Could state “Immediately following the required time delay and depressing the (name) button(s), safeguards equipment _____ start upon receipt of an AUTOMATIC actuation signal. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
7	F	2										X		M	U	**SYS006 K5.04 - Emergency Core Cooling System (ECCS)** Question does not seem to relate to the ECCS system. Question is Unsatisfactory due to not meeting the K/A. A revised question was submitted on 4/20/15, based on validation comments: **The wording of the stem question "IAW T.S. 3.4.12" would make the question a TS bases question which is not applicable to RO applicants. This could be reworded to ask it as a "purpose" question or change that part and ask about accumulator isolation.** **The question was revised on 4/22/15 and is now Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
8	F	2				X								M	E	**SYS007 K5.02 - Pressurizer Relief Tank/Quench Tank System (PRTS)** **Question was submitted for preliminary review.** Do not believe that distractors A(2) and C(2) are plausible. The parameters have different units. Understand that you do not use the PRT for drawing a bubble. Will provide a different K/A if desired.
	F	2				X								B		For the revised question, I do not believe that choices A.2 and C.2 are plausible. I do not see what vessel head vents have to do with PRT temperature and PZR steam space temperature equalizing. **Initial K/A rejected and K/A SYS007 K1.03 randomly selected on 4/10/05.** **New question submitted on 4/10/15:** **The first part question is missing "PORV" at the very end of the question. Which is best, to ask about the alarm setpoint or the maximum temperature listed in the limits and precautions of the applicable operating procedure?** A new question was submitted on 4/20/15, based on validation comments: **I agree with concept of new question. Need to change the word "operate" when describing what the rupture disk does.** **Revised question was submitted on 4/22/15. The term "operate" was corrected. The first part question is missing the word "been."** **The question was revised again on 4/22/15 and is now Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
9	F	2										X		B	U	**SYS008 A1.03 - Component Cooling Water System (CCWS)** Question does not seem to be related to operating the KC system controls. Question is Unsatisfactory due to not meeting the K/A. New question submitted on 4/10/15: **The new question is Satisfactory.**
10	H	3												B	S	**SYS010 A4.02- Pressurizer Pressure Control System (PZR PCS)** Question is Satisfactory.
11	H	1-2				X								B	E	**SYS012 K2.01 - Reactor Protection System (RPS)** This question seems to boil down to: 1) are the Nis powered by AC or DC? and 2) is power lost to one or two of the applicable busses? With all of the choices having power lost to only one channel, choices B and D are not plausible. Based on the above, the LOD is also approaching 1. Revised question submitted on 4/08/15: Agree with facility comment that choice B is the correct answer. That was a “typo”, actually meant choices C and D. **The revised question is Satisfactory.**
12	H	3												M	S	**SYS013 K3.03 - Engineered Safety Features Actuation System (ESFAS)** Question is Satisfactory.
13	H	3												B	E	**SYS022 A3.01 - Containment Cooling System (CCS)** Recommend adding a peak containment pressure to the initial conditions. I believe that would prevent the applicants from asking if the hi-hi containment pressure signal was reached. We can discuss. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
14	H	3												M	U	**SYS025 A2.02 - Ice Condenser System** This question appears to be a license level mismatch. Although ROs are responsible for above the line information in TSs, they are not normally required to make operability determinations. Also, we are testing them on a 48 hour action statement. ROs normally only need to know < or = 1 hour action statements from memory. New question submitted on 4/10/15: **The last bullet of the initial conditions lists a temperature that is in alarm for points 1-48, but not for points 51-58.** Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
15	H	3												N	S	**SYS026 K1.01 - Containment Spray System (CSS)** Question is Satisfactory. **Revised question submitted on 4/22/15, based on validation comments. Revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
16	F F	2 2	 X											B B	E	**SYS039 K4.06 - Main and Reheat Steam System (MRSS)** **Question was submitted for preliminary review.** There is a basis given for a Hi Cog, but the cognitive level is listed as Memory in the table below. The first part question meets the K/A. The second part question about the SM PORVs is not an exact match for the K/A. Although this is normally allowable if there are no other options since it is fairly closely related. There are, however, several other possibilities in this case. For example, you could also give a rate of pressure decrease and ask if the isolation would be on rate or pressure. There could be several variations, with that considered, that would exactly match the K/A. We just want to minimize the amount of two part questions that stray away from the K/A on the second part. Choices C and D need to state “Bypasses” vice “Bypass” to match choices A and B. For the second part question, you may also consider asking only if the SM PORVs close on a Main Steam Isolation, since MSIV Bypasses are in all of the four answer choices. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
17	H	2												M	S	**SYS059 K3.04 - Main Feedwater (MFW) System** There is a basis given for a Hi Cog, but the cognitive level is listed as Memory in the table below it. Question is Satisfactory otherwise.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
18	H	3		X										M	E	**SYS061 K6.01 - Auxiliary / Emergency Feedwater (AFW) System** Based on the two procedure choices, the stem provides a cue when it asks which procedure would be used FIRST. With regard to the initial conditions and first part question, choices A.1 and B.1 are not grammatically correct. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**
19	F	2												N	S	**SYS062 A1.01 - AC Electrical Distribution System** Question is Satisfactory. **Revised question submitted on 4/22/15, based on validation comments. Revised question is Satisfactory.**
20	H	3	X											B	E	**SYS062 K3.01 - AC Electrical Distribution System** In order to determine the type of transfer (fast or slow), wouldn't it be necessary to know if the normal and alternate supplies were in synchronization? Explanation submitted on 4/21/15: **The question is Satisfactory.**
21	H	3	X											M	E	**SYS063 2.4.11 - DC Electrical Distribution System** Need to discuss this question. It seems that per IAAT step 26 of Enclosure 7 would remove the battery from service. Explanation submitted and voltage changed in initial conditions on 4/21/15: **The question is Satisfactory.**
22	F	2												B	S	**SYS064 A3.07 - Emergency Diesel Generator (ED/G) System** Question is Satisfactory.
23	F	2												B	S	**SYS064 K1.02 - Emergency Diesel Generator (ED/G) System** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
24	H	3	X											M	E	**SYS073 A2.02 - Process Radiation Monitoring (PRM) System** The WOOTF statement needs to refer to the statements above vise the statements below. Would choice B also be correct? Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
25	F	2												M	S	**SYS076 K2.01 - Service Water System (SWS)** Question is Satisfactory.
26	F	2	X											N	E	**SYS078 2.1.30 - Instrument Air System (IAS)** If the pressure switch connected to the solenoid that operates the valve fails, then how is it supposed to operate normally as described in the first part question? There is no indication of how the pressure switch failed. This question just not seem clear to me. Revised question submitted on 4/21/15: **The revised question did not fix the problem. Now with the solenoid failing low, the actuator will be vented immediately not when any certain pressure is reached.** **The question was revised on 4/22/15 and is now Satisfactory.**
27	H	3	X											B	E	**SYS078 K4.01 - Instrument Air System (IAS)** Probably need information in the initial conditions that describe how the VS air compressors are lined up (normal alignment?). Otherwise, choice C could be correct. There is potentially a subset issue on choices C and D. Consider asking the pressure for VI-820 for one question and if the VS compressor will or will not auto start in the normal lineup. Revised question submitted on 4/21/15: **The revised question needs to have the words "less than" added to the first part question.** **The question was revised on 4/22/15 and is now Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
28	H	3	X			X								N	E	**SYS103 A3.01 - Containment System** Do not need to list that a reactor trip and safety injection have occurred due to the parameters given. Do not believe that it is plausible to not have containment ventilation isolation with a phase A and 2.9 psig in containment. We can discuss. Revised question submitted on 4/21/15: **The revised question did not address the plausibility of choice "A."** **A new question was provided on 4/22/15 and is Satisfactory.**
29	H	3	X											N	E	**SYS001 K6.11 - Control Rod Drive System** Potential overlap with JPM E. Revised question submitted on 4/08/15: **Believe that the initial conditions or second part stem question should state something to clarify that an individual rod bank is not selected, since there is the possibility of rod motion in that case.** **Based on telephone discussion, the second part question will be changed to ask what type(s) of rod motion the logic cabinet rod control urgent failure alarm would block.** **This change will make the revised question Satisfactory.** **The revised question has been updated and is Satisfactory.**
30	H	3												N	S	**SYS002 K4.07 - Reactor Coolant System (RCS)** Question Is Satisfactory.
31	H	3												M	S	**SYS011 K2.02 - Pressurizer Level Control System (PZR LCS)** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
32	H	3				X								B	U	**SYS014 K5.01 - Rod Position Indication System (RPIS)** Choices A and C are not logically plausible. Question is Unsatisfactory due to two non- plausible distractors. Revised question submitted on 4/08/15: **I agree with the concept of both the first and second parts of the new question, but believe that wording for the first part question answer choices is somewhat awkward.** **Based on telephone discussion, the current third bullet will be removed and will be replaced with a statement that the highest coil penetrated is a "B" coil. The first part question will then basically ask if indicated rod position will decrease or remain the same.** **The revised question was corrected as discussed and is Satisfactory.**
33	F	2							X					B	E	**SYS017 A1.01 - In-Core Temperature Monitor (ITM) System** I realize this question was on a previous NRC exam, but believe that whether a T/C indicates down to 0 F or 32 F is minutia. We can discuss.
34	F	2												N	S	**SYS027 A4.04 - Containment Iodine Removal System (CIRS)** Question is Satisfactory.
35	F	2												N	S	**SYS029 2.1.31 - Containment Purge System (CPS)** Question is Satisfactory.
36	H	3												B	S	**SYS033 K3.02 - Spent Fuel Pool Cooling System (SFPCS)** Question is Satisfactory. Revised question submitted on 4/22/15, based on validation comments. Question is still Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
37	H	2				X								M	E	**SYS035 A2.05 - Steam Generator System (S/GS)** **Question was submitted for preliminary review.** Do not believe that the combination of distractors C(1) and C(2) are plausible. How could you lose feed to all steam generators and rule out a reactor trip. Without giving a trend, it is not apparent that flows are not balanced at the given time. Levels are just different. Mechanically binding a FRV during a power change would cause unbalanced flows. Then you could test setpoints and procedural actions. For the new question, choice C is not plausible. When would you just match steam flow and feed flow with a level deviation alarm in? Also, it could be said that restoring level to program would include matching steam flow and feed flow. Revised question submitted on 4/08/15: **Do not believe that the entry conditions for AP/06 were met. Discussed referencing the alarm response procedure in the question stem.** **The revised question was corrected and is Satisfactory.**
	H	3	X			X								N	E	
38	F	2												N	S	**SYS068 K1.07 - Liquid Radwaste System (LRS)** Question is Satisfactory.
39	H	3												N	S	**EPE007 EA1.03 - Reactor Trip** Question is Satisfactory.
40	H	3												B	S	**APE008 AK2.01 - Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)** Question is Satisfactory.
41	H	3												N	S	**EPE009 EA2.02 - Small Break LOCA** Question is Satisfactory.
42	F	2												N	S	**APE022 AA1.07 - Loss of Reactor Coolant Makeup** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
43	H	3				X								N	E	**APE025 AK2.01 - Loss of Residual Heat Removal System (RHRS)** I don't believe that the combination of both parts of choice A is plausible. You have to consider that the bypass valve will either fail open or closed. If it fails open, total flow will increase but more will be bypassing the heat exchangers since their outlet valves are throttled in a fixed position. Then it is not plausible for cooldown rate to increase. Revised question submitted on 4/08/15: Still do not agree with plausibility on one of the distractors. The revised question was updated to basically ask the fail positions of the heat exchanger outlet and bypass valves. **The revised question is Satisfactory.**
44	H	3												B	E	**APE027 2.4.46 - Pressurizer Pressure Control System (PZR PCS) Malfunction** Do not believe that choice "B" is plausible. Is there any condition when the PORV would receive an open signal and the spray valves would not? Also, the conditions state that actual pressurizer pressure is above the normal band and decreasing. Revised question submitted on 4/22/15. Question is Satisfactory.
45	F	2												B	S	**EPE029 2.4.21 - Anticipated Transient Without Scram (ATWS)** Question is Satisfactory.
46	F	2												N	S	**EPE038 EK3.01 - Steam Generator Tube Rupture (SGTR)** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
47	H	3												N	E	**APE040 AK3.04 - Steam Line Rupture** Need to ensure that the reason part of this question is testing major mitigation strategy and not EOP bases which is SRO knowledge. Also, need to be consistent on how containment and SG pressures are listed in the initial conditions (channels). Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
48	H	3												B	S	**APE054 AA2.03 - Loss of Main Feedwater (MFW)** Question is Satisfactory.
49	F	2	X											M	E	**EPE055 EK1.01 - Loss of Offsite and Onsite Power (Station Blackout)** Need to specify the vital DC batteries that you are asking about in the second part question (tie to first part question). Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
50	F	2												B	E	**APE056 2.4.47 - Loss of Offsite Power** Choice B is not plausible. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
51	H	3	X			X								N	U	**APE057 AA1.05 - Loss of Vital AC Electrical Instrument Bus** Choices A.2 and B.2 are not plausible. If the flow fails low, how could you use the flow computer points? Question is Unsatisfactory due to two non- plausible distractors. Revised question submitted on 4/08/15: **Based on the wording of the second part question and that CA fails low on both the 2A and 2B S/G, choices A and B are both correct answers.** **The stem of the revised question was updated and is now Satisfactory.**
52	H	3	X			X								N	E	**APE058 AA2.03 - Loss of DC Power** Based on the fact that power to DC**B** is lost, I do not believe any choice that does not have 1T**B** in it is plausible. Also, the first part question seems awkward when considering the "OR" portion of the choices. Recommend asking whether components powered from 1TB ONLY or components from 1TB and 1TD can be checked to determine if DCB is energized. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
53	H	3	X											N	E	**APE077 AK1.03 - Generator Voltage and Electric Grid Disturbances** Need to ensure that there is no overlap with scenario 1 event 5. Do not believe that A.1 and B.1 are plausible as an only choice. Tripping the turbine reduces MW and will always reduce MVARS. Also, not completely sure that the first part question is operationally valid since AP-5 requires a reactor or turbine trip if the voltage regulator does not work and outside the capability curve. It seems to be more along the lines of GFES theory. Revised question submitted on 4/08/15: **The initial conditions need to be enhanced on the revised question to ensure that the entry conditions of AP-05 are met.** **The initial conditions were corrected and the revised question is now Satisfactory.**
54	F	2		X										M	S	**WE04 EK3.4 - LOCA Outside Containment** **Question was submitted for preliminary review.** The first bullet is a cue and is not needed. May need to add plant pressure to the initial conditions (>450 psig). Revised question is Satisfactory.
55	H	3												B	S	**WE05 EK1.3 - Loss of Secondary Heat Sink** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
56	F	2	X											M	E	**WE11 EK2.1 - Loss of Emergency Coolant Recirculation** Per E-1, do not meet the criteria for transfer to cold leg recirculation (FWST level is above 95"). Per E-1 step 12, the two conditions that would result in going to ECA-1.1 are either the ND pump or suction valve power not being available for both trains. Neither of these conditions is given in the initial conditions. Need to use the name for the low level alarm as it is written in the EOP. Revised question submitted on 4/22/15. Question is now Satisfactory
57	H	3	X											M	E	**APE005 AA1.01 - Inoperable/Stuck Control Rod** Need to be more specific about what "all other rods" means in the second part question. What rods are selected? Revised question submitted on 4/22/15. Question is now Satisfactory
58	H	3	X											B	E	**APE028 AK3.03 - Pressurizer (PZR) Level Control Malfunction** Choice C is also partially correct. "Subsequently" has no time reference and not sure if the temperatures and pressures are still the same. **Revised question submitted on 4/24/15:** **The revised question is Satisfactory.**
59	H	3	X											N	E	**APE032 2.2.36 - Loss of Source Range Nuclear Instrumentation** Need include something to the effect of "IAW the requirements of TS LCO 3.3.1, Reactor Trip System Instrumentation….." in the question stem. With the references and conditions provided, this appears to be a direct lookup. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
60	H	3	X			X								N	E	**APE033 AK3.01 - Loss of Intermediate Range Nuclear Instrumentation** Based on the initial conditions, do not believe that choices A.2 and B.2 are plausible. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
61	F	2												M	S	**APE060 AA1.01 - Accidental Gaseous-Waste Release** Question is Satisfactory.
62	F	2										X		M	U	**APE067 AA2.03 - Plant Fire On Site** Question does not meet the K/A. There is a fire detection system. See OP/0A/6400 002C. Question is Unsatisfactory due to not meeting the K/A. Revised question submitted on 4/21/15: The second part of the revised question is not needed. Also, there is some question in whether or not Halon displaces oxygen. Question revised to remove second part. **Question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
63	F	2	X			X								B	E	**APE076 2.4.50 - High Reactor Coolant Activity** **Question was submitted for preliminary review.** Per AP-18, placing a cation bed demineralizer in service is an IAAT step that is only done when requested by chemistry during failed fuel. You ensure that a mixed bed demineralizer is in service for failed fuel at all times. You could give a value for DEI in the initial conditions and require the applicants to determine if the alarms are due to a crud burst or failed fuel. Then you could ask which component should be adjusted to increase letdown flow or ensured open for mixed bed demineralizer to be in service for whichever case is given by the initial conditions. Choices C.2 and D.2 of the revised question appear to be subsets of each other and leads to them not being plausible. Revised question submitted on 4/10/15: **The revised question is Satisfactory.**
64	H	3				X								B	E	**WE08 EK1.1 - Pressurized Thermal Shock** Choice D is not plausible. What does soak mean? Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
65	F	2	X			X								M	E	**WE10 EK2.1 - Natural Circulation with Steam Void in Vessel with/without RVLIS** Based on terminology used in your lesson plan that lists the major action categories for ES-0.2 and ES-0.3, it appears that choices B and D could be considered the same answers. This leads to plausibility issues. **Revised question submitted on 4/24/15.** **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
66	F	2	X											N	E	**GEN2.1 2.1.37 - GENERIC - Conduct of Operations** You are missing the "or is not controllable" portion of the first part question. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
67	F	2	X			X								N	E	**GEN2.1 2.1.42 - GENERIC - Conduct of Operations** The answer choices need to match how persons performing actions in the procedure are designated. Revised question submitted on 4/21/15: Still need to verify that there is a Site Refueling Supervisor. **The question is Satisfactory.**
68	H	3												B	S	**GEN2.2 2.2.39 - GENERIC - Equipment Control** Question is Satisfactory.
69	F	2												B	S	**GEN2.2 2.2.4 - GENERIC - Equipment Control** Question is Satisfactory.
70	H	3												N	S	**GEN2.3 2.3.14 - GENERIC - Radiation Control** Question is Satisfactory.
71	F	2												M	S	**GEN2.3 2.3.15 - GENERIC - Radiation Control** Question is Satisfactory.
72	H	3												B	S	**GEN2.3 2.3.4 - GENERIC - Radiation Control** Question is Satisfactory.
73	F	2												N	S	**GEN2.4 2.4.19 - GENERIC - Emergency Procedures / Plan** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
74	F	2	X											N	E	**GEN2.4 2.4.26 - GENERIC - Emergency Procedures / Plan** Not sure about the wording of this question. I agree that the classes of fire are correct. I am just concerned that I believe you would not want to use some types of class B extinguishers on energized electrical equipment. May just want to ask about the ratings listed on a portable fire extinguisher used in this situation. **Question is Satisfactory.**
75	F	2	X											B	E	**GEN2.4 2.4.39 - GENERIC - Emergency Procedures / Plan** Need to ensure that the station considers this an RO duty since it performed by an enclosure labeled “OSM Actions”. **Question is Satisfactory.**
76	H	3												B	S	**EPE007 2.4.20 - Reactor Trip** Question is Satisfactory.
77	H	3												B	S	**EPE009 2.1.7 - Small Break LOCA** Question is Satisfactory.
78	H	3												N	S	**EPE011 2.4.21 - Large Break LOCA** Question is Satisfactory.
79	H	3										X		N	U	**APE026 AA2.06 - Loss of Component Cooling Water (CCW)** The question does not meet the K/A at the SRO level. Question is Unsatisfactory due to not meeting the K/A. **New question submitted on 4/23/15.** **New question is Satisfactory.**
80	H	3												N	E	**APE056 AA2.73 - Loss of Offsite Power** **Question was submitted for preliminary review.** Based on further review, I believe pressurizer level needs to be given in the initial conditions for the second part question. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
81	H H	2 3	X										X X	M N	U U	**APE062 AA2.04 - Loss of Nuclear Service Water** **Question was submitted for preliminary review. Question is not counted as Unsatisfactory for determination of quality of submittal.** Do not believe that this is an SRO only question. It seems that an RO could easily determine that the breakers would need to be opened due to systems knowledge of the safety signals present and the components that open because of those signals. The second part question is clearly RO knowledge. Normally like to have the K/A match directly at the SRO level. In this case it is more of a match on the second part of the question which is definitely RO level. If the question is set up as is discussed below, Could set up the question initial conditions such that sump pumps not keeping up with the leak and lube oil temperatures were at a certain value and rising. You could then ask how the diesel would be secured (choice between two consecutive RNO steps). This would be SRO procedure selection. Then you could ask a question about lube oil temperature and the trip. Would it be more plausible to have the leak on the inlet piping to the heat exchanger? Especially since AP-44 would secure the diesel before the valves were isolated. A leak on the outlet could possibly cause more cooling of the lube oil. The revised question does not match the K/A part concerning normal values or upper limits. The first part is good for SRO only and is closely enough related to matching the interpret part of the K/A if the value is tested. Question is Unsatisfactory due to not meeting the K/A. After further review and discussion, believe that question actually meets the K/A for interpreting the upper limits. **Question is Satisfactory.**
82	H	3												N	S	**APE003 AA2.03 - Dropped Control Rod** Amount of power reduction is listed in TS bases. Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
83	F	2				X								B	E	**APE036 2.2.37 - Fuel Handling Incidents** Do not believe that choices A.2 and C.2 are plausible. Consider 10 CFR 20. Need to list the names of the CFR. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**
84	F	2	X											N	E	**APE037 AA2.14 - Steam Generator (S/G) Tube Leak** **Question was submitted for preliminary review.** Need to look at your specific E-3 background document and verify that it discusses ECA-3.2 as stated in the question stem. Otherwise question is Satisfactory. Need to ensure this does not overlap with simulator scenario. **Question is Satisfactory.**
85	F	2												B	S	**APE067 2.1.23 - Plant Fire On Site** Question is Satisfactory.
86	H	3	X											N	E	**SYS006 2.4.9 - Emergency Core Cooling System (ECCS)** Is it reasonable for the NC system to be opened to atmosphere while a loss of cooling is in progress? Revised question submitted on 4/21/15: **The revised question is Satisfactory.** **New revision based on validation comments submitted on 4/23/15. Do not believe that the 180 degree distractor is plausible the way the question is written.** **New question revised on 4/24/15 and is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
87	F	2												N	S	**SYS022 2.4.35 - Containment Cooling System (CCS)** Question is Satisfactory. Revised question submitted on 4/21/15: **The revised question needs to have the NF AHUs secured already vice dispatched in the initial conditions.**
88	F	2										X		B	E	**SYS059 A2.01 - Main Feedwater (MFW) System** The first part question should state “reaches a minimum of” vice “exceeds a maximum of.” Revised question submitted on 4/23/15: **The revised question is Satisfactory.**
89	H	3												B	S	**SYS064 A2.02 - Emergency Diesel Generator (ED/G) System** Question is Satisfactory.
90	F	2											X	B	U	**SYS073 A2.01 - Process Radiation Monitoring (PRM) System** This is not SRO only. The correct answer can be determined solely by knowing a limit and precaution listed in OP/1/A/6450/015. Question is Unsatisfactory due to not being SRO only. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**
91	F	2												N	S	**SYS001 A2.01 - Control Rod Drive System** The question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
92	H	3	X											B	E	**SYS072 A2.02 - Area Radiation Monitoring (ARM) System** **Question was submitted for preliminary review.** Per the SLC 16.7.6 table, these monitors are not required until 40% power. Based on reading the lesson plan, the setpoints are manually set by RP (5 gpd above 40% and 20gpd below 40%). I do not believe this is technically correct. I think it is the algorithm that changes when the power indication fails, not the setpoint. Need to discuss. The distractor analysis does not match the number choices.
	F	2				X								B	E	A new question was submitted. On the new question, choices A.1 and B.1 are not plausible. Revised question submitted on 4/21/15: When asking “FIRST” between ES-0.0 and E-1, E-1 is no longer plausible. Revised question submitted on 4/23/15: **The revised question is Satisfactory.**
93	H	3							X			X		B	U	**SYS086 2.4.30 - Fire Protection System (FPS)** Is the number of counties to call minutia? It is on a table in the procedure and pushing one button calls of the counties. This does not appear to test the K/A. Question is Unsatisfactory due to not meeting the K/A. **Revised question submitted on 4/24/15.** **The revised question is Satisfactory.**
94	F	2												N	S	**GEN2.1 2.1.13 - GENERIC - Conduct of Operations** Question is Satisfactory.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
95	F	2	X											N	E	**GEN2.1 2.1.42 - GENERIC - Conduct of Operations** Need to add “not specified in approved procedures” to the first part question. Need to address the fact that Shift Manager concurrence is required. Revised question submitted on 4/08/15: **The revised question is Satisfactory.**
96	H	3	X											B	E	**GEN2.2 2.2.12 - GENERIC - Equipment Control** There is technically no correct answer. The bases states less than or equal to 0.95. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
97	H	3	X											B	E	**GEN2.2 2.2.44 - GENERIC - Equipment Control** Believe pressurizer level listed in initial conditions should be 11% or lower and decreasing. Revised question submitted on 4/21/15: **The revised question is Satisfactory.**
98	H	3												B	S	**GEN2.3 2.3.6 - GENERIC - Radiation Control** Question is Satisfactory.
99	F	1											X	N	U	**GEN2.4 2.4.28 - GENERIC - Emergency Procedures / Plan** Do not believe this is SRO only. LOD = 1. Question is Unsatisfactory due to not being SRO only and LOD = 1. Revised question submitted on 4/08/15: Need to remove the information about Charlotte Douglas airport from the initial conditions. It could be argued that the airport is less than 5 minutes from McGuire. **The initial conditions were corrected and the revised question is Satisfactory.**

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
100	H	3	X											N	E	**GEN2.4 2.4.50 - GENERIC - Emergency Procedures / Plan** Need to reference the appropriate procedure for the first part question. Revised question submitted on 4/23/15: **The revised question is Satisfactory.**

Instructions

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

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

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

Facility: McGuire	Date of Exam: May 7, 2015	Exam Level: RO X SRO X	

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

	Printed Name/Signature	Date
a. Grader	Michael G. Douthat	5/20/15
b. Facility Reviewer(*)	N/A	N/A
c. NRC Chief Examiner (*)	Daniel M. Bacon	5/20/15
d. NRC Supervisor (*)	Eugene Guthrie	6/3/15

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