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

Facility: McGUIRE NUCLEAR STATION Date of Examination: 08/20/2012

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)]	N/A
{-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.

Facility:	McGuire	Date of Examination:	8/20/12		
Item	Task Description		Initials a	b*	c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	& 8-14-12	N/A ①	N/A ①	N/A
	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.		↓	↓	N/A
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.				N/A
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.		↓	↓	N/A
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.		②		
	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.		②		
	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.		②		
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.		②		
	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		②		
	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.		②		
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.		②		
	b. Assess whether the 10CFR 55.41/43 and 55.45 sampling is appropriate.		②		
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.		②		
	d. Check for duplication and overlap among exam sections.		②		
	e. Check the entire exam for balance of coverage.		②		
	f. Assess whether the exam fits the appropriate job level (RO or SRO).		②		

		Printed Name / Signature	Date
a.	Author	H. Clark Fletcher / H. Clark Fletcher	08-14-12
b.	Facility Reviewer (*)	Wiley Kilette / Wiley Kilette	8/15/12
c.	NRC Chief Examiner (#)	MICHAEL MEEKS / Michael Meeks	08/16/2012
d.	NRC Supervisor	Malcolm Widmann / Malcolm Widmann	08/16/12

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

① This checklist for Op Exam Submittal ONLY.
② Op Exam developed by vendor Dave Lazarony and verified by exam author.

Facility: **McGuire Nuclear Station** Date of Examination: **8/20/2012**

Item	Task Description	Initials a	b*	c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401.	✓	✓	✓
	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.	✓	✓	✓
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	✓	✓	✓
	d. Assess whether the justifications for deselected or rejected K/A statements are appropriate.	✓	✓	✓
2. SIMULATOR	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients.	✓ 8-28-12 N/A ①	✓ ①	✓
	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.	✓ 8-28-12 N/A ①	✓ ①	✓
	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.	✓ 8-28-12 N/A ①	✓ ①	✓
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.	✓ 8-28-12 N/A ①	✓ ①	✓
	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	✓ 8-28-12 N/A ①	✓ ①	✓
	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.	N/A ① 8-28-12	✓ ①	✓
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections.	✓	✓	✓
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	✓	✓	✓
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	✓	✓	✓
	d. Check for duplication and overlap among exam sections.	✓	✓	✓
	e. Check the entire exam for balance of coverage.	✓	✓	✓
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	✓	✓	✓

	Printed Name/Signature	Date
a. Author	H. Clark Fletcher / H. Clark Fletcher	8-28-12
b. Facility Reviewer (*)	Wiley Killette / Wiley Killette	8/29/12
c. NRC Chief Examiner (#)	MICHAEL MEEKS / Michael Meeks	08/30/2012
d. NRC Supervisor	MARGARET T. WIDMANN / Margaret T. Widmann	08/30/12

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

① This submittal for written exam ONLY. @ 8-28-12

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/20/12 and week of 8/27/12 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 8-20-12. 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.	H. Clark Fletcher	MNS EXAM TEAM LEAD	H Clark Fletcher	1/10/12	H Clark Fletcher	8/6/12	
2.	Wiley Kilpatrick	MNS Exam team		1/10/12		9/10/12	
3.	VICKIE BREWER	AOM.	Vickie Brewer	1/10/12	Vickie Brewer	9/6/12	
4.	Steven Mosteller	MNS Exam team	Steven E. Mosteller	1/16/12		9-6-12	
5.	Linda Gabbert	MNS Exam team	L P Dalut	1-30-12	L P Dalut	9-6-12	
6.	Dennis Taylor	SIMULATOR ENGINEER		2-4-12		9/6/12	
7.	John H. Sadler	Sr Operations Specialist	John H. Sadler	2/6/2012	John H. Sadler	9/5/2012	
8.	S. KUMAR	I.T. Prof. Nuclear		2/6/12		9/6/12	
9.	Robert Adams	Sr. Engineer		2/6/12		9/6/12	
10.	W.R. BAKER	IT Prof		2/6/12		9/6/12	
11.	Terry S. TessNear	MNS Sim Support	Terry S. Tessnear	2/8/12	Terry S. Tessnear	9/6/12	
12.	Vickie L. McGinnis	Admin	Vickie L. McGinnis	2/17/12	Vickie McGinnis	9-11-12	
13.	John Suprak	COE		3/6/12	per phone conversation	10-8-12	(1)
14.	Cliff Withers	OPS		3/9/12	per phone conversation	9-6-12	(1)
15.	Gabriel Washburn	OPS		3/17/12	per phone conversation	9-6-12	(1)

NOTES:
(1) per telephone conversation.

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 9/30:27/12 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 LAZAROW	Exam Developer		12/9/11	Per telephone conversation	10/1/12	see (1)
2.	Thad Reams	Exam Validation		3-24-12		5-16-12	
3.	Richard Dallas	RO		3/24/12		9/6/12	
4.	DAN HELTON	RO		3/24/12		9/6/12	
5.	Tim PUDLEY	RO		3/25/12		9/6/12	
6.	RYAN SEVERNS	RO		3/26/12		9/6/12	
7.	Wayne Flynn	RO		3/28/12		9/6/12	
8.	Mark Rosskamp	SRO		3/29/12		10/6/12	
9.	WARREN MOORE	SRO		3-29-12		8-16-12	
10.	MICHAEL DEMPSEY	RO		4-12-12		10/4/12	
11.	ROBERT DENNIS MCCOOK	SRO (OSM)		4/12/12		9/10/12	
12.	KEZIAH RUTNAM	SRO		4/23/12		9/06/12	
13.	BRIAN JETTON	RO		4/24/12		9/16/12	
14.	DOUG WAKEFIELD	SRO		4/24/12		9/6/12	
15.	Jim DUDLEY	RO		5/4/12		9/6/12	

NOTES:

(1) per telephone conversation

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/20:27/12 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 8/20/12. 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.	Darrell Hensley	Peer Review - CNS	Darrell Hensley	5/16/12	[illegible]	10-4-12	①
2.	Eric P. Maosen	Peer Review - CNS	[illegible]	5/16/12	[illegible]	10-4-12	①
3.	Bobby Pope	OPT Manager - MNS	[illegible]	6/11/12	[illegible]	9-6-12	
4.	Philip Bales	RO - MNS	[illegible]	6/20/12	[illegible]	10-5-12	
5.	James Kerns	RO - MNS	[illegible]	6/20/12	[illegible]	9-17-12	
6.	Wesley Hill	SRO - MNS	[illegible]	6/20/12	Wesley Hill	9/6/12	
7.	~~Tiffney Cook~~	~~RO MNS~~	~~[illegible]~~	~~8-8-12~~	~~[illegible]~~	~~[illegible]~~	
8.	Tiffney Cook	RO - MNS	[illegible]	8-8-12	[illegible]	10/6/12	
9.	Stephen Gibson	Instructor - MNS	[illegible]	8-22-12	[illegible]	9-10-12	
10.	Christopher Paulsen	Instructor	[illegible]	8-24-2012	[illegible]	9-6-12	
11.	Heather Futsaeter	Instructor / Van driver	[illegible]	8/27/12	[illegible]	9/6/12	
12.	Chuck Jacobs	Instructor / Van driver	[illegible]	8/27/12	[illegible]	9/5/12	
13.	Chad Gordon	Instructor - MNS	[illegible]	9/4/12	[illegible]	9/5/12	
14.	Billy Little	ET QS COORDINATOR	[illegible]	9/4-12	[illegible]	9-5-12	
15.	Phillip H. Gass	Developer MNS	[illegible]	9/4/12	[illegible]	9/5/12	

OPS 8-8-12

NOTES:
① via phone conversation ATF 10-4-12

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/20/12 - 8/27/12 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.	Devan Simmerson	MNS/RO		6/3/12		9/6/12	
2.	Justin Black	RO		7-19-12		9/10/12	
3.	T.R. Hall	RO		7/30/12		9/6/12	
4.	Reginald Parker	RO		7/30/12		10/5/12	
5.	[illegible]	OSM		7/31/12		9/6/12	
6.	[illegible]	SRO		7/31/12		9/11/12	
7.	LE Summerlin	RP STAFF		8/1/12		9/11/12	
8.	Mike Weiner	OPS Proc Grp/Prime Engr		8/2/12		9/10/12	
9.	DAVID FISCHLI	SYS ENGINEERING		8/2/12		10/3/12	
10.	Scott Slater	MNS SRO		8/6/12		9/14/12	
11.	Jerry Day	Reactor Engineering		8/8/12		10/1/12	
12.	Larry Sarratt	Shift Ops Manager		8/20/12		9/6/12	
13.	STEVEN HELMS	OPS TNG SUPERVISOR		8-20-12		9-10-12	
14.	Vickie Reid	MNS Trng Admin		8-20-12		9-11-12	
15.							

NOTES:

Facility: McGuire		Date of Examination:	8/20/12
Examination Level:	RO	Operating Test Number:	N12-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	D, R	2.1.7 (4.4)	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
		JPM:	Calculate QPTR with an Inoperable Power Range Instrument
Conduct of Operations	M, R	2.1.25 (3.9)	Ability to interpret reference materials, such as graphs, curves, tables, etc.
		JPM:	Calculate Boration Needed for a Specified Rod Change
Equipment Control	M, P, R	2.2.12 (3.7)	Knowledge of Surveillance Procedures.
		JPM:	Perform a Manual NC Leakage Calculation
Radiation Control	N, R	2.3.14 (3.4)	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.
		JPM:	Predict Radiation Levels While Responding to a Damaged Spent Fuel Pool

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 Bank JPM. With the plant at 74% power, the operator will be told that the Unit 1 OAC failed and is not operating, and that PR-41 has been removed from service. The operator will be directed to calculate QPTR in accordance with PT/1/A/4600/21A (Loss of Operator Aid Computer while in Mode 1). The operator will be expected to calculate QPTR for the three operable Power Range Detectors, and determine that Technical Specification 3.2.4, Quadrant Power Tilt Ratio, has been exceeded.

A1b This is a modified JPM using Bank JPM OP-MC-JPM-ADM-215 as its basis. The operator will be given a set of initial conditions and told that it is desired to withdrawal the Bank D Control Rods about 45 steps. The Operator will be given the Core Data Book and asked to manually determine the amount of Boric Acid that will be necessary to add, to complete the rod height adjustment.

A2 This is a modified JPM using Bank JPMs ADM-NRC-A2-05 and 12 as its basis. 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, and identify any Technical Specification Limits that have been exceeded. This is a modified version of a similar JPM on NRC Exam N10-1-1.

A3 This is a new JPM. The operator will be given a set of conditions reflecting a damaged and leaking Spent Fuel Pool with a full core off-loaded, where attempts of makeup have failed, but are expected to be successful within four hours. The operator will also be given a present Spent Fuel Pool leak rate and level. The operator will be directed to refer to Enclosure 13 (Spent Fuel Pool Radiation Level vs. Water level Above Fuel) of AP/1/A/5500/41 (Loss of Spent Fuel Pool Cooling or Level), and determine the expected radiation levels one hour, two hours, three hours and four hours from now, based on the last known leak rate. The operator will be expected to determine the expected Dose rate within ±50%.

Facility: McGuire		Date of Examination:	8/2012
Examination Level:	SRO	Operating Test Number:	N12-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed	
Conduct of Operations	D, R	2.1.5 (3.9)	Ability to use procedures related to shift staffing, such as minimum compliment overtime limitations, etc.
		JPM:	Determine Proper Shift Staffing
Conduct of Operations	M, R	2.1.25 (4.2)	Ability to interpret reference materials, such as graphs, curves, tables, etc.
		JPM:	Manual AFD Calculation
Equipment Control	M, P, R	2.2.12 (4.1)	Knowledge of Surveillance Procedures.
		JPM:	Perform/Review a Manual NC Leakage Calculation
Radiation Control	N, R	2.3.14 (3.8)	Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.
		JPM:	Calculate Spent Fuel Pool Boiloff rate and predict when Spent Fuel Pool Radiation levels will exceed 1Rem/Hour
Emergency Procedures/Plan	M, R	2.4.41 (4.6)	Knowledge of emergency action level thresholds and classifications.
		JPM:	Classify an Emergency Event

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 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) **(0)**

SRO Admin JPM Summary

A1a This is a Bank JPM. The operator will be told that Units 1 and 2 are at 100% power and that it is a specific time and date. The operator will be provided with a Work Schedule of personnel that are reporting for work, and told that three individuals have expressed concerns regarding overtime limitations, and present their recent work history. After being provided a work history for those that have expressed concerns, the operator will be directed to evaluate the work history of the three individuals who have expressed overtime limitation concerns; and then assign personnel to a shift position on Attachment 12.1, Control Room Supervisor Turnover Checklist, in accordance with the attached Work Schedule. The operator will directed to identify any arriving personnel that cannot be assigned to a shift position; and to hold over personnel and/or call in additional personnel ONLY if the minimum staffing cannot be met. The operator will be expected to evaluate the work history of three individuals in accordance with section 200.6 of NSD 200, and determine that one RO cannot report for work, however, the other individuals with work history concerns may report for work. The operator will also be expected to assign all other personnel reporting to work in accordance with an attached Key, identifying that that STA must be held over from the previous shift, and that one RO must be held over, or a Request for Work Hours Extension must be approved.

A1b This is a modified JPM using Bank JPM ADM-NRC-A1-021 as its basis. The operator will be told that Unit 1 is at 100% power, the OAC has been out of service for 30 minutes, that PT/1/A/4600/021 A (Loss of Operator Aid Computer While in Mode 1) is being performed, and that the Main Control Board AFD meters are INOPERABLE. The operator will be given the present current values for the Power Range upper and lower detectors and directed to calculate AFD per PT/1/A/4600/021A (Loss of Operator Aid Computer while in Mode 1), Section 12.10 for current plant conditions and verify that AFD is within the limits specified in the COLR. The operator will be expected to manually calculate AFD, determine that the AFD calculated for N42 and N44 is in excess of the limits allowed by the COLR, and identify all required Technical Specification ACTION.

A2 This is a modified JPM using Bank JPMs ADM-NRC-A2-05 and 12 as its basis. 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 (SRO aspect) identify with all Technical Specification ACTION.

A3 This is a new JPM. The operator will be given a set of conditions reflecting a loss of level and cooling to the Spent Fuel Pool with a full core off-loaded, where attempts of makeup have failed. The operator will also be given a present Spent Fuel Pool level and time since shutdown. The operator will be directed to use Enclosure 5 (Spent Fuel Pool Boiloff rate) of AP/1/A/5500/41 (Loss of Spent Fuel Pool Cooling or Level), and estimate how fast the Spent Fuel Pool level will go down as the pool boils; and then use this boiloff rate and Enclosure 13 (Spent Fuel Pool Radiation Level vs. Water level Above Fuel) of AP/1/A/5500/41 (Loss of Spent Fuel Pool Cooling or Level), and predict when the radiation levels in the Spent Fuel Pool area will be greater than 1 Rem/hour if no makeup is added. The operator will be expected to determine that the boiloff rate is 4.4 inches/hour, and that the expected time that the Dose Rate in the Spent Fuel Area exceeds 1 Rem/hour is 36±2 hours.

A4 This is a modified version of a Bank JPM. The operator will be told that Unit 1 and Unit 2 are in Mode 1 at 100% power; and then given a timeline of events that result in the implementation of the Abnormal/Emergency Operating Procedures at Unit 1. The operator will be directed to classify the event in accordance with RP/0/A/5700/000 (Classification of Emergency). The operator will be expected to declare a Site Area Emergency based on 4.4.S.1, Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Trip WAS NOT Successful. This action is Time Critical and must be completed within 15 minutes. Then, the operator must prepare an Emergency Notification Form for this event in accordance with RP/0/B/5700/029 (Notifications to Offsite Agencies From the Control Room), and present this form to the Emergency Coordinator for approval, also within 15 minutes of the event classification.

Facility: McGuire	Date of Examination: 8/2012
Exam Level (circle one): *RO (only)* / SRO(I) / **SRO (U)**	Operating Test No.: N12-1

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. 001 Control Rod Drive System [001A4.06(2.9/3.2)] Realign a Misaligned Control Rod	S, N	1
B. 045 Main Turbine Generator System [045A3.04(3.4/3.6)] Perform the Main Turbine Overspeed Trip Test	S, D, P, A	4S
C. 010 Pressurizer Pressure Control System [010A4.02(3.6/3.4)] Remove Pressurizer Heaters from Service	S, D, P, A	3
D. 026 Containment Spray System [026A4.01(4.5/4.3)] **Align the Containment Spray System During Cold Leg Recirc**	**S, D, EN, A**	**5**
E. APE 025 Loss of Residual Heat Removal System [025AA1.02(3.8/3.9)] **Midloop Makeup to the NCS**	**S, M, L**	**4P**
F. APE 026 Loss of Component Cooling Water [026AA1.02(3.2/3.3)] **Respond to High VCT Temperature**	**S, N, A**	**8**
G. 064 Emergency Diesel Generators [064A4.06(3.9/3.9)] Perform Diesel Generator Operability Test	S, D, A	6
H. APE 061 ARM System Alarms [061AA2.01(3.5/3.7)] *Control Room Air Intake High Radiation Alarms*	*S, N*	*7*
In-Plant Systems[@] (3 for RO; 3 for SRO-I; 3 or 2 for **SRO-U**)		
I. APE 058 Loss of DC Power [058AA2.01(3.7/4.1)] **Swap Battery Charger EVCA Power Supply from Unit 1 to Unit 2**	**D, R, E**	**6**
J. APE 024 Emergency Boration [024AA1.04(3.6/3.7)] **Emergency Borate the NCS Locally Using 1NV-269**	**D, R, E**	**1**
K. APE 065 Loss of Instrument Air [065AA1.0 (2.6/2.8)] Bypass A, B, and C VI Dryers following a Loss of Instrument Air	D, A, E	8

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

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 (6) /4-6 (6) / 2-3 (2)
(C)ontrol room	
(D)irect from bank	≤ 9 (7) /≤ 8 (7) / ≤ 4 (3)
(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 (4) / ≥ 2 (3) / ≥ 1 (2)
(P)revious 2 exams	≤ 3 (2) / ≤ 3 (2)/ ≤ 2 (0) (Randomly Selected)
(R)CA	≥ 1 (2)/≥ 1 (2) / ≥ 1 (2)
(S)imulator	

JPM Summary

JPM A This is a new JPM. The operator will be told that due to a plant transient, Control Rod M-4 is misaligned from its bank by 24 steps, and that Unit 1 has been stabilized at 45% power for the past 16 hours. The operator will also be told that the crew entered AP/1/A/5500/14 (Rod Control Malfunction), and completed Enclosure 1 (Response to Dropped or Misaligned Rod) through Step 16; and that IAE and RE has determined that rod realignment is permissible by moving the misaligned rod inward. The operator will be directed to realign Control Rod M-4 with Bank D by performing Enclosure 1 (Response to Dropped or Misaligned Rod), of AP/1/A/5500/14 (Rod Control Malfunction). The operator will be expected to correct the misalignment of Control Rod M-4 by performing Steps 17-22 and 45.a of Enclosure 1.

JPM B This is a Bank JPM, previously used on N11-1-1. The operator will be told that Unit 1 is starting up after a refueling outage, that the Turbine/Generator is off line and rolling at 1800 RPM in preparation for performing PT/1/A/4250/004C (Turbine OPC and Mechanical Overspeed Trip Test), that all prerequisite conditions have been met, that two operators have been stationed at the Turbine as required, and that communications have been established with all involved. The operator will be directed to complete the Turbine OPC and Mechanical Overspeed Trip Test per PT/1/A/4250/004C (Turbine OPC and Mechanical Overspeed Trip Test), starting with Step 12.7. The operator will raise Turbine speed to OPC setpoint, and then raise speed until the Turbine Overspeed trip should be actuated **(Alternate Path)**. The operator is expected to recognize the turbine has failed to trip at the expected setpoint and then manually trip the Turbine.

JPM C This is a Bank JPM, previously used on N10-1-1. The operator will be told that plant power has just been raised to 100% per OP/1/A/6100/003 (Controlling Procedure for Unit Operation). The operator will be directed to remove Pzr Heater Groups A, B and D from service per Enclosure 4.6 (Operation of Pzr Heaters) of OP/1/A/6100/003. The operator will be expected to remove the A, B and D Pzr Heater Groups from service in accordance with the Enclosure. After the Pzr Pressure Master has been placed in MANUAL and its output has been adjusted, the Pzr Variable Heaters (Group C) will fail **(Alternate Path)**. The operator will be required to respond to MCB Annunciator 1AD6/D6 (PZR HTR CONTROLLER TROUBLE), and manually control pressure using

the other heater groups. The operator will be expected to place at least one Pzr Heater Group in service in accordance with Step 3.3.1 (or equivalent) of Enclosure 4.6.

JPM D This is a bank JPM updated for recent plant modification/procedure update. The operator will be told that earlier in the shift, the Unit 1 reactor tripped due to a Large Break LOCA inside of containment, that EP/1/A/5000/ES-1.3 (Transfer To Cold Leg Recirc) has been implemented and completed through step 7, that Containment pressure is approximately 4 psig, and that FWST Level is approximately 80 inches and lowering. The operator will be directed to perform Step 8 of EP/1/A/5000/ES-1.3 (Transfer To Cold Leg Recirc) and align NS for Recirc. The operator will attempt to place the A Train of NS in service manually, discover that it cannot be placed in service **(Alternate Path)**, and then place the B Train in service as an alternative.

JPM E This is a modified version of a Bank JPM. The operator will be told that Unit 1 is in mode 5 during a refueling outage, that AP/1/A/5500/19 (Loss of ND or ND System Leakage) has been entered and completed up to Step 5; and that the CRS is considering makeup options for the NCS. The operator will be directed to use Enclosure 5 (Makeup Via NV Pumps Through S/I Flowpath) of AP/1/A/5500/19 (Loss of ND or ND System leakage) to maintain NCS level greater than 10 inches. The operator will be expected to initiate make up to the NCS using Enclosure 5 of AP/1/A/5500/19.

JPM F This is a new 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. Upon PD Pump start, the motor will fail **(Alternate Path)**, and the operator will ultimately align the suction of the NV Pumps to the FWST.

JPM G This is a bank JPM. The operator will be told that Unit 1 is operating at 100% power, that a monthly test of the 1B Emergency Diesel Generator is required, and that the System Engineer wants to start and stop the Diesel from the Control Room. The operator will be directed to conduct a Slow Start of the 1B Emergency Diesel Generator using Enclosure-13.1 of PT/1/A/4350/002B, "Diesel Generator 1B Operability Test." During the performance of Enclosure 13.1, a sudden loss of crankcase vacuum will be indicated together with a loss of engine speed **(Alternate Path)**. The operator will be expected to stop the engine with the normal stop switch.

JPM H This is a new JPM. The operator will told that Units 1 and 2 are operating at 100% power, that Annunciator 1RAD-2 B2, EMF 43B CR AIR INTAKE B HI RAD, alarmed 45 seconds ago; and that Annunciator 1RAD-1 B2, EMF 43A CR AIR INTAKE A HI RAD, alarmed 15 seconds ago. The operator will be directed to perform the immediate actions associated with the Annunciator Response Procedures for both alarms. The operator will be expected to determine that the Unit 2 intake presents a greater threat than Unit 1, and align the VC inlet to take suction on Unit 1 only; and then pressurize the Control Room from the A Train Outside Air Pressure Fan.

JPM I This is a Bank JPM. The operator will be told that Unit 1 has just experienced a Loss of Offsite Power, that the 1A D/G will not start, and that 1ETA is de-energized.

AP/1/A/5500/07, "Loss of Electrical Power," Case 1 has been implemented. The operator will be directed to swap power supplies to the EVCA Battery Charger from Unit 1 to Unit 2 in accordance with Enclosure 22 (Swapping Battery Charger Power Supplies) of AP/1/A/5500/07, (Loss of Electrical Power). The operator will be expected to place Battery Charger EVCA in service with power being supplied from Unit 2 within 20 minutes of dispatch. This is a Time Critical JPM.

JPM J This is a Bank JPM. The operator will be told that Unit 2 was at 100% power when a Boron dilution event occurred, that AP/2/A/5500/38 (Emergency Boration) was entered, and that while attempting to open 2NV-265B (Boric Acid To NV Pumps), the RO discovered that 2NV-265B was de-energized. The operator will be directed to emergency borate the NC System by performing Step 12.d RNO of AP/2/A/5500/38 (Emergency Boration and Response to Inadvertent Dilution). The operator will be expected to locate and open 2NV-269 (simulated) within ten (10) minutes of dispatch. This is a Time Critical JPM.

JPM K This is a Bank JPM. The operator will be told that Unit 1 is operating at 100% power, that AP/1/A/5500/22 (Loss of VI) has been implemented due to decreasing VI Pressure, that VI Pressure is holding at 75 psig but the leak has not been isolated, and that several other operators have been dispatched for various tasks in response to the loss of VI. The operator will be directed to bypass the VI dryers and isolate VS per Enclosure 5 (VI Dryer and VI to VS System Isolation) of AP/1/A/5500/22 (Loss of VI) using the copy of the procedure located beside Service Building Lube Oil Station door. When the operator checks the position of the Dryer Bypass valve, it will be determined that the valve has failed closed **(Alternate Path)**. The operator will be expected to fail open the Dryer Bypass Valve when it is recognized that the valve has failed closed, and then close the A, B, and C VI Dryers Inlet and Outlet Isolation valves.

Facility: McGuire	Date of Examination: 8/20/12	Operating Test Number: N12-1

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

		Printed Name / Signature	Date
a.	Author	H. Clark Fletcher / H Clark Fletcher	08-14-12
b.	Facility Reviewer (*)	Wiley Kilgore / Wiley Kilgore	8/15/12
c.	NRC Chief Examiner (#)	MICHAEL MEEKS / Michael Meeks	08/16/2012
d.	NRC Supervisor	MALCOLM T. WIDMANN / Malcolm T. Widmann	08/16/12

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

① Op Exam developed by vendor Dave Lazarony and verified by exam author.

Facility: McGuire Date of Exam: 8/20/12 Scenario Numbers: 2 3 4 Operating Test No.: N12-1

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.			
2.	The scenarios consist mostly of related events.			
3.	Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)			
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.			
5.	The events are valid with regard to physics and thermodynamics.			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. 8-14-12	N/A		
8.	The simulator modeling is not altered.			
9.	The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			

Target Quantitative Attributes (Per Scenario; See Section D.5.d)		Actual Attributes 2	3	4	-	-	-
1.	Total malfunctions (5-8)	7	6	9			
2.	Malfunctions after EOP entry (1-2)	1	1	5			
3.	Abnormal events (2-4)	4	3	3			
4.	Major transients (1-2)	1	1	1			
5.	EOPs entered/requiring substantive actions (1-2)	1	2	1			
6.	EOP contingencies requiring substantive actions (0-2)	0	1	1			
7.	Critical tasks (2-3)	2	2	2			

Facility: McGuire Date of Exam: 8/20/12 Scenario Numbers: 5 Operating Test No.: N12-1

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.			
2.	The scenarios consist mostly of related events.			
3.	Each event description consists of • the point in the scenario when it is to be initiated • the malfunction(s) that are entered to initiate the event • the symptoms/cues that will be visible to the crew • the expected operator actions (by shift position) • the event termination point (if applicable)			
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.			
5.	The events are valid with regard to physics and thermodynamics.			
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.			
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints.	N/A 8-14-12		
8.	The simulator modeling is not altered.			
9.	The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.			
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301.			
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).			
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).			
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.			

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

Facility:	McGuire	Date of Exam:	8/20/12	Operating Test No.:	N12-1

APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		N012-1-2			N012-1-3			N12-1-4			N12-1-5 (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				1					1				2	1	1	1
	I/C				2,3, 4,5					3,5				6	4	4	2
	MAJ				6					6				2	2	2	1
	TS				3,4									2	0	2	2
SROU-2	RX													0	1	1	0
	NOR				1					1				2	1	1	1
	I/C				2,3, 4,5					3,5				6	4	4	2
	MAJ				6					6				2	2	2	1
	TS				3,4									2	0	2	2
SROU-3	RX													0	1	1	0
	NOR				1									1	1	1	1
	I/C				2,3, 4,5									4	4	4	2
	MAJ				6									1	2	2	1
	TS				3,4									2	0	2	2
SROU-4	RX													0	1	1	0
	NOR							1						1	1	1	1
	I/C							2,3, 4,5						4	4	4	2
	MAJ							6						1	2	2	1
	TS							3,4						2	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: 8/20/12			Operating Test No.: N12-1			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM M(*)		
		N012-1-2			N012-1-3			N12-1-4			N12-1-5 (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-5	RX													**0**	1	1	**0**
	NOR	2												**1**	1	1	**1**
	I/C	1,3, 4,5												**4**	4	4	**2**
	MAJ	6												**1**	2	2	**1**
	TS	1,4												**2**	0	2	**2**
SROU-6	RX													**0**	1	1	**0**
	NOR	2												**1**	1	1	**1**
	I/C	1,3, 4,5												**4**	4	4	**2**
	MAJ	6												**1**	2	2	**1**
	TS	1,4												**2**	0	2	**2**
SROI-1	RX					1								**1**	1	**1**	0
	NOR							1						**1**	1	**1**	1
	I/C					2,5		2,3, 4,5						**6**	4	**4**	2
	MAJ					6		6						**2**	2	**2**	1
	TS							3,4						**2**	0	**2**	2
SROI-2	RX					1								**1**	1	**1**	0
	NOR							1						**1**	1	**1**	1
	I/C					2,5		2,3, 4,5						**6**	4	**4**	2
	MAJ					6		6						**2**	2	**2**	1
	TS							3,4						**2**	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: 8/20/12							Operating Test No.: N12-1			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)			
		N012-1-2			N012-1-3			N12-1-4			N12-1-5 (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-1	RX								1					1	1	1	0	
	NOR						1							1	1	1	1	
	I/C						3,4		2,4					4	4	4	2	
	MAJ						6		6					2	2	2	1	
	TS													0	0	2	2	
RO-2	RX								1					1	1	1	0	
	NOR						1							1	1	1	1	
	I/C						3,4		2,4					4	4	4	2	
	MAJ						6		6					2	2	2	1	
	TS													0	0	2	2	
RO-3	RX					1								1	1	1	0	
	NOR			2										1	1	1	1	
	I/C			1,5		2,5								4	4	4	2	
	MAJ			6		6								2	2	2	1	
	TS													0	0	2	2	
RO-4	RX		2											1	1	1	0	
	NOR						1							1	1	1	1	
	I/C		3,4				3,4							4	4	4	2	
	MAJ		6				6							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: 8/20/12						Operating Test No.: N12-1			
APPLICANT	EVENT TYPE	Scenarios															TOTAL	MINIMUM(*)		
		N012-1-2			N012-1-3			N12-1-4			N12-1-5 (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								1								1	1	1	0
	NOR			2													1	1	1	1
	I/C			1,5					2,4								4	4	4	2
	MAJ			6					6								2	2	2	1
	TS																0	0	2	2
RO-6	RX		2														1	1	1	0
	NOR									1							1	1	1	1
	I/C		3,4							3,5							4	4	4	2
	MAJ		6							6							2	2	2	1
	TS																0	0	2	2
	RX																	1	1	0
	NOR																	1	1	1
	I/C																	4	4	2
	MAJ																	2	2	1
	TS																	0	2	2
	RX																	1	1	0
	NOR																	1	1	1
	I/C																	4	4	2
	MAJ																	2	2	1
	TS																	0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must 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: 8/20/12				Operating Test No.: N12-1							
Competencies	APPLICANTS											
	SRO (U/I)				RO/ATC				BOP			
	SCENARIO				SCENARIO				SCENARIO			
	2	3	4	5	2	3	4	5	2	3	4	5
Interpret/Diagnose Events and Conditions	1-7	1-7	1-9	1-8	1-7	1-7	1-9	1-8	1-7	1-7	1-9	1-8
Comply With and Use Procedures (1)	1-7	1-7	1-9	1-8	1-7	1-7	1-9	1-8	1-7	1-7	1-9	1-8
Operate Control Boards (2)	NA	NA	NA	NA	2, 3,4,6	1,2, 5,6	1,3,5 6	1, 3,4,6 , 7	1,2,3 4,5,6 7	1,3,4 5,6,7	1,2,3 4,6	2, 4,5,6 7, 8
Communicate and Interact	1-7	1-7	1-9	1-8	1-7	1-7	1-9	1-8	1-7	1-7	1-9	1-8
Demonstrate Supervisory Ability (3)	1-7	1-7	1-9	1-8	NA	NA	NA	NA	NA	NA	NA	NA
Comply With and Use Tech. Specs. (3)	1,4	3,4	2,3	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, Rev. 9 **PWR Examination Outline** **Form ES-401-2**

Facility: McGUIRE Date of Exam: AUGUST 2012

Tier	Group	RO K/A Category Points											SRO-Only Points		
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A		3	18	3	3	6
	2	1	2	1				2	2			1	9	2	2	4
	Tier Totals	4	5	4				5	5			4	27	5	5	10
2. Plant Systems	1	2	2	2	2	2	3	3	3	3	3	3	28	3	2	5
	2	1	1	1	1	1	1	1	1	1	1	0	10	0 or 2	1	3
	Tier Totals	3	3	3	3	3	4	4	4	4	4	3	38	5	3	8
3. Generic Knowledge and Abilities Categories		1			2			3			4		10	1	2	3	4	7
		3			2			2			3			2	1	2	2	

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to 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 KAs.
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:
007EG2.4.49	Reactor Trip - Stabilization - Recovery / 1	4.6	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
008AK3.02	Pressurizer Vapor Space Accident / 3	3.6	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Why PORV or code safety exit temperature is below RCS or PZR temperature
009EA2.14	Small Break LOCA / 3	3.8	4.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Actions to be taken if PTS limits are violated
011EK2.02	Large Break LOCA / 3	2.6	2.7	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Pumps
022AG2.1.31	Loss of Rx Coolant Makeup / 2	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.
026AA1.07	Loss of Component Cooling Water / 8	2.9	3	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Flow rates to the components and systems that are serviced by the CCWS; interactions among the components
027AK1.02	Pressurizer Pressure Control System Malfunction / 3	2.8	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Expansion of liquids as temperature increases
029EK1.01	ATWS / 1	2.8	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Reactor nucleonics and thermo-hydraulics behavior
038EG2.1.7	Steam Gen. Tube Rupture / 3	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.
040AA1.11	Steam Line Rupture - Excessive Heat Transfer / 4	3.2	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	MFW system
054AA2.03	Loss of Main Feedwater / 4	4.1	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Conditions and reasons for AFW pump startup

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
055EK3.02	Station Blackout / 6	4.3	4.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Actions contained in EOP for loss of offsite and onsite power
056AK1.01	Loss of Off-site Power / 6	3.7	4.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Principle of cooling by natural convection
057AA1.04	Loss of Vital AC Inst. Bus / 6	3.5	3.6	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	RWST and VCT valves
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
WE04EK2.2	LOCA Outside Containment / 3	3.8	4.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.
WE05EK2.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.9	4.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.
WE11EK3.2	Loss of Emergency Coolant Recirc. / 4	3.5	4.0	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Normal, abnormal and emergency operating procedures associated with (Loss of Emergency Coolant Recir).

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003AG2.2.22	Dropped Control Rod / 1	4.0	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of limiting conditions for operations and safety limits.
005AK2.02	Inoperable/Stuck Control Rod / 1	2.5	2.6	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Breakers, relays, disconnects and control room switches
024AA1.18	Emergency Boration / 1	3.7	3.6	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Emergency boron flow meter
032AA2.05	Loss of Source Range NI / 7	2.9	3.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Nature of abnormality, from rapid survey of control room data
033AK3.01	Loss of Intermediate Range NI / 7	3.2	3.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Termination of startup following loss of intermediate-range instrumentation
067AA1.06	Plant Fire On-site / 8	3.5	3.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Fire alarm
WE06EK1.2	Degraded Core Cooling / 4	3.5	4.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Normal, abnormal and emergency operating procedures associated with (Degraded Core Cooling).
WE13EK2.2	Steam Generator Over-pressure / 4	3.0	3.2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility.
WE16EA2.2	High Containment Radiation / 9	3.0	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003K5.04	Reactor Coolant Pump	3.2	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Effects of RCP shutdown on secondary parameters, such as steam pressure, steam flow and feed flow
003K6.04	Reactor Coolant Pump	2.8	3.1	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Containment isolation valves affecting RCP operation
004G2.1.32	Chemical and Volume Control	3.8	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to explain and apply all system limits and precautions.
004K5.14	Chemical and Volume Control	2.5	2.9	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Reduction process of gas concentration in RCS: vent-accumulated non-condensable gases from PZR bubble space depressurized during cooldown or by alternately heating and cooling (spray) within allowed pressure band (drive more gas out of solution)
005K4.12	Residual Heat Removal	3.1	3.7	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Lineup for piggyback mode with CSS
006K2.02	Emergency Core Cooling	2.5	2.9	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Valve operators for accumulators
008A1.02	Component Cooling Water	2.9	3.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	CCW temperature
008A3.08	Component Cooling Water	3.6	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Automatic actions associated with the CCWS that occur as a result of a safety injection signal
010K4.01	Pressurizer Pressure Control	2.7	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Spray valve warm-up
012K1.06	Reactor Protection	3.1	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	T/G
012K3.01	Reactor Protection	3.9	4.0	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	CRDS

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
013A1.06	Engineered Safety Features Actuation	3.6	3.9	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	RWST level
013K6.01	Engineered Safety Features Actuation	2.7	3.1	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Sensors and detectors
022K3.02	Containment Cooling	3.0	3.3	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Containment instrumentation readings
025A2.03	Ice Condenser	3.0	3.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Opening of ice condenser doors
025A4.02	Ice Condenser	2.7	2.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Containment vent fans
026A4.01	Containment Spray	4.5	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	CSS controls
039A3.02	Main and Reheat Steam	3.1	3.5	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Isolation of the MRSS
059A1.07	Main Feedwater	2.5	2.6	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Feed Pump speed, including normal control speed for ICS
061K6.02	Auxiliary/Emergency Feedwater	2.6	2.7	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Pumps
062G2.4.1	AC Electrical Distribution	4.6	4.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of EOP entry conditions and immediate action steps.
062K2.01	AC Electrical Distribution	3.3	3.4	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Major system loads

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
063K1.03	DC Electrical Distribution	2.9	3.5	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Battery charger and battery
064G2.1.30	Emergency Diesel Generator	4.4	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate and operate components, including local controls.
073A2.01	Process Radiation Monitoring	2.5	2.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Erratic or failed power supply
076A3.02	Service Water	3.7	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Emergency heat loads
078A4.01	Instrument Air	3.1	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Pressure gauges
103A2.04	Containment	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Containment evacuation (including recognition of the alarm)

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001A1.03	Control Rod Drive	3.6	3.7	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	S/G level and pressure
002K6.12	Reactor Coolant	3.0	3.5	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Code Safety valves
017A2.02	In-core Temperature Monitor	3.6	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Core damage
027K2.01	Containment Iodine Removal	3.1	3.4	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Fans
029K4.02	Containment Purge	2.9	3.1	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Negative pressure in containment
033K3.03	Spent Fuel Pool Cooling	3.0	3.3	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Spent fuel temperature
034A4.01	Fuel Handling Equipment	3.3	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Radiation levels
035A3.01	Steam Generator	4.0	3.9	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	S/ G water level control
068K5.04	Liquid Radwaste	3.2	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Biological hazards of radiation and the resulting goal of ALARA
079K1.01	Station Air	3.0	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	IAS

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.29	Conduct of operations	4.1	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.
G2.1.5	Conduct of operations	2.9	3.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to locate and use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
G2.1.6	Conduct of operations	3.8	4.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to manage the control room crew during plant transients.
G2.2.13	Equipment Control	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of tagging and clearance procedures.
G2.2.2	Equipment Control	4.6	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.
G2.3.5	Radiation Control	2.9	2.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to use radiation monitoring systems
G2.3.7	Radiation Control	3.5	3.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to comply with radiation work permit requirements during normal or abnormal conditions
G2.4.28	Emergency Procedures/Plans	3.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of procedures relating to emergency response to sabotage.
G2.4.34	Emergency Procedures/Plans	4.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects
G2.4.45	Emergency Procedures/Plans	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to prioritize and interpret the significance of each annunciator or alarm.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
015AA2.10	RCP Malfunctions / 4	3.7	3.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	When to secure RCPs on loss of cooling or seal injection
022AA2.04	Loss of Rx Coolant Makeup / 2	2.9	3.8	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	How long PZR level can be maintained within limits
029EG2.2.3	ATWS / 1	3.8	3.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	(multi-unit license) Knowledge of the design, procedural and operational differences between units.
038EA2.17	Steam Gen. Tube Rupture / 3	3.8	4.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	RCP restart criteria
058AG2.4.47	Loss of DC 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.
we11EG2.2.36	Loss of Emergency Coolant Recirc. / 4	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

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
036AA2.03	Fuel Handling Accident / 8	3.1	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Magnitude of potential radioactive release
059AA2.02	Accidental Liquid RadWaste Rel. / 9	2.9	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	The permit for liquid radioactive-waste release
067AG2.4.18	Plant Fire On-site / 8	3.3	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the specific bases for EOPs.
we15EG2.4.30	Containment Flooding / 5	2.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of events related to system operations/status that must be reported to internal orginizations or outside agencies.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
004A2.27	Chemical and Volume Control	3.5	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Improper RWST boron concentration
006A2.02	Emergency Core Cooling	3.9	4.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Loss of flow path
022A2.02	Containment Cooling	2.3	2.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Fan motor vibration
059G2.1.20	Main Feedwater	4.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to execute procedure steps.
064G2.4.45	Emergency Diesel Generator	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to prioritize and interpret the significance of each annunciator or alarm.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001A2.11	Control Rod Drive	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Situations requiring a reactor trip
027A2.01	Containment Iodine Removal	3.0	3.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	High temperature in the filter system
035G2.2.40	Steam Generator	3.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to apply technical specifications for a system.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.34	Conduct of operations	2.7	3.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of primary and secondary chemistry limits
G2.1.45	Conduct of operations	4.3	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to identify and interpret diverse indications to validate the response of another indication
G2.2.37	Equipment Control	3.6	4.6	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to determine operability and/or availability of safety related equipment
G2.3.12	Radiation Control	3.2	3.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of radiological safety principles pertaining to licensed operator duties
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
G2.4.43	Emergency Procedures/Plans	3.2	3.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of emergency communications systems and techniques.
G2.4.44	Emergency Procedures/Plans	2.4	4.4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of emergency plan protective action recommendations.

Tier / Group	Randomly Selected KA	Reason for Rejection
2 / 1	SYS004 2.2.35	Q(3) Orginal KA provided by Chief Examiner was the wrong KA. New KA (SYS004 G2.1.32) provided by Chief Examiner. HCF 7/16/12
2 / 1	SYS007 K5.02	Q(6) KA rejected due to not being operationally valid at MNS. New KA (SYS004 K5.14) randomly selected by Chief Examiner. HCF 06/19/12
1 / 1	APE025 AK3.02	Q(44) KA rejected due to inability to write a discrimminating question to match KA. New KA WE11 EK3.2 randomly selected by Chief Examiner. 3/12/12 - HCF
1 / 1	APE026 AA1.03	Q(45) KA rejected because the SWS does not serve as a backup to CCW at MNS. New KA APE026AA1.07 randomly selected by Chief Examiner. 3/12/12 - HCF
1 / 1	EPE038 2.4.8	Q(48) KA rejected because it pertains to SRO-level knowledge. New KA EPE038 G2.1.7 randomly selected by Chief Examiner. 3/12/12 - HCF
1 / 2	APE061 AK1.01	Q(62) K/A rejected due to inability to develop a discrimminating operationally valid question. New K/A (WE06 EK1.2) randomly selected by Chief Examiner. HCF 06-19-12
1 / 2	APE067 AA1.01	Q(63) Rejected KA due to inability to write question that is exclusively RO level knowledge. New KA APE067 AA1.06 randomly selected by Chief Examiner. 3/12/12 - HCF
1 / 2	WE13 EK3.4	Q(64) Rejected KA with Chief Examiner's approval due to inability to match the KA at the RO level. New KA (WE13 EK2.2) randomly selected by Chief Examiner. HCF 08/24/12
2 / 2	SYS015 2.4.20	Q(82) KA rejected due to not being able to meet KA at SRO level. New KA (SYS035 G2.2.40) randomly selected by Chief Examiner. HCF 06/18/2012
1 / 2	APE037 AA2.03	Q(90) KA rejected due to inability to write a discrimminating question to the KA. New KA (APE036 AA2.03) randomly selected by Chief Examiner. HCF 06/19/12
1 / 2	APE059 AA2.03	Q(91) Rejected due to inability to write SRO level question. New KA is APE059, AA2.02 randomly selected by Chief Examiner. 3/12/12 - LPG

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

Facility: McGuire Nuclear Station Date of Exam: 8/20/2012 Exam Level: RO ☑ SRO ☑

	Item Description	Initial a	b*	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: 32 / 3 — Modified: 12 / 3 — New: 31 / 19	✓	✓
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: 34 / 11 — C/A: 41 / 14	✓	✓
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 Fletcher / H Clark Fletcher	8-28-12
b. Facility Reviewer (*)	Wiley Killette / Wiley Killette	8/29/12
c. NRC Chief Examiner (#)	MICHAEL MEEKS / Michael Meeks	08/30/2012
d. NRC Regional Supervisor	MALCOLM T. WIDDISS / Malcolm T. Widdiss	08/30/12

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.

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

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

Instructions

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

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

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
1	H	3	X					X				Y	N/A	N	E	K/A 003K5.04 1. Q=K/A, Q=RO level. 2. Need to run this on the simulator and ensure that both answers are completely and always correct/distractors are completely and always incorrect. 3. We need to specify the timing of the transient ("after conditions have stabilized" is how many minutes? Hours? Days?). Instead of stating "unaffected" S/Gs, state which ones we are considering (e.g. B, C, and D S/G pressures will be _____). 4. Must specify that rods are in manual in the stem? Otherwise how will the rod control response potentially change the answer? 5. May need to re-evaluate if sim data is unexpected.
2	F	2				X						Y	N/A	B	E	K/A 003K6.04 1. Q=K/A, Q=RO level. 2. Cog level: This Q could be classified as fundamental/lower cog based on recall of phase A affected valves. 3. Cred. Dist: unbalanced psychometrics in the answer choices; KC system is in three choices but not the correct answer. Consider the following recommendation for answer choices: Seal Water Return Flow _____ / RN Flow _____ A. Isolated / Isolated B. Isolated / NOT Isolated C. NOT Isolated / Isolated D. NOT Isolated / NOT Isolated
3	H	2										N	N/A	N	E	K/A 004G2.2.35 1. Q does not meet K/A, Q=RO level. Believe that previous Chief Examiner may have mis-transcribed this K/A in the 401-2 form sent to you, will not "count" this Q. Need new K/A. Replacement K/A: 004G2.1.32.

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	F	2		X								Y	N/A	M	E	K/A 005K4.12 1. Q=K/A, Q=RO level 2. For answer choices, all distractors either must all have periods at the end, or all not have periods at the end of the sentence.
5	F	2										Y	N/A	M	S	K/A 006K2.02 1. Q=K/A, Q=RO level 2. Cog level: again would consider this a memory-level Q because it's still just a recall of which bus power supplies which CLA. 3. Otherwise Q appears SAT at this time.
6	F	3	X	X								Y	N/A	B	E	K/A 004K5.14 1. Q=K/A, Q=RO level 2. Cues: need to add a bullet in the stem that states there is a bubble in the Pressurizer? Otherwise second part of distractors A and C would not be plausible. 3. Stem focus: we need specific procedural references for both the first and second part of the Q statement; *e.g.,* "In accordance with OP/xxx/xxx/xx (Procedural Title), Nitrogen is aligned to the VCT from _____" and "In accordance with OP/xxx/xxx/xx (Procedural Title), the purpose for performing this evolution is to _____" This will also help ensure there is only one correct answer. The provided references and answer/distractor analysis did not completely support the answer choices. 4. Q should be o.k. as long as supporting procedural references are clear.

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	H	2		X		X	X					Y	N/A	B	U	K/A 008A1.02 1. Q=K/A, Q=RO level 2. Cred. Dist.: Second part of distractors B. and D. is non-plausible because of the additional information "… due to a loss of cooling flow" that is not supported by any conditions in the Q stem. 3. Partial: What procedure directs the actions? Supporting reference that was provided is the ARP display page for annunciator 2A KC HX OUTLET TEMP, which only directs the operators to "reduce heat load on KC system…." However, if the operators were to secure all NCPs, that is an action that reduces the heat load on the KC system. Therefore, distractor C. is a second correct answer. For "A" to be the only correct answer, we must have a procedural reference that specifically states "reduce NC system cooldown rate" as the required action for the conditions given in the Q stem. 4. Cues: First part of answers A. and B. contains cueing in the answer choice; as submitted, "reduce the KC system heat load by …" is a big tip-off because it is not the specific action ("reduce NC system cooldown rate"), instead it is a very broad statement of intention/mitigation strategy. 5. There's a lot of issues with this Q, no sure how to best make a recommendation to fix. Q is U due to multiple non plausible distractors and multiple correct answers.
8	H	3	X	X								Y	N/A	N	E	K/A 008A3.08 1. Q=K/A, Q=RO level 2. Stem focus: -need to include the status of 2B1, 2B2 KC pumps in the Q stem; for example, what if they were tagged out or handswitches in hard "OFF?" -Also to state "To maintain minimum KC pump flow" in the first part Q statement is teaching in the stem, we can delete that phrase completely and simply ask "Each KC train has a recirc valve which discharges to ____." -first part Q statement: do we also need to add additional clarification/information "with no operator actions" (?) -timing concern: we need to also state "after the SI sequencer is complete" or equivalent statement for McGuire. 3. Cues: the use of the logical modifier "ONLY" for distractors A. and B. does not grammatically fit in with the Q statement, which is a cue that A. and B. are incorrect choices.

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			X	X					Y	N/A	B	E	K/A 010K4.01 1. Q=K/A, Q=RO level. 2. Stem focus/Partial: we need to include procedural references for both the first and second parts of the Q to ensure there is one and only one correct answer. The concern is that an applicant can find language somewhere that states what we thought were "wrong" answers are actually correct in this non-specified document. 3. Cred. Dist: Second part of distractors B. and D. are weak as written. Won't call them non-plausible, but close. Can we come up with a better/stronger wrong answer? Consider "Reduce the number of valve cycles (open/closed) and resulting fatigue stress concerns on the valve internals." Would this work as an incorrect answer?
10	F	2	X							X		Y	N/A	B	E	K/A 012K1.06 1. Q=K/A, Q=RO level. 2. Stem focus/numbering: Don't think the logical modifier "MINIMUM" is technically correct in this case (should probably be "MAXIMUM?") Would it be a better approach to simply say that we are asking for the setpoint? Consider the following recommendation for the Q statement: "...provided 2/3 Auto Stop Oil pressures lower below the setpoint, which is _____ PSIG, OR 4/4 _____ are closed."
11	F	2	X									Y	N/A	B	E	K/A 012K3.01 1. Q=K/A, Q=RO level. 2. Stem focus: why do we need the last bullet ("Control Bank 'D' rods are currently at 190 steps")? Unsure what information that provides. If bullet is superfluous, can be deleted. 3. Otherwise Q appears o.k. at this time.
12	F	2	X									Y	N/A	N	E	K/A 013A1.06 1. Q=K/A, Q=RO level. 2. Stem focus: Believe we need to add the modifier "Earliest time" to the Q statement to resolve timing/subset issues. For example, is it clear to ask: "Based on the provided FWST trends, which ONE (1) of the following is the EARLIEST time a signal would be generated to automatically swap the ND pump suction to the containment sump?"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
13	H	2				X						Y	N/A	B	U	K/A 013K6.01 1. Q=K/A, Q=RO level. 2. Cred. Dist: second part of distractors 'A' and 'C' are non plausible due to single failure criteria. Logically, if the coincidence were 2/2 and another single failure were to occur, the function would never automatically actuate—therefore TS would not allow continued operation—therefore neither A nor C could be the correct answer. Q is U due to multiple non plausible distractors.
14	H	1	X				X					Y	N/A	N	U	K/A 022K3.02 1. Q=K/A, Q=RO level but not site specific. 2. Stem focus and Partial: We need to state specific nomenclature as is listed in the control room instead of generic categories. For example: "LT-XXX, PZR LEVEL CHAN II, will indicate _____ than actual level." This also gets us away from multiple correct answers; if an applicant believes "NC PZR indicated level" means the wide-range, colder calibrated level instrument, then distractor C. is also a correct answer. 3. LOD=1/GFES. The Q can be answered via simple recall of GFES components lessons (*e.g.*, mnemonic "hot cal reads high/cold cal reads low"). Because this is a site-specific exam, the Q can not be exclusively GFES-orientated. 4. One way to approach the K/A would be to test instruments that may or may not be affected by containment temperature (i.e. whether the parameter has adverse containment values in EOPs or not). For example, consider the following Q sketch/outline: after isolating RV to containment a steam break occurs and containment temperature is XXX degrees F. The operating crew is implementing EOPs and is evaluating SI termination criteria. The team (will/will NOT) have to use adverse containment values for subcooling. The team (will/will NOT) have to use adverse containment values for RVLIS level. Q is U due to LOD=1/GFES-only evaluation.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
15	H	2	X				X					Y	N/A	M	E	K/A 025A2.03 1. Q=K/A, Q=RO level. 2. Cog level: believe this is HIGHER cog due to the analysis of plant conditions and essentially an operability call in the first part Q, second part Q is more memory-level. 3. Stem focus: all answer choices include entry into REQUIRED ACTIONS of LCO 3.6.13, so logically we don't really have to consider any other possibility. 4. Cred. Dist: Don't believe second part of 'C' and 'D' are plausible. Giving licensee benefit of the doubt here with E rating instead of U rating due to ease of correction (?). Basis for this determination: second part of Q states "what is the concern with <u>increasing</u> ice bed temperature?" (i.e. temps going up) and second part of distractors talks about "ice buildup." Logically if temps are going up why would more ice buildup be a concern? Opposite effect should be correct. Consider the following recommendation: "Given the following conditions on Unit 1: {include bullets as submitted} Based on the given conditions, which ONE (1) of the following completes the below statements? 1) Technical Specification (TS) LCO 3.6.12 (Ice Bed) is _____ . 2) In accordance with procedure XYZ [McGuire provide correct reference], the primary concern with the increasing ice bed temperature is _____ . A. NOT met increased ice bed sublimation B. met increased ice bed sublimation C. NOT met blockage of air flow due to volumetric expansion of the ice beds D. met blockage of air flow due to volumetric expansion of the ice beds"

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	2		X			X					Y	N/A	N	E	K/A 025A4.02 1. Q=K/A, Q=RO level. 2. Cues/Partial: second Q statement is teaching in the stem. Answer analysis talks about a 9 min time delay, not a 10 minute time delay, but this information is not required psychometrically to answer the Q and can be deleted. Consider the following recommendation for the second part Q statement and answer choices: "[other initial Q stuff as submitted] 2) In addition to other signals, an AUTOMATIC start of the CARFs requires a/an _____ . Which ONE (1) of the following completes the statements above? A. 1. is 2. Sp signal (no associated time delay required) B. 1. is NOT 2. time delay after Sp signal generated C. 1. is 2. time delay after Sp signal generated D. 1. is NOT 2. Sp signal (no associated time delay required)"
17	H	2	X	X								Y	N/A	N	E	K/A 026A4.01 1. Q=K/A, Q=RO level. 2. Stem focus: to really ensure no questions over subset issues, recommend slight modification to first part Q statement as follows: "1) CPCS Train A pressure must be greater than the setpoint value of _____ " 3. Cues: ensure the first part of distractors A. and C. are 0.80 PSIG in order to ensure parallelism with first part of distractors B. and D. (two decimal places 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
18	H	2				X						Y	N/A	B	E	K/A 039A3.02 1. Q=K/A, Q=RO level. 2. Cred. Dist.: Distractor D. is not plausible; if the operator is correctly performing a TS-limited cooldown directed by procedure why would this cause an automatic MSLI? Distractor D. needs to be replaced with another plausible distractor. 3. Cred. Dist: change setpoint of distractor B. to read 1.3 PSIG (i.e. greater than setpoint of 1 PSIG containment pressure) to ensure applicant may erroneously believe SI signal caused MSLI.
19	F	3	X									Y	N/A	N	E	K/A 059A1.03 1. Q=K/A, Q=RO level. 2. There is what looks like a cut-and-paste error in the "basis for hi cog" analysis section associated with this Q. 3. Stem focus: want to ensure the Q statement is exactly and precisely correct, consider the following recommendation: "The CF Control Bypass valves receive a full close demand signal from DCS when steam flow increases to a MINIMUM of _____(1)_____. The CF Control Bypass valves receive a full open demand signal from DCS when steam flow increases to a MINIMUM of _____(2)_____. Which ONE (1) of the following completes the statements above?"
20	H	2	X									Y	N/A	M	E	K/A 061K6.02 1. Q=K/A, Q=RO level. 2. Recommend slight modification to Q statement as follows: "If no operator action has adjusted CA flow rates, which ONE (1) of the following describes which S/Gs are currently being fed and the associated flow rates?"
21	H	2				X						Y	Y	B	U	K/A 062G2.4.1 1. Q=K/A, Q is NOT RO level. 2. Cred. Dist./License level: Distractors B, C, and D deal with coordinating procedure usage that is beyond-RO level knowledge. If the RO applicant understands SRO clarification guidance, B, C, and D can be easily eliminated and are non plausible. Beyond SRO level concerns, distractor C is completely non plausible. Under what circumstance do operators ever leave E-0 to perform steps in an AOP and then return to E-0? Q is U due to multiple non plausible distractors and license-level match concerns.

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
22	H	2	X									Y	N/A	B	E	K/A 062K2.01 1. Q=K/A, Q=RO level. 2. Stem focus: need to add position of MODE select switch in stem using correct McGuire nomenclature for the switch. 3. Can cut down on the reading burden for the applicant in answer choices as follows: "Based on the given conditions, which ONE (1) of the following completes the statements below? NCP 1B _____ . Bus 1TB automatically _____ transfers to its alternate power supply. A. trips fast B. trips slow C. continues to run fast D. continues to run slow"
23	H	2	X									Y	N/A	B	E	K/A 063K1.03 1. Q=K/A, Q=RO level. 2. Stem focus: consider slight modification to Q statement as follows: "Based on the given conditions above, with no operator action Bus 1DP is _____."
24	H	2	X	X								Y	N/A	B	E	K/A 064G2.1.30 1. Q=K/A, Q=RO level. 2. Stem focus: ensure correct McGuire-specific nomenclature for freq. and kVAR controls at local panel. 3. Cues: to state that 1ETA is "separated from the grid," is cueing the applicant to operational mode of the diesel. Better approach may be to list normal and alternate offsite power supply breakers OPEN.

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
25	F	2				X	X					Y	N/A	B	E	K/A 073A2.01 1. Q=K/A, Q=RO level. 2. Cred. Dist/Partial: Distractor B is non plausible and a subset of correct answer A (so potentially correct?) The Q asks for actions, not actions and reasons for the actions. Distractor D: would it be more credible to place the sample pump switch in OFF for a given time delay (i.e. similar to resetting thermal overloads) before returning to RUN? i.e. "Place the 1EMF-33 Sample Pump switch in OFF for a MINIMUM of 5 seconds, and then back to RUN to reset the OPERATE light." (?) Distractor B must be replaced for this Q.
26	H	2	X									Y	N/A	B	E	K/A 076A3.02 1. Q=K/A, Q=RO level. 2. Stem focus: consider the following recommendation for Q statement: "Based on the given conditions, if no operator actions occur, which ONE (1) of the following provides the assured source of cooling water to containment AHUs?"
27	H	2	X									Y	N/A	N	E	K/A 078A4.01 1. Q=K/A, Q=RO level 2. Stem focus: do we need to add the positions of operational switches for VI compressors? i.e. if one switch was in hard off position rather than an auto position, would the answers change? Believe this is needed information in the stem.
28	F	2										Y	N/A	B	S	K/A 103A2.04 1. Q=K/A, Q=RO level 2. Need to add a backspace before "Actuated" in distractor B? 3. Otherwise Q appears SAT at this time.
29	H	2				X	X					Y	N/A	N	E	K/A 001A1.03 1. Q=K/A, Q=RO level. 2. Cog level: believe this is higher cog based on 2nd part of Q, applicants must analyze current plant conditions and predict the reaction based on overall plant operations. 3. Cred. Dist/Partial: Recommend the following modifications to the second part distractors as follows: "A.2. initially, then returns to approximately the original value before the rod pull." "C.2. and stabilizes at a higher steam pressure than before the rod pull."

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
30	H	3	X			X	X					Y	N/A	N	E	K/A 002K6.12 1. Q=K/A, Q=RO level. 2. Stem focus: need to add information in Q stem to ensure applicants know all pressurizer pressure and pressurizer level control systems are in auto. Concerned that answer choice is exactly correct and wrong choices always incorrect: are we absolutely certain that there is no condition that would result in more than one correct answer? 3. First part Q statement: instead of stating "temperature downstream of 2NC-2" is there a plant-specific instrument or gage we can reference? *E.g.,* "over the next 30 minutes, temperature instrument TI-XXX (temperature downstream…) will _____" 4. We also need to add "If Reactor does not trip" to Q statement. 5. Do we also need to add "If Pressurizer Pressure remains constant?" explicitly to the Q stem to elicit the correct answer? What impact on plausibility if we do?
31	H	4	X									Y	N/A	N	E	K/A 017A2.02 1. Q=K/A, Q=RO level. 2. Stem focus: Recommend slight change to Q statement: "Based on the conditions above, the NEXT major action required by FR-C.1 is to ____"
32	F	2										Y	N/A	B	S	K/A 027K2.01 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
33	H	3	X									Y	N/A	N	E	K/A 029K4.02 1. Q=K/A, Q=RO level. 2. Consider the following recommendation for the Q statement: "Based on the given conditions above, 1) What is the current discharge flowpath of the VE (Annulus Ventilation) fans? 2) If annulus pressure continues to lower with no operator actions, at what annulus pressure setpoint will a signal be generated to change the discharge flowpath of the VE fans?"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
34	H	2	X			X						Y	N/A	B	E	K/A 033K3.03 1. Q=K/A, Q=RO level. 2. Stem focus/Cred. Dist: believe we need to provide initial switch positions/condition for the KF pumps; otherwise this impacts the plausibility of distractor D. in that, if 2B KF switch in hard off rather than auto answer changes. If we don't give initial switch positions applicants may rightly question whether D. could be true.
35	F	2	X			X						Y	N/A	B	E	K/A 034A4.01 1. Q=K/A, Q=RO level. Note however this is a weak K/A match that is indirectly met; willing to accept that a radiation monitor in a trip condition is indirectly monitoring radiation levels without explicitly providing levels in the Q. 2. Stem focus: Recommend slight modification to Q statement as follows: "Based on the given conditions, which ONE (1) of the following describes the AUTOMATIC response of the Fuel Handling Building Ventilation System (VF) to the 2EMF-42 condition?" 3. Cred. Dist: distractor C. is non plausible and needs replacement. Simple knowledge that if a radiation monitor were actually reading high radiation, one would want to re-direct the bad stuff through the filters instead of isolating the filters.
36	H	2										Y	N/A	B	S	K/A 035A3.01 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
37	H	2	X	X								Y	N/A	N	E	K/A 068K5.04 1. Q=K/A, Q=RO level. 2. Cog level: believe this is a higher cog Q based on the first part, applicant must analyze given plant conditions and determine the most significant radiological hazard. 3. Stem focus: recommend second part Q modified as follows: "What EMF Trip 2 automatic actions would ensure the release...." 4. Cues: add nomenclature to 1WP-35 valve for parallelism with other distractors. 5. Some concern remains over absolute correctness/incorrectness of answers, distractors, and procedural references. Discuss with licensee during Q review.

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
38	F	2	X			X	X					Y	N/A	B	E	K/A 079K1.01 1. Q=K/A, Q=RO level. 2. Potential overlap with Q #27—discuss with licensee during review. 3. Cred. Dist/Partial: are there any manual isolation valves between the VI and VS headers? A. and B. would then become correct answers. 4. Reading burden of distractors can be logically reduced to the following: "The VI and VS headers are separated by _____ . The VS air compressor _____ to maintain VS header pressure."
39	F	2				X						Y	N/A	N	U	K/A 007G2.4.49 1. Q=K/A, Q=RO level. 2. Cred. Dist.: applicants have performed E-0 every day in the simulator for the last five or six months, they know E-0 does not contain immediate operator actions to insert control rods. First part of distractors A. and B. are non plausible. Q is U due to multiple non plausible distractors.
40	H	2				X						Y	N/A	N	U	K/A 008K3.02 1. Q=K/A, Q=RO level. 2. Cred. Dist: is there any constant entropy throttling process in the universe? Second part of distractor A. and B. non plausible, also purely GFES knowledge. Would prefer Q to simply list 4 different approximate temperatures, willing to accept that if applicant can determine the correct expected temperature the applicant demonstrates knowledge of the reasons why the expected temperature is what it is. That way K/A can be met without GFES-level distractions. Q is U due to multiple non plausible distractors.
41	H	2					X					Y	N/A	M	E	K/A 009EA2.14 1. Q=K/A, Q=RO level. 2. Partial: As written, distractor D. is also a correct answer. Benefit of the doubt given due to ease of correction. Recommend changing Q statement as follows: "Based on the given conditions, which ONE (1) of the following actions is permitted by FR-P.1 during the soak?"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
42	F	2										Y	N/A	M	S	K/A 011EK2.02 1. Q=K/A, Q=RO level. 2. As submitted, second part distractors are logically/psychometrically only differentiating whether ND can be aligned to hot legs or not. O.k. with current format. 3. Q appears SAT at this time.
43	F	3										Y	N/A	M	S	K/A 022AG2.1.31 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
44	H	3	X									Y	N/A	M	E	K/A W/E11EK3.2 1. Q=K/A, Q=RO level. 2. Stem focus: do we need bullets under current conditions for NC pump status and ND pumps off? Based on NI flow rates plant pressure should be well above ND pump shutoff head? Could delete these bullets if correct. 3. Q statement could be modified as follows: "Based on the conditions above, at 0330, 1) which ONE (1) of the following describes the actions that will meet ALL requirements of ECA-1.1? AND 2) Flow from the remaining ECCS pumps will be greater than the minimum required flow rate of _____." Which ONE (1) of the following completes the above sentence?"
45	H	2	X									Y	N/A	B	E	K/A 026AA1.07 1. Q=K/A, Q=RO level. 2. Stem focus: recommend modification to Q statement as follows: "Based on the given conditions, and In accordance with procedure OP/XYZ/--- (McGuire Insert Procedure number and Title Here), the MAXIMUM allowable KC flow through the 1A ND Heat Exchanger is less than _____ .

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
46	H	2	X									Y	N/A	M	E	K/A 027AK1.02 1. Q=K/A, Q=RO level. 2. Stem focus: increase precision of Q statement, recommendation as follows: "Based on the given conditions, which ONE (1) of the following is the effect on the PZR Surge Line Temperature AND the position of the PZR spray valves, as compared to the conditions before the Pressure Master Controller failure? (Assume NO Operator actions)." 3. Stem focus: need to also specify that all Pressurizer Pressure control components are in auto?
47	F	2	X	X			X					Y	N/A	N	E	K/A 029EK1.01 1. Q=K/A, Q=RO level. 2. Stem focus/Cues: In first part Q statement, to say "by the resultant temperature increase" is teaching in the stem, better to phrase the Q as follows: "1) When the turbine is tripped, the amount of negative reactivity added will be greater if the unit is at ____ ." 3. Partial: to ensure clarity, better to write first part distractors as "EOL as compared to BOL," "BOL as compared to EOL," which is what I think we mean to ask. 4. Partial: change second part of distractors C. and D. to read "maintain S/G inventory if the initiating event is a simultaneous loss of all CF."

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
48	H	2	X				X					Y	N/A	B	E	K/A 038EG2.1.7 1. Q=K/A, Q=RO level. 2. What is convention in McGuire regarding adverse containment values based on Containment pressure? i.e. once pressure drops below the adverse containment value do you revert back to "normal" EOP setpoints? 3. Recommend slight changes to Q stem format as follows: "Initial conditions on Unit 2: - A SGTR has occurred on the 2D SG - A Steam Line break occurred on the 2B SG -Containment pressure peaked at 3.1 PSIG Current conditions: - Containment pressure is 0.9 PSIG and STABLE Based on the current conditions, E-3 (Steam Generator Tube Rupture) requires that 2D SG NR level be maintained greater than a MINIMUM of _____ . AND E-3 will require to crew to FIRST attempt to depressurize the NC system using _____ . Which ONE (1) of the following completes the statements above?"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
49	H	2				X						Y	N/A	N	E	K/A 040AA1.11 1. Q=K/A, Q=RO level. 2. Cred. Dist.: distractor D. is non plausible, because why would the system be designed to keep the pumps running with both the CF pump recirc valve shut and the CF discharge valve shut? This configuration would destroy the pumps. 3. Recommend the following: "Given the following conditions on Unit 1: - The unit was initially at 100% RTP - A steam line break occurs inside Containment - Containment Pressure is currently 3.5 PSIG Based on the given conditions, with no operator action, which ONE (1) of the following completes the below statements? Both CF pumps are _____ . AND The CF to CA Nozzle Isolation Valves are _____ . A. tripped Closed B. tripped Open C. running at 2800 RPM Closed D. running at 2800 RPM Open."

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
50	F	2	X			X						Y	N/A	N	U	K/A 054AA2.03 1. Q=K/A, Q=RO level. 2. Stem focus: need a lot more info in the stem giving me the initial status of the plant: TDCA pump in auto, MDCA pumps in auto, what is initial power level? Etc. 3. Cred. Dist: imprecise as to what "Blackout" means; is it a complete station blackout? Is so, why would I even pick A. or C.? Both distractors are non-plausible as submitted. 4. Should be able to fix with increased precision in Q stem and distractors as to just what we are testing on. Q is U due to multiple non plausible distractors.
51	F	2	X			X	X					Y	N/A	B	U	K/A 055EK3.02 1. Q=K/A, Q=RO level. 2. Cred. Dist/Partial: Distractors B. and C. are non plausible and A. is weak and may be another correct answer. B is non plausible because there is no information given in the stem that would lead the applicant to consider that the core would not be maintained subcritical. C. is non plausible because it is common knowledge that cooldown and depressurization are not required to establish natural circ. Distractors A. and B. are probably potential correct answers—CLAs will inject during the depressurization, wouldn't that help to restore subcooling, and also add boron to maintain the core subcritical? 3. Unsure what to recommend for this Q. Q is U due to multiple non plausible distractors.
52	F	2				X						Y	N/A	B	U	K/A 056AK1.01 1. Q=K/A, Q=RO level. 2. Cred. Dist: Condition 3 is present in all incorrect distractors, and is the only condition where temperatures are stated to be going up slowly. Therefore, it is easy to eliminate three distractors and only get to the correct answer in one mental step of elimination. Distractors A, B, and C are non plausible. Q is U due to multiple non plausible distractors.
53	F	2										Y	N/A	B	S	K/A 057AA1.04 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.

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
54	F	3										Y	N/A	N	S	K/A 062AA2.04 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
55	F	2		X								Y	N/A	N	E	K/A WE04EK2.2 1. Q=K/A, Q=RO level. 2. Cues: to state "in attempting to isolate the LOCA" is teaching in the stem/cueing the applicant that second part of A. and B. are incorrect. Recommend stating: "The overall mitigating strategy of ECA-1.2 includes:" 3. Recommend slight modification to second part of distractors C. and D. to state: "ND isolation valves to close."
56	F	2					X					Y	N/A	B	U	K/A WE05EK2.2 1. Q=K/A, Q=RO level. 2. Partial: all second part choices are potentially correct. Attempts to restore feedwater will stop when both bleed and feed is initiated and when a secondary heat sink is restored. Q is U due to multiple correct answers.
57	F	1				X						Y	N/A	N	U	K/A 003AG2.2.22 1. Q=K/A, Q=RO level. 2. Cred. Dist: Common knowledge that all rods on the bottom in MODE 3. C. and D. non plausible. TS rarely requires power redux in 1 hour action statements, first part of B. and D. weakly plausible. LOD=1 to get correct answer. Q is U due to multiple non plausible distractors.
58	H	2										Y	N/A	M	S	K/A 005AK2.02 1. Q=K/A, Q=RO level. 2. Cog level: could also consider this a memory-level Q. 3. Q appears SAT at this time.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
59	F	2				X						Y	N/A	N	E	K/A 024AA1.18 1. Q=K/A, Q=RO level. 2. Cred. Dist: second part of distractors C. and D. non plausible, giving benefit of doubt with E rating based on believed ease of correction.
60	H	3										Y	N/A	B	S	K/A 032AA2.05 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
61	H	4										Y	N/A	M	S	K/A 033AK3.01 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
62	H	2										Y	N/A	B	S	K/A WE06EK1.2 1. Q=K/A, Q=RO level 2. Q appears SAT at this time.
63	H	2	X									Y	N/A	N	E	K/A 067AA1.06 1. Q=K/A, Q=RO level 2. Cog level: believe higher cog due to analysis of plant conditions against knowledge of ACTIVE fire criteria. 3. Stem focus: Check w/licensee again—is the first bullet exactly what would be shown on the screen? Enhance op validity?
64	H	2				X						Y	N/A	M	E	K/A WE13EK3.4 1. Q=K/A, Q=RO level. 2. Cred. Dist: remove "immediately" from distractors A. and B.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
65	F	2										Y	Y	N	U	K/A WE16EA2.2 1. Q=K/A, Q is NOT RO level. Closed-book knowledge of YELLOW path entry conditions is considered SRO only knowledge. Q as submitted is U due to not being RO level knowledge/license level mismatch. Consider the following recommendation: "Which ONE (1) of the following is NOT a major action category of procedure FR-Z.3 (Response to High Containment Radiation)? A. Place VE (Annulus Ventilation) system in operation. B. Place VX (Containment Air Return) system in operation. C. Check Containment Ventilation Isolation. D. Notify Station Management of Containment Radiation levels."
66	H	2										Y	N/A	M	S	K/A G 2.1.5 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.
67	F	2	X	X								Y	N/A	B	E	K/A G 2.1.14 1. Q=K/A, Q=RO level. 2. Stem focus/cues: recommend absolutely specifying all procedural titles in Q statement; for example: "SOMP 01-04 (Conduct of Operations) Attachment 7.15 (Control Room Conduct) step 2 (Starting or Operating Large Components) *specifically* requires an announcement using the plant paging system prior to initiation of _____" 3. Cues: change distractor D. to read: "Radioactive Waste Liquid Release" for parallelism with other choices.
68	F	2										Y	N/A	B	S	K/A G 2.1.29 1. Q=K/A, Q=RO level. 2. Q appears SAT at this time.

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
69	H	3				X						Y	N/A	B	E	K/A G 2.2.2 1. Q=K/A, Q=RO level. 2. Cred. Dist: recommend changing first part of distractors A. and B. to read: "AMSAC has NOT failed to automatically unblock." for parallelism with C. and D.
70	F	2	X									Y	N/A	B	E	K/A G 2.2.13 1. Q=K/A, Q=RO level. 2. Stem focus: add procedural ref. to Q statement, recommendation: "In accordance with SOMP 02-10 (Safety Tagging and Configuration Control), which ONE (1) of the following describes the required disposition of the CCC?"
71	F	3				X						Y	N/A	B	E	K/A G 2.3.5 1. Q=K/A, Q=RO level. 2. Cred. Dist: First part of distractors C. and D. weak and close to being non-plausible. Benefit of doubt given based on ease of correction. Recommend changing first part of distractors C. and D. to read: "clear after pressing and holding the Dose/Dose Rate toggle switch on the ED for 10 seconds." This modification would be in accordance with plausibility explanation for distractors C. and D.
72	H	2	X			X						Y	N/A	B	E	K/A G 2.3.7 1. Q=K/A, Q is a weak RO level hit, willing to accept due to nature of radiological controls Tier 3 questions. 2. Cred. Dist: second part of distractor D. non plausible; the worker is going to wear a respirator and exceed DAC limits? doesn't make sense. 3. Stem focus: do we need to specify in Q stem that 2-hour time for work with a respirator includes the respirator-induced inefficiency factor—otherwise the calculations may be technically incorrect or arguable as such.
73	H	2	X									Y	N/A	N	E	K/A G 2.4.2 1. Q=K/A, Q=RO level. 2. Stem focus: Ask the direct Q rather than the indirect. Recommend the following: "Based on the given conditions, which ONE (1) of the following conditions will result in an automatic reactor trip signal?"

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						Y	N/A	N	U	K/A G 2.4.34 1. Q=K/A, Q=RO level. 2. Cred. Dist: the second parts of distractors B. and C. do not work when compared with the other values and render the entire distractor implausible. Specifically, when comparing 55-65% levels with 80-90% levels, the choice of "prevent S/G overfill" is logically inconsistent. When comparing 80-90% level with 55-65% level, the choice of "minimize cooldown" is also logically inconsistent. In this case the "2X2" format choices only work with their 'correct' first part and the other two become implausible in comparison. Q is U due to multiple non plausible distractors.
75	H	2				X						Y	N/A	B	E	K/A G 2.4.45 1. Q=K/A, Q=RO level. 2. Cred. Dist: Distractor D is weak because of the broad nature of the statement, needs to be more plant- and Q-specific with precise nomenclature. Recommend: "Place the TX-XYZ switch (correct name here) to the "DEFEAT A" position (whatever the correct designation is) in accordance with the ARP for 1AD-6/E10." 3. Cred. Dist: Distractor A. is non plausible. If the applicant correctly recognizes the issue with the NC pump, there is no circumstance in any other procedure that will direct the operator to intentionally violate a plant interlock, lower power, and then trip the NCP with no other words about E-0 entry. Because there are no additional words about E-0 entry, distractor A. is saying it's perfectly acceptable to stay at 48% indefinitely with a tripped NCP.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
																SRO Questions

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
76	F	2	X	X			X					Y	Y	N	E	K/A 004A2.27 1. Q=K/A, Q=SRO-only, but weak as submitted. 2. It does not appear that comments provided during the initial 10-question review were incorporated with this question revision. 3. NRC written exam questions cannot be written in a conditional sense ("the conditions above could result in") because it opens the Q up to the potential of multiple correct answers. The correct answer must be explicitly correct, and the incorrect distracters must be explicitly incorrect. 4. To explicitly state the title of this SLC specification is to provide cueing in the stem—it is obvious that when "operating," that both the BAT and the FWST must be required. 5. This Q could be evaluated as U, benefit of the doubt is given due to initial review comments. Need to provide a second plausible incorrect distractor for the second part of B. and D. As written, second part of B.2. and D.2. are potentially correct. Consider the following recommendation: "Given the following conditions on Unit 1: -The unit is performing a normal NC system cooldown for refueling -Current NC temperature is 400 °F -1FWST boron is 2650 ppm Based on the given conditions, which ONE (1) of the following completes the statements below? (1) The applicable Selected Licensee Commitment (SLC) states that, as a minimum, the Boric Acid Tank (BAT) _____ the Refueling Water Storage Tank (FWST) shall be OPERABLE. (2) The basis of the applicable SLC states that the FWST limits on boron concentration are based upon _____ . A. (1) AND (2) ensuring a pH value between 7.5 and 9.5 for the solution recirculated within containment after a LOCA. B. (1) AND (2) 2nd plausible distractor? C. (1) OR (2) ensuring a pH value between 7.5 and 9.5 for the solution recirculated within containment after a LOCA. D. (1) OR (2) 2nd plausible distractor?"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
77	H	2	X			X						Y	Y	M	U	K/A 006A2.02 1. Q=K/A, Q=SRO-only 2. The Q format is a little confusing. How could all the conditions given in the stem be present 20 minutes later, if trend information is given? We must be precise as to what we are asking, precise as to specifically what the conditions are that we are asking the applicants to evaluate. 3. There appears to be erroneous information in the "General Discussion" portion of the answer/distractor analysis. The final statement reads: "If the containment barrier was also affected, the classification was be [sic] upgraded to a General Emergency." The correct answer is a General Emergency, so this statement does not make sense in context. 4. Cred. Dist.: Because this is an open reference question, by giving four unique EALs, it essentially becomes a direct look-up question; all the applicant has to do is look at the four choices and match them with the given conditions (i.e. rather than the other way around which is what would actually happen in an operational context). This makes the other distracters non-plausible. Q is U due to multiple non-plausible distracters. Consider the following recommendation: "Given the following conditions on Unit 1: -A Loss of Offsite Power occurred, resulting in a stuck open PZR safety valve -Reactor tripped automatically and SI actuated automatically -1B D/G failed to start -actions in E-0 are complete at Time=0645 <u>Conditions at Time=0700:</u> -1B D/G will not start -NC pressure=1585 PSIG -RVLIS Lower Range level=35% -PZR safety valve is stuck open -1NI-9A (NC Cold Leg Inj from NV) is closed -CETs=705 °F -Subcooling Monitor= -35 °F <u>Conditions at Time=0720:</u> -1B D/G will not start -NC pressure=1610 PSIG -RVLIS Lower Range level=33% -PZR safety valve is stuck open -1NI-9A is closed -CETs=715 °F -Subcooling Monitor= -XX °F [MCGUIRE INSERT CORRECT VALUE HERE] Based on the conditions at 0720, which ONE (1) of the following is the classification for this event? For the purposes of this question, do NOT consider Emergency Director judgement as a basis of classification. <u>REFERENCE PROVIDED</u> A. Notice of Unusual Event (NOUE) B. Alert Emergency C. Site Area Emergency D. General Emergency"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
78	H	2	X					X				Y	Y	N	E	K/A 022A2.02 1. Q=K/A, Q=SRO-only 2. Because this Q deals with Tech Spec REQUIRED ACTIONS greater than 1 hour, references need to be provided—probably all of LCO 3.8.1 and all of LCO 3.6.11 3. Stem Focus: Last bullet can be deleted, maintenance estimate of when the diesel will be fixed does not matter in the Q. 4. Consider slight modification to the Q statement as follows: "In order to NOT declare both trains of VX INOPERABLE, the crew must restore either 1B VX Train or 1A DG to OPERABLE status not later than _____ ."
79	H	3				X	X					Y	Y	M	U	K/A 059G2.1.20 1. Q=K/A, Q=SRO-only 2. Partial: Do not believe there is specifically a correct answer in the first part answer choices. Based on the given conditions in the stem, when the operator reaches step 22 of enclosure 8 of FR-H.1, the answer to the left-hand column will be "yes," which means that the 22.a.RNO is not applicable. When the operator moves on to step 23, the answer to the left-hand column will be "no," which makes the 23.a. RNO applicable. This leads to a correct answer to the first part of the Q to be: "align feed flow to just one S/G to establish flow rate required to lower core exit T/Cs." Therefore, it is technically incorrect to state that the correct answer is feed flow indication going up AND CETs decreasing. It would be more correct to state "CETs decreasing ONLY." 3. Cred Dist: when comparing the second part answer choices, "reactor vessel nozzles" is not plausible, it's obvious that if operators were to thermally shock the reactor vessel nozzles they would have already over-thermally shocked the SG tubes as well, which are going to feel the direct effects of introducing the "cold" CF flow onto the hot&dry S/G tubes. Q is U due to no correct answer, and multiple non-plausible distractors.
80	H	2	X									Y	Y	N	E	K/A 064G2.4.45 1. Q=K/A, Q=SRO-only 2. Cognitive Level: first part of the Q involves analysis of plant conditions in order to make an operability call on the 1A D/G. This analysis is more appropriately classified as higher cognitive; the second part of the Q is memory level. 3. Stem focus: Is enough information provided to the applicant to elicit the correct answer? Do we need to add another bullet to the stem *e.g.,* "no other annunciators lit at the local panel," or equivalent, so the applicant understands the other half of the system is unaffected in order to make the correct operability call?

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
81	F	2										Y	N	N	U	K/A 001A2.11 1. Q=K/A, Q does NOT match SRO-only. Knowledge of when a reactor trip is required is essentially knowledge of E-0 entry requirements, which is RO level knowledge. Based on the K/A for this Q, it may be difficult to hit SRO-only. One potential fix is to tie the question more closely to procedure selection and performance of procedures in parallel; for example, is there a way to have plausible answer choices that go between *e.g.,* "trip the reactor and GO TO E-0 ONLY," and "trip the reactor and implement E-0 AND continue performing steps in AP-xx?" 2. Otherwise, it may be necessary to get a new K/A for this Q. Q is U as submitted due to not meeting SRO-only criteria.
82	F	2	X									Y	Y	N	E	K/A 035G2.2.40 1. Q=K/A, Q=SRO only. 2. Stem Focus: for a complete evaluation of the TS, do we need to add information concerning the CRDM system and differentiate between NC loops OPERABLE and in operation? Consider the following recommendation: "Given the following conditions on Unit 1: -NC system heatup is in progress following a forced outage -NC system temperature is 500 °F -All Reactor trip and Bypass breakers are OPEN Based on the given conditions, which ONE (1) of the following completes the statements below? (1) in accordance with Technical Specifications (TS), a MINIMUM of ___ NC loops shall be OPERABLE (not necessarily in operation). (2) for an NC loop to be considered OPERABLE, among other requirements its associated S/G NR level shall be greater than a MINIMUM of _____ . [answer choices as submitted]"

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									Y	Y	N	E	K/A 027A2.01 1. Q=K/A, Q=SRO only. 2. Second Q statement: should reference TS Bases (instead of "Background Document"), can re-phrase the second Q statement as follows: "In accordance with Technical Specification 3.6.10 (Annulus Ventilation System (AVS)) Bases, with the heater INOPERABLE, the 1A Annulus Ventilation train is _____." Second part of all answer choices can then just read OPERABLE/INOPERABLE.
84	H	2										Y	Y	B	S	K/A 015/017 AA2.10 1. Q=K/A, Q=SRO only. 2. Q appears SAT at this time.
85	H	3										Y	Y	N	S	K/A 022AA2.04 1. Q=K/A, Q=SRO only. 2. Q appears SAT at this time.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
86	H	2	X			X						Y	Y	N	E	K/A 029G2.4.21 1. Q=K/A, Q=SRO only. 2. Stem Focus: try to find a better way of putting the crew in a particular spot in the procedure instead of stating "crew is at step #XX," because use of such a format implies (incorrectly?) that there is an expectation to know/recognize every step in every procedure by number. Recommendation below. 3. Credible dist.: As submitted, distractor "B" is non plausible. With the conditions as given, it is obvious that FR-S.1 has not helped the team fix the situation, why would they immediately transition away from the highest possible priority procedure to perform a lower-priority procedure? Consider the following recommendation: "Initial conditions on Unit 1: -The crew implemented E-0 (Reactor Trip or Safety Injection) due to a valid Reactor trip signal. -Subsequently the crew transitioned to FR-S.1 (Response to Nuclear Power Generation/ATWS) due to a failure of the Reactor to trip automatically or manually. Current conditions: -The crew has just completed the step in FR-S.1. to check NC T-colds stable or going up, and is now evaluating plant conditions for a potential procedural transition. -I/R SUR is positive. -W/R Neutron Flux is 7% -CETs are 1220 °F and increasing Based on the current conditions, which ONE (1) of the following describes the NEXT required procedural implementation, in accordance with FR-S.1? A. Complete the actions of FR-S.1, and then implement FR-C.1 (Response to Inadequate Core Cooling). B. Perform actions of FR-C.1 (Response to Inadequate Core Cooling) that do <u>not</u> cool down the NC system or add positive reactivity to the core in parallel with FR-S.1. C. Perform actions of FR-C.1 (Response to Inadequate Core Cooling) in parallel with FR-S.1. D. GO TO EG/1/A/MSAM/SACRG1 (Severe Accident Control Room Guideline Initial Response).

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				X	X					Y	Y	N	U	K/A 038EA2.17 1. Q=K/A, Q=SRO only. 2. Cred. Dist.: second part of distractors C. and D. are non-plausible. Why would starting requirements not need to be met before starting an NCP? There is no situation in E-3 where NCPs are started without support systems, and there are no conditions given in the stem that would lead the applicant to believe FRP requirements for starting NCPs without support systems apply. 3. Partial: Need to tighten up the first part Q statement to ensure that first part of distractors A. and C. are not potentially correct; for example "in accordance with the EOP background document for E-3, the principal reason for restarting an NC pump at this point in E-3 is to _____ during the subsequent recovery." Q is U due to multiple non plausible distractors.
88	H	2										Y	N	N	U	K/A 058G2.4.47 1. Q=K/A, Q not SRO only. 2. Although the Q asks "per design basis," the provided references show that the 1-hour battery limit is also included as a NOTE in AP15. Knowledge of NOTES or CAUTIONS in AOPs and EOPs is considered RO-level knowledge. Therefore, the applicant can elicit the correct answer from RO level knowledge that is not exclusive to SROs; *i.e.,* to be considered "SRO only" level, information that is contained in the design basis needs to be exclusively stated in the design basis, or other reference that is specific to SRO knowledge requirements (such as TS bases, FSAR analyses, etc.). If the information is listed in the design basis and another source that is either systems-level knowledge or RO level knowledge, it cannot be considered as "SRO only." Q is U due to not meeting SRO only knowledge level.
89	H	2	X									N	N	N	U	K/A WE11G2.4.23 1. Q does not meet K/A on the SRO level. The K/A specifically requires knowledge of bases information ("... knowledge of the bases for prioritizing emergency procedure implementation ..."); however, given the psychometrics of the Q, there are 4 unique answers that only deal with the next actions by the crew; therefore, an applicant can elicit the unique correct answer with only knowledge of the next required action, and not demonstrate any knowledge of bases information to get the correct answer. 2. This may be a difficult K/A to meet on the SRO level. Consider if K/A replacement is warranted. Q is U due to not meeting K/A on SRO level.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
90	F	2				X						Y	Y	N	E	K/A 036AA2.03 1. Q=K/A, Q=SRO only. 2. Cred. Dist: second part of distractors "B" and "D" are not plausible. Applicants know that the basis of TS which relates to FSAR analyses are based upon postulated accidents. 10CFR20 radiation limits apply to every-day operations and when compared to the other two answer choices are very weak. Need to reference an accident condition and have some stronger choice to balance out the question. Giving licensee benefit of the doubt here (rating the Q as "E" instead of "U") because it should be relatively easy to get a plausible distractor here in the "2X2" format.
91	H	2?	X				X					Y	Y	M	E	K/A 059AA2.02 1. Q=K/A, Q=SRO only. 2. LOD: may need to explain some issues associated with this Q during the in-office review so the Chief Examiner may understand the Q better. For example, the answer/distractor analysis says that another release is in progress; how can you determine this fact from the given information? 3. Partial: be careful with the use of the logical "ONLY" here; recommend specifically stating what is meant as follows: "A. The release may NOT be approved due to inadequate number of RC pumps. Recommended Release Rate information is correct. B. The release may NOT be approved due to incorrect Recommended Release Rate. RC Pump Data information is adequate."
92	F	2	X	X								Y	Y	N	E	K/A 067G2.4.18 1. Q=K/A, Q=SRO only. 2. Cues: first part of Q needs to be able to grammatically cover multiple trains if first part of distractors C. and D. are going to be plausible: "… assured Safe Shutdown Train(s) for this event is(are) _____," otherwise it's a sure-fire tipoff that A. or B. are correct. 3. Stem focus: do the PORVs have to be closed in 10 minutes for the given fire situation, or just for fires in the battery area? May not have a technically correct answer here, may need to change second part Q to be more specific to ensure 100% correct answer. Giving benefit of the doubt here with E rating based upon predicted ease of corrections.

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
93	H	2				X						Y	Y	B	U	WE15G2.4.23 1. Q=K/A, Q=SRO only. 2. Cred. Dist.: Second part of A, B, and D non plausible. Discussion: second parts of A and B are very similar and logically are interdependent of each other; *i.e.,* if the core becomes [completely] uncovered, core cooling has been lost. Furthermore, when discussing critical safety functions, to state "core cooling has been lost" is a specific condition that is not supported by conditions in the stem; the only information we are given is that the team has swapped ECCS suctions to cold leg recirculation which contradicts the statement that core cooling has been lost. Therefore, distractor A is non plausible. Distractor B states that the core has become uncovered, but it is RO level knowledge to know that the "core uncovered" setpoint is RVLIS lower level of 39%--with RVLIS at over half full reading, why would applicant think that the core is uncovered? Distractor D is non plausible because the applicants have seen many LBLOCAs in the simulator where the RCS and the FWST are voided/dumped into the containment sumps and the levels do not come close to offscale high. Q is U due to multiple non plausible distractors. Consider the following recommendation, don't know if it works for McGuire or not: "Initial conditions on Unit 1: -an accident occurred resulting in automatic Reactor Trip and Safety Injection -Containment pressure peaked at 2.8 PSIG and is slowly decreasing Current conditions: -ECCS suctions have been aligned for Cold Leg Recirculation -FWST level is 7% and lowering -NC pressure is 2 PSIG -CETs = 600 °F and increasing -RVLIS lower level = 49% and lowering -Containment sump levels are as follows: LT-XXX=13.1 ft and rising, LT-XXX=12.9 ft and rising, LT-XXX=7 ft and stable Based on the current conditions, which ONE (1) of the following states the required procedure transition, AND the reason for implementation of this procedure? A. Implement FR-C.2 (Response to Degraded Core Cooling). The level of water in the core region has been reduced such that a challenge exists to core cooling. B. Implement FR-C.2 (Response to Degraded Core Cooling). Containment sump levels are invalid and can be disregarded due to instrument failures. C. Implement FR-Z.2 (Response to Containment Flooding). Containment sump levels are higher than expected, indicating a potential for a ruptured RN or KC pipe inside containment. D. Implement FR-Z.2 (Response to Containment Flooding). Containment sump levels are higher than expected, indicating a potential secondary line (feedwater or main steam) break inside containment along with the input from the NC system and the FWST."

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
94	H	2				X	X					Y	Y	M	E	K/A G2.1.34 1. Q=K/A, Q=SRO only 2. Cred. Dist. And Partial: Second part of all distractors needs revision and strengthening. Correct answers must be precisely stated using language that is clearly as stated from the TS bases, incorrect answers need to be more plausible (if exposure limits at nearest site boundary are not exceeded, then it's reasonable that exposure limits within the site boundary would not be exceeded). Benefit of doubt given for E rating based upon predicted ease of correction. Consider the following recommendation: "Given the following conditions on Unit 2: -Power=65% due to maintenance on 2B CF pump -Chemistry just reported that NC Dose Equivalent I-131 was 100 µCi/gm based upon a sample taken 1 hour ago Which ONE (1) of the following completes the statements below? (Reference Provided) Based on the given conditions and in accordance with Technical Specification (TS) 3.4.16 (RCS Specific Activity), a valid REQUIRED ACTION is to _____. AND In accordance with the bases of TS 3.4.16, the LCO limits on the specific activity of the NC system ensures the resulting 2 hour doses _____. A. Restore DOSE EQUIVALENT I-131 to within limit in 48 hours. at the site boundary will not exceed a small fraction of the 10CFR100 dose guideline following a SGTR accident. B. Restore DOSE EQUIVALENT I-131 to within limit in 48 hours. to the whole body and thyroid of radiation workers will not exceed the 10CFR20 dose guideline following a SGTR accident with a stuck open main steam safety valve on the ruptured SG. C. Be in MODE 3 with T_{ave}< 500 °F in 6 hours. at the site boundary will not exceed a small fraction of the 10CFR100 dose guideline following a SGTR accident. D. Be in MODE 3 with T_{ave}< 500 °F in 6 hours. to the whole body and thyroid of radiation workers will not exceed the 10CFR20 dose guideline following a SGTR accident with a stuck open main steam safety valve on the ruptured SG."

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						Y	Y	N	E	G2.1.45 1. Q=K/A, Q=SRO only 2. Cred. Dist.: How is B. (VCT) a credible distractor? The provided answer/distractor analysis mentions containment temperature, not the VCT. Which one was intended for distractor B? Please ensure correct. Q is E due to one non-plausible distractor.
96	H	3				X	X					Y	Y	B	E	G 2.2.37 1. Q=K/A, Q=SRO only. 2. Cred. Dist: Don't agree that "Operable but Degraded" is an acceptable condition per TS., change to yes/no toggle on INOPERABLE as shown below. 3. Partial correct: if at least one DC train is available, is at least one DC channel available as well? recommendation below. Recommend the following: "[initial stuff in Q as before] Based on the conditions following restoration given above, per Technical Specification (TS) 3.8.6 (Battery Cell Parameters), Battery EVCA _____ INOPERABLE. The basis of TS 3.8.6 states that "The OPERABILITY of the DC subsystems .... includes maintaining at least one _____ of DC sources OPERABLE during accident conditions." A. 1. is 2. train B. 1. is NOT 2. train C. 1. is 2. channel D. 1. is NOT 2. channel"

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
97	H	2	X									Y	N	N	U	G2.3.12 1. Q=K/A, Q is NOT SRO only. Knowledge of the emergency exposure limits is not SRO only information and should be known by any operator at the plant. What would be SRO-only would be the decision to send person X instead of person Y, and/or knowledge of the administrative requirements concerning emergency exposure limits (does the person have to be a volunteer, does the person have to be briefed, does the ED have the specifically sign the authorization or can the authorization be given verbally, etc.). 2. Stem focus: in Qs of this type, stem must specify the emergency limit to be applied, because otherwise there is a judgement call on the part of the applicant and we are forcing them to make an unwarranted assumption. *E.g.,* include a bullet statement in the stem explicitly stating "the Emergency Director has authorized an emergency exposure for this work in order to protect valuable equipment." Q is U due to not meeting SRO-only.
98	H	2		X				X				Y	Y?	N	E?	G2.3.14 1. Q=K/A, Q=SRO only? Is there any formal plant procedure that supports the lesson plan statement? Need to have a specific reference, and state the reference in the Q statement ("In accordance with RP-XYZ-123 (Duke ALARA Program Requirements), which ONE of the available teams should be selected?") 2. Q may be o.k. if a site-specific reference as mentioned above can be used, otherwise the Q may not be allowable due to operational validity and SRO only concerns.
99	F	2	X									Y	Y	N	E	G 2.4.43 1. Q=K/A, Q=SRO only. 2. Stem focus: recommend stating first part of Q statement to work the same as the second part Q statement as follows: "In accordance with RP-029, if plant conditions remain the same, follow-up notifications are required _____ until the emergency is termination."

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	F	3				X						Y	Y	B	U	G 2.4.44 1. Q=K/A, Q=SRO only 2. Cred. Dist: common knowledge that PARS are only required in GE situations. Distractors A. and B. are non plausible. Q is U due to multiple non plausible distractors. Consider the following recommendation: "In accordance with RP-004 (General Emergency) and RP-029 (Notifications to Offsite Agencies from the Control Room), irrespective of the event in progress the INITIAL notification to offsite agencies of a General Emergency _____ ALWAYS requires a Protective Action Recommendation (PAR) to be made. AND If a PAR is required, and wind speeds are <u>less than</u> 5 MPH, the MINIMUM geographic radius that requires complete evacuation is _____. Which ONE (1) of the following completes the above statements? A. does 2 mile radius B. does NOT 2 mile radius C. does 5 mile radius D. does NOT 5 mile radius"

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

Facility: McGUIRE Date of Exam: 09/05/12 Exam Level: RO ☑ SRO ☑

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

	Printed Name/Signature	Date
a. Grader	David Laney / DL	9/26/12
b. Facility Reviewer(*)	N/A	N/A
c. NRC Chief Examiner (*)	MICHAEL MEEKS / Michael Meeks	10/05/2012
d. NRC Supervisor (*)	MALCOLM T. WIDMANN / Malcolm T. Widmann	10/10/12

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