

Facility: McGuire		Date of Examination: 2/2020
Examination Level: RO		Operating Test Number: N20-1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, P, R	2.1.20 (4.6) Ability to interpret and execute procedure steps.
		JPM: Complete a Surveillance for Mode Change
Conduct of Operations	M, R	2.1.37 (4.3) Knowledge of procedures, guidelines or limitations associated with reactivity management.
		JPM: Verification of Keff <0.99 with Shutdown Banks Withdrawn
Equipment Control	M, R	2.2.43 (3.0) Knowledge of process used to track inoperable alarms.
		JPM: Partial Loss of Annunciators
Radiation Control	M, R	2.3.7 (3.5) Ability to comply with radiation work permit requirements during normal or abnormal conditions.
		JPM: Evaluate Stay Time with Lowered SFP Level
<p>NOTE: All items (5 total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).</p>		
<p>*Type Codes & Criteria:</p> <p>(C)ontrol room, (0) (S)imulator, (0) or Class(R)oom (4)</p> <p>(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (1)</p> <p>(N)ew or (M)odified from bank (≥ 1) (3)</p> <p>(P)revious 2 exams (≤ 1; randomly selected) (1)</p>		

RO Admin JPM Summary

- A1a This is a Bank JPM. The operator will be told that Unit 1 is in Mode 4 during a plant startup, that the current EFPD is 348, that NC System pressure has stabilized at 1600 psig, and that it has become necessary to perform Enclosure 13.4, NC Boron Concentration Checklist, of PT/1/A/4600/003D, Monthly Surveillance Items, in order to continue with the plant startup. The operator will be provided with the most recent chemistry sample results for the Cold Leg Accumulator Boron Concentrations, and directed to complete Enclosure 13.4, NC Boron Concentration Checklist, of PT/1/A/4600/003D, Monthly Surveillance Items. Additionally, the operator will be directed to identify any Flex Strategy Administrative Limits and any Technical Specification LCO that are not being complied with. The operator will be expected to complete Enclosure 13.4 of PT/1/A/4600/003D in accordance with the attached KEY, determine that all Flex Strategy Administrative Limits are met, and determine that LCO 3.5.1 is not currently met. This JPM appeared on the 2016 Initial License Exam and was randomly selected for the 2020 Exam.
- A1b This is a modified Bank JPM. The operator will be told that a Unit 1 startup in progress per OP/1/A/6100/001 (Controlling Procedure for Unit Startup) and PT/0/A/4150/047 (1/M Monitoring During Startup), that all control banks have just been reinserted because the extrapolated critical rod position indicated that criticality would occur below the lower ECP band, that the OAC and REACT Program are unavailable, and that it is expected that Tavg will be maintained at its current value of 557°F. The operator will be provided with an initial set of plant /reactor conditions; and directed to perform Enclosure 4.7 (Verification of Keff <0.99 with Shutdown Banks Withdrawn) of OP/0/A/6100/006 (Reactivity Balance Calculation) to ensure that an inadvertent Mode change has not occurred. The operator will be expected to determine that an inadvertent mode change has not occurred (See attached KEY).
- A2 This is a modified JPM. The operator will be told that while Unit 1 was operating at 100% power, a lightning strike caused several of the Unit 1 Control Room Annunciators to fail requiring entry into PT/1/A/4600/033 (Loss of Control Room Annunciators) and has completed Attachment 2 (Partial Loss of Annunciator Panels) through Step 3.8. The operator will be told that several operators are reviewing the Annunciator Response Procedures for each failed annunciator. The operator will be provided with a list of failed annunciators on 1AD-13; and directed to perform step 9 of Attachment 2 to determine (1) IF any AP or EP that has a Time Critical Task has been affected, (2) IF any Technical Specification or Selected Licensee Commitment surveillance has been affected and (3) IF any proceduralized Alternate Action must be taken. The operator will be expected to determine that there are Alternative Methods procedurally identified for Surveillance associated with three of these annunciators, that one failure impacts the Semi-Daily Surveillance associated with TS SR 3.6.4.1, that one failure impacts the Daily Surveillance associated with SLC 16.7.3, and that one failure impacts an AP/EP Time Critical Task per the attached KEY.

- A3 This is a modified Bank JPM. The operator will be told that a station wide accident has occurred due to an Earthquake, that Unit 1 is Mode 6 with a full core off-load, that the Unit 1 Spent Fuel Pool level has lowered to 10 feet above the top of the fuel, and has stabilized at this level, and that the crew is implementing AP/1/A/5500/41 (Loss of Spent Fuel Cooling or Level) and EP/1/A/5000/G-1 Generic Enclosures), Enclosure 32 (Monitoring Unit 1 SFP Level and Temperature). They will also be told that there are no installed radiation monitors that are operable in the Spent Fuel Building, that an RWP limit of 500 mrem has been placed on all personnel performing emergency tasks within the building, and that the operator has been assigned a repetitive task within Generic Enclosure 32 which will require them to enter the Fuel Building and proceed to the area around the Spent Fuel Pool, and remain there for 8 minutes, before exiting the building. The operator will be directed to use Enclosure 13 (Spent Fuel Pool Radiation Level Vs. Water Level Above Fuel) of AP/1/A/5500/41 (Loss of Spent Fuel Cooling or Level), and determine the number of times they will be able to perform this repetitive task before they must be replaced by another operator. The operator will be expected to use Enclosure 13 of AP/1/A/5500/41 to determine that the dose rate around the Spent Fuel Pool area is 649 mrem/hour and based on this the operator will determine that the repetitive task can be performed 5 times before another operator will need to perform the task.

Facility: McGuire		Date of Examination: 2/2020
Examination Level: SRO		Operating Test Number: N20-1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, R	2.1.18 (3.8) Ability to make accurate, clear, concise logs, records, status boards, and reports.
		JPM: Determine Reportability Requirements
Conduct of Operations	M, R	2.1.1 (4.2) Knowledge of conduct of operations requirements
		JPM: Perform Daily Surveillance Items Checklist
Equipment Control	M, R	2.2.18 (3.9) Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.
		JPM: Perform a Thermal Margin Determination
Radiation Control	D, P, R	2.3.6 (3.8) Ability to approve release permits.
		JPM: Approve a Liquid Release Permit
Emergency Procedures/Plan	D, R	2.4.41 (4.6) Knowledge of emergency action level thresholds and classifications.
		JPM: Classify an Emergency Event
<p>NOTE: All items (5 total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).</p>		
<p>*Type Codes & Criteria:</p> <p>(C)ontrol room, (0) (S)imulator, (0) or Class(R)oom (5)</p> <p>(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (2)</p> <p>(N)ew or (M)odified from bank (≥ 1) (3)</p> <p>(P)revious 2 exams (≤ 1; randomly selected) (1)</p>		

SRO Admin JPM Summary

- A1a This is a modified Bank JPM. The operator will be provided with a set of plant conditions that ultimately led to an automatic reactor trip from 100% power. The operator will be directed to determine reportability requirements, including completion of any necessary paperwork. The operator will be expected to identify that this condition requires a 4-hour notification to the NRC in accordance with RP/0/A/5700/010 (NRC Immediate Notification Requirements), and to complete Attachment 2 (NRC Event Notification Worksheet) in accordance with the attached Key.
- A1b This is a modified Bank JPM. The operator will be told that Unit 1 is in Mode 1 at 100% power, given several initial plant conditions and told that Enclosure 13.1, Daily Surveillance Items Checklist, of PT/1/A/4600/003B, "Daily Surveillance Items," has been completed. The operator will be directed to evaluate the completed Enclosure 13.1 of PT/1/A/4600/003B (Daily Surveillance Items Checklist) per Step 12, identify all Technical Specification/SLC required ACTION, as well as all other actions that must be taken. The operator will be expected to review the completed Enclosure 13.1, Daily Surveillance Items Checklist and associated Equipment Problem Identification Form and verify that the applicable surveillance items meet specified acceptance criteria. For surveillance items NOT meeting Acceptance Criteria, all required action will be identified per the attached KEY.
- A2 This is a modified Bank JPM. The operator will be told that Unit 1 was shutdown 16 days ago for a mid-cycle outage after 200 days of operation, that Unit 1 is currently in Mode 5 with the NC system is 125°F and "A" Train ND in service; and that preparations are being made to lower NC system level to 67 inches above Hot Leg Centerline per Enclosure 4.1 (Draining the NC System) of OP/1/A/6100/SD-20 (Draining the NC System). The operator will be directed to complete Attachment 12.6 of OMP 5-8 (Shift Supervision Turnovers) to determine the new thermal margin with NC system level at 67 inches above Hot Leg Centerline and make the appropriate notifications (Complete all paperwork). The operator will be expected to determine the Thermal Margin and complete Attachment 12.6 (Thermal Margin Determination) and Attachment 12.7 (Shutdown Assessment Status) of OMP 5-8 (Shift Supervision Turnovers) in accordance with the provided KEY.
- A3 This is a Bank JPM. The operator will be provided with a list of equipment that is Out-of-Service (OOS) which will include some Liquid Radwaste monitoring equipment. The operator will be told that Unit 1 and Unit 2 are in Mode 1 at 100% power, that there are no on-going liquid radiation releases, that Attachment 1 ('B' WMT Release Using 'B' WMT Pump) of OP/0/B/6200/607 (Liquid Waste Release – WMT 'B' with WMT Pump 'B') is in progress in preparation for release of the B Waste Monitor Tank, that Attachment 10 ('B' WMT Release Authorization) has been initiated, that RP has just delivered the LWR package # 2020067 to the Control Room, and that all available RC Pumps are running. The operator will be directed to review and approve LWR Package # 2020067 by performing Steps 9-12 of Attachment 10 ('B' WMT Release Authorization) of OP/0/B/6200/607; and if LWR Package # 2020067 cannot be approved, identify why not. The operator will be expected to determine that LWR Package # 2020067 cannot be approved because the recommended Release Rate is GREATER THAN the Allowable Release Rate and OEMF49 has NOT been source checked. This JPM appeared on the 2018 Initial License Exam and was randomly selected for the 2020 Exam.

- A4 This is a Bank JPM. The operator will be told that Unit 1 was operating at 100% power and Unit 2 was in No Mode when a Loss of Offsite Power occurred to the site. The operator will be directed to classify the event in accordance with RP/0/A/5700/000 (Classification of Emergency), identify the EAL resulting in the Highest Emergency Classification, then prepare a Nuclear Power Plant Emergency Notification Form for the event, and present to the Emergency Coordinator for approval. The operator will be expected to declare a SITE AREA EMERGENCY (SAE) based on SS1.1, "Loss of all offsite and all onsite AC power capability to essential 4160V buses 1(2)ETA and 1(2)ETB for ≥ 15 min;" and complete the Emergency Notification Form in accordance with the provided KEY within the following 15 minutes.

Facility:	McGuire	Date of Examination:	2/2020
Exam Level (circle one):	<i>RO (only) / SRO(I) / SRO (U)</i>	Operating Test No.:	N20-1
Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)			
System / JPM Title		Type Code*	Safety Function
A. APE 022 Loss of Reactor Coolant Makeup [022 AA1.04 (3.3/3.2)] Restoring Charging Flow with Hot NC Pump Seals		S, N, A, L	2
B. APE 065 Loss of Instrument Air [065 AA2.07 (2.8/3.2)] Auxiliary Feedwater Flow Control with a Loss of Instrument Air		S, N, A, L	8
C. 061 Auxiliary/Emergency Feedwater (AFW) System [061 A2.07 (3.4/3.5)] CA Suction Source Realignment		S, P, D, A, EN	4S
D. 010 Pressurizer Pressure Control System [010 A4.03 (4.0/3.8)] Place LTOP in Service and Respond to a Failed PORV		S, D, A, L	3
E. APE 056 Loss of Off-Site Power [056 AA1.02 (4.0/3.9)] Restore Normal Power to 1ETB and Unload the 1B EDG/Respond to 1ETB Lockout		S, D, A	6
F. APE 061 ARM System Alarms [061 AA2.01 (3.5/3.7)] Control Room Air Intake High Radiation Alarms		S, P, D	7
G. 007 Pressurizer Relief Tank/Quench Tank System [007 A1.03 (2.6/2.7)] Control Pressurizer Relief Tank Parameters		S, D	5
<i>H. 003 Reactor Coolant Pump System [003 A4.01 (3.3/3.2)] Start and Stop the 1B NCP for NCS Venting</i>		<i>S, D, L</i>	<i>4P</i>
In-Plant Systems* 3 for RO; 3 for SRO-I; 3 or 2 for SRO-U			
I. APE 024 Emergency Boration [024 AA1.04 (3.6/3.7)] Emergency Borate the NCS Locally Using 2NV-269		P, D, R, E	1
J. APE 069 Loss of Containment Integrity [069 AA1.03 (2.8/3.0)] Start the Hydrogen Analyzers		D, R, E	5
K. EPE 055 Station Blackout [055 EK3.02 (4.3/4.6)] Establish NC Pump Seal Injection From the SSF		D, E	6

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

JPM Summary

JPM A This is a New JPM. The operator will be told that a loss of Charging at 100% power has resulted in a plant trip and hot lower bearing temperatures on all four NC Pumps and that charging flow is now ready to be restored. The operator will be directed to perform Enclosure 4 (Restoring Charging Flow With Hot NC Pump Seals) of AP/1/A/5500/12, "Loss of Letdown, Charging or Seal Injection." The operator will be expected to isolate the NC Pumps seals, attempt to start the 1B NV Pump to re-establish Charging Flow, then start the PD Pump when the 1B NV Pump fails to start (**Alternate Path**) and complete the restoration of 50 gpm charging flow per Enclosure 4 of AP/1/A/5500/12.

JPM B This is a New JPM. The operator will be told that with Unit 1 at 100% power, a seismic event resulted in a loss of VI and a reactor trip, that the crew is in EP/1/A/5000/ES-0.1, "Reactor Trip Response," and continuing with AP/1/A/5500/22, "Loss of VI," as able; and that crew has just determined that VI Header pressure is less than 85 psig at Step 2 of ES-0.1. The operator will be directed to perform the ES-0.1 Step 2 RNO to control NC System Cooldown. The operator will be expected to initiate the Step 2 RNO of ES-0.1, determine that all S/G levels are greater than 11% and rising in an uncontrolled manner, then implement Generic Enclosure 16 (CA Flow Control with a Loss of VI) to minimize cooldown and stabilize all Steam Generator levels prior to Steam Generator Narrow Range level in any Steam Generator rising to greater than 92%. When attempting to control CA flow from the MDCA Pump to the 1D S/G the operator will determine that the CA flow cannot be controlled from the Control Room and direct local action to isolate CA flow (**Alternate Path**).

JPM C This is a Bank JPM. The operator will be told that Unit 1 has just tripped from 100% power, due to seismic activity, that the crew is now implementing EP/1/A/5000/ES-0.1 (Reactor Trip Response), and that the CA Storage Tank has developed a leak, and level has lowered to 1.5 feet. The operator will be directed to perform EP/1/A/5000/G-1, Generic Enclosure 20 (CA Suction Source Realignment), while the crew continues with ES-0.1. The operator will realign the suction of the CA Pumps from the non-safety related to the safety-related source (RN). During this action, the operator will recognize that RN Supply to the 1B MDCA Pump cannot be established (**Alternate Path**) and stop the pump. This

JPM appeared on the 2016 Initial License Exam and was randomly selected for the 2020 Exam.

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

JPM E This is a Bank JPM. The operator will be told that Unit 1 was operating at 100% power when the normal power breaker to 1ETB was inadvertently opened, the 1B EDG started and re-energized the bus and sequenced loads onto 1ETB as expected, the crew entered AP/1/A/5500/07, Loss of Electrical Power, Case II, Loss of Normal Power to Either 1ETA or 1ETB; and they are currently at Step 86. The operator will also be told that an investigation has revealed that the breaker was inadvertently opened, that the breaker is ready to be re-closed, and that the crew is attempting to return 1ETB to normal power and shutdown the 1B D/G. The operator will be directed to restore 1ETB to normal power and separate the 1B D/G from the Grid from the Control Room per OP/1/A/6350/002 (Diesel Generator), Enclosure 4.4 (1B D/G Shutdown). The operator will be expected to parallel 1ETB, with 1ATD, and then unload the 1B D/G. When the operator transfers the 1ETB load to the normal power supply and opens the 1ETB Emergency Breaker, an overcurrent lockout will occur on Bus 1ETA causing the running NV and KC Pumps to stop (**Alternate Path**). The operator will be expected to carry out the immediate actions of AP/1/A/5500/07 by starting the 1B NV Pump and the 1B KC Pumps manually.

JPM F This is a Bank JPM. The operator will be 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 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 B Train Outside Air Pressure Fan. This JPM appeared on the 2018 Initial License Exam and was randomly selected for the 2020 Exam.

JPM G This is a Bank JPM. The operator will be told that Unit 1 is operating at power, that a transient has resulted in a discharge to the Pressurizer Relief Tank (PRT) from the Pressurizer PORVs, that the plant has stabilized and all Pressurizer PORVs are closed, and then provided with a set of PRT parameters. The operator will also be told that Steps 3.1 through 3.5 of Enclosure 4.3 (PRT Cooling) of OP/1/A/6150/004 (Pressurizer Relief Tank), have been completed. The operator will be directed to perform Enclosure 4.3 (PRT Cooling) of OP/1/A/6150/004 (Pressurizer Relief Tank), starting with Step 3.6, to lower PRT Temperature to clear 1AD-6, C9, PRT HI TEMP. The operator will be expected to complete Enclosure 4.3 (PRT Cooling) of OP/1/A/6150/004 (Pressurizer Relief Tank) such that PRT Temperature is less than 110°F, and 1AD-6, C9, PRT HI TEMP is EXTINGUISHED.

- JPM H This is a Bank JPM. The operator will be told that a plant startup is in progress per OP/1/A/6100/001 (Controlling Procedure For Unit Startup), that the crew is implementing Enclosure 4.2 (Venting the NC System (Control Room Activities)) of OP/1/A/6100/SU-6 (Venting the NC System), that the NC System is water solid, and that NC System pressure is being maintained between 320-350 psig. The operator will also be told that the crew is ready to conduct a 60 second run of the 1B NC Pump, and that Attachment 1 (Startup and Operation) of OP/1/A/6150/002 A (Reactor Coolant Pump Operation) has been marked up for place-keeping through step 3.1.3 to support NC Pump operation. The operator will be directed to start the 1B NCP per Section 3.3 of Attachment 1 (Startup and Operation) of OP/1/A/6150/002 A (Reactor Coolant Pump Operation); and then stop the 1B NCP after 60 seconds of operation, or if a low temperature condition develops. The operator will be expected to conduct a 60 second run of the 1B NC Pump in accordance with Attachment 1 of OP/1/A/6150/002 A.
- JPM I 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 and Response to Inadvertent Dilution) was entered, and that while attempting to open 2NV-265B (Boric Acid To NV Pumps), the BOP 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. The operator will be expected to attempt to open 2NV-265B, and then open 2NV-269 within ten (10) minutes of dispatch minus transit time from the Control Room to the RCA Entry Point. This is a Time Critical JPM. This JPM appeared on the 2016 Initial License Exam and was randomly selected for the 2020 Exam.
- JPM J This is Bank JPM. The operator will be told that Unit 1 has tripped from 100% power due to an accident, that the crew is in EP/1/A/5000/FR-Z.1 (Response to High Containment Pressure), and that the crew is checking Containment Hydrogen Concentration. The operator will be directed to place the Hydrogen Analyzers in service in accordance with Enclosure 5 (Placing H₂ Analyzers In Service) of EP/1/A/5000/G-1 (Generic Enclosures). The operator will be expected to place the 1A Hydrogen Analyzer in service.
- JPM K This is a Bank JPM. The operator will be placed in a situation in which a Loss of All AC has occurred on Unit 1. The operator will be told that EP/1/A/5000/ECA-0.0, (Loss of All AC Power) has been implemented, and that an operator to complete Enclosure 3 (Unit 1 ETA And ETB Rooms - ECA-0.0 Actions). The operator will be directed to obtain the Brown Folder at SSF and complete Enclosure 2, (Unit 1 SSF-ECA-0.0 Actions), which will require the re-establishment of NCP Seal Water flow. The operator will be expected to place the SSF Diesel in operation and supply power to 1SLXG, start the Standby Makeup Pump and ensure that it is supplying NCP seal injection within seven (7) minutes of dispatch, ensure that 1SLXG is supplying power to SMXG and SMXG-1, and that Battery Chargers SDSP-1 and SDSP-2 supply breakers are closed. This is a Time Critical JPM.

Facility: McGuire			Exam Date: February 2020										
Admin JPMs	1 ADMIN Topic and K/A	2 LOD (1-5)	3 Attributes							4 Job Content		5 U/E/S	6 Explanation
			I/C Focus	Cues	Critical Steps	Scope (N/B)	Overlap	Perf. Std.	Key	Minutia	Job Link		
RO A1a	2.1.20	3										S	Are Flex Strategy Admin Limits required RO knowledge?
RO A1b	2.1.37	3										E*	Could we give them the full version of OP/0/A/6100/006 instead of waiting for them to ask for the attachment? Also, are we giving paper copies of everything or will they be able to access their procedures on the computer? We essentially have 2 surveillances for COO. Probably OK.
RO A2	2.2.43	3										S	
RO A3	2.3.7	2										S	
SRO A1a	2.1.18	2										S	
SRO A1b	2.1.1	3										S	
SRO A2	2.2.18	2										S	
SRO A3	2.3.6	3										S	
SRO A4	2.4.41	3										S	
Simulator/In-Plant JPMs	1 Safety Function and K/A												
A	2	3										S	Alternate Path
B	8	3					X					E/U	This looks like more like a 4S than an 8. I understand that the initiating problem is due to a loss of IA, but that is only supplemental to feeding. Alternate Path
C	4S	3										S	Alternate Path
D	3	2										E	Alternate Path At what point is it too long to close the block valve? Perhaps loss of subcooling?
E	6	3										S	Alternate Path
F	7	3										E	Step 10 cue should be changed to something like RP acknowledges

													I'd rather not hand out individual enclosures. Let's discuss how we are going to handle this. My preference is to let them choose the entire procedure.
G	5	2										S	
H	4P	4										S	
I	1	2										S	
J	5	3										S	We might want to tell them to just place 1A in service.
K	6	4										E	We need to add words about parts being time critical to the examiner's cue sheet.

ES-301	Operating Test Review Worksheet	Form ES-301-7
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Instructions for Completing This Table:

Check or mark any item(s) requiring a comment and explain the issue in the space provided using the guide below.

1. Check each JPM for appropriate administrative topic requirements (COO, EC, Rad, and EP) or safety function requirements and corresponding K/A. Mark in column 1. (ES-301, D.3 and D.4)
2. Determine the level of difficulty (LOD) using an established 1–5 rating scale. Levels 1 and 5 represent an inappropriate (low or high) discriminatory level for the license that is being tested. Mark in column 2 (Appendix D, C.1.f)
3. In column 3, "Attributes," check the appropriate box when an attribute is **not met**:
 - The initial conditions and/or initiating cue is clear to ensure the operator understands the task and how to begin. (Appendix C, B.4)
 - The JPM contains appropriate cues that clearly indicate when they should be provided to the examinee. Cues are objective and not leading. (Appendix C, D.1)
 - All critical steps (elements) are properly identified.
 - The scope of the task is not too narrow (N) or too broad (B).
 - Excessive overlap does not occur with other parts of the operating test or written examination. (ES-301, D.1.a, and ES-301, D.2.a)
 - The task performance standard clearly describes the expected outcome (i.e., end state). Each performance step identifies a standard for successful completion of the step.
 - A valid marked up key was provided (e.g., graph interpretation, initialed steps for handouts).
4. For column 4, "Job Content," check the appropriate box if the job content flaw **does not meet** the following elements:
 - Topics are linked to the job content (e.g., not a disguised task, task required in real job).
 - The JPM has meaningful performance requirements that will provide a legitimate basis for evaluating the applicant's understanding and ability to safely operate the plant. (ES-301, D.2.c)

5. Based on the reviewer's judgment, is the JPM as written (U)nacceptable (requiring repair or replacement), in need of (E)nhancement, or (S)atisfactory? Mark the answer in column 5.
6. In column 6, provide a brief description of any (U)nacceptable or (E)nhancement rating from column 5.

Save initial review comments and detail subsequent comment resolution so that each exam-bound JPM is marked by a (S)atisfactory resolution on this form.

ES-301

Operating Test Review Worksheet

[illegible]

[illegible]

[illegible]

ES-301

Operating

[illegible]

Instructions for Completing This Table:

Use this table for each scenario for evaluation.

- 2 Check this box if the events are not related (e.g., seismic event followed by a pipe rupture) **OR** if the events do not obey the laws of physics and thermodynamics.
- 3, 4 In columns 3 and 4, check the box if there is **no** verifiable or required action, as applicable. Examples of required actions are as follows: (ES-301, D.5f)
- opening, closing, and throttling valves
 - starting and stopping equipment
 - raising and lowering level, flow, and pressure
 - making decisions and giving directions
 - acknowledging or verifying key alarms and automatic actions (Uncomplicated events that require no operator action beyond this should **not** be included on the operating test unless they are necessary to set the stage for subsequent events. (Appendix D, B.3).)
- 5 Check this box if the level of difficulty is **not** appropriate.
- 6 Check this box if the event has a TS.
- 7 Check this box if the event has a critical task (CT). If the same CT covers more than one event, check the event where the CT started **only**.
- 8 Check this box if the event overlaps with another event on any of the last two NRC examinations. (Appendix D, C.1.f)
- 9 Based on the reviewer's judgment, is the event as written (U)nacceptable (requiring repair or replacement), in need of (E)nhancement, or (S)atisfactory? Mark the answer in column 9.
- 10 Record any explanations of the events here.

In the shaded boxes, sum the number of check marks in each column.

- In column 1, sum the number of events.
- In columns 2–4, record the total number of check marks for each column.
- In column 5, based on the reviewer's judgement, place a checkmark only if the scenario's LOD is not appropriate.
- In column 6, TS are required to be ≥ 2 for each scenario. (ES-301, D.5.d)
- In column 7, preidentified CTs should be ≥ 2 for each scenario. (Appendix D; ES-301, D.5.d; ES-301-4)
- In column 8, record the number of events not used on the two previous NRC initial licensing exams. A scenario is considered unsatisfactory if there is < 2 new events. (ES-301, D.5.b; Appendix D, C.1.f)
- In column 9, record whether the scenario as written (U)nacceptable, in need of (E)nhancement, or (S)atisfactory from column 11 of the simulator scenario table.

Facility: McGuire		Exam Date: February 2020							
Scenario	1 Event Totals	2 Events Unsat.	3 TS Total	4 TS Unsat.	5 CT Total	6 CT Unsat.	7 % Unsat. Scenario Elements	8 U/E/S	11 Explanation
1	7	0	2	0	3	0	0	S	
2	7	0	2	0	3	0	0	E	
3	8	0	2	0	3	0	0	E	
4	7	0	2	0	3	0	0	E	

Instructions for Completing This Table:

Check or mark any item(s) requiring comment and explain the issue in the space provided.

1, 3, 5 For each simulator scenario, enter the **total** number of events (column 1), TS entries/actions (column 3), and CTs (column 5).
This number should match the respective scenario from the event-based scenario tables (the sum from columns 1, 6, and 7, respectively).

2, 4, 6 For each simulator scenario, evaluate each event, TS, and CT as (S)atisfactory, (E)nhance, or (U)nsatisfactory based on the following criteria:

- Events. Each event is described on a Form ES-D-2, including all switch manipulations, pertinent alarms, and verifiable actions. Event actions are balanced between at-the-controls and balance-of-plant applicants during the scenario. All event-related attributes on Form ES-301-4 are met. Enter the total number of unsatisfactory events in column 2.
- TS. A scenario includes at least two TS entries/actions across at least two different events. TS entries and actions are detailed on Form ES-D-2. Enter the total number of unsatisfactory TS entries/actions in column 4. (ES-301, D.5d)
- CT. Check that a scenario includes at least two preidentified CTs. This criterion is a target quantitative attribute, not an absolute minimum requirement. Check that each CT is explicitly bounded on Form ES-D-2 with measurable performance standards (see Appendix D). Enter the total number of unsatisfactory CTs in column 6.

7 In column 7, calculate the percentage of unsatisfactory scenario elements: $\left(\frac{2 + 4 + 6}{1 + 3 + 5}\right) 100\%$

8 If the value in column 7 is > 20%, mark the scenario as (U)nsatisfactory in column 8. If column 7 is ≤ 20%, annotate with (E)nhancement or (S)atisfactory.

9 In column 9, explain each unsatisfactory event, TS, and CT. Editorial comments can also be added here.

Save initial review comments and detail subsequent comment resolution so that each exam-bound scenario is marked by a (S)atisfactory resolution on this form.

Site name:				Exam Date:		
OPERATING TEST TOTALS						
	Total	Total Unsatisf.	Total Edits	Total Satisf.	% Unsatisf.	Explanation
Admin. JPMs	9	0	1	8		
Sim./In-Plant JPMs	11	1	3	7		
Scenarios	4	0	3	1		
Op. Test Totals:	24	1	7	16	4	

Instructions for Completing This Table:

Update data for this table from quality reviews and totals in the previous tables and then calculate the percentage of total items that are unsatisfactory and give an explanation in the space provided.

- Enter the total number of items submitted for the operating test in the "Total" column. For example, if nine administrative JPMs were submitted, enter "9" in the "Total" items column for administrative JPMs. For scenarios, enter the total number of simulator scenarios.
- Enter the total number of (U)nsatisfactory JPMs and scenarios from the two JPMs column 5 and simulator scenarios column 8 in the previous tables. Provide an explanation in the space provided.
- Enter totals for (E)nhancements needed and (S)atisfactory JPMs and scenarios from the previous tables. This task is for tracking only.
- Total each column and enter the amounts in the "Op. Test Totals" row.
- Calculate the percentage of the operating test that is (U)nsatisfactory (Op. Test Total Unsatisf.)/(Op. Test Total) and place this value in the bolded "% Unsatisf." cell.

Refer to ES-501, E.3.a, to rate the overall operating test as follows:
 - satisfactory, if the "Op. Test Total" "% Unsatisf." is $\leq 20\%$
 - unsatisfactory, if "Op. Test Total" "% Unsatisf." is $> 20\%$
- Update this table and the tables above with post-exam changes if the "as-administered" operating test required content changes, including the following:
 - The JPM performance standards were incorrect.
 - The administrative JPM tasks/keys were incorrect.
 - CTs were incorrect in the scenarios (not including postscenario critical tasks defined in Appendix D).
 - The EOP strategy was incorrect in a scenario(s).
 - TS entries/actions were determined to be incorrect in a scenario(s).

Facility: McGuire 1&2

Date of Exam: February 2020

Tier	Group	RO K/A Category Points												SRO-Only Points				
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	Total	A2		G*	Total	
1. Emergency and Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A			3	18	3		3	6
	2	1	1	2				2	2				1	9	2		2	4
	Tier Totals	4	4	5				5	5				4	27	5		5	10
2. Plant Systems	1	3	2	2	2	3	3	3	2	2	3	3	28	3		2	5	
	2	1	1	1	1	1	1	1	0	1	1	1	10	0	2	1	3	
	Tier Totals	4	3	3	3	4	4	4	2	3	4	4	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	2	1	2	

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

G* Generic K/As

- * These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.
- ** These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan.

ES-401		PWR Examination Outline						Form ES-401-2	
Emergency and Abnormal Plant Evolutions—Tier 1/Group 1 (RO/SRO)									
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
000007 (EPE 7; BW E02&E10; CE E02) Reactor Trip, Stabilization, Recovery / 1	X						007EK1.05; Knowledge of the operational implications of the following concepts as they apply to the reactor trip: Decay power as a function of time.	3.3	
000008 (APE 8) Pressurizer Vapor Space Accident / 3						X	008AG2.2.42; Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9	
000009 (EPE 9) Small Break LOCA / 3				X			009EA1.10; Ability to operate and monitor the following as they apply to a small break LOCA: Safety parameter display system.	3.8	
000011 (EPE 11) Large Break LOCA / 3			X				011EK3.15; Knowledge of the reasons for the following responses as they apply to the Large Break LOCA: Criteria for shifting to recirculation mode.	4.3	
000015 (APE 15) Reactor Coolant Pump Malfunctions / 4			X				015AK3.02; Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): CCW lineup and flow paths to RCP oil coolers.	3.0	
000022 (APE 22) Loss of Reactor Coolant Makeup / 2					X		022AA2.03; Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: Failures of flow control valve or controller.	3.1	
000025 (APE 25) Loss of Residual Heat Removal System / 4						X	025AG2.4.20; Knowledge of the operational implications of EOP warnings, cautions, and notes.	3.8	
000026 (APE 26) Loss of Component Cooling Water / 8					X		026AA2.02; Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The cause of possible CCW loss.	2.9	
000027 (APE 27) Pressurizer Pressure Control System Malfunction / 3		X					027AK2.03; Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.	2.6	
000029 (EPE 29) Anticipated Transient Without Scram / 1					X		029EA2.02; Ability to determine or interpret the following as they apply to an ATWS: Reactor trip alarm.	4.4	
000038 (EPE 38) Steam Generator Tube Rupture / 3						X	038EG2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.4	
000040 (APE 40; BW E05; CE E05; W E12) Steam Line Rupture—Excessive Heat Transfer / 4	X						WE12EK1.1; Knowledge of the operational implications of the following concepts as they apply to the (Uncontrolled Depressurization of all Steam Generators): Components: capacity, and function of emergency systems.	3.4	
000054 (APE 54; CE E06) Loss of Main Feedwater / 4			X				054AA1.04; Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): HPI, under total feedwater loss conditions.	4.4	
						X	054AG2.4.35; Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	4.0	
000055 (EPE 55) Station Blackout / 6					X		055EA2.02; Ability to determine or interpret the following as they apply to a Station Blackout: RCS Core cooling through natural circulation cooling to S/G cooling.	4.6	
000056 (APE 56) Loss of Offsite Power / 6			X				056AK3.01; Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Order and time to initiation of power for the load sequencer.	3.5	

000057 (APE 57) Loss of Vital AC Instrument Bus / 6					X		057AA2.18; Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The indicator, valve, breaker, or damper position which will occur on a loss of power.	3.1	
000058 (APE 58) Loss of DC Power / 6						X	058AG2.2.37; Ability to determine operability and/or availability of safety related equipment.	4.6	
000062 (APE 62) Loss of Nuclear Service Water / 4				X			062AA1.07; Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Service Water (SWS): Flow rates to the components and systems that are serviced by the SWS: interactions among the components.	2.9	
000065 (APE 65) Loss of Instrument Air / 8						X	065AG2.1.25; Ability to interpret reference materials, such as graphs, curves, tables, etc.	3.9	
000077 (APE 77) Generator Voltage and Electric Grid Disturbances / 6					X		077AA2.02; Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Voltage outside the generator capability curve.	3.6	
(W E04) LOCA Outside Containment / 3	X						WE04EK1.1; Knowledge of the operational implications of the following concepts as they apply to the (LOCA Outside Containment): Components, capacity, and function of emergency systems.	3.5	
(W E11) Loss of Emergency Coolant Recirculation / 4		X					WE11EK2.2; Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: 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.	3.9	
(BW E04; W E05) Inadequate Heat Transfer—Loss of Secondary Heat Sink / 4		X					WE05EK2.2; Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following: 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.	3.9	
K/A Category Totals:	3	3	3	3	3/3	3/3	Group Point Total:		18/6

ES-401		PWR Examination Outline						Form ES-401-2		
Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (RO/SRO)										
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#	
000001 (APE 1) Continuous Rod Withdrawal / 1										
000003 (APE 3) Dropped Control Rod / 1	X						003Ak1.01; Knowledge of the operational implications of the following concepts as they apply to Dropped Control Rod: Reason for turbine following reactor on dropped rod event	3.2		
000005 (APE 5) Inoperable/Stuck Control Rod / 1										
000024 (APE 24) Emergency Boration / 1										
000028 (APE 28) Pressurizer (PZR) Level Control Malfunction / 2										
000032 (APE 32) Loss of Source Range Nuclear Instrumentation / 7						X	032AG2.2.40; Ability to apply Technical Specifications for a system.	4.7		
000033 (APE 33) Loss of Intermediate Range Nuclear Instrumentation / 7										
000036 (APE 36; BW/A08) Fuel-Handling Incidents / 8				X			036AA1.03; Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: Reactor building containment evacuation alarm enable switch.	3.5		
000037 (APE 37) Steam Generator Tube Leak / 3					X		037AA2.12; Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: Flow rate of leak.	3.3		
000051 (APE 51) Loss of Condenser Vacuum / 4					X		051AA2.01; Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum: Cause for low vacuum condition.	2.7		
000059 (APE 59) Accidental Liquid Radwaste Release / 9										
000060 (APE 60) Accidental Gaseous Radwaste Release / 9										
000061 (APE 61) Area Radiation Monitoring System Alarms / 7						X	061AG2.1.25; Ability to interpret reference materials, such as graphs, curves, tables, etc.	4.2		
000067 (APE 67) Plant Fire On Site / 8										
000068 (APE 68; BW A06) Control Room Evacuation / 8										
000069 (APE 69; W E14) Loss of Containment Integrity / 5		X					069AK2.03; Knowledge of the interrelations between the Loss of Containment Integrity and the following: Personnel access hatch and emergency access hatch.	2.8		
000074 (EPE 74; W E06 & E07) Inadequate Core Cooling / 4						X	074EG2.4.11; Knowledge of abnormal condition procedures.	4.0		
000076 (APE 76) High Reactor Coolant Activity / 9										
000078 (APE 78*) RCS Leak / 3										
(W E01 & E02) Rediagnosis & SI Termination / 3					X		WE02EA2.1; Ability to determine and interpret the following as they apply to the (SI Termination): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.	3.3		

(W E13) Steam Generator Overpressure / 4					X		WE13EA2.2; Ability to determine and interpret the following as they apply to the (Steam Generator Overpressure): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.	3.4	
(W E15) Containment Flooding / 5									
(W E16) High Containment Radiation /9			X				WE16EK3.4; Knowledge of the reasons for the following responses as they apply to the (High Containment Radiation): RO or SRO function within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.	3.0	
(BW E08; W E03) LOCA Cooldown—Depressurization / 4			X				WE03EK3.1; Knowledge of the reasons for the following responses as they apply to the (LOCA Cooldown and Depressurization): Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.	3.1	
(BW E09; CE A13**; W E09 & E10) Natural Circulation/4				X			WE09EA1.3; Ability to operate and / or monitor the following as they apply to the (Natural Circulation Operations): Desired operating results during abnormal and emergency situations.	3.8	
(CE A11**; W E08) RCS Overcooling—Pressurized Thermal Shock / 4									
K/A Category Point Totals:	1	1	2	2	2/2	1/2	Group Point Total:		9/4

ES-401		PWR Examination Outline Plant Systems—Tier 2/Group 1 (RO/SRO)											Form ES-401-2	
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
003 (SF4P RCP) Reactor Coolant Pump					X							003K5.02; Knowledge of the operational implications of the following concepts as they apply to the RCPS: Effects of RCP coastdown on RCS parameters.	2.8	
						X						003K6.14; Knowledge of the effect of a loss or malfunction on the following will have on the RCPS: Starting requirements.	2.6	
004 (SF1; SF2 CVCS) Chemical and Volume Control					X							004K5.31; Knowledge of the operational implications of the following concepts as they apply to the CVCS: Purpose of flow path around boric acid storage tank.	3.0	
											X	004G2.4.30; Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.	2.7	
005 (SF4P RHR) Residual Heat Removal		X										005K2.03; Knowledge of bus power supplies to the following: RCS pressure boundary motor-operated valves.	2.7	
006 (SF2; SF3 ECCS) Emergency Core Cooling									X			006A3.03; Ability to monitor automatic operation of the ECCS, including: ESFAS-operated valves.	4.1	
007 (SF5 PRTS) Pressurizer Relief/Quench Tank				X								007K4.01; Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following: Quench tank cooling.	2.6	
008 (SF8 CCW) Component Cooling Water							X					008A1.01; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including: CCW flow rate.	2.8	
010 (SF3 PZR PCS) Pressurizer Pressure Control		X										010K2.04; Knowledge of bus power supplies to the following: Indicator for code safety position.	2.7	
012 (SF7 RPS) Reactor Protection	X											012K1.05; Knowledge of the physical connections and/or cause effect relationships between the RPS and the following systems: ESFAS.	3.8	
								X				012A2.05; Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty or erratic operation of detectors and function generators.	3.2	
013 (SF2 ESFAS) Engineered Safety Features Actuation										X		013A4.01; Ability to manually operate and/or monitor in the control room: ESFAS-initiated equipment which fails to actuate.	4.5	
						X						013K6.01; Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: Sensors and detectors.	2.7	
022 (SF5 CCS) Containment Cooling							X					022A1.02; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including: Containment pressure.	3.6	

025 (SF5 ICE) Ice Condenser											X	025G2.4.4; Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. 025A1.01; Ability to predict and/or monitor changes in parameters associated with operating the ice condenser system controls including: Temperature chart recorders.	4.5 3.0	
026 (SF5 CSS) Containment Spray											X	026A4.01; Ability to manually operate and/or monitor in the control room: CSS controls.	4.5	
039 (SF4S MSS) Main and Reheat Steam										X		039A2.01; Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Flow paths of steam during a LOCA. 039K5.01; Knowledge of the operational implications of the following concepts as they apply to the MRSS: Definition and causes of steam/water hammer.	3.1 2.9	
059 (SF4S MFW) Main Feedwater											X	059G2.4.35; Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects. 059A2.04; Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Feeding a dry S/G.	3.8 3.4	
061 (SF4S AFW) Auxiliary/Emergency Feedwater						X						061K6.01; Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners.	2.5	
062 (SF6 ED AC) AC Electrical Distribution											X	062A3.05; Ability to monitor automatic operation of the ac distribution system, including: Safety-related indicators and controls. 062K1.02; Knowledge of the physical connections and/or cause-effect relationships between the ac distribution system and the following systems: ED/G.	3.5 4.1	
063 (SF6 ED DC) DC Electrical Distribution	X											063K1.03; Knowledge of the physical connections and/or cause-effect relationships between the DC electrical system and the following systems: Battery charger and battery.	2.9	
064 (SF6 EDG) Emergency Diesel Generator											X	064A4.04; Ability to manually operate and/or monitor in the control room: Remote operation of the air compressor switch (different modes).	3.2	
073 (SF7 PRM) Process Radiation Monitoring										X		073A2.01; Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Erratic or failed power supply.	2.5	
076 (SF4S SW) Service Water			X									076K3.01; Knowledge of the effect that a loss or malfunction of the SWS will have on the following: Closed cooling water. 076G2.4.47; Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.	3.4 4.2	

078 (SF8 IAS) Instrument Air				X					X				078K4.02; Knowledge of IAS design feature(s) and/or interlock(s) which provide for the following: Cross-over to other air systems.	3.2	
													078A2.01; Ability to (a) predict the impacts of the following malfunctions or operations on the IAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Air dryer and filter malfunctions.	2.9	
103 (SF5 CNT) Containment			X										103K3.02; Knowledge of the effect that a loss or malfunction of the containment system will have on the following: Loss of containment integrity under normal operations.	3.8	
												X	103G2.4.21; Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.	4.6	
K/A Category Point Totals:	3	2	2	2	3	3	3	2/3	2	3	3/2	Group Point Total:			28/5

ES-401		PWR Examination Outline										Form ES-401-2		
		Plant Systems—Tier 2/Group 2 (RO/SRO)												
System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
001 (SF1 CRDS) Control Rod Drive				X								001K4.07; Knowledge of CRD design feature(s) and/or interlock(s) which provide for the following: Rod Stops.	3.7	
002 (SF2; SF4P RCS) Reactor Coolant			X									002K3.02; Knowledge of the effect that a loss or malfunction of the RCS will have on the following: Fuel.	4.2	
011 (SF2 PZR LCS) Pressurizer Level Control		X										011K2.02; Knowledge of bus power supplies to the following: PZR heaters.	3.1	
014 (SF1 RPI) Rod Position Indication														
015 (SF7 NI) Nuclear Instrumentation											X	015G2.4.1; Knowledge of EOP entry conditions and immediate action steps.	4.5	
016 (SF7 NNI) Nonnuclear Instrumentation	X											016K1.08; Knowledge of the physical connections and/or cause-effect relationships between the NNIS and the following systems: PZR PCS.	3.4	
017 (SF7 ITM) In-Core Temperature Monitor														
027 (SF5 CIRS) Containment Iodine Removal														
028 (SF5 HRPS) Hydrogen Recombiner and Purge Control								X				028A2.02; Malfunctions or operations on the HRPS; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: LOCA condition and related concern over hydrogen.	3.9	
029 (SF8 CPS) Containment Purge											X	029G2.1.23; Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	
033 (SF8 SFPCS) Spent Fuel Pool Cooling									X			033A3.01; Ability to monitor automatic operation of the Spent Fuel Pool Cooling System including: Temperature control valves.	2.5	
034 (SF8 FHS) Fuel-Handling Equipment						X						034K6.02; Knowledge of the effect of a loss or malfunction on the following will have on the Fuel Handling System: Radiation monitoring systems.	2.6	
035 (SF 4P SG) Steam Generator														
041 (SF4S SDS) Steam Dump/Turbine Bypass Control														
045 (SF 4S MTG) Main Turbine Generator														
055 (SF4S CARS) Condenser Air Removal														
056 (SF4S CDS) Condensate														
068 (SF9 LRS) Liquid Radwaste								X				068A2.04; Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of automatic isolation.	3.3	
071 (SF9 WGS) Waste Gas Disposal							X					071A1.06; Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Waste Gas Disposal System operating the controls including: Ventilation system.	2.5	

072 (SF7 ARM) Area Radiation Monitoring					X							072K5.01; Knowledge of the operational implications of the following concepts as they apply to the ARM system: Radiation theory, including sources, types, units, and effects.	2.7	
075 (SF8 CW) Circulating Water														
079 (SF8 SAS**) Station Air														
086 Fire Protection										X		086A4.03; Ability to manually operate and/or monitor in the control room: Fire alarm switch.	3.5	
050 (SF 9 CRV*) Control Room Ventilation														
K/A Category Point Totals:	1	1	1	1	1	1	1	0/2	1	1	1/1	Group Point Total:		10/3

Facility: McGuire		Date of Exam: February 2020				
Category	K/A #	Topic	RO		SRO-only	
			IR	#	IR	#
1. Conduct of Operations	2.1.15	Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc.	2.7			
	2.1.26	Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen).	3.4			
	2.1.44	Knowledge of RO duties in the control room during fuel handling, such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.	3.9			
	2.1.4	Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc.			3.8	
	2.1.41	Knowledge of the refueling process.			3.7	
	Subtotal		3		2	
	2.2.6	Knowledge of the process for making changes to procedures.	3.0			
	2.2.43	Knowledge of the process used to track inoperable alarms.	3.0			
	2.2.7	Knowledge of the process for conducting special or infrequent tests.			3.6	
	2.2.13	Knowledge of tagging and clearance procedures.			4.3	
	Subtotal		2		2	
	3. Radiation Control	2.3.11	Ability to control radiation releases.	3.8		
2.3.12		Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	3.2			
2.3.14		Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.			3.8	
Subtotal		2		1		
2.4.25		Knowledge of fire protection procedures.	3.3			
2.4.27		Knowledge of "fire in the plant" procedures.	3.4			
2.4.37		Knowledge of the lines of authority during implementation of the emergency plan.	3.0			
2.4.28		Knowledge of procedures relating to a security event (non-safeguards information).			4.1	
2.4.30		Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.			4.1	
Subtotal		3		2		
Tier 3 Point Total			10	10	7	7

[illegible]

Facility: McGuire Nuclear Station		Date of Exam: 2/17/2020		Exam Level: RO <input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/>		
Item Description				Initial		
				a	b*	c*#
1. Questions and answers are technically accurate and applicable to the facility.				SEM	h	OK
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available. c. Correct answer explanation and distractor analysis provided (ES-401, D.2.g)				SEM	h	OK
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401				SEM	h	OK
4. The sampling process was random and systematic (If more than four RO or two SRO questions were repeated from the last two NRC licensing exams, consult the NRR/NRO OL program office).				SEM	h	OK
5. Question duplication from the licensee screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate. ___ the audit exam was systematically and randomly developed, or ___ the audit exam was completed before the license exam was started, or <input checked="" type="checkbox"/> the examinations were developed independently, or ___ the licensee certifies that there is no duplication, or ___ other (explain).				SEM	h	OK
6. Bank use meets limits (no more than 75% from the bank, at least 10% new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank	Modified	New	SEM	h	OK
	24 / 13	28 / 4	23 / 8			
7. Between 38 and 45 questions of the questions on the RO exam and at least 13 questions of the questions on the SRO-only portion of the exam are written at the comprehension/analysis level (see ES-401, D.2.c); enter the actual RO / SRO-only question distribution(s) at right.	Memory	C/A		SEM	h	OK
	35 / 7	40 / 18				
8. References/handouts provided do not give away answers or aid in the elimination of distractors.				SEM	h	OK
9. Question content conforms to specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.				SEM	h	OK
10. Question psychometric quality and format meet the guidelines in Appendix B.				SEM	h	OK
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.				SEM	h	OK
Printed Name / Signature					Date	
a. Author	Steven L. Mosteller / <i>Steven L. Mosteller</i>				1/30/2020	
b. Facility Reviewer (*)	Wiley K. Little / <i>Wiley K. Little</i>				1/20/2020	
c. NRC Chief Examiner (#)	David R. Lany: <i>David R. Lany</i>				2/19/2020	
d. NRC Regional Supervisor	Gerald S. McCoy / <i>Gerald S. McCoy</i>				2/19/2020	
Note: * The facility reviewer's initials or signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initials items in Column "c"; chief examiner concurrence is required.						

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
1	H	3												B	S	003K5.02 Dri 11/18/19
2	H	3												B	E	003K6.14 A possible modified question could be to change the second question to "One minute after starting the oil lift pump, the 1A NC Pump Safety BKR "START" pushbutton is depressed. The NC pump will NOT start because _____. We could toggle on inadequate time of lift pump running or inadequate oil lift pressure. Let's discuss. Dri 11/18/19 No time delay interlock. Leave as is. Dri 12/17/19
3	H	3												N	S	004K5.31 Although the purpose of the bypass is explicitly requested in the K/A, the question does meet the operational implication portion adequately. Dri 11/18/19

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

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

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
4	F	3							X					N	E/U	04G2.4.30 Is the requirement to know the max DP for the NV pump minutia? For the second part, are there instances where the procedure specifically requires them to contact Maintenance? We probably need to add the the procedure requires them to notify ... There might be some generic words elsewhere to notify maintenance during an equipment problem. Drl 11/18/19 Changed as discussed drl 12/16/19
5	H	2												B	S	005K2.03 Drl 11/18/19
6	H	3												N	S	006A3.03 Drl 11/18/19
7	F	2							X					N	E	007K4.01 Need to verify that PRT Hi Temp alarm setpoint is NOT minutia. Drl 11/18/19 Changed as discussed drl 12/16/19
8	F	2												B	S	008A1.01 Drl 11/18/19
9	F	3		X										N	E	010K2.04 If it had an uninterruptable power supply (i.e., if it would auto swap), would the annunciator come in? If so, this question is OK. Otherwise we need to find a way to reword the question. drl 11/19/19 Revised to incorporate questions. Sat. drl 12/16/19
10	F	2												M	S	012K1.05 Drl 11/19/19
11	H	2				X								B	E	013A4.01 Our current guidance states that we should treat this as a reference provided due to the picture of the annunciators. The B answer discussion would probably be better if it stated that the answer would be correct if a Main Steam Isolation signal had not been reached (say pressure was 790 psig) Could make this modified by doing this. D is a bit less plausible unless the applicant might believe that the bypass valves don't get an auto

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																closed signal. Let's make the discussion include that. Drl 11/19/19 Revised based upon questions SAT. drl 12/16/19
12	H	2												B	S	013K6.01 Drl 11/19/19
13	F	2												M	S	022A1.02 Drl 11/19/19
14	F	2												N	E	025G2.4.4 Could we add the word "only" after "Mode 3" in the first question? drl 11/19/19 Changed as discussed drl 12/16/19
15	H	2												N	E	025A1.01 We should give the plant HUR information so that the applicant knows that we stay below Mode 4. Also we need to make a statement that they should assume the ice bed HUR remains constant. Drl 11/19/19 Changed as discussed drl 12/16/19
16	F	2				X								B	E	026A4.01 Could we go back to the parent question and for the second part change the pressure to 1 psig (not modified) or better yet to 3 psig (modified because I think Phase B will start it)? Drl 11/19/19 Auto start was deleted by mod three years ago. Question is acceptable as written. Drl 12/17/19
17	H	2				X								M	E	039A2.01 Could we include a bullet to say that NC temperature is 395 F. Then we could change max rate to 85 F/hr (normal cooldown procedural limit)? Drl 11/19/19 Changed as discussed drl 12/16/19
18	F	3		X										B	E	039K5.01 The wording is not quite right. How about we change it to "FR-H.2 will NOT allow steam to be released from the affected S/G if NR level exceeds a MINIMUM of _1_ due to _2_ concerns without an overfill evaluation being completed." 11/19/19 Changed as discussed drl 12/16/19
19	H	3												B	S	059G2.4.35 This is OK Although a loss of AFW is the cause, the question is focusing on restoring feed from the Feed and Condensate system. We need to be careful on the wording of the second part to ensure only one correct answer. Drl 11/19/19

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
20	H	2												M	S	061K6.01 Drl 11/19/19
21	F	2												B	S	062A3.05 Drl 11/20/19
22	H	2												M	S	062K1.02 Drl 11/20/19
23	H	3												M	S	063K1.03 Drl 2/20/19
24	F	2		X										N	E	064A4.04 Since MNS does not have a switch for the A/C, this question meets the intent of the K/A Will 1VGPS-5040 indication still be loweing if VG compressors are running? If we're going to give a trend here, I suspect it should be both tank pressures ar rising. Could we add a reference to the second question to remove any ambiguity? (i.e., IAW TS basis 3.8.3 ... or IAW FSAR section ...) drl 1/20/19 Changed as discussed drl 12/16/19
25	F	2				X								M	E	073A2.01 Without knowing the answer, I would guess that the system isolates. I'm not sure I would think about the systems that only have the fans secure. Why don't we change the the first question to specifically ask if the only the fans trip OR if the fans trip and dampers close? (like the parent) Drl 11/20/19 Changed as discussed drl 12/16/19
26	H	3												M	E	076K3.01 The references for Q26 are not provided in the references document. Drl 11/20/19 Coorected 11/25/19
27	H	2												N	S	078K4.02 Drl 11/20/19
28	H M	4 3		X			X							N M	E/U	103K3.03 Recently irradiated fuel is defined in the bases as fuel that has been in a critical reactor within the previous 72 hours. Technically TS 3.9.4 is not applicable after 72 hours. Many licensees choose to apply the restriction conservatively after the 72 hour period. Technically the correct answer would be D. I'm nit sure a lot of the operators would get this nuance.

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																<p>If it is feasible to be in this condition with 72 hours of S/D, the we need to state that this is being done within the first 72 hours. However, if you have written guidance that states that all irradiated fuel in the core will be treated as recently irradiated, then we might be able to make this work.</p> <p>Another option would be to discuss procedural actions. Drl 1/20/19 K/A changed. New question submitted. SAT. Drl 12/16/19</p>
29	H	3												B	S	001K4.07 Drl 11/20/19
30	H	2												B	S	002K3.02 OK. GFES drl 11/20/19
31	H	2												B	S	011K2.02 Drl 11/20/19
32	F	2												M	S	015G2.4.1 Drl 11/20/19
33	H	2												B	S	016K1.08 Drl 11/20/19
34	F	3												M	S	033A3.01 The auto/manual match with the K/A is ok since there are no automatic functions for this valve. Drl 11/20/19
35	H	2												M	S	034K6.02 Drl 11/20/19
36	H	2												M	S	071A1.06 Drl 11/20/19
37	H	2												N	S	072K5.01 Drl 11/20/19
38	F	2												N	S	086A4.03 Drl 11/20/19
39	H	2					X							M	E	007EK1.05 Why would B2 not be correct? Flow would be ≥ 355 gpm which meets the requirement drl 11/20/19 Question OK as written. Question references procedural requirements. Drl 12/16/19
40	F	2												N	S	008G2.2.42 1 hr or less TS is RO knowledge drl 11/20/19
41	H	2												M	E	009EA1.10

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																Just need to verify that the ROs are expected to complete this portion of the CSF status trees by memory. Drl 11/20/19 SAT drl 12/16/19
42	F	2				X								B	E	011EK3.15 Let's toggle on terminate core boiling instead of boron precipitation. Drl 11/20/19 Rewritten as discussed. SAT 1/7/20
43	H	2				X								N	E	015/017AK3.02 Could we change the first question to "entry into AP-21 is/is not required ..." drl 11/20/19 The question starts off IAW ARPs, this gives plausibility to both. Question is SAT. drl 12/17/19
44	H	3	X	X										N	E/U	022AA2.03 I'm having trouble with the second question. It sounds like the auto make-up was in progress. Then something happened and the VCT abnormal level alarm came in. We don't know what caused the original low level, just that it was low enough to start an auto make-up. I think you are trying to ask what failure could have caused the auto make-up system not to work properly and thus level continued to lower. If that is correct, we need to reword the second question to make that clear. Otherwise, I'll need this question explained to me. Drl 11/20/19 Changed as discussed drl 12/16/19
45	H	3												B	S	025G2.4.20 Drl 11/20/19
46	H	2												B	S	026AA2.02 This really only uses plant knowledge and not procedural knowledge to answer the question. However, Question 2 used AP knowledge to answer a systems question. Therefore exam Tier balance is maintained. Ensure we talk about Tiers. Drl 11/20/19
47	H	2												B	S	027AK2.03 This really only uses plant knowledge and not procedural knowledge to answer the question. However, Question 4 used AP knowledge to answer a systems question. Therefore exam Tier balance is maintained. Drl 11/20/19
48	H	2												M	S	012EK1.1 Drl 11/21/19
49	H	2				X								M	E	054AA1.04 The second question needs reworded. As written, both can be considered correct. The procedure does

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																<p>give guidance if only one PORV can be opened, so technically a minimum of one PORV is required if a head vent train is used.</p> <p>Perhaps we can put words in there to state that all PORVs are available and reiterate in the question that FR-H.1 requires 2 PORVs for adequate heat removal. Drl 11/21/19 Changed as discussed drl 12/16/19</p>
50	F	2												M	S	056AK3.01 Drl 11/21/19
51	F	3												M	S	057AA2.18 Drl 11/21/19
52	F	2												B	S	062AA1.07 Drl 11/21/19
53	H	2				X								N	U	<p>065G2.1.25 Since each unit has a separate procedure, I don't think that the applicants are likely to go with both units' strainers needing backwashed.</p> <p>Only the 1300 data is needed for the question. The table that is used to meet the K/A is in the procedure. How about we make this a Unit 2 only question. Use only the 1300 data but change 2RN-21A pressure to 294.4 psig. The ask if one or both strainers need backwashed and by what time. Drl 11/21/19 Changed as discussed drl 12/16/19</p>
54	F	2												B	S	WE04EK1.1 Drl 11/21/19
55	F	2												B	S	WE11EK2.2 Drl 11/21/19
56	F	2	X											M	E	<p>WE05EK2.2 Reverse the order of the questions. The NC pumps are stopped prior to looking for the next source of feed. Drl 11/21/19 Changed as discussed drl 12/16/19</p>
57	H	3												M	S	036AA1.03 Drl 11/21/19
58	H	3												B	S	037AA2.12 Drl 11/21/19
59	F	2				X								N	E	003AK1.01

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																We can remove the terms “based on the conditons above”. Using other cnditions would not be answering this question. Let’s change the second question to ask IAW AP-14, the crew will/will not first restore T-Avg to T-Ref by adjusting turbine load. Drl 11/21/19 Changed as discussed drl 12/16/19
60	F	2												B	S	069AK2.03 Drl2 11/21/19
61	F	3												M	E	074G2.4.11 First answers worded such that it seems to indicate correct answer. How about using “as determined by CET response” we say “until CETs lower below 1200 F” and instead of “to maximize forced flow” to “and monitor if CETs lwer below 1200F” This might be a new question based pon a review of the parent question. drl 11/21/19 Changed as discussed drl 12/16/19
62	H	2												N	S	WE02EA2.1 Drl 11/21/19
63	H	2												N	S	WE16EK3.4 Drl 11/21/19
64	H	2												M	S	WE03EK3.1 Drl 11/29/19
65	H	2												N	S	WE09EA1.3 Drl 11/19/19
66	F	2				X								N	E	G2.1.15 Would it make sense to make the distractor “CRS and SM” ? drl 11/21/19 Changed as discussed drl 12/16/19
67	F	2												N	S	G2.1.26 Drl 11/21/19
68	F	3										X		N	U	G2.1.44 Except for the fact that you state a refueling is in progress, this has nothing to do with the K/A. Need something like respond to a read monitor or loss of NI during refueling. RI 11/21/19 Changed as discussed drl 12/16/19
69	F	2				X								M	E/U	G2.2.6

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																The second question is too obvious. Maybe the second question could ask if verbal approval of a out of sequence change is allowable. Drl 11/29/19 Changed as discussed drl 12/16/19
70	H F	3 2												B N	U	G2.2.42 As written, this is a Tier 1 question. Typically for this K/A we look at TS 3.0.X or maybe Safety Limits. If we can't find something here, let's pull a new K/A. drl 11/22/19 K/A changed. New question is SAT drl 1/7/20
71	H	2												B	S	G2.3.11 Drl 11/22/19
72	H	3												B	S	G2.3.12 Drl 11/22/19
73	H F	3											X	B M	U	G2.4.9 This is a Tier 2 question. I don't see a way to make a Tier 3 question from this K/A. I would be willing to replace this K/A if desired. Drl 11/22/19 K/A changed. New question is SAT. drl 12/16/19
74	F	2												B	S	G.2.4.25 drl 11/22/19
75	F	2												N	S	G2.4.37 Can we change the second question to "... control room can/cannot be performed without SRO approval"? drl 11/22/19
76	H	2	X											B	E	059A2.04 The second question should start out as "A basis .." Drl 11/22/19 Changed as discussed drl 12/16/19
77	H	3												B	S	012A2.05 Drl 11/22/19
78	H	2												N	S	076G2.4.47 Drl 11/22/19
79	H	2												N	S	078A2.01 Drl 11/22/19
80	H	2												B	S	103G2.4.21 Drl 11/22/19
81	H	2												B	S	028A2.02 Drl 11/22/19

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
82	H	3												N	S	029 G2.1.23 I think this meets the K/A at the SRO level
83	F	3												N	S	068A2.04 Drl 11/22/19
84	H	2												M	S/E	EPE029 EA2.02 Since the 2nd question has 4 differing answers, the first question is not relevant except to meet the K/A. I think this is OK. Drl 11/22/19 One further question. At MNS, is it still allowable to operate the plant on 3 loops at power if below the setpoint? Question answered. Question is Sat 12/16/19
85	H	2				X								M	E/U	038G2.2.44 0 F subcooling does not seem plausible for getting ready to depressurize drl 11/22/19 Going to change this to a is/is not 20 F subcooling. Drl 12/17/19 Changed as discussed. Drl 1/7/20
86	H	3		X										N	E	0054G2.4.35 Why is “due to pump runout “ required? It seems to me that this is giving them more information to determine that noram values may not apply. Drl 11/25/19 Changed as discussed drl 12/16/19
87	H	2	X											N	E	055EA2.02 Instead of saying “stopped from the Control Room” could we xy “controlled from the Control Room”? Drl 11/25/19 Changed as discussed drl 12/16/19
88	H	3		X										B	E	058G2.2.37 Given a choice between TS requiring one train or one channel. Why would anyone choose channel? Could we ask if one canal is/is not adequate? Drl 11/25/19 Changed as discussed drl 12/16/19
89	H	3	X											B	E	077AA2.02 Would it make sense to change the first question to ask if they should raise/lower voltage? Drl 11/25/19 OK as written. Drl 12/17/19
90	H	2		X										M	E	051AA2.01 The AP directs all three actions for the first question. Therefore technically there is no wrong answer. Perhaps we could rephrase the first question to WOOTF procedurally directed actions should the CRS use to have the most affect on vacuum? Hen toggle on load reduction and vacuum pumps. Drl 11/25/19

Q	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. Source (B/ M / N)	7. Status (U /E /S)	8. Explanation
			Stem Focus	Cues	T/F	Cred. Dist	Partial	Job-Link	Minutia	# / Units	Back ward	Q – K/A	SR O Only			
																Changed as discussed drl 12/16/19
91	H	3												M	S	061G2.1.25 Double E-plan call, but does meet the KA and is at SRO level. Drl 11/25/19
92	H	3												B	S	WE13EA2.2 Drl 11/25/19
93	F	2												B	S	032G2.2.40 Drl 11/25/19
94	F	2												B	S	G2.1.4 Drl 11/25/19
95	F	2												B	S	2.1.41 Drl 11/25/19
96	F	3												N	E	G2.2.7 Let's make the first question ask if the Ops Manager (or his designee) is/is not required to participate. The second question should say that a brief can/cannot be held a max of 7 days prior to the evolution. Drl 11/25/19 Changed as discussed drl 12/16/19
97	F	3												N	S	G2.2.13 Drl 11/25/19
98	H	3												B	S	G2.3.14 Drl 11/25/19
99	F	2												B	S	G2.4.28 Drl 11/25/19
100	H	2												M	E	G2.4.30 The first part needs to reference the notification to the state and counties. Instead of the second question could we ask when is the latest that the NRC must be notified. Drl 11/25/19 Changed as discussed drl 12/16/19