Facility:	James A. Fitzpatrick	Date of Examination:	Aug 2021
Examination Level:	RO	Operating Test Number:	20-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N, S	Perform Post Accident Monitoring Instrument Channel Check K/A 2.1.45 (4.3), ST-40N
Conduct of Operations	D, R	Manually Compute Average Drywell Air Temperature K/A 2.1.20 (4.6), ST-40C
Equipment Control	P, D, R 17-2 NRC	Determine Tagout Boundary For RBCLC Pump Work K/A 2.2.13 (4.1), OP-AA-109-101
Radiation Control		
Emergency Plan	M, S	Conduct Emergency Announcement And Site Evacuation K/A 2.4.43 (3.2), EP-AA-112-F-09

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

* Type Codes and Criteria:

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

Facility: James A. Fitzpatrick	Date of Examination: Aug 2021
Examination Level: SRO	Operating Test Number: 20-1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N, R	Review Post Accident Monitoring Instrument Channel Check K/A 2.1.45 (4.3), ST-40N
Conduct of Operations	D, R	Manually Compute Average Drywell Air Temperature, Determine Technical Specification Implications K/A 2.1.20 (4.6), ST-40C
Equipment Control	P, D, R 17-2 NRC	Perform Technical Specification Evaluation and LCO Tracking for Inoperable Turbine Bypass Valves K/A 2.2.22 (4.7), COLR, TS 3.7.6
Radiation Control	D, R	Determine Visitor RCA Access Requirements K/A 2.3.4 (3.7), NISP-RP-102
Emergency Plan	M, R	Determine Emergency Classification and Initiate Event Notification K/A 2.4.40 (4.5), EP-AA-111, EP-AA-114

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

* Type Codes and Criteria:

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

Facility:	James A. Fitzpatrick	Date of Examination:	August 2021
Exam Level:	RO / SRO-I / SRO-U	Operating Test Number:	20-1

Control Room Systems:* 8 for RO, 7 for SRO-I, and **2 or 3 for SRO-U**

System/JPM Title	Type Code*	Safety Function
a. Standby Gas Treatment System / Manually Isolate Reactor Building Ventilation, Low Reactor Building D/P **K/A 261000 A4.06 (3.3/3.6), OP-51A, OP-20**	**P, D, A, EN, S** **17-2 NRC**	**9**
b. Main Turbine Generator and Auxiliary Systems / Emergency Main Turbine Shutdown K/A 245000 A4.06 (2.7/2.6), OP-9	P, D, L, S 17-2 NRC	4
c. Emergency Generators (Diesel/Jet) / Shutdown EDGs, EDG Phase Overload K/A 264000 A4.04 (3.7/3.7), OP-22, ARP 09-8-4-30	N, A, EN, S	6
d. Reactor Protection System / Reset RPS Scram with Scram Valve Fail to Close K/A 212000 A4.14 (3.8/3.8), AOP-1	D, A, EN, S	7
e. High Pressure Coolant Injection / Start HPCI for Injection, Low Bearing Oil Pressure Develops **K/A 206000 A4.05 (4.4/4.4), OP-15**	**M, A, S**	**2**
f. Reactor Manual Control System / Perform Emergency Rod In Functional Test, Rod Double Notches K/A 201002 A4.01 (3.5/3.5), OP-65, OP-26	M, A, L, S	1
g. RHR/LPCI: Containment Spray System Mode / Secure Drywell and Torus Spray K/A 226001 A4.03 (3.5/3.4), OP-13B	N, EN, S	5
h. Component Cooling Water System / Supply Ventilation Loads with Emergency Service Water (ROs and SRO-Us Only) **K/A 400000 A4.01 (3.1/3.0), AOP-11**	**D, EN, S**	**8**

In-Plant Systems:* 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. Control Rod Drive Hydraulic System / Vent the Scram Air Header **K/A 201001 A2.04 (3.8/3.9), EP-3**	**D, R, E**	**1**
j. Fire Protection System / Supply Fire Protection Water to EDGs B & D K/A 286000 K1.09 (3.2/3.3), OP-22	D, E	8
k. Primary Containment System and Auxiliaries / Vent Torus to Lower Primary Containment Pressure **K/A 223001 A2.01 (4.3/4.4), EP-6**	**M, E**	**5**

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

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-1** Op-Test No.: **20-1**

Examiners: ______________ Operators: ______________

Initial Conditions: The plant is operating at approximately 85% power. TBCLC pump C is out of service for maintenance.

Turnover: Swap CRD pumps per OP-25. Then, raise Reactor power to 90% using Recirculation flow per the provided reactivity instructions.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Swap CRD Pumps OP-25
2	N/A	R – ATC, SRO	Raise Reactor Power with Recirculation Flow OP-27
3	Remote RH43:A	C – SRO	Loss of Power to RHR Drywell Spray Valve 10MOV-26A ARP 09-3-1-03, Technical Specifications
4	TU04	C – All	Main Turbine Bearing High Vibration AOP-66
5	PC05:J	I – ATC, SRO	Drywell Pressure Transmitter Fails High, then Low ARP 09-5-1-3(21), Technical Specifications
6	AD06:G AD08:G	C – All	SRV G Fails Open AOP-36, AOP-1, EOP-RC, EOP-PC
7	MS16:G	M – All	SRV G Tailpipe Break in Torus Airspace AOP-39, EOP-RC, EOP-PC
8	Remote RH43:B	C – All	RHR Drywell Spray Valve 10MOV-26B Fails to Open EOP-RC, EOP-PC, EOP-ED

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-1**		Op-Test No.: **20-1**
1. Malfunctions after EOP entry (1-2) **Event 8**	1	
2. Abnormal events (2-4) **Events 4, 5, 6**	3	
3. Major transients (1-2) **Event 7**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RC, EOP-PC**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set) **EOP-ED**	1	
6. Pre-identified critical tasks (≥2)	2	
CRITICAL TASK DESCRIPTIONS: **CT-1: Given a stuck open SRV, the crew will scram the Reactor before Torus water temperature exceeds the Boron Injection Initiation Temperature, in accordance with AOP-36 and EOP-PC.** **CT-2: Given the inability to maintain Primary Containment conditions inside the Pressure Suppression Pressure, the crew will perform an Emergency RPV Depressurization, in accordance with EOP-PC. Emergency RPV Depressurization must be initiated within 15 minutes of Pressure Suppression Pressure being exceeded.**		

The scenario will begin at approximately 85% power with TBCLC pump C out of service for maintenance. The crew will begin the shift by starting CRD pump B and securing CRD pump A. Then, the crew will raise Reactor power using Recirculation flow.

Next, the breaker will trip for Drywell spray valve (10MOV-26A). The SRO will determine the Technical Specification impact of this failure.

Main Turbine high vibrations will develop. The crew will enter AOP-66 to address the vibrations. The crew will first lower Main Generator reactive loading, then Reactor power. The vibrations will subside as Reactor power is lowered.

Drywell pressure transmitter 05PT-12A will fail momentarily high, then low. This will cause a half scram on RPS A. The crew will reset the half scram. The SRO will determine the Technical Specification impact.

Safety Relief Valve G opens and sticks open. The crew will execute AOP-36, Stuck Open Relief Valve, and determine the valve cannot be closed. The SRO will direct a Reactor scram before Torus temperature reaches 110°F.

The SRO will enter EOP-RC, Hot RPV Control, and EOP-PC, Hot Primary Containment Control. Following the scram, the tailpipe of the stuck open SRV will break. This causes Primary Containment pressure to rapidly rise.

The SRO will direct the Torus and Drywell to be sprayed using RHR loop B. However, the RHR loop A Drywell spray valve 10MOV-26B will fail to open. Combined with the earlier failure of 10MOV-26A, this will prevent spraying the Drywell using either RHR or RHRSW. This will result in Pressure Suppression Pressure (PSP) being violated, which requires an Emergency RPV Depressurization. The SRO will direct an Emergency RPV Depressurization and the crew will open 7 SRVs.

The scenario will be terminated when all control rods are inserted, Emergency RPV Depressurization is in progress, and Reactor water level is controlled above 0”.

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-2** Op-Test No.: **20-1**

Examiners: ______________________ Operators: ______________________

Initial Conditions: The plant is operating at approximately 90% power. TBCLC pump C is out of service for maintenance.

Turnover: Perform a control rod pattern adjustment per the provided reactivity instructions. Then, test EHC pump B auto-start capability per OP-8 section G.2. Secure EHC pump A following the test.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R – ATC, SRO	Perform Control Rod Pattern Adjustment OP-26
2	N/A	N – BOP, SRO	Test EHC Pump B Auto-Start, Secure EHC Pump A OP-8
3	Remote ED23	I – BOP, SRO	LPCI Inverter Trips ARP 09-8-3-2, Technical Specifications
4	RR04:A RR05:A	C – All	Recirculation Pump A Seal Failure ARP 09-4-2-38, AOP-8, OP-27, AOP-39, Technical Specifications
5	EG11 EG12	C – BOP, SRO	Main Seal Oil Pump Trip and Emergency Seal Oil Pump Fails to Auto-Start ARP 09-7-3-41
6	EP01 MS02	C – All	Seismic Event with Steam Leak in Drywell AOP-14, AOP-39, AOP-1, EOP-RC, EOP-PC
7	RH10 Overrides	M – All	RHR Suction Piping Leak; RHR Suction Fails to Isolate AOP-14, EOP-RC, EOP-PC
8	Override	C – All	Bypass Opening Jack Fails to Open Beyond 5% AOP-1, EOP-RC

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-2**	Op-Test No.: **20-1**	
1. Malfunctions after EOP entry (1-2) **Event 8**	1	
2. Abnormal events (2-4) **Events 4, 5, 6**	3	
3. Major transients (1-2) **Event 7**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RC, EOP-PC**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set) **EOP-ED**	1	
6. Pre-identified critical tasks (≥2)	2	
CRITICAL TASK DESCRIPTIONS: **CT-1: Given an un-isolable Torus water leak and the inability to maintain Torus water level above 10.75', the crew will initiate a manual HPCI turbine trip, in accordance with EOP-PC. HPCI must be tripped before Torus water level lowers below 9.58 feet.** **CT-2: Given an un-isolable Torus water leak and the inability to maintain Torus water level above 9.58', the crew will perform an Emergency RPV Depressurization, in accordance with EOP-ED. The depressurization must be initiated before Torus water level lowers below 5.5 feet.**		

The scenario will begin at approximately 90% power with TBCLC pump C out of service for maintenance. The crew will begin the shift by performing a control rod pattern adjustment. Then, the crew will perform an EHC pump auto start capability test per OP-8.

The AC input to the A LPCI inverter will fail. The crew will transfer the A LPCI inverter to the alternate AC supply. The SRO will determine the Technical Specification impact.

RWR pump A will develop a dual seal failure. This will require the crew to manually trip and isolate RWR loop A. Technical Specifications will be addressed by the SRO.

The Main Seal Oil pump will trip and the Emergency Seal Oil pump will fail to auto-start. The crew will respond to ARP 09-7-3-41 by starting the Emergency Seal Oil pump and normalizing the Seal Oil system for the loss.

A Seismic event will occur. This will cause a steam leak inside of the Primary Containment. Degrading Drywell conditions will require a manual scram to be initiated.

EOP-RC (Hot RPV Control) and EOP-PC (Hot Primary Containment Control) will be executed. Primary Containment parameters will require the Torus to be sprayed. When Torus spray is placed in service, the suction pipe from the Torus to the RHR system breaks. This break is un-isolable and results in Torus water level lowering. The crew will determine that Torus water level cannot be maintained above 9.58 feet and an Emergency Depressurization will be required.

The scenario will be terminated when all control rods are inserted, an Emergency Depressurization is in progress, and Reactor water level is controlled above 0”.

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-3** Op-Test No.: **20-1**

Examiners: ______________________ Operators: ______________________

Initial Conditions: The plant is operating at approximately 130 psig during a startup.

Turnover: Fully withdraw the SRMs per OP-16. Then continue withdrawing control rods per the startup sequence.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Fully Withdraw SRMs OP-16
2	N/A	R – ATC, SRO	Withdraw Control Rods OP-26
3	NM06	I – ATC, SRO	IRM C Fails Upscale ARPs 09-5-1-41 and 09-5-2-52
4	DG04:A	C – SRO	EDG A Trip ARP 09-8-2-9, Technical Specifications
5	ED20:B	C – BOP, SRO	Electrical Fault on L-14 ARP 09-8-3-3, AOP-8, Technical Specifications
6	SW09 SW17	C – All	RBCLC Pump A Trips; RBCLC Pump C Fails to Auto-Start; RBCLC Pump C Trips After Start AOP-11, AOP-1
7	RR15:A	M – All	Coolant Leak in Drywell AOP-39, EOP-RC, EOP-PC
8	RH14 CS02 Overrides	I – All	RHR Fails to Automatically Start; Core Spray Fails to Automatically Inject; Feedwater MOVs Fail to Open EOP-RC

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-3**		Op-Test No.: **20-1**
1. Malfunctions after EOP entry (1-2) **Event 8**	1	
2. Abnormal events (2-4) **Events 3, 5, 6**	3	
3. Major transients (1-2) **Event 7**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RC, EOP-PC**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0	
6. Pre-identified critical tasks (≥2)	2	
CRITICAL TASK DESCRIPTIONS: **CT-1: Given a loss of all RBCLC pumps, the crew will manually scram the Reactor and trip any running RWR pump(s), in accordance with AOP-11. These actions must be completed within 15 minutes of the time all RBCLC pumps have tripped.** **CT-2: Given a coolant leak inside the Containment and a failure of injection systems to maintain Reactor water level, the crew will restore and/or maintain Reactor water level above the Top of Active Fuel, in accordance with AOP-1 and/or EOP-RC. Injection must be established such that Reactor water level does not lower below -19".**		

The scenario will begin with a Reactor startup in progress. The crew will begin the shift fully withdrawing SRMs, then continue control rod withdrawal.

IRM C will fail upscale, causing a rod block and half scram. The crew will bypass IRM C to allow resetting the half scram and further control rod withdrawals.

EDG A will experience a spurious trip. This will make EDG A inoperable. The SRO will determine the Technical Specification impact.

600 VAC bus L-14 develops a fault and de-energizes. The loss of L-14 results in a trip of RWR pump B and RBCLC pump B. The crew will enter AOP-8 (Unexpected Change in Core Flow) to address the tripped RWR pump. The SRO will determine the Technical Specification impact.

RBCLC pump A will trip. AOP-11 (Loss of RBCLC) will be entered. The crew will recognize that the standby RBCLC pump failed to auto start and will manually start it. Shortly after start, RBCLC pump C will trip. This will result in no RBCLC pumps running, which warrants a manual scram to be inserted and tripping RWR pump A.

A coolant leak occurs in the Drywell. The SRO will enter EOP-RC (Hot RPV Control) and EOP-PC (Hot Primary Containment Control). RHR pumps will fail to auto-start and must be manually started to spray the Containment. Also, both loops of Core Spray and RHR will fail to automatically inject. The Feedwater MOVs will fail to open. These failures combine to cause Reactor water level control to be seriously challenged. Manual action will be required to inject with either RHR or Core Spray to prevent lowering below the top of active fuel.

The scenario will be terminated when all control rods are inserted and Reactor water level is restored and/or maintained above 0”.

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-4** Op-Test No.: **20-1**

Examiners: ______________ Operators: ______________

Initial Conditions: The plant is operating at approximately 100% power. EHC pump B is out of service for maintenance. Fitz-Scriba Line 10 is out of service.

Turnover: Restore Fitz-Scriba Line 10 to service per OP-45 section G.6. Then, lower Reactor power using Recirculation flow per the provided reactivity instructions.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N – BOP, SRO	Restore Fitz-Scriba Line 10 to Service OP-45
2	N/A	R – ATC, SRO	Lower Reactor Power with Recirculation Flow OP-27
3	Override	I – ATC, SRO	Recirculation Pump B Speed Drifts Low AOP-8, AOP-32, OP-27, Technical Specifications
4	ED18:B	C – BOP, SRO	Electrical Fault on 10600 Bus AOP-19, AOP-60, Technical Specifications
5	RX01	C – All	Fuel Failure AOP-3, EOP-SC, AOP-1, EOP-RC
6	HP06 HP11 Remote	M – All	HPCI Steam Leak; HPCI Fails to Isolate EOP-SC, EOP-ED
7	AD07	C – All	Five ADS Valves Fail to Open EOP-ED

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: **James A. Fitzpatrick** Scenario No.: **NRC-4** Op-Test No.: **20-1**

1. Malfunctions after EOP entry (1-2) **Event 7**	1	
2. Abnormal events (2-4) **Events 3, 4, 5**	3	
3. Major transients (1-2) **Event 6**	1	
4. EOPs entered/requiring substantive actions (1-2) **EOP-RC, EOP-SC**	2	
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set) **EOP-ED**	1	
6. Pre-identified critical tasks (≥2)	2	
CRITICAL TASK DESCRIPTIONS: **CT-1: Given a fuel failure, the crew will scram the Reactor, in accordance with AOP-3. The scram must be inserted within 20 minutes of when the Off Gas radiation timer initiates.** **CT-2: Given an un-isolable primary system discharging into Secondary Containment and two areas exceeding Maximum Safe Temperatures, the crew will perform an emergency RPV depressurization, in accordance with EOP-SC. The emergency RPV depressurization must be initiated within 15 minutes of when the second Maximum Safe Temperature is exceeded.**		

The scenario will begin at approximately 100% power with a down-power scheduled to support water box cleaning. EHC pump B is out of service for maintenance. Fitz-Scriba Line 10 is out of service. The crew will begin the shift by restoring Fitz-Scriba Line 10 to service per OP-45.

Next, the crew will begin a down-power with Recirculation (RWR) flow. During the flow reduction, the RWR Pump B controller will drift low. The crew will execute AOP-8 (Unexpected Change in Core Flow), AOP-32 (Unplanned Power Change), and OP-27 (Recirculation System). The SRO will determine the Technical Specification impact due to this condition.

An electrical fault on the 4160 VAC 10600 bus will occur. The crew will execute AOP-19 (Loss of 10600 Bus) and AOP-60 (Loss of RPS Bus B). The SRO will address Technical Specifications.

Fuel clad damage will occur and radiation levels in the Turbine Building will begin to rise. The crew will enter AOP-3 (High Activity in Reactor Coolant or Off-gas) and attempt to minimize the rise in radiation levels. A manual scram will be required.

Following the scram, a steam leak will develop from HPCI into the Reactor Building. The crew will attempt to isolate HPCI but the leak will be unisolable. Reactor Building area temperatures and radiation levels will rise. The crew will enter EOP-SC (Hot Secondary Containment Control). Two Reactor Building area temperatures will exceed Max Safe, requiring the crew to perform an Emergency RPV Depressurization.

The scenario will be terminated when all control rods are inserted, an Emergency Depressurization is in progress, and RPV level is controlled above zero inches.

<table>
<tr><td colspan="10">Facility: J.A. FitzPatrick</td><td colspan="9">Date of Exam: August 2021</td></tr>
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Emergency and Abnormal Plant Evolutions</td><td>1</td><td>2</td><td>3</td><td>3</td><td colspan="3" rowspan="3">N/A</td><td>4</td><td>4</td><td colspan="2" rowspan="3">N/A</td><td>4</td><td>20</td><td colspan="2">3</td><td colspan="2">4</td><td>7</td></tr>
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Plant Systems</td><td>1</td><td>2</td><td>2</td><td>3</td><td>3</td><td>3</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>26</td><td colspan="2">3</td><td colspan="2">2</td><td>5</td></tr>
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<tr><td colspan="5" rowspan="2">3. Generic Knowledge and Abilities Categories</td><td colspan="2">1</td><td colspan="2">2</td><td colspan="2">3</td><td colspan="2">4</td><td rowspan="2">10</td><td>1</td><td>2</td><td>3</td><td>4</td><td rowspan="2">7</td></tr>
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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. 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 BWR Examination Outline Form ES-401-1
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	#
295016 (APE 16) Control Room Abandonment / 7						X	2.4.41 Knowledge of the emergency action level thresholds and classifications.	4.6	76
295021 (APE 21) Loss of Shutdown Cooling / 4					X		AA2.04 Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water temperature	3.6	77
295023 (APE 23) Refueling Accidents / 8						X	2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	4.5	78
295026 (EPE 3) Suppression Pool High Water Temperature / 5					X		EA2.02 Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool level	3.9	79
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5						X	2.4.9 Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.	4.2	80
600000 (APE 24) Plant Fire On Site / 8					X		AA2.12 Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Location of vital equipment within fire zone	3.5	81
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6						X	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	82
295001 (APE 1) Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4		X					AK2.07 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION and the following: Core flow indication	3.4	39
295003 (APE 3) Partial or Complete Loss of AC Power / 6			X				AK3.03 Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Load shedding	3.5	40
295004 (APE 4) Partial or Total Loss of DC Power / 6				X			AA1.02 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Systems necessary to assure safe plant shutdown	3.8	41
295005 (APE 5) Main Turbine Generator Trip / 3					X		AA2.08 Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Electrical distribution status	3.2	42
295006 (APE 6) Scram / 1						X	2.4.46 Ability to verify that the alarms are consistent with the plant conditions.	4.2	43
295016 (APE 16) Control Room Abandonment / 7					X		AA2.01 Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT: Reactor power	4.1	44
295018 (APE 18) Partial or Complete Loss of CCW / 8						X	2.4.6 Knowledge of EOP mitigation strategies.	3.7	45

295019 (APE 19) Partial or Complete Loss of Instrument Air / 8				X			AA1.01 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Backup air supply	3.5	46
295021 (APE 21) Loss of Shutdown Cooling / 4		X					AK2.02 Knowledge of the interrelations between LOSS OF SHUTDOWN COOLING and the following: Reactor water cleanup	3.2	47
295023 (APE 23) Refueling Accidents / 8			X				AK3.02 Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Interlocks associated with fuel handling equipment	3.4	48
295024 High Drywell Pressure / 5				X			EA1.11 Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Drywell spray: Mark-I&II	4.2	49
295025 (EPE 2) High Reactor Pressure / 3					X		EA2.04 Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: Suppression pool level	3.9	50
295026 (EPE 3) Suppression Pool High Water Temperature / 5						X	2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.	4.5	51
295028 (EPE 5) High Drywell Temperature (Mark I and Mark II only) / 5	X						EK1.02 Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE: Equipment environmental qualification	2.9	52
295030 (EPE 7) Low Suppression Pool Water Level / 5		X					EK2.04 Knowledge of the interrelations between LOW SUPPRESSION POOL WATER LEVEL and the following: RHR/LPCI	3.7	53
295031 (EPE 8) Reactor Low Water Level / 2			X				EK3.01 Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL: Automatic depressurization system actuation	3.9	54
295037 (EPE 14) Scram Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.11 Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: PCIS/NSSSS	3.5	55
295038 (EPE 15) High Offsite Radioactivity Release Rate / 9					X		EA2.03 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Radiation levels	3.5	56
600000 (APE 24) Plant Fire On Site / 8						X	2.4.31 Knowledge of annunciator alarms, indications, or response procedures.	4.2	57
700000 (APE 25) Generator Voltage and Electric Grid Disturbances / 6	X						AK1.01 Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Definition of terms: volts, watts, amps, VARs, power factor	3.3	58
K/A Category Totals:	2	3	3	4	4/3	4/4	Group Point Total:		20/7

ES-401	BWR Examination Outline Emergency and Abnormal Plant Evolutions—Tier 1/Group 2 (RO/SRO)								Form ES-401-1
E/APE # / Name / Safety Function	K1	K2	K3	A1	A2	G*	K/A Topic(s)	IR	#
295008 (APE 8) High Reactor Water Level / 2					X		AA2.01 Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL: Reactor water level	3.9	83
295010 (APE 10) High Drywell Pressure / 5						X	2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.	4.3	84
295033 (EPE 10) High Secondary Containment Area Radiation Levels / 9					X		EA2.03 Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Cause of high area radiation	4.2	85
295002 (APE 2) Loss of Main Condenser Vacuum / 3		X					AK2.03 Knowledge of the interrelations between LOSS OF MAIN CONDENSER VACUUM and the following: PCIS/NSSSS	3.5	59
295009 (APE 9) Low Reactor Water Level / 2			X				AK3.01 Knowledge of the reasons for the following responses as they apply to LOW REACTOR WATER LEVEL: Recirculation pump run back: Plant-Specific	3.2	60
295017 (APE 17) Abnormal Offsite Release Rate / 9				X			AA1.07 Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Process radiation monitoring system	3.4	61
295029 (EPE 6) High Suppression Pool Water Level / 5					X		EA2.03 Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Drywell/containment water level	3.4	62
295035 (EPE 12) Secondary Containment High Differential Pressure / 5						X	2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.	4.4	63
295036 (EPE 13) Secondary Containment High Sump/Area Water Level / 5	X						EK1.02 Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL: Electrical ground/ circuit malfunction	2.6	64
500000 (EPE 16) High Containment Hydrogen Concentration / 5		X					EK2.07 Knowledge of the interrelations between HIGH CONTAINMENT HYDROGEN CONCENTRATIONS and the following: Drywell vent system	3.2	65
K/A Category Point Totals:	1	2	1	1	1/2	1/1	Group Point Total:		7/3

ES-401 BWR Examination Outline Form ES-401-1
Plant Systems—Tier 2/Group 1 (RO/SRO)

System # / Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G*	K/A Topic(s)	IR	#
211000 (SF1 SLCS) Standby Liquid Control								X				A2.02 Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure of explosive valve to fire	3.9	86
212000 (SF7 RPS) Reactor Protection											X	2.2.12 Knowledge of surveillance procedures.	4.1	87
215003 (SF7 IRM) Intermediate Range Monitor								X				A2.04 Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Upscale or down scale trips	3.8	88
218000 (SF3 ADS) Automatic Depressurization											X	2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.4	89
262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)								X				A2.01 Ability to (a) predict the impacts of the following on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage	2.8	90
203000 (SF2, SF4 RHR/LPCI) RHR/LPCI: Injection Mode			X									K3.02 Knowledge of the effect that a loss or malfunction of the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) will have on following: Suppression pool level	3.5	1
205000 (SF4 SCS) Shutdown Cooling				X								K4.07 Knowledge of SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) design feature(s) and/or interlocks which provide for the following: Pump minimum flow	2.7	2
205000 (SF4 SCS) Shutdown Cooling						X						K6.04 Knowledge of the effect that a loss or malfunction of the following will have on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE): Reactor water level	3.6	3
206000 (SF2, SF4 HPCIS) High-Pressure Coolant Injection					X							K5.09 Knowledge of the operational implications of the following concepts as they apply to HIGH PRESSURE COOLANT INJECTION SYSTEM: Testable check valve operation: BWR-2,3,4	2.7	4
209001 (SF2, SF4 LPCS) Low-Pressure Core Spray							X					A1.01 Ability to predict and/or monitor changes in parameters associated with operating the LOW-PRESSURE CORE SPRAY SYSTEM controls including: Core spray flow	3.4	5

209001 (SF2, SF4 LPCS) Low Pressure Core Spray			X									K3.02 Knowledge of the effect that a loss or malfunction of the LOW-PRESSURE CORE SPRAY SYSTEM will have on following: ADS logic	3.8	6
211000 (SF1 SLCS) Standby Liquid Control								X				A2.05 Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of SBLC tank heaters	3.1	7
212000 (SF7 RPS) Reactor Protection									X			A3.01 Ability to monitor automatic operations of the REACTOR PROTECTION SYSTEM including: Reactor Power	4.4	8
215003 (SF7 IRM) Intermediate-Range Monitor										X		A4.02 Ability to manually operate and/or monitor in the control room: CRT display indications: Plant-Specific	2.9	9
215004 (SF7 SRMS) Source-Range Monitor											X	2.2.42 Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	3.9	10
215005 (SF7 PRMS) Average Power Range Monitor/Local Power Range Monitor	X											K1.13 Knowledge of the physical connections and/or cause-effect relationships between AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM and the following: Traversing in-core probe system	2.6	11
217000 (SF2, SF4 RCIC) Reactor Core Isolation Cooling		X										K2.01 Knowledge of electrical power supplies to the following: Motor operated valves	2.8	12
218000 (SF3 ADS) Automatic Depressurization			X									K3.01 Knowledge of the effect that a loss or malfunction of the AUTOMATIC DEPRESSURIZATION SYSTEM will have on following: Restoration of reactor water level after a break that does not depressurize the reactor when required	4.4	13
223002 (SF5 PCIS) Primary Containment Isolation/Nuclear Steam Supply Shutoff				X								K4.08 Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM / NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: Manual defeating of selected isolations during specified emergency conditions	3.3	14
239002 (SF3 SRV) Safety Relief Valves					X							K5.03 Knowledge of the operational implications of the following concepts as they apply to RELIEF/SAFETY VALVES: Acoustical monitoring: Plant-Specific	3.7	15
239002 (SF3 SRV) Safety Relief Valves				X								K4.08 Knowledge of RELIEF/SAFETY VALVES design feature(s) and/or interlocks which provide for the following: Opening of the SRV from either an electrical or mechanical signal	3.6	16
259002 (SF2 RWLCS) Reactor Water Level Control						X						K6.04 Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Reactor feedwater flow input	3.1	17

261000 (SF9 SGTS) Standby Gas Treatment							X					A1.05 Ability to predict and/or monitor changes in parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including: Primary containment oxygen level: Mark-I&II	2.7	18
262001 (SF6 AC) AC Electrical Distribution								X				A2.10 Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Exceeding current limitations	2.9	19
262002 (SF6 UPS) Uninterruptable Power Supply (AC/DC)									X			A3.01 Ability to monitor automatic operations of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) including: Transfer from preferred to alternate source	2.8	20
263000 (SF6 DC) DC Electrical Distribution										X		A4.02 Ability to manually operate and/or monitor in the control room: Battery voltage indicator: Plant-Specific	3.2	21
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG											X	2.2.38 Knowledge of conditions and limitations in the facility license.	3.6	22
264000 (SF6 EGE) Emergency Generators (Diesel/Jet) EDG					X							K5.05 Knowledge of the operational implications of the following concepts as they apply to EMERGENCY GENERATORS (DIESEL/JET): Paralleling A.C. power sources	3.4	23
300000 (SF8 IA) Instrument Air	X											K1.03 Knowledge of the connections and / or cause effect relationships between INSTRUMENT AIR SYSTEM and the following: Containment air	2.8	24
300000 (SF8 IA) Instrument Air						X						K6.04 Knowledge of the effect that a loss or malfunction of the following will have on the INSTRUMENT AIR SYSTEM: Service air refusal valve	2.6	25
400000 (SF8 CCS) Component Cooling Water		X										K2.02 Knowledge of electrical power supplies to the following: CCW valves	2.9	26
K/A Category Point Totals:	2	2	3	3	3	3	2	2/3	2	2	2/2	Group Point Total:		26/5

ES-401 BWR Examination Outline Form ES-401-1
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	#
215002 (SF7 RBMS) Rod Block Monitor											X	2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.	4.2	91
230000 (SF5 RHR SPS) RHR/LPCI: Torus/Suppression Pool Spray Mode								X				A2.05 Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS / SUPPRESSION POOL SPRAY MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. electrical failures	3.6	92
256000 (SF2 CDS) Condensate											X	2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation.	4.4	93
201006 (SF7 RWMS) Rod Worth Minimizer				X								K4.05 Knowledge of ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) design feature(s) and/or interlocks which provide for the following: Substitute rod position data: P-Spec	2.8	27
202001 (SF1, SF4 RS) Recirculation					X							K5.05 Knowledge of the operational implications of the following concepts as they apply to RECIRCULATION SYSTEM: End of cycle recirculation pump trip: Plant-Specific	3.5	28
202002 (SF1 RSCTL) Recirculation Flow Control						X						K6.02 Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION FLOW CONTROL SYSTEM: D.C. power	2.6	29
215001 (SF7 TIP) Traversing In-Core Probe							X					A1.03 Ability to predict and/or monitor changes in parameters associated with operating the TRAVERSING IN-CORE PROBE controls including: Valve status: Mark-I&II(Not-BWR1)	2.6	30
219000 (SF5 RHR SPC) RHR/LPCI: Torus/Suppression Pool Cooling Mode							X					A1.02 Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE controls including: System flow	3.5	31
223001 (SF5 PCS) Primary Containment and Auxiliaries								X				A2.11 Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Abnormal suppression pool level	3.6	32
226001 (SF5 RHR CSS) RHR/LPCI: Containment Spray Mode									X			A3.01 Ability to monitor automatic operations of the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE including: Valve operation: Plant-Specific	3.0	33
239001 (SF3, SF4 MRSS) Main and Reheat Steam										X		A4.05 Ability to manually operate and/or monitor in the control room: System temperature	2.7	34
245000 (SF4 MTGEN) Main Turbine Generator/Auxiliary											X	2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.	4.2	35
272000 (SF7, SF9 RMS) Radiation Monitoring	X											K1.04 Knowledge of the physical connections and/or cause-effect relationships between RADIATION MONITORING SYSTEM and the following: Applicable component cooling water system	2.9	36

286000 (SF8 FPS) Fire Protection		X										K2.02 Knowledge of the physical connections and/or cause-effect relationships between FIRE PROTECTION SYSTEM and the following: Pumps	2.9	37
290003 (SF9 CRV) Control Room Ventilation			X									K3.04 Knowledge of the effect that a loss or malfunction of the CONTROL ROOM HVAC will have on following: Control room pressure	2.8	38
K/A Category Point Totals:	1	1	1	1	1	1	2	1/1	1	1	1/2	Group Point Total:		12/3

Facility:	Date of Exam:					
Category	K/A #	Topic	RO		SRO-only	
			IR	#	IR	#
1. Conduct of Operations	2.1.29	Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.	4.1	66		
	2.1.30	Ability to locate and operate components, including local controls.	4.4	67		
	2.1.19	Ability to use plant computers to evaluate system or component status.	3.9	68		
	2.1.7	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.			4.7	94
	2.1.38	Knowledge of the station's requirements for verbal communications when implementing procedures.			3.8	95
	Subtotal			3		2
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	2.9	69		
	2.2.15	Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.	3.9	70		
	2.2.5	Knowledge of the process for making design or operating changes to the facility.			3.2	96
	2.2.11	Knowledge of the process for controlling temporary design changes.			3.3	97
	Subtotal			2		2
3. Radiation Control	2.3.7	Ability to comply with radiation work permit requirements during normal or abnormal conditions.	3.5	71		
	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	72		
	2.3.11	Ability to control radiation releases.			4.3	98
	Subtotal			2		1
4. Emergency Procedures/Plan	2.4.11	Knowledge of abnormal condition procedures.	4.0	73		
	2.4.13	Knowledge of crew roles and responsibilities during EOP usage.	4.0	74		
	2.4.29	Knowledge of the emergency plan.	3.1	75		
	2.4.16	Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.			4.4	99
	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	100
	Subtotal			3		2

Tier 3 Point Total		10		7

Tier / Group	Randomly Selected K/A	Reason for Rejection
The following topics / K/As were excluded from the systematic and random sampling process:		
1 / 1	295027 High Containment Temperature	This topic applies to plants with Mark III containments only. The facility has a Mark I containment.
1 / 2	295011 High Containment Temperature	This topic applies to plants with Mark III containments only. The facility has a Mark I containment.
2 / 1	207000 Isolation (Emergency) Condenser	This system is not installed at the facility.
2 / 1	209002 HPCS	This system is not installed at the facility.
2 / 2	201004 RSCS	This system is no longer installed at the facility.
2 / 2	201005 RCIS	This system is not installed at the facility.
G	2.2.3 Knowledge of the design, procedural, and operational differences between units.	This K/A applies to multi-unit facilities only.
G	2.2.4 Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.	This K/A applies to multi-unit facilities only.

The following K/As were rejected following the systematic and random sampling process:		
2 / 1	Question 17 259002 Reactor Water Level Control K6.07 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Drywell pressure input: FWCI	The facility does not have FWCI. Randomly reselected K/A 259002 Reactor Water Level Control K6.04 - Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: Reactor feedwater flow input.
2 / 2	Question 33 226001 RHR/LPCI: Containment Spray Mode A3.02 - Ability to monitor automatic operations of the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE including: System pressure	An acceptable question could not be developed for the randomly sampled K/A due to a lack of automatic operations related to RHR system pressure while in Containment Spray mode. Randomly reselected K/A 226001 RHR/LPCI: Containment Spray Mode A3.01 - Ability to monitor automatic operations of the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE including: Valve operation: Plant-Specific.
2 / 2	Question 35 245000 Main Turbine Generator/Auxiliary 2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of LCOs related to Main Turbine Generator/Auxiliary. Additionally, Technical Specification topics are already heavily sampled on the RO exam. Randomly reselected K/A 245000 Main Turbine Generator/Auxiliary 2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

2 / 2	Question 36 272000 Radiation Monitoring K1.20 - Knowledge of the physical connections and/or cause-effect relationships between RADIATION MONITORING SYSTEM and the following: Auxiliary building: Plant-Specific	The facility does not have an Auxiliary building. Randomly reselected K/A 272000 Radiation Monitoring K1.04 - Knowledge of the physical connections and/or cause-effect relationships between RADIATION MONITORING SYSTEM and the following: Applicable component cooling water system.
1 / 1	Question 45 295018 Partial or Complete Loss of CCW 2.4.3 - Ability to identify post-accident instrumentation.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of post-accident instrumentation related to loss of CCW. Randomly reselected K/A 295018 Partial or Complete Loss of CCW 2.4.6 - Knowledge of EOP mitigation strategies.
1 / 1	Question 48 295023 Refueling Accidents AK3.01 - Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Refueling floor evacuation	An acceptable question could not be developed for the randomly sampled K/A at a high enough level of difficulty. Randomly reselected K/A 295023 Refueling Accidents AK3.02 - Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Interlocks associated with fuel handling equipment.
1 / 2	Question 60 295009 Low Reactor Water Level AK3.02 - Knowledge of the reasons for the following responses as they apply to LOW REACTOR WATER LEVEL: Reactor feed pump runout flow control: Plant-Specific	The facility does not have Reactor feed pump runout flow control. Randomly reselected K/A 295009 Low Reactor Water Level AK3.01 - Knowledge of the reasons for the following responses as they apply to LOW REACTOR WATER LEVEL: Recirculation pump run back: Plant-Specific.

1 / 2	Question 63 295035 Secondary Containment High Differential Pressure 2.1.32 - Ability to explain and apply system limits and precautions.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of system limits and precautions related to Secondary Containment high differential pressure without overlapping a JPM on the operating exam. Randomly reselected K/A 295035 Secondary Containment High Differential Pressure 2.1.7 - Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
3	Question 67 2.1.27 - Knowledge of system purpose and/or function.	An acceptable question could not be developed for the randomly sampled generic K/A without making the question an extension of Tier 2. Randomly reselected K/A 2.1.30 - Ability to locate and operate components, including local controls.
3	Question 73 2.4.5 - Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.	An acceptable question could not be developed for the randomly sampled generic K/A without oversampling concepts already tested on the SRO exam. Randomly reselected K/A 2.4.11 - Knowledge of abnormal condition procedures.
1 / 1	Question 80 295028 High Drywell Temperature 2.4.34 - Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of RO tasks performed outside the main control room related to high Drywell temperature. Randomly reselected K/A 295028 High Drywell Temperature 2.4.9 - Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.

1 / 1	Question 82 700000 Generator Voltage and Electric Grid Disturbances 2.4.18 - Knowledge of the specific bases for EOPs.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of EOP bases related to generator voltage and electric grid disturbances. Randomly reselected K/A 700000 Generator Voltage and Electric Grid Disturbances 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.
1 / 2	Question 83 295008 High Reactor Water Level AA2.02 - Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL: Steam flow / feed-flow mismatch	An acceptable question could not be developed for the randomly sampled K/A at the SRO level. Randomly reselected K/A 295008 High Reactor Water Level AA2.01 - Ability to determine and/or interpret the following as they apply to HIGH REACTOR WATER LEVEL: Reactor water level.
2 / 1	Question 87 212000 Reactor Protection System 2.4.20 - Knowledge of the operational implications of EOP warnings, cautions, and notes.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of EOP warnings, cautions, and notes related to RPS. Randomly reselected K/A 212000 Reactor Protection System 2.2.12 - Knowledge of surveillance procedures.
2 / 2	Question 91 215002 Rod Block Monitor 2.4.1 - Knowledge of EOP entry conditions and immediate action steps.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of EOP entry conditions and immediate action steps related to RBM. Randomly reselected K/A 215002 Rod Block Monitor 2.2.25 – Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

2 / 2	Question 93 256000 Condensate 2.4.35 - Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.	An acceptable question could not be developed for the randomly sampled generic K/A due to a lack of local auxiliary operator tasks during an emergency related to Condensate. Randomly reselected K/A 256000 Condensate 2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.
1 / 2	Question 61 295017 Abnormal Offsite Release Rate AA1.08 Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: MSIV leakage control: Plant-Specific	The MSIV leakage control system was recently retired in place. Randomly reselected K/A 295017 Abnormal Offsite Release Rate AA1.07 Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Process radiation monitoring system.