

ES-301

Administrative Topics Outline

Form ES-301-1

Facility: <u>South Texas Project</u>		Date of Examination: <u>09-30-2013</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>		Operating Test Number: <u>LOT 19 NRC Exam</u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D,R	A1 Peer Check Operator Logs G2.1.3 Knowledge of shift or short-term relief practices. (3.7/3.9)
Conduct of Operations	D,P,R	A2 Determine Dilution Required for Power Increase G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (4.4/4.7)
Equipment Control	D,R	A3 Prepare ECO for SFP Skimmer Pump G2.2.13 Knowledge of tagging and clearance procedures. (4.1/4.3)
Radiation Control		
Emergency Procedures/Plan	N,R	A4 Complete an Offsite Agency Notification Message Form G2.4.39 Knowledge of RO responsibilities in emergency plan implementation. (3.9/3.8)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, then all 5 are required.		
*Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

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Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D,R	A5 Review Control Room Logs G2.1.3 Knowledge of shift or short-term relief practices. (3.7/3.9)
Conduct of Operations	D,P,R	A6 Determine Shift Staffing G2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. (2.9/3.9)
Equipment Control	N,R	A7 Review Completed Surveillance (ECW) G2.2.12 Knowledge of surveillance procedures. (3.7/4.1)
Radiation Control	D,R	A8 Initiate a Dose Extension G2.3.13 Knowledge of radiation safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (3.4/3.8)
Emergency Procedures/Plan	M,R	A9 Determine EAL G2.4.41 Knowledge of the emergency action level thresholds and classifications. (2.9/4.6)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, then all 5 are required.		
*Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank ( $\leq 3$ for ROs; $\leq 4$ for SROs & RO retakes) (N)ew or (M)odified from bank ( $\geq 1$ ) (P)revious 2 exams ( $\leq 1$ ; randomly selected)		

STP LOT-19  
NRC Admin JPM Description

**RO**

- (A1) Peer Check Operator Logs  
Demonstrate the ability to Peer Check Control Room Operator Logs from 0PSP03-ZQ-0028, Operator Logs, for any adverse trends and the appropriate corrective actions that would need to be taken in accordance with 0POP01-ZQ-0022, Plant Operations Shift Routines.
- (A2) Determine Dilution Required for Power Increase  
Demonstrate the knowledge required to determine the appropriate amount of dilution water to add for a given power increase.
- (A3) Prepare ECO for Spent Fuel Pool Skimmer Pump  
Demonstrate the ability to prepare an Equipment Clearance Order per 0PGP03-ZO-EC01, Equipment Clearance Orders.
- (A4) Prepare an Offsite Agency Notification Message Form  
Demonstrate the ability to prepare an Offsite Agency Notification Message Form for approval by the Emergency Director per 0ERP01-ZV-IN02, Notifications to Offsite Agencies.

**SRO**

- (A5) Review Control Room Logs  
Demonstrate the ability to review and approve Control Room Operator Logs from 0PSP03-ZQ-0028, Operator Logs, for any adverse trends and the appropriate corrective actions that would need to be taken in accordance with 0POP01-ZQ-0022, Plant Operations Shift Routines.
- (A6) Determine Shift Staffing  
Demonstrate knowledge of the requirements for MINIMUM SHIFT COMPLEMENT as is defined in the Conduct of Operations, Chapter 2, Shift Operating Practices.
- (A7) Review Completed Surveillance (ECW)  
Demonstrate the ability to review a completed surveillance on the Essential Cooling Water System per 0PSP03-EW-0017, Essential Cooling Water System Train A Testing, in accordance with 0PGP03-ZE-0004, Plant Surveillance Program.
- (A8) Initiate a Dose Extension  
Demonstrate the ability to the requirements for a dose extension in accordance with 0PGP03-ZR-0050, Radiation Protection Program.
- (A9) Determine Emergency Action Level  
Demonstrate the ability to correctly determine an Emergency Action Level for a given condition requiring entry into the STPNOC Emergency Action Plan.

ES-301

Control Room/In-Plant Systems Outline

Form ES-301-2

Facility: <u>South Texas Project</u>		Date of Examination: <u>09-30-2013</u>
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>LOT 19 NRC Exam</u>
Control Room Systems (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System/JPM Title	Type Code*	Safety Function
a. (S1) Transfer MFW from LPFRV to MFRV KA: 035 A4.01 (3.7/3.6)	D,S	4P
b. (S2) Transfer 4.16 KV BUS to Normal Supply KA: 064 A4.01 (4.0/4.3)	D,P,S	6
c. (S3) Isolate Containment Supplemental Purge KA: 103 A4.01 (3.2/3.3)	M,S	5
d. (S4) Place SGFPT in service from 3300 RPM KA: 039 A4.03 (2.8/2.8)	D,S	4S
e. (S5) Trip an RCP KA: 002 A3.03 (4.4/4.6)	A,L,M,S	2
f. (S6) Respond to ECW Low Discharge Pressure KA: 008 A4.01 (3.3/3.1)	A,D,EN,L,P,S	8
g. (S7) Re-Establish RCP Seal Injection KA: 004 A4.11 (3.4/3.3)	A,D,S	1
h. (S8) Fill SI Accumulator KA: 006 A4.07 (4.4/4.4)	D,EN,S	3
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. (P1) Return GWPS to Service KA: 071 A2.02 (3.3/3.6)	A,D,R	9
j. (P2) Local Start of ESF DG KA: 064 A4.01 (4.0/4.3)	E,L,N	6
k. (P3) Failing Air to MSIVs and MSIBs KA: 039 A4.01 (2.9/2.8)	A,E,L,M	4S
All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
*Type Code	Criteria for RO/SRO-I/SRO-U	
(A)lternate Path	4-6 / 4-6 / 2-3	
(C)ontrol Room		
(D)irect from Bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(EN)gineered Safety Features	- / - / $\geq 1$ (control room system)	
(L)ow-Power/Shutdown	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 Exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

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Control Room/In-Plant Systems Outline

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Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u>LOT 19 NRC Exam</u>
Control Room Systems (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System/JPM Title	Type Code*	Safety Function
b. (S2) Transfer 4.16 KV BUS to Normal Supply KA: 064 A4.01 (4.0/4.3)	D,P,S	6
c. (S3) Isolate Containment Supplemental Purge KA: 103 A4.01 (3.2/3.3)	M,S	5
d. (S4) Place SGFPT in service from 3300 RPM KA: 039 A4.03 (2.8/2.8)	D,S	4S
e. (S5) Trip an RCP KA: 002 A3.03 (4.4/4.6)	A,L,M,S	2
f. (S6) Respond to ECW Low Discharge Pressure KA: 008 A4.01 (3.3/3.1)	A,D,EN,L,P,S	8
g. (S7) Re-Establish RCP Seal Injection KA: 004 A4.11 (3.4/3.3)	A,D,S	1
h. (S8) Fill SI Accumulator KA: 006 A4.07 (4.4/4.4)	D,EN,S	3
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. (P1) Return GWPS to Service KA: 071 A2.02 (3.3/3.6)	A,D,R	9
j. (P2) Local Start of ESF DG KA: 064 A4.01 (4.0/4.3)	E,L,N	6
k. (P3) Failing Air to MSIVs and MSIBs KA: 039 A4.01 (2.9/2.8)	A,E,L,M	4S
All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
*Type Code	Criteria for RO/SRO-I/SRO-U	
(A)lternate Path	4-6 / 4-6 / 2-3	
(C)ontrol Room		
(D)irect from Bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(EN)gineered Safety Features	- / - / $\geq 1$ (control room system)	
(L)ow-Power/Shutdown	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 Exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

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Control Room Systems (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System/JPM Title	Type Code*	Safety Function
g. (S7) Re-Establish RCP Seal Injection KA: 004 A4.11 (3.4/3.3)	A,D,S	1
h. (S8) Fill SI Accumulator KA: 006 A4.07 (4.4/4.4)	D,EN,S	3
In-Plant Systems <sup>@</sup> (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. (P1) Return GWPS to Service KA: 071 A2.02 (3.3/3.6)	A,D,R	9
j. (P2) Local Start of ESF DG KA: 064 A4.01 (4.0/4.3)	E,L,N	6
k. (P3) Failing Air to MSIVs and MSIBs KA: 039 A4.01 (2.9/2.8)	A,E,L,M	4S
All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
*Type Code	Criteria for RO/SRO-I/SRO-U	
(A)lternate Path	4-6 / 4-6 / 2-3	
(C)ontrol Room		
(D)irect from Bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(EN)gineered Safety Features	- / - / $\geq 1$ (control room system)	
(L)ow-Power/Shutdown	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 Exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

STP LOT-19  
NRC Systems JPM Description

**Control Room Systems JPMs**

- (S1) Transfer MFW from LPFRV to MFRV  
Demonstrate the ability to control Steam Generator levels when aligning Main Feedwater flow from the Low Power Feedwater Regulation Valve to the Main Feedwater Regulation Valve in accordance with 0POP03-ZG-0005, Plant Startup to 100%.
- (S2) Transfer 4.16 KV Bus to Normal Supply  
Demonstrate the ability to transfer electrical load from a running Diesel Generator to offsite power in accordance with 0POP02-DG-0001, Emergency Diesel Generator 112(21).
- (S3) Isolate Containment Supplemental Purge  
Demonstrate the ability to isolate Containment Supplemental Purge and Radiation Monitor Isolation valves to mitigate the affects of a high radiation condition in Containment in accordance with 0POP04-RA-0001, Radiation Monitoring System Alarm Response.
- (S4) Place a SGFPT in service from 3300 RPM  
Demonstrate the ability to control steam to a SGFPT while placing it in service to feed Steam Generators in accordance with 0POP02-FW-0001, S.G.F.P. Turbine.
- (S5) Trip an RCP  
Demonstrate the ability to start a Reactor Coolant Pump and take appropriate action when a Reactor Coolant Pump critical parameter is not within band in accordance with 0POP02-RC-0004, Operation of Reactor Coolant Pumps, and 0POP04-RC-0002, Reactor Coolant Pump Off Normal. This is an Alternate Path JPM.
- (S6) Respond to ECW Low Discharge Pressure  
Demonstrate the ability to start an Essential Cooling Water Pump and take appropriate action when an Essential Cooling Water Pump trips in accordance with 0POP02-EW-0001, Essential Cooling Water Operations, and 0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions. This is an Alternate Path JPM.
- (S7) Re-Establish RCP Seal Injection  
Demonstrate the ability to control Reactor Coolant Pump Seal Injection with the Positive Displacement Pump in accordance with 0POP09-AN-04M8, Annunciator Lampbox 4M08 Response Instruction. This is an Alternate Path JPM.
- (S8) Fill SI Accumulator  
Demonstrate the ability to control Safety Injection System pumps and valves in order to fill a Safety Injection Accumulator to the proper level in accordance with 0POP02-SI-0001, Safety Injection Accumulators.

NOTE: All Control Room JPMs will be performed dynamically in the Simulator. The following JPMs will be performed in pairs; S1 & S2 together, S3 & S4 together and S7 & S8 together.

STP LOT-19  
NRC Systems JPM Description

**In Plant Systems JPMs**

- (P1) Return GWPS to Service  
Demonstrate the ability to startup the GWPS when Inlet Header O2 is greater than 1% requiring a Nitrogen Purge in accordance with 0POP02-GW-0001, Gaseous Waste Processing System Operations. This is an Alternate Path JPM.
- (P2) Local Start of ESF DG  
Demonstrate the ability to locally control an Engineered Safety Feature Diesel Generator in accordance with 0POP04-ZO-0001, Control Room Evacuation.
- (P3) Failing Air to MSIVs and MISBs  
Demonstrate the ability to locally close Main Steam Isolation Valves and Main Steam Isolation Bypass Valves in accordance with 0POP05-EO-EC00, Loss of all AC Power, Addendum #4. This is an Alternate Path JPM.



Facility: <u>South Texas Project</u>		Date of Exam: <u>09-26-2013</u>																
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			3	3	N/A			3	18	3	3	6	
	2	1	1	2	N/A			2	2	N/A			1	9	2	2	4	
	Tier Totals	4	4	5	N/A			5	5	N/A			4	27	5	5	10	
2. Plant Systems	1	4	3	2	1	2	2	2	5	3	2	2	28	3	2	5		
	2	2	0	1	1	1	1	1	0	1	1	1	10	0	1	2	3	
	Tier Totals	6	3	3	2	3	3	3	5	4	3	3	38	4	4	8		
3. Generic Knowledge and Abilities Categories				1		2		3		4		10		1	2	3	4	7
				3		2		3		2				1	2	2	2	

Note:

- Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
- 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.
- Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.
- 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.
- 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.
- Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
- \* 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.
- On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G\* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.
- 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.

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1		X					<b>Knowledge of the interrelations between a reactor trip and the following:</b> <b>(CFR 41.7 / 45.7)</b> EK2.02 Breakers, relays and disconnects	2.6	1
000008 Pressurizer Vapor Space Accident / 3					X		<b>Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident:</b> <b>(CFR: 43.5 / 45.13)</b> AA2.25 Expected leak rate from open PORV or code safety	2.8	2
000009 Small Break LOCA / 3						X	<b>2.2.38 Knowledge of conditions and limitations in the facility license.</b> <b>(CFR: 41.7 / 41.10 / 43.1 / 45.13)</b>	3.6	3
000011 Large Break LOCA / 3					X		<b>Ability to determine or interpret the following as they apply to a Large Break LOCA:</b> <b>(CFR 43.5 / 45.13)</b> EA2.09 Existence of adequate natural circulation	4.2	4
000015/17 RCP Malfunctions / 4				X			<b>Ability to operate and / or monitor the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow):</b> <b>(CFR 41.7 / 45.5 / 45.6)</b> AA1.02 RCP oil reservoir level and alarm indicators	2.8	5
000022 Loss of Rx Coolant Makeup / 2									
000025 Loss of RHR System / 4	X						<b>Knowledge of the operational implications of the following concepts as they apply to Loss of Residual Heat Removal System:</b> <b>(CFR 41.8 / 41.10 / 45.3)</b> AK1.01 Loss of RHRS during all modes of operation	3.9	6
000026 Loss of Component Cooling Water / 8				X			<b>Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water:</b> <b>(CFR 41.7 / 45.5 / 45.6)</b> AA1.06 Control of flow rates to components cooled by the CCWS	2.9	7

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000027 Pressurizer Pressure Control System Malfunction / 3	X						<b>Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions:</b> <b>(CFR 41.8 / 41.10 / 45.3)</b> AK1.03 Latent heat of vaporization/condensation	2.6	8
000029 ATWS / 1		X					<b>Knowledge of the interrelations between components following an ATWS:</b> <b>(CFR 41.7 / 45.7)</b> EK2.06 Breakers, relays, and disconnects	2.9	9
000038 Steam Gen. Tube Rupture / 3									
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4			X				<b>Knowledge of the reasons for the following responses as they apply to the Steam Line Rupture:</b> <b>(CFR 41.5,41.10 / 45.6 / 45.13)</b> AK3.06 Containment temperature and pressure considerations	3.4	10
000054 (CE/E06) Loss of Main Feedwater / 4									
000055 Station Blackout / 6			X				<b>Knowledge of the reasons for the following responses as they apply to the Station Blackout:</b> <b>(CFR 41.5 / 41.10 / 45.6 / 45.13)</b> EK3.02 Actions contained in EOP for loss of offsite and onsite power	4.3	11
000056 Loss of Off-site Power / 6					X		<b>Ability to determine and interpret the following as they apply to the Loss of Offsite Power:</b> <b>(CFR: 43.5 / 45.13)</b> AA2.25 Emergency feedwater ammeter and flowmeter	3.9	12
000057 Loss of Vital AC Inst. Bus / 6									
000058 Loss of DC Power / 6				X			<b>Ability to operate and / or monitor the following as they apply to the Loss of DC Power:</b> <b>(CFR 41.7 / 45.5 / 45.6)</b> AA1.03 Vital and battery bus components	3.1	13

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000062 Loss of Nuclear Svc Water / 4			X				<b>Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water:</b>  (CFR 41.4, 41.8 / 45.7) AK3.02 The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS	3.6	14
000065 Loss of Instrument Air / 8						X	<b>2.4.11 Knowledge of abnormal condition procedures.</b>  (CFR: 41.10 / 43.5 / 45.13)	4.0	15
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc. / 4						X	<b>2.4.20 Knowledge of the operational implications of EOP warnings, cautions, and notes.</b>  (CFR: 41.10 / 43.5 / 45.13)	3.8	16
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4		X					<b>Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following:</b>  (CFR: 41.7 / 45.7) EK2.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.	3.7	17
000077 Generator Voltage and Electric Grid Disturbances / 6	X						<b>Knowledge of the operational implications of the following concepts as they apply to Generator Voltage and Electric Grid Disturbances:</b>  (CFR: 41.4, 41.5, 41.7, 41.10 / 45.8) AK1.02 Over-excitation	3.3	18
K/A Category Totals:	3	3	3	3	3	3	Group Point Total:		18

ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000001 Continuous Rod Withdrawal / 1									
000003 Dropped Control Rod / 1									
000005 Inoperable/Stuck Control Rod / 1									
000024 Emergency Boration / 1			X				<b>Knowledge of the reasons for the following responses as they apply to Emergency Boration:</b> <b>(CFR 41.5, 41.10 / 45.6 / 45.13)</b> AK3.01 When emergency boration is required	4.1	19
000028 Pressurizer Level Malfunction / 2									
000032 Loss of Source Range NI / 7									
000033 Loss of Intermediate Range NI / 7					X		<b>Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation:</b> <b>(CFR: 43.5 / 45.13)</b> AA2.11 Loss of compensating voltage	3.1	20
000036 (BW/A08) Fuel Handling Accident / 8	X						<b>Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents :</b> <b>CFR 41.8 / 41.10 / 45.3)</b> AK1.02 SDM	3.4	21
000037 Steam Generator Tube Leak / 3									
000051 Loss of Condenser Vacuum / 4									
000059 Accidental Liquid RadWaste Rel. / 9				X			<b>Ability to operate and / or monitor the following as they apply to the Accidental Liquid Radwaste Release:</b> <b>(CFR 41.7 / 45.5 / 45.6)</b> AA1.01 Radioactive-liquid monitor	3.5	22
000060 Accidental Gaseous Radwaste Rel. / 9									
000061 ARM System Alarms / 7									
000067 Plant Fire On-site / 8									
000068 (BW/A06) Control Room Evac. / 8									
000069 (W/E14) Loss of CTMT Integrity / 5		X					<b>Knowledge of the interrelations between the Loss of Containment Integrity and the following:</b> <b>(CFR 41.7 / 45.7)</b> AK2.03 Personnel access hatch and emergency access hatch	2.8	23



ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO)						Form ES-401-2		
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
CE/E09 Functional Recovery									
K/A Category Point Totals:	1	1	2	2	2	1	Group Point Total:		9

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
003 Reactor Coolant Pump					X							<b>Knowledge of the operational implications of the following concepts as they apply to the RCPS:</b>  (CFR: 41.5 / 45.7)  K5.02 Effects of RCP coastdown on RCS parameters	2.8	28
004 Chemical and Volume Control						X						<b>Knowledge of the effect of a loss or malfunction on the following CVCS components:</b>  (CFR: 41.7 / 45.7)  K6.17 Flow paths for emergency boration	4.4	29
005 Residual Heat Removal								X				<b>Ability to (a) predict the impacts of the following malfunctions or operations on the RHRS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:</b>  (CFR: 41.5 / 43.5 / 45.3 / 45.13)  A2.04 RHR valve malfunction	2.9	30
006 Emergency Core Cooling	X											<b>Knowledge of the physical connections and/or causeeffect relationships between the ECCS and the following systems:</b>  (CFR: 41.2 to 41.9 / 45.7 to 45.8)  K1.03 RCS	4.2	31
007 Pressurizer Relief/Quench Tank										X		<b>Ability to manually operate and/or monitor in the control room:</b>  (CFR: 41.7 / 45.5 to 45.8)  A4.10 Recognition of leaking PORV/code safety	3.6	32



ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
008 Component Cooling Water									X			<b>Ability to monitor automatic operation of the CCWS, including:</b>  (CFR: 41.7 / 45.5)  A3.03 All flow rate indications and the ability to evaluate the performance of this closed-cycle cooling system	3.0	33
010 Pressurizer Pressure Control		X										<b>Knowledge of bus power supplies to the following:</b>  (CFR: 41.7)  K2.01 PZR heaters	3.0	34
012 Reactor Protection			X									<b>Knowledge of the effect that a loss or malfunction of the RPS will have on the following:</b>  (CFR: 41.7 / 45.6)  K3.01 CRDS	3.9	35
013 Engineered Safety Features Actuation										X		<b>2.1.32 Ability to explain and apply system limits and precautions.</b>  (CFR: 41.10 / 43.2 / 45.12)	3.8	36
022 Containment Cooling							X					<b>Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including:</b>  (CFR: 41.5 / 45.5)  A1.04 Cooling Water Flow	3.2	37
025 Ice Condenser														
026 Containment Spray				X								<b>Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following:</b>  (CFR: 41.7)  K4.02 Neutralized boric acid to reduce corrosion and remove inorganic fission product iodine from steam (NAOH) in containment spray	3.1	38

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)										Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
039 Main and Reheat Steam					X							<b>Knowledge of the operational implications of the following concepts as the apply to the MRSS:</b>  (CFR: 441.5 / 45.7)  K5.08 Effect of steam removal on reactivity	3.6	39
059 Main Feedwater								X				<b>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:</b>  (CFR: 41.5 / 43.5 / 45.3 / 45.13)  A2.04 Feeding a dry S/G	2.9	40
061 Auxiliary/Emergency Feedwater						X						<b>Knowledge of the effect of a loss or malfunction of the following will have on the AFW components:</b>  (CFR: 41.7 / 45.7)  K6.02 Pumps	2.6	41
062 AC Electrical Distribution	X											<b>Knowledge of the physical connections and/or causeeffect relationships between the ac distribution system and the following systems:</b>  (CFR: 41.2 to 41.9)  K1.03 DC distribution	3.5	42
063 DC Electrical Distribution										X		<b>Ability to manually operate and/or monitor in the control room:</b>  (CFR: 41.7 / 45.5 to 45.8)  A4.03 Battery discharge rate	3.0	43
064 Emergency Diesel Generator		X										<b>Knowledge of bus power supplies to the following:</b>  (CFR: 41.7)  K2.03 Control power	3.2	44

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
073 Process Radiation Monitoring			X									<p><b>Knowledge of the effect that a loss or malfunction of the PRM system will have on the following:</b></p> <p>(CFR: 41.7 / 45.6)</p> <p>K3.01 Radioactive effluent releases</p>	3.6	45
076 Service Water								X				<p><b>Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:</b></p> <p>(CFR: 41.5 / 43.5 / 45/3 / 45/13)</p> <p>A2.01 Loss of SWS</p>	3.5	46
078 Instrument Air	X											<p><b>Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems:</b></p> <p>(CFR: 41.2 to 41.9 / 45.7 to 45.8)</p> <p>K1.02 Service air</p>	2.7	47
103 Containment									X			<p><b>Ability to monitor automatic operation of the containment system, including:</b></p> <p>(CFR: 41.7 / 45.5)</p> <p>A3.01 Containment isolation</p>	3.9	48
003 Reactor Coolant Pump							X					<p><b>Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including:</b></p> <p>(CFR: 41.5 / 45.5)</p> <p>A1.02 RCP pump and motor bearing temperatures</p>	2.9	49

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
004 Chemical and Volume Control									X			<b>Ability to monitor automatic operation of the CVCS, including:</b> (CFR: 41.7 / 45.5) A3.15 PZR pressure and temperature	3.8	50
012 Reactor Protection								X				<b>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:</b> (CFR: 41.5 / 43.5 / 45.3 / 45.5) A2.02 Loss of instrument power	3.6	51
061 Auxiliary/Emergency Feedwater	X											<b>Knowledge of the physical connections and/or cause effect relationships between the AFW and the following systems:</b> (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.11 AFW turbine exhaust drains	2.7	52
064 Emergency Diesel Generator										X		<b>2.4.34 Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.</b> (CFR: 41.10 / 43.5 / 45.13)	4.2	53
078 Instrument Air									X			<b>Knowledge of bus power supplies to the following:</b> (CFR: 41.7) K2.02 Emergency air compressor	3.1	54
006 Emergency Core Cooling								X				<b>Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:</b> (CFR: 41.5 / 45.5) A2.11 Rupture of ECCS header	4.0	55
<b>K/A Category Point Totals</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>Group Point Total</b>	<b>28</b>

ES-401		PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO)											Form ES-401-2	
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
001 Control Rod Drive														
002 Reactor Coolant				X								<b>Knowledge of RCS design feature(s) and/or interlock(s) which provide for the following:</b> (CFR: 41.7) K4.10 Overpressure protection	4.2	56
011 Pressurizer Level Control														
014 Rod Position Indication					X							<b>Knowledge of the operational implications of the following concepts as they apply to the RPIS:</b> (CFR: 41.5 / 45.7) K5.01 Reasons for differences between RPIS and step counter	2.7	57
015 Nuclear Instrumentation									X			<b>Ability to monitor automatic operation of the NIS, including:</b> (CFR: 41.7 / 45.5) A3.03 Verification of proper functioning/operability	3.9	58
016 Non-nuclear Instrumentation			X									<b>Knowledge of the effect that a loss or malfunction of the NNIS will have on the following:</b> (CFR: 41.7 / 45.6) K3.06 AFW system	3.5	59
017 In-core Temperature Monitor	X											<b>Knowledge of the physical connections and/or cause effect relationships between the ITM system and the following systems:</b> (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.02 RCS	3.3	60
027 Containment Iodine Removal														
028 Hydrogen Recombiner and Purge Control														
029 Containment Purge														
033 Spent Fuel Pool Cooling											X	<b>2.4.35 Knowledge of local auxiliary operator tasks during an emergency and the resultant operator effects.</b> (CFR: 41.10 / 43.5 / 45.13)	3.8	61

ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
034 Fuel Handling Equipment														
035 Steam Generator											X	<b>Ability to monitor automatic operation of the S/G including:</b>  (CFR: 41.7 / 45.5)  A3.01 S/G water level control	4.0	62
041 Steam Dump/Turbine Bypass Control														
045 Main Turbine Generator							X					<b>Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including:</b>  (CFR: 41.5 / 45.5)  A1.06 Expected response of secondary plant parameters following T/G trip	3.3	63
055 Condenser Air Removal														
056 Condensate	X											<b>Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems:</b>  (CFR: 41.2 to 41.9 / 45.7 to 45.8)  K1.03 MFW	2.6	64
068 Liquid Radwaste														
071 Waste Gas Disposal														
072 Area Radiation Monitoring														
075 Circulating Water														
079 Station Air														
086 Fire Protection						X						<b>Knowledge of the effect of a loss or malfunction on the Fire Protection System following will have on the:</b>  (CFR: 41.7 / 45.7)  K6.04 Fire, smoke, and heat detectors	2.6	65
K/A Category Point Totals:	2	0	1	1	1	1	1	0	1	1	1	Group Point Total:		10



ES-401		PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO)						Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
000057 Loss of Vital AC Inst. Bus / 6						X	<b>2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.</b>  (CFR: 41.10 / 43.2 / 45.6)	4.4	80
000058 Loss of DC Power / 6									
000062 Loss of Nuclear Svc Water / 4									
000065 Loss of Instrument Air / 8						X	<b>2.1.32 Ability to explain and apply system limits and precautions.</b>  (CFR: 41.10 / 43.2 / 45.12)	4.0	81
W/E04 LOCA Outside Containment / 3									
W/E11 Loss of Emergency Coolant Recirc. / 4									
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4									
000077 Generator Voltage and Electric Grid Disturbances / 6									
<b>K/A Category Totals:</b>					3	3	<b>Group Point Total:</b>		<b>6</b>





ES-401	PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO)							Form ES-401-2	
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	IR	#
W/E13 Steam Generator Over-pressure / 4									
W/E15 Containment Flooding / 5									
W/E16 High Containment Radiation / 9									
BW/A01 Plant Runback / 1									
BW/A02&A03 Loss of NNI-X/Y / 7									
BW/A04 Turbine Trip / 4									
BW/A05 Emergency Diesel Actuation / 6									
BW/A07 Flooding / 8									
BW/E03 Inadequate Subcooling Margin / 4									
BW/E08; W/E03 LOCA Cooldown - Depress. / 4									
BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4									
BW/E13&E14 EOP Rules and Enclosures									
CE/A11; W/E08 RCS Overcooling - PTS / 4									
CE/A16 Excess RCS Leakage / 2									
CE/E09 Functional Recovery									
K/A Category Point Totals:					2	2	Group Point Total:		4



ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 1 (SRO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
059 Main Feedwater														
061 Auxiliary/Emergency Feedwater														
062 AC Electrical Distribution														
063 DC Electrical Distribution								X				<b>Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:</b>  (CFR: 41.5 / 43.5 / 45.3 / 45.13)  A2.01 Grounds	3.2	89
064 Emergency Diesel Generator														
073 Process Radiation Monitoring														
076 Service Water														
078 Instrument Air														
103 Containment											X	<b>2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.</b>  (CFR: 41.10 / 43.5 / 45.11)	4.4	90
K/A Category Point Totals:								3			2	Group Point Total:		5



ES-401	PWR Examination Outline Plant Systems - Tier 2/Group 2 (SRO)											Form ES-401-2		
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	IR	#
075 Circulating Water														
079 Station Air														
086 Fire Protection														
K/A Category Point Totals:								1			2	Group Point Total:		3

Facility: <u>South Texas Project</u>		Date of Exam: <u>09/26/2013</u>				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
1. Conduct of Operations	2.1.	<b>2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.</b> (CFR: 41.5 / 43.5 / 45.12 / 45.13)	4.4	66		
	2.1.	<b>2.1.3 Knowledge of shift or short-term relief turnover practices.</b>   (CFR: 41.10 / 45.13)	3.7	67		
	2.1.	<b>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.</b> (CFR: 41.10 / 43.2)	3.3	68		
	2.1.	<b>2.1.34 Knowledge of primary and secondary plant chemistry limits.</b> (CFR: 41.10 / 43.5 / 45.12)			3.5	94
	Subtotal					3

Facility: South Texas Project		Date of Exam: 09/26/2013				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
2. Equipment Control	2.2.	<b>2.2.22 Knowledge of limiting conditions for operations and safety limits.</b> (CFR: 41.5 / 43.2 / 45.2)	4.0	69		
	2.2.	<b>2.2.37 Ability to determine operability and/or availability of safety related equipment.</b> (CFR: 41.7 / 43.5 / 45.12)	3.6	70		
	2.2.	<b>2.2.13 Knowledge of tagging and clearance procedures.</b> (CFR: 41.10 / 45.13)			4.3	95
	2.2.	<b>2.2.20 Knowledge of the process for managing troubleshooting activities.</b> (CFR: 41.10 / 43.5 / 45.13)			3.8	96
	Subtotal					2



Facility: <u>South Texas Project</u>		Date of Exam: <u>09/26/2013</u>				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
3. Radiation Control	2.3.	<b>2.3.13 Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.</b> (CFR: 41.12 / 43.4 / 45.9 / 45.10)	3.4	71		
	2.3.	<b>2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.</b> (CFR: 41.12 / 43.4 / 45.10)	3.4	72		
	2.3.	<b>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.</b> (CFR: 41.12 / 45.9 / 45.10)	3.2	73		
	2.3.	<b>2.3.11 Ability to control radiation releases.</b> (CFR: 41.11 / 43.4 / 45.10)			4.3	97
	2.3.	<b>2.3.6 Ability to approve release permits.</b> (CFR: 41.13 / 43.4 / 45.10)			3.8	98
	Subtotal				3	

Facility: <u>South Texas Project</u>		Date of Exam: <u>09/26/2013</u>				
Category	K/A #	Topic	RO		SRO-Only	
			IR	#	IR	#
4. Emergency Procedures / Plan	2.4.	<b>2.4.6 Knowledge of EOP mitigation strategies.</b> (CFR: 41.10 / 43.5 / 45.13)	3.7	74		
	2.4.	<b>2.4.11 Knowledge of abnormal condition procedures.</b> (CFR: 41.10 / 43.5 / 45.13)	4.0	75		
	2.4.	<b>2.4.14 Knowledge of general guidelines for EOP usage.</b> (CFR: 41.10 / 45.13)			4.5	99
	2.4.	<b>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.</b> (CFR: 41.10 / 43.5 / 45.13)			4.4	100
	Subtotal			2		2
Tier 3 Point Total				10		7

**All replacement KAs were randomly selected picking a KA from a group of associated KA numbers that were placed in a container.**

Tier/ Group	Randomly Selected K/A	Reason For Rejection
1/2	W/E 16 G2.4.49	This Generic KA tested actions that require immediate operation and was grouped with High Containment Radiation. At STP we do not have immediate operator actions associated with High Containment Radiation. Therefore the Generic KA was replaced with KA G2.4.20.
2/1	022 A1.03	This KA tested the ability to predict and/or monitor Containment Humidity to prevent exceeding design limits. At STP we do not have any design limits for Containment Humidity. Therefore the KA was replaced with KA 022 A1.04.
2/2	033 G2.4.49	This Generic KA tested actions that require immediate operation and was grouped with Spent Fuel Pool Cooling. At STP we do not have immediate operator actions associated with Spent Fuel Pool Cooling. Therefore the Generic KA was replaced with KA G2.4.35.
1/1	APE 056 AA2.17	Unable to formulate a question different from other Pzr heater questions on the exam. Replaced with KA APE 056 AA2.25
2/1	061 K1.04	Unable to formulate credible distracters. Replaced with KA 061 K1.11
2/1	039 K5.05	Unable to formulate acceptable question. Replaced with KA 039 K5.08
2/1	078 A3.01	Replaced due to similarity of questions. Replace with KA 078 K2.02
2/1 SRO	012 A2.07	Unable to formulate credible distracters. Replaced with KA 012 A2.01
2/2 SRO	002 G2.4.41	Question/topic too similar to an Admin JPM. Replaced KA with 002 G2.4.9

## Appendix D

## Scenario Outline

Form ES-D-1

Facility: South Texas Project

Scenario No.: 1

Op-Test No.: LOT19 NRC

Examiners: \_\_\_\_\_Operators: \_\_\_\_\_Initial Conditions:

- 100% Power and Stable.

Turnover:

- Train 'A' Outage in progress: HHSI & LHSI Pumps 1A, SI-MOV-0016A and AFW Pump 11.
- Rod Control currently in Manual to perform 0PSP02-RC-0410, Delta T and T Average ACOT, on Channel III.
- Lower Reactor Power to 98% per 0POP03-ZG-0008, Power Operations, to allow performance of 0POP07-MS-0003, Main Turbine Steam Inlet Valve Test.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (R) BOP (R) SRO (R)	Lower Reactor Power to 98%.
2 (20 min)	08-15-02 True	BOP (I) SRO (I)	SG B Controlling Feed Flow Channel FT-0520 Fails Low.
3 (30 min)	02-19-03 True	RO (I) SRO (I, TS)	Controlling Channel of PZR Pressure PT-0457 Fails High.
4 (N/A)	50-HV-01 True	RO (C) SRO (C, TS)	Pressurizer PORV 655A fails to close after opening. Occurs with Pressurizer PT-0457 malfunction. (CT)
5 (45 min)	06-15-01 .24	BOP (C) SRO (C)	EHC Leak forces crew to manually trip Reactor, Main Turbine and SGFPTs
6 (60 min)	05-02-03 .5	RO (M) BOP (M) SRO (M)	Major Steam Line Break inside Containment on SG 1C. (CT)
7 (N/A)	01-12-06 True	BOP (C) SRO (C)	MSL Isolation fails to Auto Actuate. (Integral to Scenario) (CT)

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

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

STP LOT-19  
NRC Scenario #1 Description

**Initial Conditions:** The plant is at 100% power. Train 'A' Outage in progress: HHSI & LHSI Pumps 1A, SI-MOV-0016A and AFW Pump 11. Rod Control currently in Manual to perform 0PSP02-RC-0410, Delta T and T Average ACOT, on Channel III. Lower Reactor Power to 98% per 0POP03-ZG-0008, Power Operations, to allow performance of 0POP07-MS-0003, Main Turbine Steam Inlet Valve Test.

**Event 1:** The crew will lower Reactor Power to 98% per 0POP03-ZG-0008, Power Operations.

**Event 2:** SG B Controlling Feed Flow Channel FT-0520 fails low. The crew will respond using 0POP04-FW-0001, Loss of SG Level Control.

**Event 3/4:** Controlling channel of PZR Pressure PT-0457 fails high. When the PZR Pressure Channel fails high, PZR PORV 655A will open and then fail to close. The crew will respond using POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control. The crew will close the block valve for PZR PORV 655A. The SRO will address Tech Spec implications. **(Critical Task)**

**Event 5:** An EHC leak develops in the EHC system. The leak will be of sufficient size and at such a location that repairs will not be feasible prior to removing the Main Turbine and SGFPTs from service. The crew will respond using 0POP09-AN-07M3, Window E-2, D-2 and B-2 for a lowering EHC Reservoir level. Window B-2 for extreme low level will have the crew trip the Reactor, ensure the Main Turbine is tripped and trip all SGFPTs and then enter 0POP05-EO-EO00, Reactor Trip or Safety Injection. The crew will also secure the running EHC pumps.

**Event 6:** Once the crew has entered 0POP05-EO-ES01, Reactor Trip Response, and performed Step 4, Verified Control Rods Fully Inserted, a fault will occur on SG 1C Main Steam line inside containment. The crew will transition back to 0POP05-EO-EO00, Reactor Trip or Safety Injection. **(Critical Task)**

**Event 7:** The automatic actuation of Main Steam Isolation will not occur. The crew will have to manually initiate closing of the Main Steam Isolation Valves. **(Critical Task)**

**Termination:** The scenario will terminate after the crew exits 0POP05-EO-EO20, Faulted Steam Generator Isolation and transitions to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, or 0POP05-EO-ES11, SI Termination.

**Critical Tasks:**

- Manually close block valve for stuck open PZR PORV prior to exiting 0POP05-EO-EO00, Reactor Trip or Safety Injection.
- Isolate a Steam Generator before transitioning out of 0POP05-EO-EO20, Faulted Steam Generator Isolation.
- Manually initiate a Main Steam Isolation or manually close all Main Steam Isolation valves prior to an orange path on Subcriticality or Integrity CSF or before transition to 0POP05-EO-EC21, Uncontrolled Depressurization of all Steam Generators, which ever happens first.

**Source:** New

Facility: South Texas Project

Scenario No.: 2

Op-Test No.: LOT 19 NRC

Examiners: \_\_\_\_\_Operators: \_\_\_\_\_Initial Conditions:

- 75% power and stable. Maintaining power at 75% due to an offsite grid issue.

Turnover:

- Train B Outage in progress. CCW Pump 1B, RCFCs 11B and 12B and AFW Pump #12 are OOS.
- Start-up Feed Pump #14 is OOS for scheduled maintenance.

Event No.	Malf. No.	Event Type*	Event Description
1 (1 min)	02-25-02 0	RO (I) SRO (I, TS)	Loop 1A Cold Leg RTD T-0410B Fails Low.
2 (10 min)	SA- PT545TV 0	BOP (I) SRO (I, TS)	SG D Controlling Pressure Channel PT-0545 Fails Low.
3 (20 min)	03-05-01 True	RO (I) SRO (I)	VCT Level Transmitter LT-0112 fails high.
4 (30 min)	Proteus- AIP- T6147ZM 1.119	BOP (C) SRO (C)	Main Generator Stator Cooling DT Alarm due to high DT across Stator Bars 36B and 36T.
5 (35 min)	50-GG-01 True	RO (R) BOP (R) SRO (R)	The crew will receive a Generator Condition Monitor alarm with an associated GCM Verified Alarm, ICS Point BD-6023. The crew will perform a Fast Load Reduction at a rate 2% to 5% per minute. After the Fast Load Reduction begins the Main Generator will have a complete Fault that will cause a Reactor and Turbine Trip. (Integrated at 64% NI Power)
6 (N/A)	05-03-01 0.02 05-04-01 True 50-SA-10 0.1	RO (M) BOP (M) SRO (M)	Faulted and Ruptured SG 1A ( <b>2 CTs</b> ) (Integrated and Ramped in to Scenario)
7 (N/A)	50-AF-03 True AF-04 True 08-02-01 True	BOP (C) SRO (C)	AFW Pump #11 manual recirc valve was left open. AFW Pump #13 fails to auto start. AFW Pump Turbine #14 trips on overspeed. The crew will have to manually start AFW Pump #13 and/or close the manual recirc valve on AFW Pump #11 and cross connect to supply water to the intact SGs ( <b>CT</b> ) (Integral to Scenario)

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

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

STP LOT-19  
NRC Scenario #2 Description

**Initial Conditions:** 75% power and stable. Maintaining power at 75% due to an offsite grid issue. Train B Outage in progress: CCW Pump 1B, RCFCs 11B and 12B and AFW Pump #12 are OOS. Start-up Feed Pump #14 is OOS for scheduled maintenance.

**Event 1:** LOOP A Cold Leg RTD T-0410B fails low. The crew will respond using 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel. The SRO will address Tech Spec implications

**Event 2:** SG 1D controlling Pressure Channel PT-0545 fails low. The crew will respond using 0POP04-FW-0001, Loss of Steam Generator Level Control. The SRO will address Tech Spec implications.

**Event 3:** VCT Level Transmitter LT-0112 fails high. The crew will respond using 0POP09-AN-04M8, Window E-2, VCT LEVEL HI/LO.

**Event 4:** Main Generator Stator Bar 36T will begin to over heat and cause a high Stator Cooling Water DT between Stator Bar 36B and 36T. The crew will respond using 0POP09-AN-07M3, Window A-5, STATR COIL WTR DIFF TEMP HI/TEMP HI.

**Event 5:** Shortly after Main Generator Stator Bar 36T heats up the bar will begin to degrade and cause a GCM Verified Alarm, ICS Point BD-6023. The crew will respond using 0POP09-AN-07M3, Window A-4, GEN CONDITION MON ALARM. This will have the crew perform a fast load reduction at a rate of 2% to 5% per minute using 0POP04-TM-0005, Fast Load Reduction. Shortly after the crew begins lowering power the Main Generator will trip due to a Ground Fault. The crew will enter 0POP05-EO-EO00, Reactor Trip or SI, and then 0POP05-EO-ES01, Reactor Trip Response. (0POP05-EO-ES01 may not be entered due to the next event.)

**Event 6:** When the Reactor Trips, a Faulted and Ruptured SG 1A will be ramped in. The fault will be on the Main Steam line in the IVC. The crew will enter/reenter 0POP05-EO-EO00, Reactor Trip or Safety Injection, and then transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation, to 0POP05-EO-EO30, SGTR, and finally to 0POP05-EO-EC31, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired. **(2 Critical Tasks)**

**Event 7:** When the AFW Actuation occurs after the Reactor Trip, AFW Pump #11 manual recirc valve has been left open, AFW Pump #13 will fail to auto start, and AFW Pump #14 will trip on overspeed. The crew will have to manually start AFW Pump #13 and/or close the manual recirc valve for AFW Pump #11 and cross connect to supply AFW to the intact SGs. **(Critical Task)**

**Termination:** The scenario will be terminated after the crew has initiated Boration of the RCS to meet Shutdown Margin requirements per 0POP05-EO-EC31, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.

STP LOT 19  
NRC Scenario #2 Description

**Critical Tasks:**

- Establish 576 gpm AFW flow to the SGs before transitioning out of 0POP05-EO-EO00, Reactor Trip or Safety Injection.
- Isolate a Steam Generator before transitioning out of 0POP05-EO-EO20, Faulted Steam Generator Isolation.
- Initiate RCS Boration such that the Shutdown Margin will be met for cooling down the Unit per the Plant Curve Book, Figure 5.5, 68°F curve.

**Source:** New



## Appendix D

## Scenario Outline

Form ES-D-1

Facility: South Texas Project

Scenario No.: 3

Op-Test No.: LOT19 NRC

Examiners: \_\_\_\_\_Operators: \_\_\_\_\_Initial Conditions:

- 100% Power and Stable.

Turnover:

- Train 'A' Outage in progress: HHSI & LHSI Pumps 1A, SI-MOV-0016A and AFW Pump 11.
- Rod Control currently in Manual to perform 0PSP02-RC-0410, Delta T and T Average ACOT, on Channel III.
- Maintenance has been trouble shooting an issue with pressure fluctuations in the EHC system. Maintenance has requested that Operations start EHC Pump #12 and secure EHC Pump #11.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	NA	BOP (N) SRO (N)	Start EHC Pump #12 and secure EHC Pump #11.
2 (5 min)	OC_IAC66 M137643P ICKUPCA 0.005	BOP (C) SRO (C)	CW Pump #13 trip and Discharge valve fails to close.
3 (15 min)	01-14-08 True	RO (I) SRO (I, TS)	DRPI indication for rod H6 fails (both channels).
4 (25 min)	06-04-01 0	RO (R) BOP (C) SRO (C)	Loss of load. GV #1 fails closed.
5 (35 min)	02-03-04 0.08	RO (C) SRO (C, TS)	30 GPM RCS Leak.
6 (45 min)	02-03-04 1.0	RO (M) BOP (M) SRO (M)	RCS Loop flow low on Loop D and SBLOCA (CT) (Integral to Scenario)
7 (N/A)		RO (C) SRO (C)	Auto Reactor Trip and Actuation Train C fail. Crew will have to manually trip the Reactor. (CT) (Integral to Scenario)
8 (N/A)		RO (C) SRO (C)	HHSI Pump 1B trip. Crew must manually start HHSI Pump 1C. (CT) (Integral to Scenario)

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

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

STP LOT-19  
NRC Scenario #3 Description

**Initial Conditions:** 100% Power and Stable. Train 'A' Outage in progress: HHSI & LHSI Pumps 1A, SI-MOV-0016A and AFW Pump 11. Rod Control currently in Manual to perform 0PSP02-RC-0410, Delta T and T Average ACOT, on Channel III. Maintenance has been trouble shooting an issue with pressure fluctuations in the EHC system. Maintenance has requested that Operations start EHC Pump #12 and secure EHC Pump #11.

**Event 1:** The crew will swap running EHC Pumps using 0POP02-EH-0001, Main Turbine Electro-Hydraulic Control System.

**Event 2:** Circ Water Pump #13 trips and Discharge Valve fails to auto close. The crew will respond using 0POP04-CW-0001, Loss of Circulating Water Flow.

**Event 3:** Both DRPI channels for rod H6 will fail. The crew will use 0POP09-AN-05M3, Window A-5, RPI TRBL and Window D-5, ROD SUPV MNTR ROD POSITION TRBL to address the failures. The SRO will address Tech Spec implications.

**Event 4:** Main Turbine Governor Valve #1 fails closed. The crew will respond using 0POP04-TM-0001, Turbine Load Rejection. This event will also include a reactivity addition.

**Event 5:** 30 GPM leak from the RCS at the high pressure flow tap for Loop D. The crew will respond using 0POP04-RC-0003, Excessive RCS Leakage. The SRO will address Tech Spec implications.

**Event 6/7:** A SBLOCA will occur caused by the RCS Loop D high pressure flow tap completely failing. The crew will enter 0POP05-EO-EO00, Reactor Trip or Safety Injection, then 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. The Reactor will immediately get a trip signal from RCS Loop D low flow when the SBLOCA occurs, however, the Reactor will not auto trip. The crew will have to manually trip the Reactor. **(2 Critical Tasks)**

**Event 8:** Actuation Train C will fail on the Reactor trip. When SI is actuated, HHSI Pump 1B will trip right after it starts on over current. With no HHSI pumps running, the crew will have to manually start HHSI Pump 1C to supply ECCS flow during the SBLOCA. **(Critical Task)**

**Termination:** The scenario will be terminated after SGs are depressurized to 1000 psig in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

**Critical Tasks:**

- Manually trips the Reactor from the Control Room before completing Step 1 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.
- Establish flow from at least one HHSI Pump before transitioning out of 0POP05-EO-EO00, Reactor Trip or Safety Injection, during a SBLOCA when RCS pressure remains between 400 psig and 1680 psig.
- Depressurize intact SGs to less than 1000 psig within 45 minutes of the initiation of the SBLOCA.

**Source:** New

Appendix D

Scenario Outline

Form ES-D-1

Facility: South Texas Project      Scenario No.: 4      Op-Test No.: LOT19 NRC

Examiners: \_\_\_\_\_      Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Initial Conditions:**

- Unit 1 just completed a 30 day outage. A Plant Startup is in progress and Reactor Power is currently at 12% to 14% and stable.
- The Unit is at step 6.38 of OPOP03-ZG-0005, Plant Startup to 100%, ready to perform OPC Test on Main Turbine.

**Turnover:**

- Condensate Pump #13 and CL-ACW Pump #13 are OOS.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	(N/A)	BOP (N) SRO (N)	Perform OPC Test on Main Turbine and then continue with Plant Startup.
2 (5 min)	01-37-01 True	RO (I) SRO (I, TS)	Intermediate Range Channel NI 35 fails low. (Integral to Scenario)
3 (10 min)	Q1L013_ TC_52_ BC047G TA_SWI T1 True	RO (C) SRO (C, TS)	E1C11 Battery Charger #1 failure with loss of 125VDC power to Train 'C' Class 1E 4.16KV Bus Control Power.
4 (25 min)	05-14-01 0.845	BOP (C) SRO (C)	Steam Header PT-0557 fails high.
5 (35 min)	08-23-01 True	BOP (C) SRO (C)	Condensate Pump #11 Trips and Condensate Pump #12 will not start.
6 (N/A)	50-HH- 04 0.35	RO (M) BOP (M) SRO (M)	LBLOCA. (Integral to Scenario)
7 (N/A)		RO (C) SRO (C)	LHSI Pumps 1A & 1B fail to Auto Start. <b>(CT)</b> (Integral to Scenario)
8 (N/A)		RO (C) SRO (C)	The auto swap over to cold leg recirculation will fail and the crew will have to manually align. <b>(CT)</b> (Integral to Scenario)

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

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

STP LOT-19  
NRC Scenario #4 Description

**Initial Conditions:** Unit 1 just completed a 30 day outage. The Reactor is at 12% to 14% Power and Stable. Ready to perform OPC test on Main Turbine per 0POP03-ZG-0005, Plant Startup to 100%, Step 6.38, and then continue with Plant Startup. Condensate Pump #13 and CL-ACW Pump #13 are OOS.

**Event 1:** The crew will perform the OPC Test on the Main Turbine. 0POP03-ZG-0005, Plant Startup to 100%, Step 6.38 and then continue with Plant Startup.

**Event 2:** After the crew trips the Main Turbine, Intermediate Range Channel 35 fails low. The crew will respond using 0POP04-NI-0001, Nuclear Instrument Malfunction. The SRO will address Tech Spec implications.

**Event 3:** After addressing the failed IR Channel, E1C11 Battery Charger #1 will fail with a loss of 125VDC Control Power to Train 'C' Class 1E 4.16KV ESF Bus. The crew will respond using 1POP09-AN-03M2, Window D-1, 125V DC SYSTEM E1C11 TRBL. The SRO will address Tech Spec implications.

**Event 4:** After the crew has placed E1C11 Battery Charger #2 in service, Steam Header Pressure Transmitter PT-0557 will fail high. The crew will respond using 0POP04-MS-0001, Excessive Steam Demand. The crew will have to take manual control of the Steam Dumps to control RCS temperature.

**Event 5:** After addressing the failure of PT-0557, Condensate Pump #12 will trip and Condensate Pump #11 will not start. The crew will respond using 0POP04-CD-0001, Loss of Condensate Flow. The CIP will direct the crew to trip the Reactor, SGFPs, S/U SGFP and FWBPs.

**Event 6:** When the Reactor Trips, a LBLOCA will occur. The crew will enter 0POP05-EO-EO00, Reactor Trip or Safety Injection, and then 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

**Event 7:** When the LBLOCA occurs, LHSI Pumps 1A & 1B will fail to auto start and LHSI Pump 1C will not start due to loss of Control Power. The crew will have to manually start a LHSI Pump. **(Critical Task)**

**Event 8:** When the Refueling Water Storage Tank (RWST) lowers to 75,000 gallons, auto swap over to Emergency Recirculation will fail to occur. The crew will have to manually swap over to Emergency Recirculation per 0POP05-EO-ES13, Transfer to Cold Leg Recirculation. **(Critical Task)**

**Termination:** The scenario will be terminated when the crew verifies ECCS recirculation flow in 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.

STP LOT 19  
NRC Scenario #4 Description

**Critical tasks:**

- Manually start at least one LHSI Pump before transitioning out of 0POP05-EO-EO00, Reactor Trip or Safety Injection, during a LBLOCA when RCS pressure is less than 400 psig.
- Transfer to Cold Leg Recirculation and establish ECCS recirculation flow prior to RWST level lowering to 32,500 gallons (6% - "RWST EMPTY" alarm) or if RWST level lowers to 32,500 gallons, then stop all pumps taking suction from the RWST, manually align for Cold Leg Recirculation and re-establish ECCS recirculation flow.

**Source:** New

## Appendix D

## Scenario Outline

Form ES-D-1

Facility: South Texas Project

Scenario No.: 5BU

Op-Test No.: LOT19 NRC

Examiners: \_\_\_\_\_Operators: \_\_\_\_\_Initial Conditions:

- Stable at 48% power
- Ready to raise power to 74%. Currently at step 7.44 of POP03-ZG-0005, Plant Startup to 100%.

Turnover:

- All equipment is operable

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	SRO (R) BOP (R) RO (R)	Power increase.
2 (15 min)	05-17-01 (1.0)	SRO (I, TS) BOP (I)	1A SG PORV pressure transmitter (PT-7411) fails high.
3 (25 min)	3V111VFM01 9TVLS (1)	RO (C) SRO (C, TS)	CRE HVAC Train C Supply fan becomes inoperable.
4 (40 min)	03-23-05 (0.129/0.4)	SRO (C) RO (C)	RCP 1C #1 seal leakage ramped in over 3 minutes and then increases in severity after 7 minutes. <b>(CT)</b>
5 (N/A)	01-12-02 (True)	SRO (C) RO (C) BOP (C)	ATWS (integral to scenario) <b>(CT)</b>
6 (60 min)	02-01-01 (0.002)	SRO (M) RO (M) BOP (M)	SBLOCA at step 6 of ES01 <b>(CT)</b>
7 (NA)	04-09-08 (1)	SRO (C) BOP (C)	Failure of Train B Essential Chiller to start – (integral to scenario)

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

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

STP LOT-19  
NRC Scenario #5 BU Description

**Initial Conditions:** 48% Power and Stable. All equipment is operable and/or in service for the current power level.

**Event 1:** The crew is to re-commence raising power per step 7.44 of OPOP03-ZG-0005, Plant Startup to 100%.

**Event 2:** Steam Generator Pressure Transmitter, PT-7411, for SG 1A, fails high. The crew will respond using OPOP04-MS-0001, Excessive Steam Demand. The SRO will address Tech Spec implications.

**Event 3:** CRE HVAC trouble alarm is received. The crew will respond using annunciator response procedures and the normal operating procedure for CRE HVAC. The SRO will address Tech Spec implications.

**Event 4:** Indications of high seal leakoff flow will be received for RCP 1C. The crew will respond using OPOP04-RC-0002, RCP Off Normal. Leakage will then escalate to the point a manual reactor trip is required. **(Critical Task)**

**Event 5:** When a manual reactor trip is attempted, the crew will discover the reactor cannot be tripped from the Control Room and enter OPOP05-EO-FRS1, Response to Nuclear Power Generation ATWS, to control the plant and eventually trip the reactor. **(Critical Task)**

**Event 6:** After the reactor is tripped, the crew will exit FRS1, re-enter E0 to perform an immediate action read-through, then transition to OPOP05-EO-ES01, Reactor Trip Response. At step 6, a SBLOCA will occur requiring manual initiation of Safety Injection, and transition back to E0. During E0, conditions will be met requiring tripping of all RCPs due to low RCS pressure with a SBLOCA. The diagnostic steps of E0 will send the crew to OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant. **(Critical Task)**

**Event 7:** While performing OPOP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, the BOP operator will discover Essential Chiller 11B did not/will not start requiring manual stopping of Train B EAB HVAC.

**Termination:** The scenario will terminate after entry into OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant.

**Critical Tasks:**

- Manually shuts down the reactor prior to exiting OPOP05-EO-FRS1.
- Trips RCP 1C within 5 minutes of the Reactor being Tripped. For this scenario the 5 minutes starts when the Reactor Trip Breakers are opened.
- Manually trips RCPS to minimize inventory loss during a SBLOCA prior to exiting OPOP05-EO-EO00.

**Source:** Bank