CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A1	KSA No:	GEN 2.1.37
Revision:	Sept 2012	KSA Rating:	4.3/4.6
Job Title:	RO		
Duty:	Administrative		
Task Title:	Knowledge of procedures, guidelines, or limitations associated with reactivity management: Calculate a Shutdown Margin.		
Completion Time:	20 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

References: OSP-SF-00001, Shutdown Margin Calculations, Rev 40
Plant Curve Book
WINPCNDR Handouts

Tools / Equipment: Calculator

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A1

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 100% power, as indicated on REU1118, with Control Rods D @ 215 steps and RCS Boron Concentration at 750 ppm. Effective Full Power Days (EFPD) is at 270 (12000 MWD/MTU). There is a question about whether the Rod Insertion Limit (RIL) monitor is functional.

Initiating Cues: Due to the concerns of the RIL monitor, the Control Room Supervisor directs you to perform a Shutdown Margin Calculation for the current plant conditions IAW OSP-SF-00001, Shutdown Margin Calculations. He has directed you to perform the calculation IAW Step 6.11. The PC program OSPSF1 is currently being revised by reactor engineering and is not available.

When complete, inform the CRS of what the calculated value is for the Shutdown Margin (SDM) and is SDM acceptable.

Task Standard: Upon completion of this JPM, the Applicant will have determined that the Shutdown Margin is acceptable with a value of 2114-2582.

START TIME: _____

STOP TIME: _____

JPM NO: A1

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of OSP-SF-00001	Applicant obtained working copy of OSP-SF-00001 NOTE: If requested, provide applicant with copies of WinPCNDR handouts.	**S U** Comments:
2. Completes Attachment 4 form OSP-SF-00001 with values from the Curve Book and WINPCNDR	Applicant completed Attachment 4	**S U** Comments:
*3. Using Attachment 4, determines current Shutdown Margin	Applicant determined value of Shutdown Margin to be acceptable at a value 2348 pcm May accept values between 2114 and 2582	**S U** Comments:
4. **The JPM is complete**	**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 100% power, as indicated on REU1118, with Control Rods D @ 215 steps and RCS Boron Concentration at 750 ppm. Effective Full Power Days (EFPD) is at 270 (12000 MWD/MTU). There is a question about whether the Rod Insertion Limit (RIL) monitor is functional.

Initiating Cues: Due to the concerns of the RIL monitor, the Control Room Supervisor directs you to perform a Shutdown Margin Calculation for the current plant conditions IAW OSP-SF-00001, Shutdown Margin Calculations. He has directed you to perform the calculation IAW Step 6.11. The PC program OSPSF1 is currently being revised by reactor engineering and is not available.

When complete, inform the CRS of what the calculated value is for the Shutdown Margin (SDM) and is SDM acceptable.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A2, Rev 0	KSA No:	GEN 2.1.25
Revision:	Sept 2012	KSA Rating:	3.9/4.2
Job Title:	RO		
Duty:	Administrative		
Task Title:	Ablity to interpret reference materials, such as graphs, curves, tables, etc: Calculate volume of water to transfer between RWST and SFP within given limits.		
Completion Time:	25 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: OOA-BB-00003
OTA-RK-00018, Add 47D
OTA-RK-00022, Add 76D
Tank Data Book

Tools / Equipment: Calculator

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A2, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 80% power. Maintenance has been performed on the level instrument for the Spent Fuel Pool (SFP), EC LI-39A. Current level indicates zero (0) on EC LI-39A. Refueling Water Storage Tank (RWST) level is currently at the administrative low level limit.

Cask loading pit and transfer canal gates are installed.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to transfer water from the RWST to the SFP to verify that the SFP high level alarm will annunciate properly on rising level. The CRS has directed you to calculate the volume of water required to actuate the SFP level high alarm and if this water is available from the RWST without affecting the operability of the RWST.

Task Standard: Upon completion of this JPM, the Applicant will have determined that 7716 gallons (acceptable range is 6945-8488) of water is needed to actuate the SFP high level alarm and that the RWST will still be operable if this water is transferred to the SFP from its contents.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
*1. Determine volume of water required to raise SFP level to high alarm setpoint	Applicant calculated that 7716 gal is needed as follows: High alarm setpoint for the SFP is +8.69" as obtained from OTA-RK-00022, Add 76D Applicant determined from OOA-BB-00003 that the SFP contains 888 gal/in 8.69" X 888 gal/" = 7716 gallons (Acceptable values are 6945-8488)	**S U** Comments:
2. Determine amount that RWST will lower if water is transferred to the SFP	Applicant determined that RWST level will lower by 1.9% as follows: Current RWST level is 96.3% as obtained from OTA-00018, Add 47D (Admin Limit given in Initiating Cue) RWST level conversion is 4007 gal/% as obtained from Plant Tank Book* 7716 gal ÷ 4007 gal/% = 1.9% (1.73% if 6945 gal used / 2.12% if 8488 gal used) *NOTE: If OOA-BB-00003 is used, conversion is 4009 gal/%	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
*3. Determine if RWST is still operable after water transfer	Applicant determined that RWST **will still be operable** if it is used to transfer water to the SFP Current RWST level is 96.3% as obtained from OTA-00018, Add 47D (Admin Limit given in Initiating Cue) 96.3% - 1.73% = 94.6% 96.3% - 2.12 % = 94.2% RWST operability low level limit is 93.7%	**S U** Comments:
4. **The JPM is complete**	**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 80% power. Maintenance has been performed on the level instrument for the Spent Fuel Pool (SFP), EC LI-39A. Current level indicates zero (0) on EC LI-39A. Refueling Water Storage Tank (RWST) level is currently at the administrative low level limit.

Cask loading pit and transfer canal gates are installed.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to transfer water from the RWST to the SFP to verify that the SFP high level alarm will annunciate properly on rising level. The CRS has directed you to calculate the volume of water required to actuate the SFP level high alarm and if this water is available from the RWST without affecting the operability of the RWST.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A3	KSA No:	GEN 2.2.37
Revision:	Dec 2012	KSA Rating:	3.6/4.6
Job Title:	RO		
Duty:	Administrative		
Task Title:	Ability to determine operability and/or availability of safety related equipment: Determine amperage limits for 480 VAC safety related busses when cross-connecting for maintenance.		
Completion Time:	10 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: OTN-NG-00001, Class 1E 480 VAC Electrical System, Rev 14

Tools / Equipment: Calculator

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A3

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 100% power. NG01 local ammeter indicates 712 amps. NG03 local ammeter indicates 344 amps. The following Train 'A' equipment is **NOT** in service:
DG Vent Supply Fan A, CGM01A
Air Compressor A, CKA01A
Fuel Pool Clg Pump A, PEC01A
CR A/C Unit A, SGK04A

Initiating Cues: The Control Room Supervisor (CRS) has directed you to cross-connect Load Centers NG01 and NG03 for maintenance to replace Load Center NG01 feeder breaker, NG0101.

Prior to cross-connecting NG01 and NG03, the CRS wants to know:

Which equipment not currently in service could be started after the load centers are cross-connected?

Provide your answer to the CRS (Examiner).

Task Standard: Upon completion of this JPM, the Applicant will report that CGM01A, PEC01A or SGK04A can be started.

START TIME: _____

STOP TIME: _____

JPM NO: A3

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of OTN-NG-00001	Applicant obtained working copy of OTN-NG-00001	S U Comments:
2. Refers to Section 5.10, Cross-Connecting Load Centers NG01 And NG03	Applicant referred to Section 5.10, Cross-Connecting Load Centers NG01 And NG03	S U Comments:
3. Determines total amperage allowed on NG01 and NG03 when cross-connected	Applicant determined total amperage allowed on NG01 and NG03 when cross-connected is 1200 amps Determined from Caution preceding Step 5.10.1 or from Step 5.10.3	S U Comments:
4. Refers to Attachment 1, Load Centers NG01 & NG03 Loads	Applicant referred to Attachment 1, Load Centers NG01 & NG03 Loads	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
*5. Using Att 1 and provided cues, determines what equipment can be started on NG01 and NG03 after they are cross-connected	Applicant determined that **CGM01A, SGK01A and PEC01A can be started** but that CKA01A could not be started, as based on the following calculations: Current amperage on both busses is 712 + 344 = 1056 (Provided in cue) Margin for starting additional equipment is 1200 – 1056 = 144 Amperage for equipment not running would be: CGM01A-130 – Acceptable CKA01A-296 – Not Acceptable PEC01A-132 – Acceptable SGK04A 85 – Acceptable Information is provided to the CRS (Examiner)	**S U** Comments:
6. **The JPM is complete**	**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 100% power. NG01 local ammeter indicates 712 amps. NG03 local ammeter indicates 344 amps. The following Train 'A' equipment is **NOT** in service:
DG Vent Supply Fan A, CGM01A
Air Compressor A, CKA01A
Fuel Pool Clg Pump A, PEC01A
CR A/C Unit A, SGK04A

Initiating Cues: The Control Room Supervisor (CRS) has directed you to cross-connect Load Centers NG01 and NG03 for maintenance to replace Load Center NG01 feeder breaker, NG0101.

Prior to cross-connecting NG01 and NG03, the CRS wants to know:

Which equipment not currently in service could be started after the load centers are cross-connected?

Provide your answer to the CRS (Examiner).

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A4	KSA No:	GEN 2.4.14
Revision:	Dec 2012	KSA Rating:	3.8/4.5
Job Title:	RO		
Duty:	Administrative		
Task Title:	Knowledge of general guidelines for EOP usage: Determine correct Functional Restoration Guideline (FRG) procedure implementation following a plant event.		
Completion Time:	14 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: CSF-1, Critical Safety Function Status Trees (CSFST), Rev 10

Tools / Equipment:

FACILITY REPRESENTATIVE:_____ DATE: _____

CHIEF EXAMINER:_____ DATE: _____

JPM NO: A4

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: A fault/rupture occurred in Steam Generator 'D' 30 minutes ago.
The following plant conditions currently exist:

NIS Source Ranges	Energized / 0 SUR
Containment Pressure	28 psig
RCS Subcooling	10°F Superheat
RCS Pressure	1300 psig
Auxiliary Feedwater Flow	SG 'A' – 100,000 lbm/hr
	SG 'B' – 100,000 lbm/hr
	SG 'C' – 100,000 lbm/hr
	SG 'D' – 0 lbm/hr
Steam Generator Levels	0% NR – All Steam Generators
Steam Generator Pressures	SG 'A' – 825 psig
	SG 'B' – 815 psig
	SG 'C' – 815 psig
	SG 'D' – 0 psig
RCS Cold Leg Temperatures	240°F – Loop 4
	450°F – Loops 1/2/3
Core Exit Thermocouples	705°F - 750°F
RVLIS (Pumps Off)	45%
Pressurizer Level	0%
Containment Spray Pumps	Both Off
Atmospheric Steam Dumps	All Closed

Initiating Cues: The Control Room Supervisor (CRS) has directed you to perform the Critical Safety Functions (CSF). Report the highest priority CSF to the CRS and which FRG should be implemented.

Task Standard: Upon completion of this JPM, the Applicant will report to the CRS that the highest priority CSF is Core Cooling and that FR-C.2, Response to Degraded Core Cooling should be implemented.

START TIME: _____ STOP TIME: _____

JPM NO: A4

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of CSF-1	Applicant obtained working copy of CSF-1	**S U** Comments:
2. Reviews Subcriticality CSF	Applicant determined Subcriticality CSF is satisfied – green condition	**S U** Comments:
3. Reviews Core Cooling CSF	Applicant determined Core Cooling CSF is orange - go to FR-C.2	**S U** Comments:
4. Reviews Heat Sink CSF	Applicant determined Heat Sink CSF is yellow – go to FR-H.5	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5. Reviews Integrity CSF	Applicant determined Integrity CSF is orange – go to FR-P.1	S U Comments:
6. Reviews Containment CSF	Applicant determined Containment CSF is orange – go to FR-Z.1	S U Comments:
7. Reviews Inventory CSF	Applicant determined Inventory CSF is yellow – go to FR-I.2	S U Comments:
*8. Informs the CRS that CSF review is complete	Applicant reported that highest priority CSF is Core Cooling and that FR-C.2, Response to Degraded Core Cooling, should be implemented	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
9. **The JPM is complete**	**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: A fault/rupture occurred in Steam Generator 'D' 30 minutes ago.
The following plant conditions currently exist:

NIS Source Ranges	Energized / 0 SUR
Containment Pressure	28 psig
RCS Subcooling	10°F Superheat
RCS Pressure	1300 psig
Auxiliary Feedwater Flow	SG 'A' – 100,000 lbm/hr
	SG 'B' – 100,000 lbm/hr
	SG 'C' – 100,000 lbm/hr
	SG 'D' – 0 lbm/hr
Steam Generator Levels	0% NR – All Steam Generators
Steam Generator Pressures	SG 'A' – 825 psig
	SG 'B' – 815 psig
	SG 'C' – 815 psig
	SG 'D' – 0 psig
RCS Cold Leg Temperatures	240°F – Loop 4
	450°F – Loops 1/2/3
Core Exit Thermocouples	705°F - 750°F
RVLIS (Pumps Off)	45%
Pressurizer Level	0%
Containment Spray Pumps	Both Off
Atmospheric Steam Dumps	All Closed

Initiating Cues: The Control Room Supervisor (CRS) has directed you to perform the Critical Safety Functions (CSF). Report the highest priority CSF to the CRS and which FRG should be implemented.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A5	KSA No:	GEN 2.1.35
Revision:	Nov 2012	KSA Rating:	2.2/3.9
Job Title:	SRO		
Duty:	Administrative		
Task Title:	Knowledge of the fuel handling responsibilities of SROs: Evaluate conditions for restarting of Refueling Preshuffle of Fuel Assemblies in the Spent Fuel Pool.		
Completion Time:	35 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

References: OSP-SF-00003, Pre-Core Alteration Verifications, Rev 26
OTN-EC-00001, Fuel Pool Cooling and Cleanup System, Rev 39
APA-ZZ-00801, Foreign Material Exclusion, Rev 32
CDP-ZZ-00200, APP 'B', Primary Plant Systems Tables, Rev 27
Curve Book Table 8-8b, Rev 13
Technical Specifications

Tools / Equipment:

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A5

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The Plant is in Mode 1.
Preparations are being made for Refuel 19.
Fuel assemble shuffling activities have been in progress in the Spent Fuel Pool.
Shuffling activities have been suspended for 10 days due to a shortage of manpower.

The Shift Manager (SM) desires to resume shuffling fuel assemblies in the Spent Fuel Pool.

The following plant conditions exist:

- Spent Fuel Pool level indicates -22" on ECLI39A
- Spent Fuel Pool boron concentration is 2250 ppm
- Spent Fuel Pool temperature is 101°F
- Control Room temperature is 73°F
- FME controls for the Spent Fuel Pool are not in effect
- OSP-KE-00004, Excessive Load Interlock Verification For The Spent Fuel Pool Bridge Crane, was performed 5 days ago

The following plant components are inoperable/OOS:

- Spent Fuel Pool skimmer pump is OOS
- SGK04A, CTRL RM A/C Unit A, failed to start two hours ago, and SGK04B is tagged OOS for breaker maintenance
- GG RE-27, Fuel/Aux Bldg Radiation Monitor, has been inoperable for 8 days, and the Fuel Building and Control Building HVAC are in a normal lineup
- Inverter NN03 is OOS; all other inverters are operable

Initiating Cues: The SM has directed you to evaluate conditions for recommencement of shuffling fuel assemblies in the Spent Fuel Pool IAW OSP-SF-00003, Pre-Core Alterations, and other requirements. Identify ALL items, if any exist, that will prevent the recommencement of shuffling fuel assemblies at this time.

JPM NO: A5

TASK NUMBER - ELEMENT	STANDARD	SCORE

Task Standard: Upon completion of this JPM, the Operator will have identified five (5) items that would prevent the recommencement of shuffling fuel assemblies at this time.

The five items are:

- Spent Fuel Pool level is below the minimum level of -19.50" ($\geq$23' over the top of the storage racks)
- FME controls for the Spent Fuel Pool (SFP) are not in place
- Two inoperable trains of CRACS, TS 3.7.11, due to both SGK04A and SGK04B, require the suspension of movement of irradiated fuel assemblies
- Fuel Building (FB) HVAC must be in a FBVIS lineup within 7 days of the inoperability of GG RE-27 or suspend the movement of irradiated fuel assemblies (FA)
- Control Building HVAC must be in a CRVIS lineup within 7 days of the inoperability of GG RE-27 or suspend the movement of irradiated fuel assemblies (FA)

START TIME: _____

STOP TIME: _____

* CRITICAL STEP

JPM NO: A5

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtains a verified working copy of OSP-SF-00003	Applicant obtained working copy of OSP-SF-00003	**S U** Comments:
2. Refers to Section 6.8, Prior To Movement Of Irradiated Fuel Assemblies In The Fuel Building	Applicant referred to Section 6.8	**S U** Comments:
3. Evaluates each condition and equipment status to determine if SFP fuel shuffle can recommence	Applicant evaluated each condition and equipment status to determine if SFP fuel shuffle can recommence **NOTE: Evaluation of given conditions can be performed in any order**	**S U** Comments:
*4. Determines SFP level is below the minimum level for moving irradiated FAs in the SFP	Applicant determined SFP level of -22" is below the minimum level of -19.5" for moving irradiated FAs Can be determined from either OOA-BB-00003 or OTN-EC-00001	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5. Determines SFP boron concentration is above the minimum level for moving irradiated FAs in the SFP	Applicant determined SFP boron concentration is above the minimum concentration of 2165 ppm for moving irradiated FAs in the SFP Can be determined from either CDP-ZZ-00200, APP 'B', or OSP-SF-00003	**S U** Comments:
6. Determines SFP temperature is below the maximum for moving irradiated FAs in the SFP	Applicant determined SFP temperature is below the maximum of 114°F for moving irradiated FAs in the SFP Can be determined from Curve Book Table 8-8b	**S U** Comments:
7. Determines Control Room (CR) temperature is below maximum allowed limit	Applicant determined CR temperature is below maximum allowed limit Can be determined from FSAR16.7.4 (Also, there is no CR limit associated with moving irradiated FAs)	**S U** Comments:
*8. Determines FME controls must be in place to move irradiated FAs in the SFP	Applicant determined FME controls must be in place to move irradiated FAs in the SFP Can be determined from APA-ZZ-00801	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
9. Determines OSP-KE-00004 is current for moving irradiated FAs in the SFP	Applicant determined OSP-KE-00004 is current for moving irradiated FAs in the SFP Can be determined from OSP-SF-00003	**S U** Comments:
10. Determines SFP skimmer pump is not required for moving irradiated FAs in the SFP	Applicant determined SFP skimmer pump is not required for moving irradiated FAs in the SFP No requirements exist for SFP skimmer pump to be in operation when moving irradiated FAs in the SFP	**S U** Comments:
*11. Determines irradiated FAs cannot be moved in the SFP due to Control Room Air Conditioning System (CRACS) being inoperable	Applicant determined irradiated FAs cannot be moved in the SFP due to Control Room Air Conditioning System (CRACS) being inoperable Can be determined from review of TS 3.7.11, Condition D	**S U** Comments:
*12. Determines irradiated FAs cannot be moved in the SFP due to FB HVAC not being in FBVIS lineup	Applicant determined irradiated FAs cannot be moved in the SFP due to FB HVAC not being in FBVIS lineup (Required due to inoperability of GG RE-27) Can be determined from review of TS 3.3.8, Conditions A and D	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
*13. Determines irradiated FAs cannot be moved in the SFP due to Control Building HVAC not being in FBVIS lineup	Applicant determined irradiated FAs cannot be moved in the SFP due to CB HVAC not being in CRVIS lineup (Required due to inoperability of GG RE-27) Can be determined from review of TS 3.3.8, Conditions A and D	S U Comments:
14. Determines irradiated FAs can be moved in the SFP with NN03 OOS	Applicant determined irradiated FAs can be moved in the SFP with NN03 OOS Can be determined from review of TS 3.8.8, Condition A	
*15. Determines shuffling of FAs in the SFP cannot recommence at this time	Applicant determined shuffling of FAs in the SFP cannot recommence at this time due to the following 5 items not being satisfied: 1) SFP level below required minimum 2) FME controls not being in place 3) Two CRACS trains inoperable 4) FB HVAC not being in FBVIS lineup 5) CB HVAC not being in CRVIS lineup Applicant informed SM of items which prevent recommencing of SFP FA shuffle	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
16. **The JPM is complete**	**Record stop time on Page 2**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The Plant is in Mode 1.
Preparations are being made for Refuel 19.
Fuel assemble shuffling activities have been in progress in the Spent Fuel Pool.
Shuffling activities have been suspended for 10 days due to a shortage of manpower.

The Shift Manager (SM) desires to resume shuffling fuel assemblies in the Spent Fuel Pool.

The following plant conditions exist:

- Spent Fuel Pool level indicates -22" on ECLI39A
- Spent Fuel Pool boron concentration is 2250 ppm
- Spent Fuel Pool temperature is 101°F
- Control Room temperature is 73°F
- FME controls for the Spent Fuel Pool are not in effect
- OSP-KE-00004, Excessive Load Interlock Verification For The Spent Fuel Pool Bridge Crane, was performed 5 days ago

The following plant components are inoperable/OOS:

- Spent Fuel Pool skimmer pump is OOS
- SGK04A, CTRL RM A/C Unit A, failed to start two hours ago, and SGK04B is tagged OOS for breaker maintenance
- GG RE-27, Fuel/Aux Bldg Radiation Monitor, has been inoperable for 8 days, and the Fuel Building and Control Building HVAC are in a normal lineup
- Inverter NN03 is OOS; all other inverters are operable

Initiating Cues: The SM has directed you to evaluate conditions for recommencement of shuffling fuel assemblies in the Spent Fuel Pool IAW OSP-SF-00003, Pre-Core Alterations, and other requirements. Identify ALL items, if any exist, that will prevent the recommencement of shuffling fuel assemblies at this time.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A6, Rev 0	KSA No:	GEN 2.1.18
Revision:	Sept 2012	KSA Rating:	3.6/3.8
Job Title:	SRO		
Duty:	Administrative		
Task Title:	Ability to make accurate, clear, and concise logs, records, status boards, and reports: Review shiftly logs for completeness and correctness.		
Completion Time:	30 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: OSP-ZZ-00001, Control Room Shift And Daily Log Readings And Channel Checks, Rev 79

Tools / Equipment: OSP-ZZ-00001, Attachment 1

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A6, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The Plant is at 100% power.

CGK04B, Control Room Pressurization Fan 'B', is OOS.

Discharge Monitor Tank (DMT) 'B' is currently being discharged.

The program for Auto Tour rounds is not available and manual logs are required.

Initiating Cues: The Reactor Operator (RO) has completed the Control Room Night Shift logs. You are to review Sheets 1-13 of Attachment 1 for accuracy and identify any corrections or plant issues that need to be addressed.

Another SRO will review Sheets 14-19.

TASK NUMBER - ELEMENT	STANDARD	SCORE

Task Standard: There are 10 mistakes that have been made on the completed logs provided to the Applicant as described below:

1) TS allowed time for CGK04B to be OOS is listed as 30 days rather than 7 days per TS 3.7.10 on Sheet 1.

2) Due date for next completion of OSP-BB-00009 is 5 days rather than the required 3 days on Sheet 1.

3) Group counters for control rods Bank D1 and Bank D2 logged at 228 steps rather than 215 steps on Sheet 4 - Controlling rod height is listed as Control Bank 'D' at 215 steps on Sheet 1.

4) OPΔT Setpoint Channel Check logged as SAT on Sheet 5. Deviation is greater than 6% which would be UNSAT by Criteria 1.

5) Condensate Storage Tank Level is below the Acceptance Criteria on Sheet 6.

6) Cooling Tower B/D Disch flow on Sheet 6 is above the maximum flow allowed during a plant discharge (DMT 'B' currently being discharged as given in Initial Conditions).

7) ACC Tank 'B' Press is below the Acceptance Criteria on Sheet 7.

8) Corrective action needed for RWST temperature being above 90°F on Sheet 8.

9) Loop 3 Flow Inst Channel Check marked as SAT on Sheet 10. Deviation is greater than 3% which would be UNSAT by Criteria 1.

10) SG 'A' NR Level Inst Channel Check marked as SAT on Sheet 13. Deviation is greater than 3% which would be UNSAT by Criteria 1.

Upon completion of this JPM, the Applicant will have identified at least 8 of the 10 corrections that are needed on the logs to successfully complete this JPM.

START TIME: _____

STOP TIME: _____

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of OSP-ZZ-00001	Applicant obtained working copy of OSP-ZZ-00001	S U Comments:
2. Review completed copy of Sheets 1-13 of Attachment 1	Applicant reviewed completed copy of Sheets 1-13 of Attachment 1	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
*3. Identifies at least 8 of the 10 items needing to be addressed in completed logs reviewed	Applicant identified at least 8 of the 10 items needing to be addressed in the completed logs reviewed – the items needing to be addressed are: 1) OOS time for CGK04B on Sh 1 2) Due date for OSP-BB-00009 on Sh 1 3) Group counters for CB 'D' different on Sh 4 from Sh 1 4) OPΔT channel check listed as SAT on Sh 5 – incorrect 5) Condensate Storage Tank Level below the acceptance criteria on Sh 6 6) CT B/D flow incorrect for plant discharge in progress on Sh 6 7) ACC Tank 'B' press below acceptance criteria on Sh 7 8) RWST temp on Sh 7 needs corrective action identified 9) Loop 3 flow channel check listed as SAT on Sh 10 – incorrect 10) SG 'A' NR level channel check listed as SAT on Sh 13 – incorrect	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
4. **The JPM is complete**	**Record stop time on Page 2** **Eight (8) of 10 items need to be identified to successfully complete JPM**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The Plant is at 100% power.

CGK04B, Control Room Pressurization Fan 'B', is OOS.

Discharge Monitor Tank (DMT) 'B' is currently being discharged.

The program for Auto Tour rounds is not available and manual logs are required.

Initiating Cues: The Reactor Operator (RO) has completed the Control Room Night Shift logs. You are to review Sheets 1-13 of Attachment 1 for accuracy and identify any corrections or plant issues that need to be addressed.

Another SRO will review Sheets 14-19.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A7, Rev 0	KSA No:	GEN 2.2.18
Revision:	Sept 2012	KSA Rating:	2.6/3.9
Job Title:	SRO		
Duty:	Administrative		
Task Title:	Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc: Perform a risk assessment during shutdown conditions.		
Completion Time:	10 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: EDP-ZZ-01129, Callaway Energy Center Risk Assessment, Rev 33

Tools / Equipment:

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A7, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:
- Callaway Plant is in Mode 6.
- Core Offload is in progress with Refueling Pool level at 390".
- XNB01 is OPERABLE supplying NB01.
- XNB02 is Out of Service for maintenance.
- NE01 is OPERABLE.
- NE02 is AVAILABLE with LSELS deenergized.
- AEPS Diesel Generators are AVAILABLE.
- There is NO work being performed in the Switchyard or on the Grid.
- A Severe Thunderstorm Warning has been issued for Callaway County.

Initiating Cues: The Shift Manager (SM) has directed you to perform a Shutdown Safety Assessment for Power Availabilty IAW EDP-ZZ-01129, Callaway Energy Center Risk Assessment. Inform the SM of the number of credit points and color condition for Power Availability when you are complete.

Task Standard: Upon completion of this JPM, the Applicant will have completed a Shutdown Safety Assessment for Power Availability and informed the SM that there are five (5) credit points for Power Availability and the condition color is Green.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of EDP-ZZ-01129	Applicant obtained working copy of EDP-ZZ-01129	**S U** Comments:
2. Determines correct attachment to use is Att 6, Shutdown Safety Assessment – MODE 6 – Refueling Operations $\geq$ 23 ft. Above Vessel Flange (Indicated Level $\geq$ 376.0")	Applicant determined Attachment 6 is correct attachment to use for given plant conditions	**S U** Comments:
3. Assigns 1 point for operable offsite AC power sources (XNB01)	Applicant assigned 1 point for operable offsite AC power sources	**S U** Comments:
4. Assigns 0 points for available offsite AC power sources	Applicant assigned 0 points for available offsite AC power sources	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5. Assigns 1 point for operable onsite AC power sources	Applicant assigned 1 point for operable onsite AC power sources	S U Comments:
6. Assigns 1 point for available onsite AC power sources	Applicant assigned 1 point for available onsite AC power sources	S U Comments:
7. Assigns 1 point for AEPS diesel generators being available	Applicant assigned 1 point for AEPS diesel generators being available	S U Comments:
8. Assigns 1 point for no significant switchyard work in progress	Applicant assigned 1 point for no significant switchyard work in progress	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
9. Deducts 0 points for no significant grid work in progress	Applicant deducted 0 points for no significant grid work in progress	**S U** Comments:
*10.	Applicant informed SM there were five (5) credit points for Power Availability	**S U** Comments:
*11.	Applicant informed SM the Power Availiability condition color is Green	**S U** Comments:
12. **The JPM is complete**	**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:
- Callaway Plant is in Mode 6.
- Core Offload is in progress with Refueling Pool level at 390”.
- XNB01 is OPERABLE supplying NB01.
- XNB02 is Out of Service for maintenance.
- NE01 is OPERABLE.
- NE02 is AVAILABLE with LSELS deenergized.
- AEPS Diesel Generators are AVAILABLE.
- There is NO work being performed in the Switchyard or on the Grid.
- A Severe Thunderstorm Warning has been issued for Callaway County.

Initiating Cues: The Shift Manager (SM) has directed you to perform a Shutdown Safety Assessment for Power Availabilty IAW EDP-ZZ-01129, Callaway Energy Center Risk Assessment. Inform the SM of the number of credit points and color condition for Power Availability when you are complete.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A8, Rev 0	KSA No:	GEN 2.3.12
Revision:	Nov 2012	KSA Rating:	3.2/3.7
Job Title:	SRO		
Duty:	Administrative		
Task Title:	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.: Determine estimated dose for job and make recommendation on whether to install shielding to reduce total dose.		
Completion Time:	6 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: HTP-ZZ-01101, Administrative Controls For Radiation Shielding, Rev 17

Tools / Equipment:

FACILITY REPRESENTATIVE:_____ DATE: _____

CHIEF EXAMINER:_____ DATE: _____

JPM NO: A8, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: A work package is being planned for maintenance on EBG05, Letdown Reheat Heat Exchanger, which is located in Room 1104. A dose rate reading of 80 mR/hr at 12 inches has been taken by RP at the work location. The work for Operations to perform prior to maintenance is expected to take 1.75 hours.

It has been determined that if shielding is installed, the dose rate will lower to 45 mR/hr. The estimated total time to install and remove the shielding is 40 minutes. The dose to install and remove the shielding is the same.

Initiating Cues: The Shift Manager has directed you to review this job and determine the total expected dose for the work if shielding is not installed and total expected dose if shielding is installed. Recommend whether or not temporary shielding should be requested.

Task Standard: Candidate calculated total estimated dose for the work without installing shielding to be 140 mrem. With shielding installed the total estimated dose, including the time to install and remove the shielding, to be 132 mrem. The candidate recommends requesting the installation of temporary shielding.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
*1. Determine expected dose without shielding.	Candidate determined expected dose without shielding to be 140 mrem 80 mR/hr X 1.75 hours = 140 mrem	**S U** Comments:
*2. Determine expected dose with shielding installed.	Candidate determined expected dose with the installation of shielding to be 132 mrem (80 mR/hr X 40 mins) + (45 mR/hr X 1.75 hours) = 132 mrem	**S U** Comments:
*3. Determine is shielding should be requested.	Candidate determined that the installation of shielding would save a total of 8 mrem for the job; therefore he recommended that the installation of temporary shielding be requested for this job.	**S U** Comments:
4. **The JPM is complete.**	**Record stop time on Page 1.**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: A work package is being planned for maintenance on EBG05, Letdown Reheat Heat Exchanger, which is located in Room 1104. A dose rate reading of 80 mR/hr at 12 inches has been taken by RP at the work location. The work for Operations to perform prior to maintenance is expected to take 1.75 hours.

It has been determined that if shielding is installed, the dose rate will lower to 45 mR/hr. The estimated total time to install and remove the shielding is 40 minutes. The dose to install and remove the shielding is the same.

Initiating Cues: The Shift Manager has directed you to review this job and determine the total expected dose for the work if shielding is not installed and total expected dose if shielding is installed. Recommend whether or not temporary shielding should be requested.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	A9, Rev 0	KSA No:	GEN 2.4.41
Revision:	Jan 2013	KSA Rating:	2.9/4.6
Job Title:	SRO		
Duty:	Administrative		
Task Title:	Knowledge of the emergency action level thresholds and classifications: Initiate RERP implementation to include event classification and initial offsite notification.		
Completion Time:	No greater than 30 minutes (Time Critical)		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM __X__

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED __X__

References: EIP-ZZ-00101, Classification of Emergencies, Rev 47
EIP-ZZ-00101, ADD 1, EAL Classification Matrix, Rev 3
EIP-ZZ-00102, Emergency Implementing Actions, Rev 48

Tools / Equipment: Computer with Sentry capability

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: A9, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway is in a Refuel with the following conditions:

0100

- Reactor Vessel Head removed for core off-load
- 144 Fuel Assemblies remain in the Reactor Vessel
- The Containment equipment hatch is open to support outage equipment coming into Containment
- RCS Wide Range Temperature (T_{HOT}) is 188°F and lowering
- NB02 is deenergized for maintenance
- RHR Pump 'A' trips on overcurrent

0115

- Refueling Pool Level, BB LI-53A — 394 inches and STABLE
- RCS Wide Range Temperature (T_{HOT}) — 204°F and RISING

Initiating Cues: You have been directed to determine the Emergency Event Classification and COMPLETE the Sentry Notification form and SEND it.

This JPM is Time Critical.

Task Standard: Upon completion of this JPM, the Applicant will have classified the event as an Alert within 15 minutes and then completed, and sent, the initial Sentry Notification to offsite agencies within the following 15 minutes.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of EIP-ZZ-00101, Classification of Emergencies, ADD1 Wall Chart, and combined EAL attachments	Applicant obtained working copies of procedures	**S U** Comments:
2. NOTE: Initial classification should take place as soon as possible but NOT >15 minutes after recognition of initiating conditions	Applicant read note	**S U** Comments:
*3. Using the given conditions and Addendum 1, determine the appropriate emergency classification: Alert	Applicant declared an Alert based on EAL CA3.1 within 15 minutes	**S U** Comments: Time of Declaration _____ (Start of new 15 min clock)
4. Notify Facility Personnel EIP-ZZ-00102, ATT 5, EC Flowchart	Applicant notified facility personnel CUE: Facility personnel have been notified	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5. Notify Onsite Personnel EIP-ZZ-00102, ATT 5, EC Flowchart	Applicant notified onsite personnel CUE: Onsite personnel have been notified	S U Comments:
6. Is Emergency Alert or higher? EIP-ZZ-00102, ATT 5, EC Flowchart	Applicant determined emergency was an Alert	S U Comments:
7. Has SAS activate callout per KOA-ZZ-00200 EIP-ZZ-00102, ATT 5, EC Flowchart	Applicant had SAS activate callout per KOA-ZZ-00200 CUE: SAS has been notified to activate callout	S U Comments:
8. Is Emergency a General Emergency EIP-ZZ-00102, ATT 5, EC Flowchart	Applicant determined emergency was not a General Emergency	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
*9. Notify offsite agencies by completing and sending the Sentry notification form EIP-ZZ-00102, ATT 5, EC Flowchart	Applicant filled out the Sentry notification form and sent it to the offsite agencies within 15 minutes of completing the EAL classification	**S U** Comments: Time Notification Sent (Completion time of 2nd 15 min clock)
10. **The JPM is complete**	**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway is in a Refuel with the following conditions:

0100

- Reactor Vessel Head removed for core off-load
- 144 Fuel Assemblies remain in the Reactor Vessel
- The Containment equipment hatch is open to support outage equipment coming into Containment
- RCS Wide Range Temperature (T_{HOT}) is 188°F and lowering
- NB02 is deenergized for maintenance
- RHR Pump 'A' trips on overcurrent

0115

- Refueling Pool Level, BB LI-53A — 394 inches and STABLE
- RCS Wide Range Temperature (T_{HOT}) — 204°F and RISING

Initiating Cues: You have been directed to determine the Emergency Event Classification and COMPLETE the Sentry Notification form and SEND it.

This JPM is Time Critical.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S1, Rev 0	KSA No:	004A4.07
Revision:	Nov 2012	KSA Rating:	3.9 / 3.7
Job Title:	RO / SROI / SROU		
Duty:	Chemical and Volume Control System		
Task Title:	Borate the Reactor Coolant System for a power change.		
Completion Time:	15 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB __X__ PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED ___X___

References: OTO-MA-00008, Rapid Load Reduction, Rev 25
OTN-BG-00002, Reactor Makeup Control and Boron Thermal Regeneration System, Attachment 8, Borate Mode of RMCS Operation, Rev 41

Tools / Equipment:

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

JPM NO: Sim S1, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Reactor Power is 100%.
A primary to secondary leak has been identified on S/G "B". A plant shutdown has been commenced IAW OTO-MA-00008, Rapid Load Reduction, to be in Mode 3 within 3 hours.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to borate the Reactor Coolant System (RCS) 250 gallons IAW OTO-MA-00008, Step 4, to commence the plant shutdown.

Inform the CRS once boration has been commenced.

Notes: Use IC 161.
Fail the RMCS (Switch BG HS-25) to operate by selecting switch X02I16F to 'OFF'
Fail BG HIS-8104 to open as follows:
Insert Remote NG04CPF2, Value = Trip, Conditional of HWX01o134R eq 1
(Trips Breaker)
Fail Meter BG FI-183A to 0.0 on glass panel.

Task Standard: Upon completion of this JPM, the applicant will have commenced a boration of the RCS. Boration will be from the RWST as he will not be able to borate from the BAST due to system failures.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE

EVAULATOR NOTE:
OTO-MA-00008 gives 3 sets of directions to borate the RCS in Step 4. The first refers to Attachment 8 of OTN-BG-00002; the second is the same method as the first, just with the steps embedded in Step 4; the third option given is emergency boration, with the required actions given in Step 4. The three options are bulleted, meaning they do not have to be performed in order.

1. Obtain a verified working copy of OTO-MA-00008	Provide applicant with procedure copy	Applicant obtained working copy of OTO-MA-00008	**S U** Comments:
2. Borate from the BAST by performing any of the following: Borate using OTN-BG-00002, Att 8	Provide applicant with procedure copy	Applicant obtained working copy of OTN-BG-00002, Att 8 **NOTE:** **Applicant may use guidance as provided in OTO MA-00008 starting at JPM Step 10**	**S U** Comments:
3. NOTE: This attachment provides direction for frequently performed, nominal borations. Prior to Step 1 (Att 8)		Applicant read note	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4. Place BG HS-26, RCS M/U Ctrl, in Stop Step 1 (Att 8)	BG HS-26 is in Stop	Applicant placed BG HS-26, RCS M/U Ctrl, in Stop	**S U** Comments:
*5. Place BG HS-25, RCS M/U Ctrl Sel, in Bor Step 2 (Att 8)	BG HS-25 is in Bor	Applicant placed BG HS-25, RCS M/U Ctrl Sel, in Bor	**S U** Comments:
6. Reset BG FY-110B, BA Counter, to 000 Step 3 (Att 8)	BG FY-110B indicates 000	Applicant reset BG FY-110B, BA Counter, to 000	**S U** Comments:
7. NOTE: When setting BG FY-110B, allowance should be made in the setpoint to compensate for instrument inaccuracies and isolation valve closure times on total flow delevered Prior to Step 4 (Att 8)		Applicant read note	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
8. Ensure BG FY-110B is set to deliver the desired amount of boron Step 4 (Att 8)	BG FY-110B indicates 250.0	Applicant ensured BG FY-110B set to deliver the desired amount of boron	**S U** Comments:
*9. Place BG HS-26, RCS M/U Ctrl, in Run Step 5 (Att 8)	BG HS-26 is in Run Flow Recorder, BG FR-110, indicates 0 flow BG FY-110B is not changing (counting)	Applicant placed BG HS-26, RCS M/U Ctrl, in Run Applicant recognized that RMCS has malfunctioned and is not borating as expected **Applicant moved to next option for boration: Step 4, Borate using Emergency Boration, beginning at JPM Step 17**	**S U** Comments:
10. Borate to the VCT: Place RCS Makeup Control in Stop: BG HS-26 Step 4.a (Borate to the VCT)	BG HS-26 is in Stop	Applicant placed BG HS-26 in Stop	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*11. Place RCS Makeup Control Selector in Borate: BG HS-25 Step 4.b (Borate to the VCT)	BG HS-25 is in Borate	Applicant placed BG HS-25 in Borate	**S U** Comments:
12. Set Boric Acid Flow Controller to the desired flow rate BG FK-110 Step 4.c (Borate to the VCT)	BG FK-110 is set to desired flow rate	Applicant set BG FK-110	**S U** Comments:
13. Place BG FK-110 in Auto Step 4.d (Borate to the VCT)	Red Auto light is lit on BG FK-110	Applicant placed BG FK-110 in Auto	**S U** Comments:
14. Reset Boric Acid Counter to 000: BG FY-110B Step 4.e (Borate to the VCT)	BG FY-110B indicates 000	Applicant reset BG FY-110B to 000	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. Set BG FY-110B for the desired gallons of boric acid to be added Step 4.f (Borate to the VCT)	BG FY-110B indicates 250.0	Applicant set BG FY-110B for the desired gallons of boric acid to be added	**S U** Comments:
*16. Place BG HS-26 in Run Step 4.g (Borate to the VCT)	BG HS-26 is in Run Flow Recorder, BG FR-110, indicates 0 flow BG FY-110B is not changing (counting)	Applicant placed BG HS-26 in Run Applicant recognized that RMCS has malfunctioned and is not borating as expected Applicant moved to next option for boration: Step 4, Borate using Emergency Boration	**S U** Comments:
*17. Start at least one Boric Acid Transfer Pump: BG HIS-5A BG HIS-6A Step 4.a (Borate using Emergency Boration)	Red light is lit and green light is not lit for pump started	Applicant started one Boric Acid Transfer Pump	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*18. Open Emergency Borate To Charging Pump Suction: BG HIS-8104 Step 4.b (Borate using Emergency Boration)	Red light is not lit and green light is not lit on BG HIS-8104 If contacted, Primary OT reports that breaker for valve is tripped and will not reclose	Applicant opened Emergency Borate To Charging Pump Suction: BG HIS-8104 Applicant recognized that power has been lost to BG HV-8104 Applicant moved to RNO for Step 4	**S U** Comments:
*19. Open CCP Suction From RWST: BN HIS-112D BN HIS-112E RNO Step 4.a	Red light is lit and green light is not lit on both: BN HIS-112D BN HIS-112E **If CRS is asked for time to emergency borate, inform operator to borate for 5 minutes – another RO will calculate amount required**	Applicant opened CCP Suction From RWST: BN HIS-112D BN HIS-112E	**S U** Comments:
*20. Close VCT Outlet Valves: BG HIS-112B BG HIS-112C RNO Step 4.b	Green light is lit and red light is not lit on both: BG HIS-112B BG HIS-112C	Applicant closed VCT Outlet Valves: BG HIS-112B BG HIS-112C	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
21. Notifies CRS that boration has commenced from the RWST	CRS acknowledges	Applicant informed CRS that boration has commenced from the RWST	S U Comments:
22.	**The JPM is complete**	**Record stop time on Page 1**	S U Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Reactor Power is 100%.
A primary to secondary leak has been identified on S/G “B”. A plant shutdown has been commenced IAW OTO-MA-00008, Rapid Load Reduction, to be in Mode 3 within 3 hours.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to borate the Reactor Coolant System (RCS) 250 gallons IAW OTO-MA-00008, Step 4, to commence the plant shutdown.

Inform the CRS once boration has been commenced.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S2, Rev 0	KSA No:	010A4.03
Revision:	Oct 2012	KSA Rating:	4.0 / 3.8
Job Title:	RO / SROI		
Duty:	Reactor Coolant System (BB)		
Task Title:	Perform System Surveillance – BBHV8000A Stroke Test		
Completion Time:	10 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab __X__ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed ___X_____

References: OSP-BB-V0001, RCS Valve Inservice Test, Rev 24

Tools / Equipment: Calibrated Stop Watch

Facility Representative:_____ Date:_____

Chief Examiner: _____ Date:_____

JPM NO: Sim S2, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 3.

Initiating Cues: The Control Room Supervisor (CRS) directs you to perform the Stroke Time Test for BBHV8000A, Reactor Coolant System Pressurizer PORV Block Valve, per OSP-BB-V0001, RCS Valve Inservice Test, Section 6.1. The local position indication is NOT required for this test.

Notes: Use IC 168 – Run with Sim JPM S6
Select Engineering Mode
ME Schematics/BB/m22bb02_a (Pressurizer)
Right click on motor for bbhv8000a (located on top of Pressurizer)
Select RT04RC_HV8000A_MCTCLOSE – Insert Selected Value to 25
AND
Select RT04RC_HV8000A_MCTOPEN – Insert Selected Value to 25

Task Standard: Upon completion of this JPM, the applicant will have completed the Stroke Time Test for BBHV8000A per OSP-BB-V0001 and reported to the CRS that the Acceptance Criteria was not satisfied.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OSP-BB-V0001	Provide applicant with procedure copy	Applicant obtained working copy of OSP-BB-V0001	**S U** Comments:
2. Review Acceptance Criteria Section 3.0		Applicant reviewed Acceptance Criteria	**S U** Comments:
3. Review Precautions and Limitations Section 4.0	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	**S U** Comments:
4. Review Prerequisites Section 5.0	All Prerequisites are satisfied	Applicant reviewed Prerequisites	**S U** Comments:
5. NOTE: The local position indication is performed every refuel prior to Mode 4 startup. These steps may be omitted when performing this procedure in Mode 1, 2, or 3 on BBHV8000A Prior to 6.1		Applicant read note Given in initial cue that local position indication is not required for this test.	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
6. NOTE: If BBHV8000A, RCS PZR Out Pwr Oper Rlf HV, is on its backseat for normal operations, the stroke close time will be from the backseat position and not from the OPEN (limit switch) position. Prior to 6.1.1	BBHV8000A is not on its backseat	Applicant read note	**S U** Comments:
7. Using BB HIS-455A, PZR PORV, ensure BBPCV0455A is closed Step 6.1.1	BB HIS-455A green light is lit and the red light is not lit	Applicant ensured BBPCV0455A is closed	**S U** Comments:
8. Ensure BB HS-8000A, TRN A Cold O/P Bloc/Arm, is in the block position Step 6.1.2	The Block PB is depressed on BB HS-8000A	Applicant ensured BB HS-8000A is in the block position	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. Record Initial Remote Position of BB HIS-8000A, PZR PORV Block Vlv, on Attachment 1 Step 6.1.3		Applicant recorded Initial Remote Position of BB HIS-8000A on Attachment 1	**S U** Comments:
10. If Position Indication Testing is scheduled, perform the following: Step 6.1.4	Position Indication Testing is not scheduled	Applicant proceeded to Step 6.1.5 Given in Initiating Cue that Position Indication Testing is not scheduled	**S U** Comments:
*11. Using BB HIS-8000A, PZR PORV Block Vlv, close BBHV8000A and measure the elapsed time between pushing the close pushbutton and when the open light goes out Step 6.1.5	BB HIS-8000A green light is lit and the red light is not lit Measured stroke time is 25 seconds	Applicant closed BBHV8000A and measured the elapsed time between pushing the close pushbutton and when the open light went out	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12. Record Observed Stroke Time Closed for BBHV8000A, RCS PZR Out Pwr Oper Rlf HV, on Attachment 1 Step 6.1.6		Applicant recorded Observed Stroke Time Closed for BBHV8000A on Attachment 1 (Observed stroke time should be ~25 sec)	**S U** Comments:
13. RECORD Full Stroke Remote Position of BB HIS-8000A, PZR PORV Block Vlv, on Attachment 1 Step 6.1.7		Applicant recorded Full Stroke Remote Position of BB HIS-8000A on Attachment 1	**S U** Comments:
14. If Position Indication Testing is scheduled, record the Full Stroke Local Position of BBHV8000A, RCS PZR Out Pwr Oper Rlf HV, on Attachment 1 Step 6.1.8	Position Indication Testing is not scheduled	Applicant proceeded to Step 6.1.9 Given in Initiating Cue that Position Indication Testing is not scheduled	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*15. Using BB HIS-8000A, PZR PORV Block Vlv, open BBHV8000A and measure the elapsed time between pushing the open pushbutton and when the closed light goes out Step 6.1.9	BB HIS-8000A red light is lit and the green light is not lit Measured stroke time is 25 seconds	Applicant opened BBHV8000A and measured the elapsed time between pushing the open pushbutton and when the closed light went out	**S U** Comments:
16. Record Observed Stroke Time open for BBHV8000A, RCS PZR Out Pwr Oper Rlf HV, on Attachment 1 Step 6.1.10		Applicant recorded Observed Stroke Time open for BBHV8000A on Attachment 1 (Observed stroke time should be ~25 sec)	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*17. Perform the following: Evaluate Observed Stroke Time against the Normal Stroke Time Range and the Maximum Allowable Stroke Time and determine if valve retest is required for BBHV8000A If Observed Stroke Time for BBHV8000A does NOT meet acceptance criteria, notify SM/CRS If retest is required, perform the retest per CA2716, Valve Retest Instructions Step 6.1.11	Retest will NOT be performed at this time.	Applicant evaluated Observed Stroke Time for BBHV8000A as exceeding the maximum allowable stroke time and NOT meeting acceptance criteria Applicant notified SM/CRS that valve stroke time did NOT meet acceptance criteria	**S U** Comments:
18. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 3.

Initiating Cues: The Control Room Supervisor (CRS) directs you to perform the Stroke Time Test for BBHV8000A, Reactor Coolant System Pressurizer PORV Block Valve, per OSP-BB-V0001, RCS Valve Inservice Test, Section 6.1. The local position indication is NOT required for this test.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	Sim S3, Rev 0	KSA No:	013A4.01
Revision:	Oct 2012	KSA Rating:	4.5 / 4.8
Job Title:	RO / SROI / SROU		
Duty:	Engineered Safety Features Actuation System (ESFAS)		
Task Title:	Perform Attachment A of E-0		
Completion Time:	15 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab _X_ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed _X_

References: E-0, Reactor Trip or Safety Injection, Rev 15

Tools / Equipment:

Facility Representative: _____ DATE: _____

Chief Examiner: _____ DATE: _____

JPM NO: Sim S3, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway has experienced a reactor trip from full power due to a Loss of Coolant Accident. The control room is responding to the trip per E-0, Reactor Trip or Safety Injection. Currently the crew is at Step 5 of E-0.

Initiating Cues: The CRS directs you to perform Attachment A of E-0 and report to him when complete.

Note: Use IC 163.
Insert the following:

- Malf/SB/CISA_A_Block_Auto/Block/Insert
- Malf/EG/PEG01A_A/Inhibit/Insert
- Malf/EG/PEG01C_A/Inhibit/Insert
- Remote/GN/SGN01A_2/Inhibit/Insert
- Malf/BB/BB002_A/5000/Insert

Trip RCPs when RCS pressure lowers to 1400 psig
Freeze the simulator until the candidate begins the JPM

NOTE: Run following lesson each time IC is restored:
Lesson/All/Generic/1302_Sifts/Sift20120320.lsn

Task Standard: Upon completion of this JPM, the applicant will have started the 'A' or 'C' CCW Pump, 'A' Containment Cooler and manually initiated a CIS 'A' on Train 'A'.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of E-0, Attachment A	Provide applicant with procedure copy	Applicant obtained working copy of E-0, Attachment A	S U Comments:
2. Check charging pumps both running BG HIS-1A and 2A Step A1	Both BG HIS-1A and 2A have red lights on green lights off BG HIS-3 has green light and yellow light on and red light out	Applicant checked both CCPs running	S U Comments:
3. Check SI and RHR pumps: SI pumps both running EM HIS-4 and 5 RHR pumps both running EJ HIS-1 and 2 Step A2	Both SI pumps and both RHR pumps have red lights on and green lights off	Applicant checked SI and RHR pumps running	S U Comments:
4. Check ECCS flow: CCPs to boron inj header flow indicated RCS pressure less than 1700 psig SI Pump discharge flow indicated Step A3	Both EM FI-917A and B indicate 320 gpm RCS WR Press indicates 1050 psig and slowly lowering on BB PR-403 Both EM FI-918 and 922 indicate 330 gpm	Applicant checked boron inj header flow and SI pump discharge flow indicated and RCS pressure – went to Step A4 due to RCS pressure >325 psig	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. CAUTION: If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment. Prior to Step A4		Applicant read caution	S U Comments:
6. Check ESW pumps both running EF HIS-55A and 56A Step A4	EF HIS-55A has red light on and green light off with ~140 psig discharge pressure indicated EF HIS-56A has red light on and green light off with ~140 psig discharge pressure indicated	Applicant checked ESW pumps running	S U Comments:
*7. Check CCW alignment Red train EG HIS-21 or 23 running Yellow train EG HIS-22 or 24 running Step A5.a	EG HIS-21 and 23 have green lights lit and red lights not lit EG HIS-22 has red light lit and green light not lit After starting pump, EG HIS-21 or EG HIS-23 red light is lit and green light is not lit (provide cue based on which pump is started)	Applicant checked CCW pumps in service in both Red and Yellow train Manually started either 'A' pump (EG HIS-21 or 'B' pump (EG HIS-23)	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
8. CCW service loop supply and return valves for one operating CCW pump open EG ZL-15 and 53 or EG ZL-16 and 54 Step A5.b	EG ZL-15 and 53 have green lights lit and red lights off EG ZL-16 and 54 have red lights lit and green lights off	Applicant checked CCW service loop aligned properly	S U Comments:
*9. Open CCW to RHR HX valves EG HIS-101 and 102 Step A5.c	Both EG HIS-101 and 102 have both green and red lights on After operating HISs, both EG HIS-101 and 102 have red lights on green lights off	Applicant opened EG HIS-101 and 102	S U Comments:
*10. Close spent fuel pool HX CCW outlet valves EC HIS-11 and 12 Step A 5.d	EC HIS-11 green light is lit and the red light is not lit EC HIS-12 red light and green light are both lit After closing EC HIS-12, the green light is lit and the red light is not lit	Applicant closed EC HIS-11 and 12	S U Comments:
*11. Stop spent fuel pool cooling pumps EC HIS 27 and 28 Step A5.e	EC HIS-27 has green light on red light off EC HIS-28 has red light on green light off After operating HIS, EC HIS-28 has green light on and red light off	Applicant stopped EC HIS-28	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12. Record the time spent fuel pool cooling pump secured Step A5.f	Use current time	Applicant recorded current time	S U Comments:
13. Monitor time since CCW flow isolated to SFP HX less than 4 hours Step A5.g	CRS acknowledges and assigns this step to another RO to perform	Applicant turned over step to another RO	S U Comments:
*14. Check Containment cooler fans running is slow speed GN HIS-9, 17, 5, and 13 Step A6	Containment cooler fans B/C/D indicate red run light for slow speed with all other lights out After operating HSs, GN HIS-5, red run light for slow is lit with other lights off	Applicant selected slow speed on GN HS-5 and went to run on GN HIS-5	S U Comments:
15. Check containment hydrogen mixing fans running in slow speed GN HIS-2, 4, 1 and 3 Step A7	GN HIS-2, 4, 1 and 3 have red slow lights lit and all other lights off	Applicant checked all four H2 mixing fans running in slow speed	S U Comments:
16. Check if Containment Spray should be actuated Step A8	Containment pressure indicates 10 psig on GN PR-934	Applicant checked that CS should not be actuated due to Containment pressure <27 psig and went to Step A9	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
17. Check if main steamlines should be isolated Step A9	Containment pressure indicates 10 psig on GN PR-934 and steamline pressure is at 900 psig	Applicant checked that main steamlines should not be isolated due to containment pressure and main steam pressure not reaching MSLIS setpoint and went to Step A10	**S U** Comments:
18. Check ECCS valves – proper emergency alignment Step A10	SA066X and Y white lights are lit for SIS sections	Applicant checked ECCS valves are in proper emergency alignment	**S U** Comments:
*19. Check Containment Isolation Phase A Step A11	SA066Y white lights lit for CISA; SA066X red light lit for CISA SA066X white lights lit after actuated from SB HS-47	Applicant checked CISA and manually actuated Train A using SB HS-47	**S U** Comments:
20. Check SG blowdown isolation Step A12	SA066X and Y white lights are lit for S/G B/D isolation	Applicant checked proper alignment for SG blowdown isolation	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
21. Check both trains of control room ventilation isolation Step A13	SA066X and Y white lights are lit for CRVIS	Applicant checked both trains of control room ventilation isolation were proper	**S U** Comments:
22. Check containment purge isolation Step A14	SA066X and Y white lights are lit for CPIS	Applicant checked proper alignment for containment purge	**S U** Comments:
23. Notify CRS of equipment status Step A15	CRS acknowledges	Applicant notified CRS of following unanticipated manual actions taken: Starting CCW Pump Starting Containment Cooler 'A' Manually initiating Train 'A' for CISA	**S U** Comments:
24. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway has experienced a reactor trip from full power due to a Loss of Coolant Accident. The control room is responding to the trip per E-0, Reactor Trip or Safety Injection. Currently the crew is at Step 5 of E-0.

Initiating Cues: The CRS directs you to perform Attachment A of E-0 and report to him when complete.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S4, Rev 0	KSA No:	007A1.01
Revision:	Oct 2012	KSA Rating:	2.9 / 3.1
Job Title:	RO		
Duty:	Pressurizer Relief Tank (PRTS)		
Task Title:	Drain PRT To The Containment Normal Sump		
Completion Time:	8 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab __X__ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed ___X___

References: OTN-BB-00004, Pressurizer Relief Tank, Rev 35

Tools / Equipment:

Facility Representative: _____ Date: _____

Chief Examiner: _____ Date: _____

JPM NO: Sim S4, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 50% power.

Due to valve testing, the Pressurizer Relief Tank (PRT) level is at 81%. MCB Annunciator 34F, PRT LEV HILO, is currently in alarm.

PRT hydrogen concentration is 0.02%.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to lower PRT level to clear Ann 34F, PRT LEV HILO, by draining it to the Containment Normal Sump using OTN-BB-00004, Pressurizer Relief Tank, Section 5.6.

Stop PRT draining and notify the CRS when Ann 34F clears.

Notes: Use IC 162
Insert Browser/Plant Parameters/BB/TAPRTL
Input Selected Value to .81 and Insert (This will raise PRT level to 81% and activate Ann 34F, PRT LEV HILO)

Task Standard: Upon completion of this JPM, the applicant will have drained the PRT to the Containment Normal Sump to clear Ann 34F without reactuating Ann 34F for PRT low level (64%).

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTN-BB-00004	Provide applicant with procedure copy	Applicant obtained working copy of OTN-BB-00004	S U Comments:
2. Review Precautions and Limitations	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	S U Comments:
3. Ensure PRT hydrogen concentration is less than 4% Step 5.6.1		Applicant ensured PRT hydrogen concentration was less than 4% (given in Initial Conditions) and proceeds to Step 5.6.2	S U Comments:
4. Ensure PRT level is maintained above 19% until RCS has been degasified Step 5.6.2	BB LI-470 indicates 91%	Applicant ensured PRT level was above 19%	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. Ensure RCS is depressurized prior to lowering PRT level below 64% Step 5.6.3	BB LI-470 indicates 81% (NOTE: Ann 34F will clear at 80%)	Applicant ensured PRT was not lowered to less than 64% with the RCS pressurized	**S U** Comments:
6. Prior to venting to atmosphere, ensure PRT hydrogen concentration is <4% Step 5.6.4		Applicant r ensured PRT hydrogen was <4% before venting	**S U** Comments:
7. Using BB HIS-8031, PRT To RCDT, ensure closed BBHV8031 Step 5.6.5	BB HIS-8031 green light is lit and the red light is not lit	Applicant ensured BBHV8031 was closed	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
8. Ensure BBPCV8034, RCS PRT N2/Serv Gas Sply PCV, is set to control between 3 and 4 psig (AB 2000 RM1322) Step 5.6.6	After contacted, POT responds that BBPCV8934 is set to 3.5 psig	Applicant contacted POT to ensure BBPCV8934 was set to control between 3 and 4 psig	**S U** Comments:
*9. Using BB HIS-8026, PRT N2 Sply Inner Ctmt Iso Vlv, open BBHV8026 Step 5.6.7	BB HIS-8026 red light is lit and the green light is not lit	Applicant opened BBHV8026 using BB HIS-8026	**S U** Comments:
*10. Using BB HIS-8027, PRT N2 Sply Outer Ctmt Iso Vlv, open BBHV8026 Step 5.6.8	BB HIS-8027 red light is lit and the green light is not lit	Applicant opened BBHV8027 using BB HIS-8027	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
11. CAUTION: Containment normal sump pumps do not have capacity to keep up with PRT outlet valves. Containment sump lineup should be checked and level monitored to prevent overflowing sump. Prior to 5.6.9		Applicant read caution	**S U** Comments:
*12. Open one PRT outlet valve to containment normal sump: BBHV8037A, by operating from RL021 using BB HIS-8037A, PRT Drn To Ctmt Norm Sump or BBHV8037B, by operating from RL021 using BB HIS-8037B, PRT Drn To Ctmt Norm Sump Step 5.6.9	**If** BBHV8037A opened, BB HIS-8037A red light is lit and green light is not lit **If** BBHV8037B opened, BB HIS-8037B red light is lit and green light is not lit	Applicant opened either BBHV8037A **or** BBHV8037B	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. Monitor PRT level using control room instrumentation or computer point: BBLI0470, RCS Pressurizer Relief Tank Level Ind, or REL0485A, PZR Relief Tank Level Step 5.6.10	BBLI0470 indicates 80% and lowering	Applicant monitored PRT level	**S U** Comments:
14. Monitor Containment Normal Sump level using control room instrumentation or computer points: LF LI-9 and 89, Ctmt Norm Sump Lev, indicators or LFL0009 and 0089, Ctmt Normal Sump A/B Lev, computer points Step 5.6.11		Applicant monitored containment normal sump level	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*15. When containment normal sump level reaches 30 inches, or PRT reaches desired level, close: BBHV8037A, by operating from RL021 using BB HIS-8037A, PRT Drn To Ctmt Norm Sump or BBHV8037B, by operating from RL021 using BB HIS-8037B, PRT Drn To Ctmt Norm Sump Step 5.6.12	BBLI0470 indicates 79% and lowering Ann 34F has cleared **If** BBHV8037A is closed, BB HIS-8037A green light is lit and the red light is not lit **If** BBHV8037B is closed, BB HIS-8037B green light is lit and the red light is not lit	Applicant monitored containment normal sump level and PRT level for indications to stop PRT draining Applicant closed PRT drain valve opened in Step 12	**S U** Comments:
16. If additional PRT draining is desired, wait until sump level reaches a low level, and return to Step 5.6.9 Step 5.6.13		Applicant determined additional draining is not required	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
17. If BBHV8037A or BBHV8037B were operated manually Step 5.6.14		Applicant proceeded to Step 5.6.15 as valves were not operated manually	**S U** Comments:
*18. Using BB HIS-8026, PRT N2 Sply Inner Ctmt Iso Vlv, close BBHV8026 Step 5.6.7	BB HIS-8026 green light is lit and the red light is not lit	Applicant closed BBHV8026 using BB HIS-8026	**S U** Comments:
*19. Using BB HIS-8027, PRT N2 Sply Outer Ctmt Iso Vlv, close BBHV8027 Step 5.6.8	BB HIS-8027 green light is lit and the red light is not lit	Applicant closed BBHV8027 using BB HIS-8027	**S U** Comments:
20. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is at 50% power.

Due to valve testing, the Pressurizer Relief Tank (PRT) level is at 81%. MCB Annunciator 34F, PRT LEV HILO, is currently in alarm.

PRT hydrogen concentration is 0.02%.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to lower PRT level to clear Ann 34F, PRT LEV HILO, by draining it to the Containment Normal Sump using OTN-BB-00004, Pressurizer Relief Tank, Section 5.6.

Stop PRT draining and notify the CRS when Ann 34F clears.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S5, Rev 0	KSA No:	059A2.07
Revision:	Oct 2012	KSA Rating:	3.0 / 3.3
Job Title:	RO / SROI		
Duty:	Main Feedwater System		
Task Title:	Transfer 'A' MFP Speed Control/Pump Trip		
Completion Time:	11 Minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab __X__ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed ___X___

References: OTN-AE-00001 Addendum 2, MFP (PAE01A/B) Operations, Rev 20
OTA-RK-00026, Addendum 122C, MFT A Thrust Bearing High Oil Temp, Rev 0

Tools / Equipment:

Facility Representative: _____ Date: _____

Chief Examiner: _____ Date: _____

JPM NO: Sim S5, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The following plant conditions exist:

- Reactor power is 50%
- 'A' and 'B' Main Feed Pumps are in service
- FC SK-509B, 'A' MFP Speed Controller has been malfunctioning causing rapid changes in pump speed
- It has been determined that FC SK-509B requires Corrective Maintenance and needs to be removed from service
- The Plant Computer is NOT available

Initiating Cues: The Control Room Supervisor (CRS) has directed you to transfer 'A' MFP from AUTO to MANUAL on the GE Controller (FC HK-88) in accordance with Section 5.3 of OTN-AE-00001, Add 2, MFP (PAE01A/B) Operations.

Notes: Use IC 162 (50%).
Insert Cry Wolf Alarms/RK/Annun_C122/ON/Conditional
HWX05O124W eq 1/30 sec delay/Insert

Task Standard: Upon completion of this JPM, the applicant will have transferred control of 'A' MFP speed controller from auto to manual and then tripped 'A' MFP due to high thrust bearing oil temperature.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtained a verified working copy of OTN-AE-00001, Add 2	Provide applicant with procedure copy	Applicant obtained working copy of OTN-AE-00001, Add 2	S U Comments:
2. Review Precautions and Limitations Section 3.0	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	S U Comments:
3. NOTE: MFP A and MFP B can be transferred to manual control in either order. Prior to 5.3		Applicant read note	S U Comments:
4. If desired, place FC SK-509A, MFP Turbs Master Speed Ctrl, in man Step 5.3.1	FC SK-509A is in manual with red manual light lit and red auto light off	Applicant placed FC SK-509A, MFP Turbs Master Speed Ctrl, in man NOTE: Applicant may leave SK-509A, MFP Turbs Master Speed Ctrl, in auto	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*5. Place FC SK-509B, MFP Turb A Speed Ctrl, in man Step 5.3.2	FC SK-509B is in manual with red manual light lit and red auto light off	Applicant placed FC SK-509B, MFP Turb A Speed Ctrl, in man	S U Comments:
6. Using FC HK-88, MFP Turb A Man Speed Ctrl, Null FC EI-88, MFP A Man/Auto Sig Match Step 5.3.3	FC EI-88 indicates “0”	Applicant nulled FC EI-88 using FC HK-88	S U Comments:
*7. Place FC HIS-88, MFP Turb A Speed Ctrl Transfer, in man Step 5.3.4	FC HIS-88 is in manual with white manual light lit and yellow auto light off	Applicant placed FC HIS-88, MFP Turb A Speed Ctrl Transfer, in man	S U Comments:
8. Maintain speed using FC HK-88, MFP Turb A Man Speed Ctrl Step 5.3.5	MFP Turb A Speed indicates 3840 RPM on FC SI-33	Applicant maintained speed using FC HK-88, MFP Turb A Man Speed Ctrl	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. Annun 122C, MFT A Thrust Bearing High Oil Temp, alarms	Provide applicant a copy of OTA-RK-00026, Add 122C	Applicant acknowledged Annun 122C	S U Comments:
10. Monitor thrust bearing oil temperature using either of the following: FCTIS0031, Thrust Brg Oil Drn TIS (Local) Computer point FCT0031, MFT A T-Brg Oil Temp Step 3.1	SOT reports temperature is 182°F and rising	Applicant dispatched SOT to locally check temperature NOTE: Computer point not available due to unavailability of plant computer (given in initial conditions)	S U Comments:
11. Directs SOT to check Closed Cooling Water valve lineup Step 3.2.1	SOT reports Closed Cooling Water L-O Cooler inlet and outlet isolation valves are open	Applicant directed SOT to check Closed Cooling Water valve lineup	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12. If desired, adjust FCTIC0055 to increase cooling water flow Step 3.2.2	SOT reports maximum flow is through the cooler and temperature on FCTIS0031 is 189°F and rising	Applicant directed SOT to adjust FCTIC0055 to increase cooling water flow	**S U** Comments:
13. If transfer to the standby oil cooler is desired, Refer To OTN-AE-00001, Feedwater System Step 3.3	SOT reports that the standby oil cooler is tagged out	Applicant directed SOT to transfer to the standby oil cooler NOTE: Operator may determine to trip the feed pump at this time	**S U** Comments:
14. If thrust bearing oil temperature is $\geq$ 180°F and oil system flows and temperatures are normal, perform the following: Runback turbine lead to $\leq$ 60% Step 3.4.1		Applicant identified need to perform Step 3.4 and that turbine load is already $\leq$ 60%	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*15. Trip MFP A Step 3.4.2	FC HIS-18, MFP Turb A Trip, has been depressed and Annun 120A, MFP A Trip, is lit	Applicant tripped MFP A	**S U** Comments:
16. Check that MFP B is controlling feedwater flow automatically to maintain steam generator levels at the programmed level Step 3.4.3	S/G levels are stable at 50%	Applicant stabilized S/G levels using MFP B	**S U** Comments:
17. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The following plant conditions exist:

- Reactor power is 50%
- 'A' and 'B' Main Feed Pumps are in service
- FC SK-509B, 'A' MFP Speed Controller has been malfunctioning causing rapid changes in pump speed
- It has been determined that FC SK-509B requires Corrective Maintenance and needs to be removed from service
- The Plant Computer is NOT available

Initiating Cues: The Control Room Supervisor (CRS) has directed you to transfer 'A' MFP from AUTO to MANUAL on the GE Controller (FC HK-88) in accordance with Section 5.3 of OTN-AE-00001, Add 2, MFP (PAE01A/B) Operations.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S6, Rev 0	KSA No:	062K1.04
Revision:	Oct 2012	KSA Rating:	3.7 / 4.2
Job Title:	RO / SROI		
Duty:	A.C. Electrical Distribution		
Task Title:	Perform Operational Testing of the Alternate Emergency Power Source		
Completion Time:	15 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab __X__ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed ___X___

References: OTS-PA-00001, Operation And Testing Of The Alternate Emergency Power Source, Rev 08

Tools / Equipment:

Facility Representative: _____ Date: _____

Chief Examiner: _____ Date: _____

JPM NO: Sim S6, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is in Mode 3.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to perform an online test of EDGPA5004, AEPS Diesel Generator #4, in accordance with OTS-PA-00001, Operation And Testing Of The Alternate Emergency Power Source, Section 5.10.

The CRS directs you to take one (1) set of readings on Attachment 5 and then secure EDGPA5004.

The Outside OT has been briefed and is at EDGPA5004 to assist in the diesel test.

Notes: Perform with Sim S2 (IC-168).

Task Standard: Upon completion of this JPM, the applicant will have performed an online test of EDGPA5004, AEPS Diesel Generator #4.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTS-PA-00001	Provide applicant with procedure copy	Applicant obtained working copy of OTS-PA-00001	S U Comments:
2. Review Precautions and Limitations	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	S U Comments:
3. Review Prerequisites	All Prerequisites are satisfied	Applicant reviewed Prerequisites	S U Comments:
4. NOTE: Diesels are operated from PBXY0001, AEPS Computer Interface, in the Control Room. Similar controls are available on the Master HMI (PA50102 cubicle) in the PA501 building. The local control panel on the switchgear requires a key to place it in service. Sections 5.7 through 5.10 may be performed concurrently. Prior to 5.10.1		Applicant read note	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. Check Pre-start checks have been performed Step 5.10.1	Pre-start checks are complete	Applicant checked that pre-start checks were complete	**S U** Comments:
*6. On the Main Screen on PBXY0001, press icon for PA50107 for AEPS Diesel Generator #4 Step 5.10.2	Generator #4 EDGPA5004 Control Panel is now displayed	Applicant pressed icon for PA50107 on PBXY0001	**S U** Comments:
7. Check the diesel status lights are green under the alarm monitoring section of the pop-up screen. Any status light not green must be evaluated by the CRS prior to continuing. Step 5.10.3	All status lights are lit green in the alarm monitoring section	Applicant checked status lights were green under the alarm monitoring section of the pop-up screen	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*8. In the pop-up window, press the button "On Line Gen Test Start" Step 5.10.4	"On Line Gen Test Start" button in the pop-up window has been pressed	Applicant pressed the button "On Line Gen Test Start" in the pop-up window	S U Comments:
9. NOTE: The next step will start the diesel generator. The generator will automatically synchronize to the PA501 bus. The output breaker will close automatically when they are synchronized. The diesel will then ramp to to 2000 KW automatically at a pre-set rate and remain at that load. Prior to 5.10.5		Applicant read note	S U Comments:
*10. In the confirmation pop-up window, press the button "Yes Start Generator" Start 5.10.5	"Yes Start Generator" button has been pressed	Applicant pressed the button "Yes Start Generator" in the confirmation pop-up window	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
11. Check the diesel started Step 5.10.6	Engine speed indicates 1800 RPM and MegaWatts indicate 2.00 MW	Applicant checked that the diesel started	**S U** Comments:
12. Locally check the ventilation dampers have opened Step 5.10.7	The OOT reports the ventilation dampers are open	Applicant contacted the OOT to verify the ventilation dampers were open	**S U** Comments:
13. Check breaker PA50107 closed Step 5.10.8	Breaker indication for PA50107 is lit red	Applicant checked breaker PA50107 closed	**S U** Comments:
14. Check diesel parameters come into normal range per Attachment 5 Step 5.10.9	All Attachment 5 parameters are within their normal range	Applicant checked diesel parameters came into normal range	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. Record readings on Attachment 5 at 1-hour intervals Step 5.10.10	You are directed to take the Attachment 5 readings from Panel PBXY0001 in the Control Room Indications are: Oil Press 57 Water Temp 183 Battery Volt 26 Engine RPM 1800 Volts A 13.8 Volts B 13.8 Volts C 13.8 Hz 60.0 Amps A 86 Amps B 86 Amps C 86 KiloWatts 2000 KiloVars 500 Power Factor -.97	Applicant recorded 1 set of Attachment 5 readings as directed in Initiating Cues	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16. NOTE: AEPS diesels go into a 5-minute cooldown period after Stop command is given. A "Cool Down Time Left" timer shows the time remaining in the 5-minute period (in seconds). CAUTION: The 286 relay must be reset prior to shutting down any of the remaining diesels to ensure a minimum of three diesels remain functional at all times. Prior to 5.10.11		Applicant read note and caution	**S U** Comments:
*17. To secure from the Online test, press button PA50107 for AEPS Diesel Generator #4 Step 5.10.11	Generator #4 EDGPA5004 Control Panel is now displayed	Applicant pressed button PA50107 for AEPS Diesel Generator #4 **NOTE: Button PA50107 will not need to be pressed if Generator #4 EDGPA5004 Control Panel is already displayed**	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*18. Press the button "Generator Normal Stop" Step 5.10.12	The "Generator Normal Stop" button has been pressed	Applicant pressed the button "Generator Normal Stop"	S U Comments:
*19. Confirm the command by pressing the button "Yes Stop Generator" Step 5.10.13	The "Yes Stop Generator" button has been pressed	Applicant confirmed the command by pressing the button "Yes Stop Generator"	S U Comments:
20. Check breaker PA50107 opened Step 5.10.14	Breaker indication for PA50107 is lit green	Applicant checked breaker PA50107 opened	S U Comments:
21. After the 5-minute cooldown period, check the diesel stopped Step 5.10.15	JPM is complete	Applicant waited 5 minutes to check diesel stopped	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
22. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is in Mode 3.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to perform an online test of EDGPA5004, AEPS Diesel Generator #4, in accordance with OTS-PA-00001, Operation And Testing Of The Alternate Emergency Power Source, Section 5.10.

The CRS directs you to take one (1) set of readings on Attachment 5 and then secure EDGPA5004.

The Outside OT has been briefed and is at EDGPA5004 to assist in the diesel test.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S7, Rev 0	KSA No:	005K4.11
Revision:	Dec 2012	KSA Rating:	3.5 / 3.9
Job Title:	RO / SROI		
Duty:	Residual Heat Removal System		
Task Title:	Transfer to Cold Leg Recirculation		
Completion Time:	13 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab __X__ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed ___X_____

References: ES-1.3, Transfer To Cold Leg Recirculation, Rev 10

Tools / Equipment:

Facility Representative:_____ Date:_____

Chief Examiner: _____ Date:_____

JPM NO: Sim S7, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: A large break Loss of Coolant Accident has occurred. The crew was performing the actions of E-1, Loss of Reactor Or Secondary Coolant, when MCB Annunciator 47C, RWST LOLO 1 AUTO XFR, alarmed.

Initiating Cues: You have been directed to place ECCS in cold leg recirculation in accordance with ES-1.3, Transfer To Cold Leg Recircuation.

Notify the Control Room Supervisor when Step 3 is complete.

Note: Use IC 169 (Built from IC-163 used for Sim S3)
After the completion of JPM Sim 3, perform the following:
Insert Malfunction SB/K741TrainA/Fail_As_Is
Run/Freeze
Insert Plant Parameters BN/TBN01TAZTLIL/Value = 16.5
Verify Annun 47C is in alarm and that ECCS auto swapover is complete.
Freeze the simulator.

Task Standard: Upon completion of this JPM, the applicant will have aligned the RHR pumps for cold leg recirculation and the SI pumps and CCPs suction to the RHR pumps IAW ES-1.3.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of ES-1.3	Provide applicant with procedure copy	Applicant obtained working copy of ES-1.3	S U Comments:
*2. Reset SI: SB HS-42A SB HS-43A Step 1	Auto SI block light is lit and red SI actuate light is off on Panel SB069	Applicant reset SI	S U Comments:
3. Check CCW flow to RHR heat exchangers: Check CCW to RHR HX valves – open EG HIS-101 EG-HIS-102 Step 2.a	Red lights are lit and green lights are not lit for EG HIS-101 and 102	Applicant checked EG HIS-101 and EG HIS-102 valves were open	S U Comments:
4. Check Spent Fuel Pool HX CCW outlet valves – closed EC HIS-11 EC-HIS-12 Step 2.b	Green lights are lit and red lights are not lit for EC HIS-11 and 12	Applicant checked EC HIS-11 and EC HIS-12 were closed	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. Check CCW pumps – one running in each train Red Train: EG HIS-21 or EG HIS-23 Yellow Train: EG HIS-22 or EG HIS-24 Step 2.c	Red light is lit and green light is not lit for EG HIS-21 and EG HIS-22	Applicant checked one CCW pump running in each train	**S U** Comments:
6. Align ECCS for cold leg recirculation: Check RHR pump automatic suction switchover – complete RHR Pump A: EJ HIS-8811A – open BN HIS-8812A – closed Step 3.a.1)	RHR Pump A – red light is not lit and green light is lit for EJ HIS-8811A; green light is not lit and red light is lit for BN HIS-8812A	Applicant checked RHR pump automatic suction switchover – complete for RHR Pump A Applicant went to Step 3.a.1) RNO to manually align Train A RHR	**S U** Comments:
*7. Stop RHR Pump A: EJ HIS-1 Step 3.a RNO 1)a	EJ HIS-1 red light is not lit and green light is lit	Applicant stopped RHR Pump A	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*8. Close RWST To RHR Pump A Suction: BN HIS-8812A Step 3.a RNO 1)b	BN HIS-8812A green light is lit and red light is not lit	Applicant closed BN HIS-8812A	**S U** Comments:
*9. Open Containment Recirc Sump To RHR Pump A Suction: EJ HIS-8811A Step 3.a RNO 1)c	EJ HIS-8811A red light is lit and green light is not lit	Applicant opened EJ HIS-8811A	**S U** Comments:
10. Align ECCS for cold leg recirculation: Check RHR pump automatic suction switchover – complete RHR Pump B: EJ HIS-8811B – open BN HIS-8812B – closed Step 3.a.2)	RHR Pump B – red light is lit and green light is not lit for EJ HIS-8811B; green light is lit and red light is not lit for BN HIS-8812B	Applicant checked RHR pump automatic suction switchover – complete for RHR Pump B	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*11. Check RHR pumps – both running EJ HIS-1 EJ HIS-2 Step 3.b	Red light is lit and green light is not lit for EJ HIS-2 Green light is lit and red light is not lit for EJ HIS-1 After starting RHR Pump A, EJ HIS-1 red light is lit and green light is not lit	Applicant checked both RHR pumps running Applicant started RHR Pump A using EJ HIS-1	**S U** Comments:
12. Check both the following conditions - satisfied RCS pressure – less than 1700 psig SI pump discharge – flow indicated EM FI-918 EM FI-922 Step 3.c	RCS pressure is 700 psig on BB PR-403 EM FI-918 and 922 indicate 500 gpm	Applicant checked RCS pressure and SI pump discharge flow	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*13. Close SI pump recirc to RWST valves: Close both the following: EM HIS-8814A <u>AND</u> EM HIS-8814B <u>OR</u> Perform the following: 1) Place power lockout for BN HIS-8813A in non iso position: BN HIS-8813A 2) Close BN HIS-8813 3) Place power lockout for BN HIS-8813A in iso position: BN HIS-8813A Step 3.d	Green light is lit and red light is not lit for EM HIS-8814A and EM HIS-8814B If BN HIS-8813 was operated, then green light is lit and red light is not lit for BN HIS-8813	Applicant closed SI pump recirc to RWST valves, EM HIS-8814A <u>AND</u> EM HIS-8814B <u>OR</u> performed the following: 1) Placed power lockout for BN HIS-8813A in non iso position: BN HIS-8813A 2) Closed BN HIS-8813 3) Placed power lockout for BN HIS-8813A in iso position: BN HIS-8813A	**S U** Comments:
*14. Close RHR train hot leg recirc valves: EJ HIS-8716A EJ HIS-8716B Step 3.e	Green light is lit and red light is not lit for EJ HIS-8716A and 8716B	Applicant closed RHR train hot leg recirc valves	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*15. Open the following suction crosstie valves: CVCS to SI Pump A suction valves: EM HIS-8807A EM HIS-8807B Step 3.f	Red light is lit and green light is not lit for EM HIS-8807A and 8807B	Applicant opened the CVCS to SI Pump A suction valves	**S U** Comments:
16. Check CVCS to SI pump isolation valve – open ESFAS status panel SIS section SA066Y location 2Q, CVCS To SI Pmp Iso Vlv EM HV-8924, white light – lit Step 3.g	ESFAS status panel SIS section SA066Y, location 2Q, lit white	Applicant checked CVCS to SI pump isolation valve open	**S U** Comments:
*17. Open the following suction crosstie valves: RHR to charging pumps: EJ HIS-8804A RHR to SI pump B suction: EJ HIS-8804B Step 3.h	Red light is lit and green light is not lit for EJ HIS-8804A and 8804B	Applicant opened RHR to charging pumps and RHR to SI pump B suction valves	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
18. Check if any SI pump – running EM HIS-4 EM HIS-5 Step 3.i	Red light is lit and green light is not lit for EM HIS-4 and 5	Applicant checked if any SI pump was running	**S U** Comments:
*19. Monitor SI pump flow and close RWST to SI pump suction valves: BN HIS-8806A BN HIS-8806B Step 3.j	Green light is lit and red light is not lit for BN HIS-8806A and 8806B SI pump discharge flow does not change	Applicantr monitored SI pump flow and closed RWST to SI pump suction valves	**S U** Comments:
*20. Monitor CCP discharge flow and close CCP suction from RWST valves: BN HIS-112D BN HIS-112E Step 3.k	Green light is lit and red light is not lit for BN HIS-112D and 112E CCP pump discharge flow does not change	Applicant monitored CCP pump flow and closed RWST to CCP pump suction valves	**S U** Comments:
21. Check at least one flow path from recirculation sump to RCS – established Step 3.l	EJ FI-618 and EJ FI-619 both indicate 2100 gpm flow (RHR pump discharge flow would indicate that recirculation flow had been established)	Applicant checked at least one flow path from recirculation sump to RCS was established	**S U** Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
22. Check RHR Pump Room Coolers – running ESFAS status panels SIS sections: SA066X white light 8B (SGL10A) – Lit SA066Y white light 8B (SGL10B) – Lit Step 3.m	SA066X white light 8B is lit SA066Y white light 8B is lit	Applicant checked RHR Pump Room Coolers were running	**S U** Comments:
23.		Applicant informed CRS that ES-1.3 was complete through Step 3	**S U** Comments:
24. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: A large break Loss of Coolant Accident has occurred. The crew was performing the actions of E-1, Loss of Reactor Or Secondary Coolant, when MCB Annunciator 47C, RWST LOLO 1 AUTO XFR, alarmed.

Initiating Cues: You have been directed to place ECCS in cold leg recirculation in accordance with ES-1.3, Transfer To Cold Leg Recircuation.

Notify the Control Room Supervisor when Step 3 is complete.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Sim S8, Rev 0	KSA No:	029G2.1.29
Revision:	Oct 2012	KSA Rating:	4.1 / 4.0
JOB TITLE:	RO / SROI		
Duty:	Containment Purge System		
Task Title:	Remove the Containment Mini-Purge System From Service		
Completion Time:	11 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab __X__ Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed ___X___

References: OTN-GT-00001, Containment Purge System, Rev 28

Tools / Equipment:

Facility Representative: _____ Date: _____

Chief Examiner: _____ Date: _____

JPM NO: Sim S8, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is in Mode 1. The containment mini-purge system had been placed in service to support containment maintenance activities. The Control Room Supervisor (CRS) has the Gaseous Rad Release Permit.

Initiating Cues: The maintenance activities inside containment have been completed.

The CRS has directed you to remove containment mini-purge from service in accordance with OTN-GT-00001, Containment Purge System, Section 5.3.

Notes: Use Mode 161.
Place containment mini-purge in service IAW OTN-GT-00001, Section 5.2.

Task Standard: Upon completion of this JPM, the applicant will have removed containment mini-purge from service IAW OTN-GT-00001.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTN-GT-00001	Provide applicant with procedure copy	Applicant obtained working copy of OTN-GT-00001	**S U** Comments:
2. Review Precautions and Limitations Section 3.0	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	**S U** Comments:
3. Review Prerequisites Section 4.0	All Prerequisites are satisfied	Applicant reviewed Prerequisites	**S U** Comments:
4. If containment equipment hatch is open during core alterations and mini-purge exhaust must be secured, perform one of the following: Step 5.3.1		Applicant read step and determined that it was N/A for the given initial conditions and goes to Step 5.3.2	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*5. Using GT HIS-5, Ctmt Mini Purge Air Sply CTMT Iso, close GTHZ0005 Step 5.3.2	GT HIS-5 green light is lit and the red light is not lit	Applicant closed GTHZ0005 using GT HIS-5, Ctmt Mini Purge Air Sply CTMT Iso,	S U Comments:
*6. Using GT HIS-4, Ctmt Mini Purge Air Sply CTMT Iso, close GTHZ0004 Step 5.3.3	GT HIS-4 green light is lit and the red light is not lit	Applicant closed GTHZ0004 using GT HIS-4, Ctmt Mini Purge Air Sply CTMT Iso,	S U Comments:
*7. Using GT HIS-23, CTMT Mini Purge Air Sply Unit, stop SGT02 Step 5.3.4	GT HIS-23 green light is lit and the red light is not lit	Applicant stopped SGT02 using GT HIS-23, CTMT Mini Purge Air Sply Unit	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*8. Using GT HIS-26, CTMT Purge Sys Air Sply Damper, close GTHZ0026 Step 5.3.5	GT HIS-26 green light is lit and the red light is not lit	Applicant closed GTHZ0026 using GT HIS-26, CTMT Purge Sys Air Sply Damper	S U Comments:
*9. Using GT HIS-27, CTMT Purge Sys Air Sply Damper, close GTHZ0027 Step 5.3.6	GT HIS-27 green light is lit and the red light is not lit	Applicant closed GTHZ0027 using GT HIS-27, CTMT Purge Sys Air Sply Damper	S U Comments:
*10. Using GT HIS-20, CTMT Mini Purge Exh Fan & Damper, stop CGT02 Step 5.3.7	GT HIS-20 green lights are lit and the red lights are not lit	Applicant stopped CGT02 using GT HIS-20, CTMT Mini Purge Exh Fan & Damper	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*11. Using GT HIS-11, CTMT Mini Purge Exh Inner CTMT Iso, close GTHZ0011 Step 5.3.8	GT HIS-11 green light is lit and the red light is not lit	Applicant closed GTHZ0011 using GT HIS-11, CTMT Mini Purge Exh Inner CTMT Iso	S U Comments:
*12. Using GT HIS-12, CTMT Mini Purge Exh Outer CTMT Iso, close GTHZ0012 Step 5.3.9	GT HIS-12 green light is lit and the red light is not lit	Applicant closed GTHZ0012 using GT HIS-12, CTMT Mini Purge Exh Outer CTMT Iso	S U Comments:
*13. Using GT HIS-41, CTMT Mini Purge Sply/Exh Dampers, close the following: GTHZ0041, CTMT Mini-Purge Exh Inner CTMT Upstrm Dmpr Oper AND GTHZ0042, CTMT Mini-Purge Air Sply Inner CTMT Dnstrm Dmpr Oper Step 5.3.10	GT HIS-41 green light is lit and the red light is not lit	Applicant closed GTHZ0041 and GTHZ0042 using GT HIS-41, CTMT Mini Purge Sply/Exh Dampers	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*14. Using GT HIS-28, CTMT Purge Exh Damper, close GTHZ0028 Step 5.3.11	GT HIS-28 green light is lit and the red light is not lit	Applicant closed GTHZ0028 using GT HIS-28, CTMT Purge Exh Damper	S U Comments:
*15. Using GT HIS-29, CTMT Purge Exh Damper, close GTHZ0029 Step 5.3.12	GT HIS-29 green light is lit and the red light is not lit	Applicant closed GTHZ0029 using GT HIS-29, CTMT Purge Exh Damper	S U Comments:
16. Record date and time dampers were closed on Gaseous Rad Release Permit Step 5.3.13	Date and time dampers were closed have been recorded on the Gaseous Rad Release Permit	Applicant ensured date and time dampers were closed recorded on Gaseous Rad Release Permit	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
17. Record containment pressure as read on GT PDI-40, CTMT ΔP, or plant computer point GTD0040 on Gaseous Rad Release Permit Step 5.3.14	Containment pressure has been recorded on Gaseous Rad Release Permit	Applicant ensured containment pressure as recorded on Gaseous Rad Release Permit	**S U** Comments:
18. Notify Rad/Chem Technician (Count Room) of time of purge completion Step 5.3.15	Rad/Chem Technician (Count Room) acknowledges	Applicant notified Rad/Chem Technician (Count Room) of time of purge completion	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
19. If in Modes 1-4 or preparing to enter Mode 4 from Mode 5, remove "Containment Purge In Progress Do Not Bypass" covers from the following switches: GTRT22 (located on Drawer 7N168-1 in SA036D) AND GTRT33 (located on Drawer 7N168-2 in SA036E) Step 5.3.16	"Containment Purge In Progress Do Not Bypass" covers have been removed from GTRT22 and GTRT33	Applicant removed "Containment Purge In Progress Do Not Bypass" covers from GTRT22 and GTRT33	**S U** Comments:
20. If in Modes 5 or 6 and not preparing for entry into Mode 4, ensure the following are in operate: GTRT22 and GTRT33 Step 5.3.17		Applicant recognized step was N/A for given conditions and moved to Step 5.3.18	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
21. NOTE: When post-release calculations are complete, Rad/Chem Technician (Count Room) will adjust GTRE0021B, GTRE0022 and GTRE0033 to setpoints established by post-release calculations. Prior to 5.3.18		Applicant read note	S U Comments:
22. Notify Rad/Chem Technician (Count Room) of purge completion time and request disposition of Gaseous Radwaste Release Permit Step 5.3.18	Rad/Chem Tecnician (Count Room) acknowledges	Applicant notified Rad/Chem Technician (Count Room) of purge completion time and requested disposition of Gaseous Radwaste Release Permit	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
23. If desired, remove trends from plant computer: SDR0041H SDR0042H GTD0040 Step 5.3.19	Trends have been moved from the plant computer	Applicant removed trends from plant computer, if desired NOTE: Applicant may decide NOT to remove plant trends at this time	S U Comments:
24. **The JPM is complete**		**Record stop time on Page 1**	

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is in Mode 1. The containment mini-purge system had been placed in service to support containment maintenance activities. The Control Room Supervisor (CRS) has the Gaseous Rad Release Permit.

Initiating Cues: The maintenance activities inside containment have been completed.

The CRS has directed you to remove containment mini-purge from service in accordance with OTN-GT-00001, Containment Purge System, Section 5.3.

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Plt P1, Rev 0	KSA No:	062A2.10
Revision:	Oct 2012	KSA Rating:	3.0 / 3.3
Job Title:	RO / SROI / SROU		
Duty:	A.C. Electrical Distribution		
Task Title:	Shift Instrument Bus to Backup Power Supply		
Completion Time:	12 Minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator/Lab _____ Plant X Classroom _____

Method of Performance: Simulated X Performed _____

References: OTS-NN-00013, NN13 Inverter Outage - IPTE, Rev. 14

Tools/Equipment: PPE

Facility Representative: _____ Date: _____

Chief Examiner: _____ Date: _____

JPM NO: Plt P1, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is operating in Mode 1.
A problem was discovered on NN13, 7.5 KVA Inv Fed From NK0311.
Engineering recommends that it be deenergized as soon as practical.

A Pre-Job Brief has been performed.
Key #78 to the Kirk Key Interlock is in your possession.
Steps 5.1.1 through 5.1.3 of OTS-NN-00013, NN13 Inverter Outage, are complete.

Initiating Cues: The Control Room Supervisor (CRS) directs you to transfer
NN03, 120 VAC Inst Pnl Class IE Grp 3, to
XNN05, Alt Feed XFMR To Inst AC Busses NN01 And NN03, by completing
OTS-NN-00013, Sections 5.1 and 5.2.

Notes: **All operator actions are to be simulated.**

Task Standard: Upon completion of this JPM, the applicant will have demonstrated the ability to transfer NN03 to XNN05.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTS-NN-00013	Provide applicant with procedure copy	Applicant obtained working copy of OTS-NN-00013	S U Comments:
2. Ensure the applicable Prerequisites are met (Section 4.0) Step 5.1.1	All Prerequisites are satisfied	Applicant reviewed Prerequisites	S U Comments:
3. Review Precautions and Limitations (Section 3.0) Step 5.1.2	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	S U Comments:
4. Perform the following for Attachment 4, Plant Lineup For Transferring NN03: Step 5.1.3	If asked, respond that Attachment 4 is complete	Applicant recognized that step was complete based on Initial Conditions and went to Step 5.1.4	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. Transfer NN13 from Normal to Alternate as follows: Check the IN SYNC light (P11) is on Step 5.1.4.a	The IN SYNC light (P11) is on	Applicant checked the IN SYNC light (P11) is on	**S U** Comments:
6. NOTE: The following step makes NN13 inoperable which affects the following Technical Specifications: T/S 3.8.7 T/S 3.8.8 Prior to 5.1.4.b		Applicant read note	**S U** Comments:
*7. Press S202, Bypass Source To Load, and check the following: Step 5.1.4.b	S202,Bypass Source To Load, has been pressed	Applicant pressed S202, Bypass Source To Load	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
8. Check the following: The IN SYNC amber light (P11) is on Step 5.1.4.b	The IN SYNC amber light (P11) is on	Applicant checked the IN SYNC amber light (P11) was on NOTE: JPM Steps 8-11 may be performed in any order.	S U Comments:
9. Check the following: The Bypass Source Supplying Load red light (P202) is on Step 5.1.4.b	The Bypass Source Supplying Load red light (P202) is on	Applicant checked the The Bypass Source Supplying Load red light (P202) was on NOTE: JPM Steps 8-11 may be performed in any order.	S U Comments:
10. Check the following: The Inverter Supplying Load amber light (P201) is off Step 5.1.4.b	The Inverter Supplying Load amber light (P201) is off	Applicant checked the Inverter Supplying Load amber light (P201) was off NOTE: JPM Steps 8-11 may be performed in any order.	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
11. Check the following: MCB Annunciator 27B, NN13 INV TRBL/XFER, is on Step 5.1.4.b	Control Room reports MCB Annunciator 27B, NN13 INV TRBL/XFER, is on	Applicant contacted the Control Room to check MCB Annunciator 27B, NN13 INV TRBL/XFER was on NOTE: JPM Steps 8-11 may be performed in any order.	**S U** Comments:
12. Ensure Section 5.1 is complete Step 5.2.1		Applicant ensured Section 5.1 was complete	**S U** Comments:
13. Ensure the applicable Prerequisites of Section 4.0 are met Step 5.2.2	The applicable Prerequisites of Section 4.0 are met	Applicant ensured the applicable Prerequisites of Section 4.0 were met	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
14. Notify the Control Room to stand by for alarms as indicated on Attachment 1, MCB Annunciators As A Result Of NN03 Outage Step 5.2.3	The Control Room acknowledges	Applicant notified the Control Room to stand by for alarms as indicated on Attachment 1	S U Comments:
15. NOTE**:** Sequencing loads off has the advantage of being a more controlled evolution. It is easier for Control Room operators to recognize and respond to each deenergized cabinet. Shifting the bus without sequencing loads has the advantage of being timely. In other words, the plant is without the affected controls for seconds rather than minutes. Prior to 5.2.4		Applicant read note	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16. IF directed by the SM/CRS, perform Attachment 2, Sequential Unloading Of NN03 Step 5.2.4	NN03 loads will NOT be sequentially unloaded	Applicant acknowledged that Attachment 2 will not be performed and proceeded to Step 5.2.5	S U Comments:
17. NOTE: The following step de-energizes NN03, making it inoperable. This may impact the following Technical Specifications: T/S 3.8.1 T/S 3.8.2 T/S 3.8.9 T/S 3.8.10 Prior to 5.2.5		Applicant read note	S U Comments:
*18. Open NN0301, Fdr Bkr To NN03-Class 1E AC Dist Pnl From Inv NN13 Step 5.2.5	NN0301 is in the off position	Applicant opened NN0301	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
19. Check Annunciator 27A, NN03 INST BUS UV, is on Step 5.2.6	Control Room reports Annunciator 27A, NN03 INST BUS UV, is on	Applicant contacted the Control Room to check Annunciator 27A, NN03 INST BUS UV, was on	**S U** Comments:
*20. On NN03, operate the Kirk Key Interlock to allow the sliding link to clear the Backup Power Source Breaker Step 5.2.7	The plunger is down and the sliding link has been moved; Backup Power Source Breaker is cleared	Applicant operated the Kirk Key Interlock to allow the sliding link to clear the Backup Power Source Breaker	**S U** Comments:
*21. Close NN0302, Alt Fdr Bkr To NN03 Class IE AC Dist Pnl From XFMR XNN05 Step 5.2.8	NN0302 is in the on position	Applicant closed NN0302	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
22. CHECK Annunciator 27A, NN03 INST BUS UV, is off Step 5.2.9	Control Room reports Annunciator 27A, NN03 INST BUS UV, is off	Applicant contacted the Control Room to check Annunciator 27A, NN03 INST BUS UV, was off	**S U** Comments:
23. NOTE: Steps 5.2.10 and 5.2.11 may be omitted at SM discretion if NN03 is to be powered via XNN05 for only a short time. Prior to 5.2.10	SM directs you to omit Steps 5.2.10 and 5.2.11	Applicant read note	**S U** Comments:
24. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is operating in Mode 1.
A problem was discovered on NN13, 7.5 KVA Inv Fed From NK0311.
Engineering recommends that it be deenergized as soon as practical.

A Pre-Job Brief has been performed.
Key #78 to the Kirk Key Interlock is in your possession.
Steps 5.1.1 through 5.1.3 of OTS-NN-00013, NN13 Inverter Outage, are complete.

Initiating Cues: The Control Room Supervisor (CRS) directs you to transfer
NN03, 120 VAC Inst Pnl Class IE Grp 3, to
XNN05, Alt Feed XFMR To Inst AC Busses NN01 And NN03, by completing
OTS-NN-00013, Sections 5.1 and 5.2.

Notes: **All operator actions are to be simulated.**

CALLAWAY PLANT
JOB PERFORMANCE MEASURE

JPM No:	Plt P2, Rev 0	KSA No:	059A2.12
Revision:	Dec 2012	KSA Rating:	3.1 / 3.4
Job Title:	RO / SROI / SROU		
Duty:	Main Feedwater (MFW) System		
Task Title:	Locally Operate 'C' Main Feedwater Regulating Valve (MFRV)		
Completion Time:	15 Minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab _____ Plant __X__ Classroom _____

Method of Performance: Simulated ___X___ Performed _____

References: OTN-AE-00001 Addendum 8, Local Operation Of Main Feedwater Regulating Valves (MFRV), Rev 4

Tools / Equipment: PPE

Facility Representative: _____ Date: _____

Chief Examiner: _____ Date: _____

JPM NO: Plt P2, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is in Mode 1. I&C is required to adjust main feedwater regulating valve, AE FCV-0530, due to improper operation. A pre job brief has been conducted. OTN-AE-00001, Add 8, Local Operation Of Main Feedwater Regulating Valves (MFRV), will be used to control feedwater to 'C' Steam Generator while I&C is working on AE FCV-0530. All required equipment is at the valve. I&C and the field supervisor are ready.

Initiating Cues: The CRS has directed you to work with the BOP Operator to take manual control of AE FCV-0530 and control feedwater to 'C' Steam Generator IAW OTN-AE-00001, Add 8, Section 3.5. Inform the CRS when the MFRV is mechanically aligned to the handwheel and the MFRV can only be operated by the local operator using the handwheel.

Task Standard: Upon completion of this JPM the applicant will have placed AE FCV-0530 in manual, ready to control feedwater to 'C' Steam Generator.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTN-AE-00001, Add 8	Provide applicant with procedure copy	Applicant obtained working copy of OTN-AE-00001, Add 8	S U Comments:
2. Review Precautions and Limitations	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	S U Comments:
3. Review Prerequisites	All Prerequisites are satisfied	Applicant reviewed Prerequisites	S U Comments:
4. Cycle MFRV Bypass Valve as follows: Ensure AE LK-570, SG C MN FW BYP LEV CTRL, in MAN and Closed Step 3.5.1.a	BOP informs you AE LK-570, SG C MN FW BYP LEV CTRL, is in MAN and Closed	Applicant contacted BOP and ensured AE LK-570, SG C MN FW BYP LEV CTRL, is in MAN and Closed	S U Comments:
5. Close one of the following to isolate MFRV Bypass: AEV0264 or AEV0263, SG C MFW REG VLV BYP UPSTRM (DNSTRM) ISO Step 3.5.1.b	After candidate closes valve: Either valve checked: AEV0264 or AEV0263 has threads showing and handwheel is down	Applicant closed AEV0264 (AEV0263)	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
6. Notify BOP operator that isolation valve for MFRV Bypass is Closed Step 3.5.1.c	BOP acknowledges MFRV Bypass iso is closed	Applicant informed BOP MFRV Bypass iso is closed	**S U** Comments:
7. Using AE LK-570, SG MN FW BYP LVL CTRL, cycle AEFCV0570 Step 3.5.1.d	BOP informs you that AE LK-570, SG MN FW BYP LVL CTRL, has been cycled	Applicant contacted the BOP to cycle AE LK-570, SG MN FW BYP LVL CTRL	**S U** Comments:
8. Open isolation valve closed in Step 3.5.1.b Step 3.5.1.e	After candidate opens valve: Either valve checked: AEV0264 or AEV0263 has no threads showing and handwheel is up	Applicant opened AEV0264 (AEV0263)	**S U** Comments:
9. NOTE: Adjusting the MFRV Bypass Valve 60% in the following step allows for some remote adjustment of FW flow once the MFRV is placed in local handwheel operation. Prior to 3.5.2		Applicant read note	**S U** Comments:
10. Adjust AE LK-570, SG MN FW BYP LVL CTRL, to approximately 60% Step 3.5.2	BOP informs you AE LK-570, SG MN FW BYP LVL CTRL, has been adjusted to approximately 60%	Applicant contacted BOP to adjust AE LK-570, SG MN FW BYP LVL CTRL, to approximately 60%	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
11. Using Control Room computer displays, ensure affected SG parameters are relatively stable Step 3.5.3	BOP informs you that 'C' SG parameters are stable with level at 50%	Applicant contacted BOP to ensure 'C' SG parameters are stable	**S U** Comments:
12. Ensure communications have been established between local operator and BOP Operator Step 3.5.4	You have a headset on in communication with the BOP Operator	Applicant ensured communications were established	**S U** Comments:
13. Record the following for AEFCV0530, SG C MFW REG VLV: Local (LCD display) % Full Open AE FK-530, SG C MFW REG VLV CTRL: % Full Open Step 3.5.5	Local display is 80% full open BOP informs you that AE FK-530 indicates 80% full open	Applicant recorded local display at 80% Full Open Applicant contacted BOP to get AEFCV0530 indication	**S U** Comments:
14. NOTE: While it might not be possible for all repair situations, MFRV position should not be changed using the controller until requested by the local operator. This simplifies restoration to MCB control. Prior to Step 3.5.6		Applicant read note	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. Place AE FK-530, SG C MFW REG VLV CTRL, in MAN Step 3.5.6	BOP informs you AE FK-530, SG C MFW REG VLV CTRL, is in MAN	Applicant contacted BOP to place AE FK-530, SG C MFW REG VLV CTRL, in MAN	**S U** Comments:
16. NOTE: The MFRV Bypass Valve is operated in MAN due to the lead/lag characteristics of the control circuit. Prior to Step 3.5.7		Applicant read note	**S U** Comments:
17. Adjust AE LK-570, SG C MN FW BYP LEV CTRL, to maintain stable SG level Step 3.5.7	BOP informs you 'C' SG level is stable at 50%	Applicant contacted BOP to adjust AE LK-570, SG C MN FW BYP LEV CTRL, to maintain stable SG level	**S U** Comments:
*18. Rotate AEFCV0530 handwheel to align handwheel engaging mechanism with stem engaging mechanism Step 3.5.8	AEFCV0530 handwheel has holes aligned when looking through it	Applicant rotated AEFCV0530 handwheel to engage with stem	**S U** Comments:
*19. Place T-handle in alignment holes Step 3.5.9	After applicant demonstrates where the T-handle is and where the alignment holes are: T-handle is in the alignment holes	Applicant placed T-handle in the alignment holes	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*20. Close the following to bleed air from the top and bottom of actuator: AEFCV0530V4, AEFCV0530O ACT 3-WAY ISO/BLEED INST AIR VALVE Step 3.5.10	AEFCV0530V4 is in the vent position Note: This is a 3-way valve with a vent position. When it is aligned to vent you should hear a small rush of air.	Applicant closed AEFCV0530V4 Note: Steps 20 and 21 may be performed in any order.	**S U** Comments:
*21. Close the following to bleed air from the top and bottom of actuator: AEFCV0530V6, ISOLATION/BLEED AIR VALVE TO UPPER AND LOWER PISTON Step 3.5.10	AEFCV0530V6 is in the vent position Note: This is a 3-way valve with a vent position. When it is aligned to vent you should hear a small rush of air.	Applicant closed AEFCV0530V6 Note: Steps 20 and 21 may be performed in any order.	**S U** Comments:
22. Notify Control Room that AEFCV0530, SG C MFW REG VLV, is mechanically aligned to handwheel and can only to operated locally Step 3.5.11	BOP acknowledges AEFCV0530 is aligned for local control JPM is complete	Applicant informed BOP AEFCV0530 is in local control	**S U** Comments:
23. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The plant is in Mode 1. I&C is required to adjust main feedwater regulating valve, AE FCV-0530, due to improper operation. A pre job brief has been conducted. OTN-AE-00001, Add 8, Local Operation Of Main Feedwater Regulating Valves (MFRV), will be used to control feedwater to 'C' Steam Generator while I&C is working on AE FCV-0530. All required equipment is at the valve. I&C and the field supervisor are ready.

Initiating Cues: The CRS has directed you to work with the BOP Operator to take manual control of AE FCV-0530 and control feedwater to 'C' Steam Generator IAW OTN-AE-00001, Add 8, Section 3.5. Inform the CRS when the MFRV is mechanically aligned to the handwheel and the MFRV can only be operated by the local operator using the handwheel.

CALLAWAY ENERGY CENTER
JOB PERFORMANCE MEASURE

JPM No:	Plt P3, Rev 0	KSA No:	033K1.05
Revision:	Oct 2012	KSA Rating:	2.7 / 2.8
Job Title:	RO / SROI / SROU		
Duty:	Spent Fuel Pool Cooling System		
Task Title:	Place RWST in Recirculation		
Completion Time:	20 Minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

[ ] SATISFACTORY [ ] UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab _____ Plant __X__ Classroom _____

Method of Performance: Simulated __X__ Performed _____

References: OTN-EC-00001, Addendum 3, RWST Cleanup Operations, Rev 13

Tools / Equipment: PPE

Facility Representative:_____ DATE:_____

Chief Examiner: _____ DATE:_____

JPM NO: Plt P3, Rev 0

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 1. Chemistry has requested that the RWST be placed in recirculation.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to place the RWST in recirculation per OTN-EC-00001, Addendum 3, RWST Cleanup Operations, Section 5.1.

A second OT and RO have been briefed on the assigned job to assist with required actions not in the RCA.

Notify the CRS that the RWST is in recirculation after notifying Chemistry of RWST status in Step 5.1.20.

Task Standard: Upon completion of this JPM, the applicant will have placed the RWST in recirc.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTN-EC-00001, Add 3	Provide applicant with procedure copy	Applicant obtained working copy of OTN-EC-00001, Add 3	**S U** Comments:
2. Review Precautions and Limitations Section 3.0	All Precautions and Limitations are satisfied	Applicant reviewed Precautions and Limitations	**S U** Comments:
3. Review Prerequisites Section 4.0	All Prerequisites are satisfied	Applicant reviewed Prerequisites	**S U** Comments:
4. NOTE: In order to limit pump heat added to the RWST during the summer, the recirculation should be secured as soon as possible after chemistry sampling has been completed. Prior to 5.1		Applicant read note	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. Check the requirements of Step 4.3 are met Step 5.1.1	RWST level is 98% No other systems are aligned to RWST return header	Applicant checked RWST level and no other system aligned to RWST return header	S U Comments:
6. ENSURE operations which alter normal Fuel Pool Cooling And Cleanup System alignments are NOT in progress Step 5.1.2	NO operations which alter normal Fuel Pool Cooling And Cleanup system alignments are in progress	Applicant ensured operations which alter normal Fuel Pool Cooling And Cleanup system alignments were NOT in progress	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7. Ensure: The Fuel Pool Skimmer System is shutdown per applicable section of either: OTN-EC-00001 ADD02, Spent Fuel Pool Skimmer Operations - OR – OTN-EC-00001 ADD04, Refuel Pool Cleanup Operation The Fuel Pool Cleanup System is shutdown per applicable section of either: OTN-EC-00001 ADD01, Spent Fuel Pool Cleanup Operations - OR – OTN-EC-00001 ADD04, Refuel Pool Cleanup Operation Step 5.1.3	Both systems are shutdown per the appropriate procedures	Applicant ensured both systems are shutdown per the appropriate procedure	S U Comments:
8. Update control room status board for performing RWST recirculation Step 5.1.4	The Control Room Status Board for performing RWST recirculation has been updated by the RO	Applicant ensured the Control Room Status Board had been updated for performing RWST recirculation	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. NOTE: Monitoring of fluid inventories via these trend graphs should only be necessary in the initial phase of the evolution, but should continue until there is reasonable assurance of no inventory transfers. Prior to 5.1.5		Candidate read note	**S U** Comments:
10. Ensure a trend graph is established to allow monitoring of inventories between RWST and Spent Fuel Pool Step 5.1.5	A trend graph has been established to allow monitoring of inventories between RWST and Spent Fuel Pool by the RO	Applicant ensured a trend graph was established to allow monitoring of inventories between RWST and Spent Fuel Pool	**S U** Comments:
11. Request Chemistry determine desired alignment (in service/bypassed) for the Fuel Pool Cleanup Demineralizer Step 5.1.6	Chemistry responds to bypass Fuel Pool Cleanup Demineralizer	Applicant requested Chemistry determine desired alignment (in service/bypassed) for the Fuel Pool Cleanup Demineralizer	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12. Direct Radwaste Watchstander to align Fuel Pool Cleanup Demineralizer in service or bypassed per OTN-EC-00001 ADD05, Fuel Pool Cleanup Demineralizer Operations Step 5.1.7	Radwaste Watchstander has aligned Fuel Pool Cleanup Demineralizer to bypass per OTN-EC-00001 ADD05	Applicant directed Radwaste Watchstander to align Fuel Pool Cleanup Demineralizer bypassed per OTN-EC-00001 ADD05, as directed by Chemistry in previous step	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. To prevent transfer of water between SFP and RWST, hang Equipment Warning signs stating, "*The RWST is in the cleanup/recirculation lineup. Do NOT place the SFP skimmers in service.*" on: ECV0099, SFP Skimmer A To Fuel Pool Skimmer Pmp Iso ECV0100, SFP Skimmer B To Fuel Pool Skimmer Pmp Iso ECV0101, SFP Skimmer C To Fuel Pool Skimmer Pmp Iso Step 5.1.8	The equipment warning signs have been hung	Applicant demonstrated the ability to find each of the following valves and hang equipment warning signs on: ECV0099 ECV0100 ECV0101 (FB 2026 Northeast Corner)	**S U** Comments:
14. CAUTION: Leakage past ECV0025 and ECV0033 will result in water transferring between RWST and SFP. Prior to 5.1.9		Applicant read caution	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*15. ENSURE CLOSED the following valves: ECV0025, Fuel Pool Clg HX A To Fuel Pool Cln/upmps Iso ECV0033, Fuel Pool HX B To Fuel Pool Clean/Up Pmps Iso Step 5.1.9	No threads showing and stem is down on ECV0025 _____ **Stem is up with threads showing on ECV0033** (Valve is OPEN)	Applicant demonstrated the ability to ensure ECV0025 and ECV0033 were closed Applicant recognized ECV0033 was open and closed valve (FB 2000 - Rms 6104 and 6105)	**S U** Comments:
16. Hang Equipment Warning tags on following valves stating "*The RWST is in the cleanup/recirculation lineup. Do not place SFP Cleanup in service*": ECV0025, Fuel Pool Clg HX A To Fuel Pool Cln/upmps Iso ECV0033, Fuel Pool HX B To Fuel Pool Clean/Up Pmps Iso Step 5.1.10	Equipment warning tags are hanging on: ECV0025 and ECV0033	Applicant ensured equipment warning tags are hanging on: ECV0025 ECV0033	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
17. CAUTION: If Train A SFP Cooling is in service, water will be transferred to the RWST if BNV0002 and ECV0076 are open at the same time. Prior to 5.1.11	Train A SFP is NOT in service	Applicant read caution	**S U** Comments:
*18. Ensure closed ECV0076, Fuel Pool Clean-up Demin To SFP Dnstrm-iso Step 5.1.11	**Stem is up with threads showing on ECV0076** (Valve is OPEN)	Applicant demonstrated the ability to ensure ECV0076 was closed (FB 2000 – Rm 6105)	**S U** Comments:
19. Hang Equipment Warning tags on ECV0076 stating "*The RWST is in the cleanup/recirculation lineup. Do not place SFP Cleanup in service.*" Step 5.1.12	Equipment warning tags are hanging on ECV0076	Applicant ensured equipment warning tags were hanging on ECV0076	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*20. Open BNV0002, Fuel Pool Cln/u Pmps To RWST Iso Step 5.1.13	**Provide cue after OT is contacted to open valve:** BNV0002 is open	Applicant contacted OT to open BNV0002 (Located in RWST valve room)	**S U** Comments:
21. Place magnetic CAUTION signs, "*RWST in recirc*", on Main Control Board Step 5.1.14	Caution signs have been placed on the MCB	Candidate contacted the control room to place magnetic CAUTION signs on MCB	**S U** Comments:
*22. PERFORM the following: Using BN HIS-8800A, RWST To Refuel Pool, open BNHCV8800A Using BN HIS-8800B, RWST To Refuel Pool, open BNHCV8800B Step 5.1.15	**Provide cue after RO is contacted to open valve:** BNHCV8800A and BNHCV8800B are open	Applicant contacted the control room to open BNHCV8800A and BNHCV8800B	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
23. NOTE: The Fuel Pool Cleanup subsystem may be run regardless of Fuel Pool Cooling subsystem status as long as the system is properly aligned (suction and discharge). Prior to 5.1.16		Applicant read note	S U Comments:
*24. Start one Fuel Pool Cleanup Pump: ECHS0023, Fuel Pool Clean-up Pump A Hand Switch ECHS0024, Fuel Pool Clean-up Pump B Hand Switch Step 5.1.16	Fuel Pool Cleanup Pump is running	Applicant started one Fuel Pool Cleanup Pump (FB 2000 – Rm 6104)	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*25. Throttle pump discharge valve to obtain flow between 70,000 lbm/hr and 75,000 lbm/hr as indicated by ECFI0044, Fuel Pool Clean-up Pumps Disch Hdr Flow Ind: ECV0038, Fuel Pool Clean-up Pmp A Disch Iso ECV0043, Fuel Pool Clean-up Pmp B Disch Iso Step 5.1.17	**Provide cue after appropriate discharge valve is throttled:** ECFI0044 indicates 79,000 lbm/hr After valve is throttled, ECFI0044 indicates 73,000 lbm/hr	Applicant throttled the appropriate discharge valve to maintain 70,000 lbm/hr to 75,000 lbm/hr Applicant recognized flow was excessive and throttled closed on appropriate valve (FB 2000 – Rm 6104)	**S U** Comments:
26. Contact Radwaste Watchstander to check Fuel Pool Cleanup Filter differential pressure: ECPDI0025, Fuel Pool Cln/u Fltr A Press Diff Ind ECPDI0026, Fuel Pool Cln/u Fltr B Press Diff Ind Step 5.1.18	In-service filter dP is 11 psig	Applicant contacted Radwaste Watchstander	**S U** Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
27. Radwaste - If filter defferential pressure exceeds 23 psid request appropriate supervisor load PM0999965 for filter replacement Step 5.1.19	Radwaste acknowledges	Applicant informed RW of dP limit on cleanup filter	**S U** Comments:
28. NOTE: A minimum 24 hour recirculation prior to sample is required following any makeup to the RWST. Prior to 5.1.20		Applicant read note	**S U** Comments:
29. Notify Chemistry RWST is in recirculation Step 5.1.20	Chemistry acknowledges	Applicant notified Chemistry that the RWST is now in recirculation	**S U** Comments:
30. **The JPM is complete**		**Record stop time on Page 1**	**S U** Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 1. Chemistry has requested that the RWST be placed in recirculation.

Initiating Cues: The Control Room Supervisor (CRS) has directed you to place the RWST in recirculation per OTN-EC-00001, Addendum 3, RWST Cleanup Operations, Section 5.1.

A second OT and RO have been briefed on the assigned job to assist with required actions not in the RCA.

Notify the CRS that the RWST is in recirculation after notifying Chemistry of RWST status in Step 5.1.20.

Facility: Callaway Scenario No.: 1, Rev 1 Op-Test No.: 2013301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 100% Power, Steady State Conditions

Turnover: "B" SI Pump is tagged out of service for a breaker inspection. The "B" Emergency Diesel Generator is running fully loaded. After the completion of Shift Turnover, Unload and Shutdown the "B" Emergency Diesel Generator.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	BOP (N)	Unload and shutdown the "B" Diesel Generator
2	BBLT459	SRO (I) RO (I)	Pressurizer Level Transmitter Fails Low / Restore Letdown (Tech Spec)
3	PCD01_Trip	SRO (C) BOP (C)	Main Seal Oil Pump Trips / Emergency Seal Oil Pump fails to start in Automatic
4	PBG04	SRO (C) RO (C)	Normal Charging Pump Trips, must start a Centrifugal Charging Pump
5	EBB01B	SRO (C) RO (R) BOP (C)	Steam Generator "B" Tube Leak (25 gpm) Requiring Rapid Load Reduction (Tech Spec)
6	EBB01B	SRO (M) RO (M) BOP (M)	Steam Generator "B" Tube Rupture (400 gpm) after downpower started which results in a Reactor Trip / Safety Injection (PRA)
7	SAS10XX_2	BOP (C) SRO (C)	Feedwater Isolation Valve Fails to close on Ruptured SG
8	PEM01A_2	RO (C)	Safety Injection Pump "A" fails to Auto Start
9	CPIS BLOCK	RO (C)	Containment Purge Isolation Signal fails to Actuate (Both Trains)

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	7
2. Malfunctions after EOP entry (1-2)	3
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)	3

Scenario Event Description
Callaway 2013 NRC Scenario #1

The plant is operating at 100%, steady state power. Diesel Generator NE02 has been running fully loaded for one hour. During turnover, the crew is directed to unload and secure NE02 IAW OSP-NE-0001B, Standby Diesel Generator B Periodic Tests. "B" Safety Injection Pump is tagged out of service for a breaker inspection.

After NE02 has been unloaded, Pressurizer Level Channel BB LT-459 fails low, resulting in a loss of letdown. The crew will respond IAW OTO-BG-00001, Pressurizer Level Control Malfunction, select an operable pressurizer level channel and restore letdown to service. Tech Spec 3.3.1 for Reactor Trip System Instrumentation applies.

After Tech Specs have been addressed for BB LT-459, the Main Seal Oil Pump for the Main Generator trips and the Emergency Seal Oil Pump fails to start. The crew will enter OTO-MA-00002, Generator Seal Oil System Malfunction, and restore generator seal oil by manually starting the Emergency Seal Oil Pump.

Once seal oil has been restored, the Normal Charging Pump will trip. The crew will re-enter OTO-BG-00001, Pressurizer Level Control Malfunction, and start a Centrifugal Charging Pump (CCP) to restore RCS charging flow.

Once the CCP has been started and pressurizer level is stable a 25 gpm tube leak develops on "B" Steam Generator. The crew should enter OTO-BB-00001, Steam Generator Tube Leak. OTO-BB-00001 will direct the crew to commence a rapid load reduction IAW OTO-MA-00008, Rapid Load Reduction, to have the unit off-line within the next 3 hours. Tech Spec 3.4.13 for RCS Operational Leakage applies.

Once the rapid load reduction has been commenced and a CUE has been received from the Lead Examiner, Steam Generator "B" tube ruptures and results in a 400 gpm primary to secondary leak. The crew should initiate a manual reactor trip and safety injection due to the loss of primary inventory.

The Main Feedwater Isolation Valve to Steam Generator "B" fails to close on the Feedwater Isolation Signal following the reactor trip and SI and must be manually closed by the crew.

Also post trip, Safety Injection Pump "A" fails to start and the Containment Purge Isolation Signal fails to actuate. The crew will start Safety Injection Pump "A" and actuate a Containment Purge Isolation Signal when completing Attachment A in E-0, Reactor Trip or Safety Injection.

The scenario can be terminated after the crew completes the initial RCS cooldown IAW E-3, Steam Generator Tube Rupture, or at the discretion of the lead evaluator.

Critical Tasks:

Event #7 CT - Close FWIV “B” prior to transitioning from E-0, Reactor Trip or Safety Injection

Event #8 CT - Start Safety Injection Pump “A” prior to completing Attachment A, Automatic Action Verification, in E-0, Reactor Trip or Safety Injection

Event #9 CT - Manually initiate a Containment Purge Isolation Signal (CPIS) prior to completing Attachment A, Automatic Action Verification, in E-0, Reactor Trip or Safety Injection

References
OSP-NE-0001B, Standby Diesel Generator B Periodic Tests
OTO-BG-00001, Pressurizer Level Control Malfunction
OTO-MA-00002, Generator Seal Oil System Malfunction
OTO-BB-00001, Steam Generator Tube Leak
OTO-MA-00008, Rapid Load Reduction
E-0, Reactor Trip or Safety Injection
E-3, Steam Generator Tube Rupture
Tech Spec 3.3.1 for Reactor Trip System Instrumentation
Tech Spec 3.4.13 for RCS Operational Leakage
Tech Spec 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits
ODP-ZZ-00025, EOP/OTO User's Guide

Scenario Setup Guide:

Establish the initial conditions of IC-164, MOL 100% power:

- RCS boron concentration 751 ppm
- CCP A 765 ppm minus 5 days
- CCP B 775 ppm minus 15 days
- Rod Control Bank D 215 steps, Other banks 228 steps
- Diesel Generator NE02 is running fully loaded
- **ENSURE BB-LT-459 is selected on BB-LS459E**
- "B" SI Pump is tagged out with breaker in P-T-L and tag on handswitch
- Place Show 4 "NE02" on large CRT

==========SCENARIO PRELOADS / SETUP ITEMS==========

"B" SI Pump Tagged out for maintenance

- ME Schematics (EM) e23em01b, Breaker position = 3

Emergency Seal Oil Pump Fails to start in Automatic

- Insert Malfunction (CD) DPCD03_AUTO, Value = Block

"B" Feed Line Isolation Valve Fail to close in AUTO

- Insert Malfunction (SA) SAS10XX_2, Value = Enable

SI Pump 'A' fails to start in Auto

- Insert Malfunction (EM) PEM01A_2, Value = True

Containment Purge Isolation fails to actuate

- Insert Malfunction (SB) CPIS_A_Block_Auto, Value = Block
- Insert Malfunction (SB) CPIS_B_Block_Auto, Value = Block

========== EVENT 2 ==========

Pressurizer Level Channel BB LT-459 fails Low

- Insert Malfunction (BB) BBLT0459, Value= 466.1

========== EVENT 3 ==========

Main Seal Oil Pump trips and the Emergency Seal Oil Pump fails to start Automatically

- Insert Malfunction (CD) PCD01_Trip, Value = Trip

==========EVENT 4 ==========

Normal Charging Pump Trips

- Insert Malfunction (BG) PBG04, Value = Trip

==========EVENT 5 ==========

Steam Generator "B" Tube Leak of 25 gpm

- Insert Malfunction (BB) EBB01B, Value = 25

==========EVENT 6 ==========

Steam Generator "B" Tube Rupture of 400 gpm

- Insert Malfunction (BB) EBB01B, Value = 400

==========EVENT 7 PRELOADED==========

Feedwater Isolation on "B" Steam Generator Fails to close in Auto
SEE PRELOADS ABOVE

==========EVENT 8 PRELOADED==========

Safety Injection Pump "A" fails to Auto Start
SEE PRELOADS ABOVE

==========EVENT 9 PRELOADED==========

Containment Purge Isolation Signal Fails to actuate
SEE PRELOADS ABOVE

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 1	Page 5 of 22
Event Description:	Unload and secure NE02 IAW OSP-NE-0001B		

Proc /Time	Position	Applicant's Actions or Behavior
Booth Operator Instructions • When contacted, respond as Secondary Operator that you are standing by and waiting for the Control Room Staff to Shut down the "B" Emergency Diesel Generator NE02.		
OSP-NE-0001B Section 6.5, Unloading Diesel Generator B		
T=0	**CRS**	(Step 6.5.1) Using KJ HS-107A, LOWER load in increments and WAIT for load to stabilize between adjustments
OSP-NE-0001B, Section 6.5	**BOP**	(Step 6.5.2) As NE02 load is lowered, CHECK for associated change in transformer amps.
	BOP	(Step 6.5.3) Record time load reduction begins on Attachment 6 and Control Room Log.
	BOP	(Step 6.5.4) Periodically Ensure Power Factor of approximately 0.9 LAG
	BOP	(Step 6.5.5) When NE02 load is lowered to approximately 0.2 MW, Record time on Attachment 6 and Control Room Log.
	BOP	(Step 6.5.6) Wait 3 to 5 minutes with load stable at approximately 0.2 MW load on Diesel Generator B
	BOP	(Step 6.5.7) Wait 3 to 5 minutes with load stable at approximately 0.2 MW load on Diesel Generator B
	BOP	(Step 6.5.8) Record time diesel output breaker NB0211 was opened
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 2	Page 6 of 22
Event Description:	Pressurizer Level Transmitter Fails Low, Restore Letdown		

Proc /Time	Position	Applicant's Actions or Behavior
Booth Operator Instructions • T = 15 minutes or at the discretion of the Lead Examiner • Pressurizer Level Channel BB LT-459 fails Low • Insert Malfunction (BB) BBLT0459, Value= 466.1 • When contacted, respond as I&C. Acknowledge the request to investigate the instrument/channel failure. • When contacted, respond as EDO. Acknowledge entry into the OTO.		
Indications Available:		
T= 15		ANN 32B, PZR 17% HTRS OFF LTDN ISO ANN 32C, PZR LO LEV DEV
OTO-BG-00001, Pressurizer Level Control Malfunction		
	CRS	Implement OTO-BG-00001, Pressurizer Level Control Malfunction
	RO	(Step 1) CHECK Charging Pumps – At Least One Running • NCP is running
		Step 1 is an immediate action step
	RO	(Step 2) CHECK for Failed Pressurizer Level Indicator • BB-LI-459A is failed LOW
	RO	(Step 3) Transfer Pressurizer Level Control Selector to Remove Failed Channel from Control • BB LS-459D

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 2	Page 7 of 22
Event Description:	Pressurizer Level Transmitter Fails Low, Restore Letdown		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BG-00001	**RO**	(Step 4 and Step 4 RNO) CHECK Letdown – In Service – NO Maintain Charging to RCP Seals • Slowly Close Charging Header Back Pressure Control Valve while THROTTLING appropriate charging Discharge Valve to maintain 8-13 gpm to RCP seals • Ensure BG HC-182 is CLOSED
	RO	(Step 4 RNO) Letdown restoration • Ensure Letdown Containment Isolation Valves are OPEN o BG HIS-8152 o BG HIS-8160 • OPEN RCS Letdown to Regen Heat Exchanger Valves o BG HIS-459 o BG HIS-460 • Establish 85-90 gpm Charging Header Flow while maintaining seal injection flow o BG HC-182 o BG FK-124 (NCP) • Place Letdown Hx Outlet Pressure Controller in Manual and RAISE setpoint to > 75% open o BG PK-131 • Open Orifice Isolation Valve(s) to establish desired letdown flow: o BG HIS-8149AA o BG HIS-8149BA o BG HIS-8149CA • Adjust Letdown Hx Outlet Press Controller to maintain between 300 – 350 psig and place in AUTOMATIC o BG PK-131 • Adjust Charging flow to maintain Pressurizer Level
	RO	(Step 5) CHECK Pressurizer Heater Control Group C – ON o BB HIS-50

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 2	Page 8 of 22
Event Description:	Pressurizer Level Transmitter Fails Low, Restore Letdown		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BG-00001	**RO**	(Step 6) CHECK Pressurizer Level Trending to or at Program Level
	RO	(Step 7) CHECK Operable Pressurizer Level Channel – USED FOR RECORDER o BB LS-459E
	CRS	Review Applicable Technical Specifications 3.3.1, Table 3.3.1-1 Item 9 Cond M Place channel in trip within 72 hrs OR Reduce Thermal power to less than P-7 within 78 hours
	CRS	Review Attachment A, Effects of Pressurizer Level Instrument Failure
NOTE		*At this time the crew should have an UPDATE Brief*
	CRS	Perform Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 3	Page 9 of 22
Event Description:	Main Seal Oil Pump Trips / Emergency Seal Oil Pump fails to start in Automatic		

Proc /Time	Position	Applicant's Actions or Behavior

		Booth Operator Instructions
		• T = 25 minutes or at the discretion of the Lead Examiner
		
		• Main Seal Oil Pump trips and the Emergency Seal Oil Pump fails to start Automatically
		  • Insert Malfunction (CD) PCD01_Trip, Value = Trip
		
		• When contacted, respond as Secondary or Polisher Operator and inform the Control Room the Main Seal Oil pump is not operating and the pump motor feels hot to the touch.
		  o If asked about the breaker, it is tripped.
		  o The local Alarm Panel has the following alarms
		  ▪ 1C, Differential Seal Oil Pressure Low (Alarm would only be on if crew has NOT started ESOP – alarm setpoint is ≤ 5 psid)
		  ▪ 4B, Emerg Seal Oil Pump Running (Alarm would only be on if CR has started ESOP)
		  o If asked to reset the Local Alarm Panel – Insert Remote Function (CC) CCQA0001, Value = Reset
		• When contacted, respond as EDO. Acknowledge entry into the OTO.

Indications Available:		
T= 25		ANN 130E, GEN AUX TROUBLE
OTO-MA-00002, Generator Seal Oil System Malfunction		
	CRS	Implement OTO-MA-00002, Generator Seal Oil System Malfunction
	BOP	(Step 1) Dispatch Operations Technician to perform Actions of OTA-CC-0128A, Generator Hydrogen Panel
	BOP	(Step 2) CHECK Main Generator Gas pressure – LOWERING – NO • CC PI-6 GO To Step 5
	BOP	(Step 5) CHECK Main Seal Oil Pump – Tripped - YES • CD HIS-10

Op Test No.: 2013301 Scenario # 1 rev.1 Event # 3 Page 10 of 22

Event Description: Main Seal Oil Pump Trips / Emergency Seal Oil Pump fails to start in Automatic

Proc /Time	Position	Applicant's Actions or Behavior
OTO-MA-00002	**BOP**	(Step 6) CHECK Emergency Seal Oil Pump Running – NO RNO Start the Emergency Seal Oil Pump – go to Step 7
	BOP	(Step 7) CHECK Generator Gas Purity > 90% - YES • CC AI-17
	CRS	(Step 8) Go To Step 10
	CRS	(Step 10) Perform Notifications Per ODP-ZZ-00001, Addendum 13, Shift manager Communications
	CRS	(Step 11) Go To Appropriate Plant Procedure as Directed by the Control Room Supervisor
		At Lead Examiner's discretion move to the next Event

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 4	Page 11 of 22
Event Description:	Normal Charging Pump Trips, must start a Centrifugal Charging Pump		

Proc /Time	Position	Applicant's Actions or Behavior

		Booth Operator Instructions
		• T = 35 minutes or at the discretion of the Lead Examiner
		• Normal Charging Pump Trips
		  • Insert Malfunction (BG) PBG04, Value = Trip
		• When contacted, respond as Primary Operator and inform the Control Room the NCP is not running and there is a smell of burnt insulation in the room, but no fire.
		  o If asked about the breaker on PB03, it is tripped.
		• When contacted, respond as EDO. Acknowledge entry into the OTO.

Indications Available:		
T= 35		ANN 42A, CHG LINE FLOW HILO
OTO-BG-00001, Pressurizer Level Control Malfunction		
	CRS	Implement OTO-BG-00002, Pressurizer Level Control Malfunction
NOTE	***CREW***	*Tech Spec 3.4.1, DNB Limits, may be entered on Low RCS Pressure (2223 psig) due to loss of NCP – 2 hours to restore if entered*
	RO	(Step 1) CHECK Charging Pumps – At Least One Running - NO • NCP is tripped RNO – Perform the following: • Ensure CCP Recirc valves OPEN • Ensure CCP suction is aligned to the VCT or RWST • Start one CCP • Ensure CCW is running in the same train as the CCP that was started
		Step 1 is an immediate action step
	RO	(Step 2) CHECK for Failed Pressurizer Level Indicator - NO RNO – Perform the following • Go To Step 20

Op Test No.: 2013301 Scenario # 1 rev.1 Event # 4 Page 12 of 22

Event Description: Normal Charging Pump Trips, must start a Centrifugal Charging Pump

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BG-00001	**RO**	(Step 20) CHECK Charging Header Flow – Indicates Proper Charging Alignment • BG-FI-121A
	RO	(Step 21) Maintain RCP Seal Injection Flow between 8 gpm and 13 gpm per RCP using Charging Header Back Pressure Control Valve • BG HC-182
	BOP	(Step 22) CHECK Instrument Air - In Service - Yes
	RO	(Step 23) CHECK Letdown – In Service - Yes
	RO	(Step 24) Check Letdown Relief Valve (BG8117) – Normal – Yes • Letdown Relief to PRT Outlet Temp BG TI-125 • Annunciator 39C, LTDN TEMP HI - CLEAR
	RO	(Step 25) CHECK Pressurizer Level Trending to or At Program Level
	RO	(Step 26) CHECK RCS Intact • Containment Conditions – Normal • Aux Building Conditions – Normal • PRT Conditions – Normal • Recycle Holdup Tank Levels - Normal
	CRS	(Step 27) Review applicable Tech Specs - NONE
		At Lead Examiner's discretion move to the next Event

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 5	Page 13 of 22
Event Description:	Steam Generator Tube Leak (25 gpm) Requiring Rapid Load Reduction		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions • T = 45 minutes or at the discretion of the Lead Examiner • Steam Generator "B" Tube Leak of 25 gpm • Insert Malfunction (BB) EBB01B, Value = 25 • When contacted, respond as Chemistry that you will perform CTP-ZZ-02590, Primary To Secondary Leakrate Determination • When contacted, respond as Count Room Tech and inform the Control Room the higher than Normal Radiation readings from Steam Generator "B" are valid • When contacted, respond as EDO. Acknowledge entry into the OTO.
Indications Available:		
T= 45		ANN 61A, PROCESS RAD HIHI ANN 61B, PROCESS RAD HI
OTO-BB-00001, Steam Generator Tube Leak		
	CRS	Implement OTO-BB-00001, Steam Generator Tube Leak
	RO	(Step 1) CHECK if PZR Level can be maintained - YES • Control charging flow as necessary to maintain PZR level • Check Pressurizer Level – Stable or Rising
	RO	(Step 2) CHECK if VCT Level Can be Maintained - YES
	CRS	(Step 3) Chemistry to Perform CTP-ZZ-02590, Primary to Secondary Leakrate Determination
	RO/BOP	(Step 4) Try to identify Affected SG • High radiation on N16 monitors at the RM-11 station
	RO/BOP	(Step 5) Determine SG Tube Leak Rate • Should calculate leak rate of 20 – 40 gpm

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 5	Page 14 of 22
Event Description:	Steam Generator Tube Leak (25 gpm) Requiring Rapid Load Reduction		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BB-00001	**CRS**	(Step 6) CHECK if Plant should be Shutdown • EPRI Action Level 3, > 75 gpd • Perform Actions in Attachment D
	CRS/BOP	(Step 7) INITIATE Action to Minimize Secondary Contamination a. Start the Auxiliary Boiler b. Ensure auxiliary steam is supplying main turbine c. Perform the following: 1) Place Condensate Reject to CST controller in MANUAL and ZERO Output AD LIC-79A 2) Open Condensate Demin Bypass valve as necessary ADHV0028 (DCS) 3) Transfer auxiliary steam to aux boiler as necessary d. Refer to the following as necessary • Tech Spec 3.4.13, RCS Operational Leakage If Primary to secondary leakage not within limit, be in Mode 3 within 6 hours and be in Mode 6 within 36 hours. • EIP-ZZ-00101, Classification of Emergencies
Att D	**CRS**	(Step D1.a) Initiate Step 7 and commence a controlled shutdown to Mode 3. Reduce power to < 50% within 1 hour, and be in Mode 3 within the next 2 hours
	CRS	(Step D1.a.1) Perform Applicable procedures as necessary • OTO-MA-00008, Rapid Load Reduction
CUE		Once the crew starts the shutdown using OTO-MA-00008 as proven by lowering load by 5-10 MWe using boration and turbine load – **GO TO THE NEXT EVENT AS CUED BY LEAD EXAMINER**

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 15 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions • T = 60 minutes or at the discretion of the Lead Examiner • Steam Generator "B" Tube Rupture of 400 gpm • Insert Malfunction (BB) EBB01B, Value = 400 • If contacted, respond as Count Room Tech and inform the Control Room the higher than Normal Radiation readings from Steam Generator "B" are valid • When contacted, respond as EDO. Acknowledge entry into the OTO.
Indications Available:		
T= 60		ANN 61A, PROCESS RAD HIHI
		E-0, Reactor Trip or Safety Injection
	CRS	Implement E-0, Reactor Trip or Safety Injection
		NOTE *Steps 1 through 4 are immediate actions*
E-0	**RO**	(Step 1) CHECK Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux – Lowering
	BOP	(Step 2) CHECK Turbine Trip Turbine Stop Valves – Closed
	BOP	(Step 3) CHECK Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized

Op Test No.: 2013301 Scenario # 1 rev.1 Event # 6, 7, 8, 9 Page 16 of 22

Event Description: Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate

Proc /Time	Position	Applicant's Actions or Behavior
E-0	**RO**	(Step 4) CHECK SI Status Actuated or Required Manually Actuate SI (If not actuated) Check both Trains of SI Actuated LOCA Sequencer ANN 30A – Lit LOCA Sequencer ANN 31A – Lit SB069 SI Actuate Red Light – Lit Solid
	RO/BOP	(Step 5) Perform Attachment A, Automatic Action Verification, while continuing with this procedure
	CRS	Call STA to Initiate CSF Status Tree Monitoring
E-0 Att A	**RO/BOP**	(Step A1) CHECK Charging Pumps – Both CCPs running
		(Step A2) CHECK SI and RHR Pumps – All running – NO Start SI Pump "A"
Critical Task	**CREW**	**Start Safety Injection Pump "A" prior to completing Attachment A, Automatic Action Verification, in E-0, Reactor Trip or Safety Injection**
	RO/BOP	(Step A3) CHECK ECCS Flow – BIH flow indicated
	RO/BOP	(Step A4) CHECK ESW Pumps – BOTH RUNNING • EF HIS-55A • EF HIS-56A

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 17 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
E-0 Att A	**RO/BOP**	(Step A5) CHECK CCW Alignment: • CCW Pumps – ONE RUNNING IN EACH TRAIN • CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN • OPEN CCW To RHR HX valves • CLOSE Spent Fuel Pool HX CCW Outlet Valves • STOP Spent Fuel Pool Cooling Pump(s) • RECORD The Time Spent Fuel Pool Cooling Pump Secured
	RO/BOP	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
	RO/BOP	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
	RO/BOP	(Step A8) CHECK If Containment Spray should Be Actuated – NO
	RO/BOP	(Step A9) CHECK If Main Steamlines Should Be Isolated: • Containment pressure > 17 psig • Steamline pressure – LESS THAN 615 PSIG
	RO/BOP	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
	RO/BOP	(Step A11) CHECK Containment Isolation Phase A
	RO/BOP	(Step A12) CHECK SG Blowdown Isolation
	RO/BOP	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation
	RO/BOP	(Step A14) CHECK Containment Purge Isolation

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 18 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
Critical Task	**CREW**	**Manually initiate a Containment Purge Isolation Signal (CPIS) prior to completing Attachment A, Automatic Action Verification, in E-0, Reactor Trip or Safety Injection**
E-0 Att A	**RO/BOP**	(Step A15) NOTIFY CRS of the following: • Unanticipated Manual actions taken • Failed Equipment status • Attachment A, Automatic Action Verification, completed

E-0, REACTOR TRIP OR SAFETY INJECTION		
E-0		
	BOP	(Step 6) CHECK Generator Output Breakers – Open
	BOP	(Step 7) CHECK Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves – Closed Feedwater Isolation Valves – Closed
Critical Task	**CREW**	**Close FWIV "B" prior to transitioning from E-0, Reactor Trip or Safety Injection**
	BOP	(Step 8) CHECK AFW Pumps MD AFW Pumps – Both Running TD AFW Pump – Running
	BOP	(Step 9) CHECK AFW Valves – Proper Alignment MD AFP Flow Control Valves – Throttled (AFW may be isolated to SG B per foldout page)
	BOP	(Step 10) CHECK Total AFW Flow > 285,000 lbm/hr

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 19 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
E-0	**BOP**	(Step 11) CHECK PZR PORVs and Spray Valves PZR PORVs – Closed PZR PORVs – Both in AUTO PORV Block Valves – Both Open Normal PZR Spray Valves – Closed
	BOP	(Step 12) CHECK if RCPs should be Stopped RCPs – Any Running ECCS Pumps – At least One Running RCS Pressure – Less than 1425 psig YES – Stop all RCPs RNO – Go To Step 13
	BOP	(Step 13) CHECK RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F
	RO/BOP	(Step 14) CHECK if any SG is Faulted Any SG pressure lowering uncontrollably Any SG completely depressurized
	RO/BOP	(Step 15) CHECK if SG Tubes are Intact • Levels in all SGs – No NR Level rising uncontrollably • SG Steamline N16 radiation – Normal – NO • Condenser Air Removal radiation – Normal before Isolation – NO • SG Blowdown and Sample radiation – Normal before Isolation – NO • SG ASD radiation – Normal • Turbine Driven Aux Feedwater Pump Exhaust radiation – normal **GO TO E-3, Steam Generator Tube Rupture**

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 20 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
E-3, STEAM GENERATOR TUBE RUPTURE		
		NOTE Personnel should be available for sampling during this procedure **NOTE** Seal Injection flow should be maintained to all RCPs **NOTE** Step 1 criteria applies until an operator controlled cooldown is initiated
E-3	**RO**	(Step 1) CHECK if RCPs should be stopped • RCPs – Any Running • ECCS Pumps – At Least one Running • RCS pressure – Less than 1425 PSIG • Stop all RCPs
	BOP	(Step 2) Identify Ruptured SG(s) • Unexpected rise in any SG narrow range level • High radiation from any SG sample • High radiation from any SG steamline • High radiation from any SG blowdown line sample
	BOP	(Step 3) Isolate Flow From Ruptured SG a) Adjust ruptured SG ASD controller to 1160 PSIG o AB PIC-2A (SG B) b) Check ruptured SG ASD – closed o AB PIC-2A (SG B) c) Locally close TDAFP Steam Supply from Main Steam Loop Manual Isolation valve from ruptured SG o ABV0085 (SG B)
SIM Operator	**V0085 SIM**	**Insert Remote Function (AB) ABV0085, Value = 0**

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 21 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
E-3	**BOP**	(Step 3 cont'd) d) CHECK SG Blowdown Containment Isolation Valve from ruptured SG – CLOSED o BM HIS-2A e) Close Steam line Low point Drain valve from ruptured SG – AB HIS-8 f) Check if C-9 interlock is lit g) Close MSIV and MSIV bypass valve from ruptured SG
	BOP	(Step 4) CHECK Ruptured SG level • Narrow range level > 7% [25%] • Stop feed flow to ruptured SG ▪ CLOSE AL HK-9A and AL HK-10A
	RO/BOP	(Step 5) CHECK Ruptured SG Pressure - > 340 psig
	CAUTION	If RCPs are NOT running, the following steps may cause a false CSF-1, Figure 4, Integrity Status Tree indication for the ruptured loop. Disregard the ruptured loop T-cold indication until after performing Step 29.
	BOP	(Step 6) Initiate RCS Cooldown a) CHECK RCS pressure – < 1970 PSIG b) Block Steamline Pressure SI c) Determine required core exit temperature (based on table in E-3 and Lowest "Ruptured" SG Pressure d) Dump steam to condenser from the intact SGs at maximum rate using steam dumps or ASDs e) Core exit TCs – less than required temperature f) Stop the RCS cooldown g) Maintain core exit TCs – Less than required Temperature

Op Test No.: 2013301	Scenario # 1 rev.1	Event # 6, 7, 8, 9	Page 22 of 22
Event Description:	Steam Generator "B" Tube Rupture / Reactor Trip / FWIV Fails to close/ SI Pump fails to Auto Start / CPIS fails to Auto Actuate		

Proc /Time	Position	Applicant's Actions or Behavior
NOTE	**EVAL**	**Once the RCS cooldown has begun as described in STEP 6 on previous page <u>OR</u> at the discretion of the Lead evaluator – The Scenario can be STOPPED and Simulator Frozen.**

Facility: Callaway Scenario No.: 2, rev. 3 Op-Test No.: 2013301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 100% Power, with the "A" CCP Out of Service for oil change and pump alignment.

Turnover: Reduce Power to 95% to allow testing of the Main Turbine Control Valves.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	RO (R) BOP (N) SRO (N)	Reduce Power to 95% for Control Valve Testing
2	ACPT0506	SRO (I) BOP (I)	Turbine Impulse Pressure Channel PT-506 Fails Low (Tech Spec)
3	BGLT0149	SRO (I) RO (I)	VCT Level Transmitter BG LT-149 Fails High
4	BB002_A	SRO (C) RO (C) BOP (C)	Small Break LOCA, Crew must determine Leak Rate (Tech Spec)
5	PBB01C_ S1TVFL	SRO (C) BOP (C) RO (C)	RCP "C" Seal Degrades, then Fails completely, requiring Reactor Trip / Trip of RCP "C"
6	BB002_A	SRO (M) RO (M) BOP (M)	RCS Leak degrades to 5,000 gpm
7	SB SIS_BLOCK	RO (I)	SI Fails to Automatically Actuate in Both Trains, must be manually actuated
8	PBG05B_1	RO (C)	"B" Centrifugal Charging Pump fails to Auto Start on receipt of SI Signal

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	7
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)	3

Scenario Event Description
Callaway 2013 NRC Scenario #2

The plant is operating at 100%, steady state power. Centrifugal Charging Pump (CCP) "A" is tagged out of service for an oil change and pump alignment. The crew is directed to reduce reactor power to 95% to allow testing of the Main Turbine Control Valves. The power reduction will be performed in accordance with OTG-ZZ-00004, Addendum 3, Planned Power Changes From Full Power.

After power has been reduced to 95%, Turbine Impulse Pressure Channel, AC PT-506 fails low. The crew should respond per OTO-AC-00003, Turbine Impulse Pressure Channel Failure, place rod control in manual and select Turbine Impulse Pressure Channel, AC PT-505, for control. Tech Spec 3.3.1 applies.

After Tech Specs have been addressed for PT-506, VCT Level Transmitter BG LT-149 fails high, causing Letdown to Divert to the RHUT. The crew should respond per OTO-BG-00004, VCT Level Channel Failures, and re-position the Divert valve to the VCT position.

After the VCT Level Transmitter Failure, a 30 gpm leak to containment develops. The crew will address the leak using OTO-BB-00003, RCS Excessive Leakage. The crew calculates the RCS leak rate and reviews Tech Specification 3.4.13 for RCS Operational Leakage, requiring the plant to be shutdown in 4 hours.

Once the RCS Leak is addressed, RCP "C" seal #1 degrades, requiring the crew to enter OTO-BB-00002, RCP Off-Normal. Once the crew gets to the point in the procedure where they contact Engineering for additional actions to be taken, RCP "C" seal degrades further forcing the crew to manually trip the reactor and enter E-0, Reactor Trip or Safety Injection. RCP "C" should be tripped IAW OTO BB-00002 following the trip of the reactor. Since the RCS leak is not large enough to cause a Safety Injection (SI), the crew will transition to ES-0.1, Reactor Trip Response.

While performing ES-0.1, Step 3, Check PZR Pressure Control, the RCS leak increases to 5,000 gpm. Both trains of Safety Injection fail to actuate and the crew must manually initiate Safety Injection. The crew will transition back to E-0 and then to E-1, Loss of Reactor or Secondary Coolant.

CCP "B" fails to automatically start on the Safety Injection signal and will have to be started manually by the applicant.

The scenario can be terminated when the crew has commenced a RCS cooldown IAW with ES-1.2, Post LOCA Cooldown and Depressurization, or at the discretion of the lead evaluator.

Critical Tasks:

Event #7 CT - Trip all RCPs such that the core does not uncover (RVLIS<55%) AND prior to commencing an operator controlled cooldown

Event #8 CT - Manually actuate Safety Injection prior to completing ES-0.1, Reactor Trip Response

Event #9 CT - Establish flow from at least one Centrifugal Charging Pump before transitioning from E-0, Reactor Trip or Safety Injection

References
OTG-ZZ-00004, Addendum 3, Planned Power Changes From Full Power
OTO-AC-00003, Turbine Impulse Pressure Channel Failure
OTO-BG-00004, VCT Level Channel Failures
OTO-BB-00003, RCS Excessive Leakage
OTO-BB-00002, RCP Off-Normal
E-0, Reactor Trip or Safety Injection
ES-0.1, Reactor Trip Response
E-1, Loss of Reactor or Secondary Coolant
ES-1.2, Post LOCA Cooldown and Depressurization
Tech Spec 3.3.1 for Reactor Trip System Instrumentation
Tech Spec 3.4.13 for RCS Operational Leakage
Tech Spec 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits
ODP-ZZ-00025, EOP/OTO User's Guide

Scenario Setup Guide:

Establish the initial conditions of IC-165, MOL 100% power:

- RCS boron concentration 751 ppm
- CCP A 765 ppm minus 5 days
- CCP B 775 ppm minus 15 days
- Rod Control Bank D 215 steps, Other banks 228 steps
- **ENSURE AC-PT-506 is selected on AC PS-505Z**
- "A" CCP is tagged out with breaker in P-T-L and tag on handswitch

==========SCENARIO PRELOADS / SETUP ITEMS==========

"A" CCP Tagged out for maintenance

- ME Schematics (BG) e23bg01, Breaker position = 3

RCS Leak degrades to 5000 gpm following Reactor Trip

- Insert Malfunction (BB) BB002_A, Value = 5000, ramp = 1 min

SI Fails to Automatically Actuate in Both Trains

- Insert Malfunction (SB) SIS_A_Block_Auto, Value = Block
- Insert Malfunction (SB) SIS_B_Block_Auto, Value = Block

"B" Centrifugal Charging Pump fails to Auto Start

- Insert Malfunction (BG) PBG05B_1, Value = True

========== EVENT 2 ==========

Turbine Impulse Pressure Channel AC PT-506 Fails High

- Insert Malfunction (AC) ACPT0506, Value = 0, ramp = 10 sec

========== EVENT 3 ==========

VCT Level Channel BG LT-149 fails high

- Insert Malfunction (BG) BGLT0149, Value = 1.0

==========EVENT 4 ==========

Small Break Loss of Coolant Accident of 30 gpm

- Insert Malfunction (BB) BB002_A, Value = 30

==========EVENT 5 ==========

RCP "C" Seal degrades then fails completely

- Insert Malfunction (BB) PBB01C_S1TVFL, Value = 9.5, ramp = 15 secs
- Insert Malfunction (BB) PBB01C_S1TVFL, Value = 20 Ramp = 15 secs

==========EVENT 6 PRELOADED==========

RCS Leak degrades to 5000 gpm 4 minutes following the Reactor Trip
SEE PRELOADS ABOVE

==========EVENT 7 PRELOADED==========

Safety Injection Signal Fails to Automatically Actuate in both Trains
SEE PRELOADS ABOVE

==========EVENT 8 PRELOADED==========

"B" Centrifugal Charging Pump fails to Auto Start
SEE PRELOADS ABOVE

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 1	Page 5 of 25
Event Description:	Reduce Power to 95% to allow Turbine Control valve Testing		

Proc /Time	Position	Applicant's Actions or Behavior
OTG-ZZ-00004 Addendum 3, Planned Power Changes From Full Power		
T=0 OTG-ZZ-00004	**CRS**	(Step 5.2.1) Perform the following in any order to prepare for lowering power. • If needed, prior to beginning a load reduction, REQUEST I&C adjust NIS Power range coarse gains • INITIATE Additional Actions Section 5.4 to prepare for reducing power
	SIM	*If called as I&C, inform the crew an I&C Tech is standing by if needed to adjust NIS Power range instruments*
	BOP	(Step 5.2.2) INITIATE power reduction
	RO	(Step 5.2.2.a) Borate the RCS as require to support lowering power to the desired final load.
	RO	(Step 5.2.2.b) ENSURE SE HS-9, ROD BANK AUTO/MAN SEL, is in MAN
	BOP	(Step 5.2.2.c) If using MANUAL turbine, INITIATE load reduction by slowly turning LOAD LIMIT SET potentiometer counter-clockwise.

	BOP	(Step 5.2.2.d) If using AUTOMATIC turbine control, Perform the following:
		• Using LOAD SELECTOR, DECREASE LOAD, pushbutton, SLOWLY LOWER load until the following conditions are met:
		  ○ Load Limit Limiting light is off
		  ○ Decrease Loading Rate, OFF, light is lit
		  ○ Loading Rate Limit %/Min, ½, light is lit
		• TURN LOAD LIMIT SET potentiometer fully clockwise
		• Using DECREASE LOADING RATE, ON, pushbutton, PRESS ON
		• SELECT the desired loading rate
		• INITIATE Load Reduction

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 1	Page 6 of 25
Event Description:	Reduce Power to 95% to allow Turbine Control valve Testing		

Proc /Time	Position	Applicant's Actions or Behavior
	RO/BOP	(Step 5.2.3.) When the desired power level is achieved, PERFORM the following: • SET Turbine Controls for steady state operation • BORATE/DILUTE as needed to maintain power level • INSERT/WITHDRAW rods as needed to maintain power level
	BOP	(Step 5.2.4) ENSURE annunciator 77A, REACT DEV, setpoint is 1.0°F
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 2	Page 7 of 25
Event Description:	Turbine Impulse Pressure Channel PT-506 Fails High(Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions • T = 15 minutes or at the discretion of the Lead Examiner Turbine Impulse Pressure Channel AC PT-506 Fails Low • Insert Malfunction (AC) ACPT0506, Value = 0, ramp = 10 sec • When contacted, respond as I&C. Acknowledge the request to investigate the instrument/channel failure. • When contacted, respond as EDO. Acknowledge entry into the OTO.
Indications Available:		
T= 15		ANN 65E, T REF / T AUCT LO
OTO-AC-00003, Turbine Impulse Pressure Channel Failure		
	CRS	Implement OTO-AC-00003, Turbine Impulse Pressure Channel Failure
OTO-AC-00003	**RO**	(Step 1) Place Rod control in MANUAL • SE HS-9
	BOP	(Step 2) CHECK HP Turbine First Stage Pressure Indicator - FAILED - AC PI-506
	BOP	(Step 3) Select HP Turbine First Stage Pressure Selector to Operable Channel • AC PS-505Z
	RO	(Step 4) CHECK RCS Tavg Within 1.5°F of Tref

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 2	Page 8 of 25
Event Description:	Turbine Impulse Pressure Channel PT-506 Fails High(Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-AC-00003		(Step 4 RNO) Restore Tavg to within 1.5°F using any of the following: • Adjust Control Rods • Adjust Turbine load • Adjust Boron concentration
	RO	(Step 5) CHECK Rod Control – IN AUTO
	BOP	(Step 6) Place Steam Dump Bypass Interlock Switches to OFF/RESET • AB HS-63 • AB HS-64
	BOP/RO	(Step 7) CHECK the following Permissives are in the Correct State within one hour of the Channel Failure • P-7 - Lit • P-13 - Lit
	CRS	(Step 8) REVIEW Applicable Tech Specs TS 3.3.1, Cond T, Verify Interlock is in required state for existing conditions within 1 hour OR be in Mode 2 in 7 hours
	CREW	(Step 9) REVIEW Attachment A, Effects of Turbine Impulse Pressure Instrument Failure
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 3	Page 9 of 25
Event Description:	VCT Level Channel BG LT-149 fails High		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions T = 25 minutes or at the discretion of the Lead Examiner VCT Level Channel BG LT-149 fails high • Insert Malfunction (BG) BGLT0149, Value = 1.0 • When contacted, respond as I&C to repair the instrument. Acknowledge the request to investigate the channel failure. • When contacted, respond as EDO. Acknowledge entry into the OTO. • If contacted as the Primary Operator to check Local indication at BG LI-149, inform the Control Room that the Local Indicator reads 100%.
Indications Available:		
T= 25		ANN 42B, VCT LEV HILO ANN 42D, VCT DIVERT TO RHT
OTO-BG-00004, VCT Level Channel Failures		
	CRS	Implement OTO-BG-00004, VCT Level Channel Failures
	RO	(Step 1) Identify Failed VCT Level Channel Compare VCT level channel indications to confirm VCT level channel failure: • BG LT-149 (BGL0149)
	RO	(Step 2) CHECK Failed VCT Level Channel Identified as – BG LI-112 OR BG LI-185 RNO – Go To Step 15
	RO	(Step 15) CHECK CCW VCT Level Channel Failed - LOW • REL0112A • BG LI-149 (local) RNO – Perform the following: a. Place Letdown Divert to VCT & RHT to VCT position b. Initiate actions to repair the failed component c. Go To Step 17

Op Test No.: 2013301 Scenario # 2 rev.3 Event # 3 Page 10 of 25

Event Description: VCT Level Channel BG LT-149 fails High

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BG-00004	**RO**	(Step 17) Maintain VCT level as necessary by cycling BG HIS-112A and initiating manual makeup per OTN-BG-00002, Reactor makeup Control and Boron Thermal Regeneration System
	CRS	(Step 18) Perform Notifications per ODP-ZZ-00001, Addendum 13, Shift Manager Communications
	CRS	(Step 19) Initiate Actions to Repair the failed Component
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 4	Page 11 of 25
Event Description:	Small Break LOCA (~30 gpm), Crew must determine Leak Rate (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions T = 35 minutes or at the discretion of the Lead Examiner Small Break Loss of Coolant Accident of 30 gpm • Insert Malfunction (BB) BB002_A, Value = 30 • When contacted, respond as EDO as requested.
Indications Available:		
T=35		ANN 61A, PROCESS RAD HIHI
		OTO-BB-00003, RCS Excessive Leakage
	CRS	Implement OTO-BB-00003, RCS Excessive
NOTE	***CREW***	*Tech Spec 3.4.1, DNB Limits, may be entered on Low RCS Pressure (2223 psig) due to RCS leak – 2 hours to restore if entered*
	RO	(Step 1) CHECK If Pressurizer Level can be maintained a. Control charging flow as necessary to maintain PZR level b. CHECK Pressurizer Level – Stable or Rising
	RO	(Step 2) CHECK Pressurizer Level – Stable or Rising
	CRS	(Step 3) Evacuate Non-Essential Personnel in Containment
	RO	(Step 4) CHECK if VCT Level can be maintained a. VCT Level – Maintained > 5% by Normal makeup

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 4	Page 12 of 25
Event Description:	Small Break LOCA (~30 gpm), Crew must determine Leak Rate (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
	RO	(Step 5) Determine If Plant Trip is Required a. Determine Leak size and rate of change using any of the following b. Leak rate – LESS THAN 50 GPM (20 – 40 gpm)
NOTE		*The crew should determine the Leak to be approximately 20-40 gpm*
OTO-BB-00003	**RO**	(Step 6) CHECK PZR Pressure a. Check Pressurizer Presure Trending to or between 2225 and 2250 psig
	BOP	(Step 7) CHECK SG Tubes – Intact a. SG Steam Flow/Feed Flow Trends – Consistent with Pre-Event Values b. Condenser Air Removal Radiation – Normal c. SG Blowdown and Sample Radiation Monitors - Normal d. SG Steamline N16 Radiation - Normal
	BOP	(Step 8) CHECK Containment Conditions – Normal • Containment Radiation-Normal - NO • Containment Pressure-Normal • Containment Normal Sump Level – Normal • Containment area radiation monitors – Normal • Instrument Tunnel Sump - Normal
	RO	(Step 8 RNO a) If normal letdown is/was in service, THEN Perform the following: 1) Close Letdown Orifice Isolation Valves 2) Close RCS Letdown to Regen Hx isolation valves 3) If Leakage stopped, THEN Established Excess Letdown per OTN-BG-00001, Chemical and Volume Control System (Excess Letdown will be established if Crew believes leak has been stopped)

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 4	Page 13 of 25
Event Description:	Small Break LOCA (~30 gpm), Crew must determine Leak Rate (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BB-00003	**RO**	(Step 8 RNO b) If Leakage continues, THEN perform the following: 1) Secure charging by closing Charging Header Back Pressure Control Valve (BG HC-182) 2) Maintain RCP Seal injection flow to each RCP between 8 and 13 gpm 3) If leakage continues, then perform the following: a. Restore normal charging b. If leakage can be maintained within the capacity of one pump when letdown is established, THEN restore letdown 4) When containment conditions permit, THEN Dispatch an operator into containment to identify source per Att. A, Containment Leak Search.
	SIM	*If contacted as the Field Supervisor for a containment entry to search for the leak, acknowledge that a team will be formed.*
	RO/BOP	(Step 9) Monitor RCS Leakage Rate • Use Trends of VCT level and PZR level • Compare charging and letdown flows • Use CTMT Sump level trends • Perform OSP-BB-00009
	CRS	(Step 10) Refer to the following Technical Specifications • 3.4.13, RCS Operational Leakage • Be in Mode 3 in 6 hours <u>AND</u> Be in Mode 5 in 36 hours
NOTE	***RO***	*Due to the failed VCT level channel (BGLT0149) manual makeup to the VCT will be required.*
		At Lead Examiner's discretion move to the next Event

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 5	Page 14 of 25
Event Description:	RCP "C" No. 1 Seal Degrades and eventually fails		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions T = 45 minutes or at the discretion of the Lead Examiner RCP "C" Seal degrades then fails completely • Insert Malfunction (BB) PBB01C_S1TVFL, Value = 9.5, ramp = 15 secs Wait for CUE to fail seal completely. • Insert Malfunction (BB) PBB01C_S1TVFL, Value = 20, ramp = 15 secs • When contacted, respond as EDO.
Indications Available:		
T=45		ANN 72A, RCP #1 SEAL FLOW HI
OTO-BB-00002, RCP OFF-NORMAL		
	CRS	Implement OTO-BB-00002, RCP OFF NORMAL
	RO/BOP	(Step 1) CHECK All RCPs - Running
	CRS	(Step 2) Go to Attachment B, RCP Seal Parameters Abnormal
	RO/BOP	(Step B1) CHECK CCW To Containment – Normal or High for Plant Conditions – EG FI-128 & EG FI-129
NOTE		*The RCP should be tripped within 5 minutes if seal leakoff flow is greater than 6 gpm or less than 0.8 gpm with rising pump bearing or seal injection temperatures*
	RO/BOP	(Step B2) CHECK No. 1 Seal Leakoff flow on ALL RCPs – Less than 6 gpm
	RO/BOP	(Step B3) CHECK No. 1 Seal Leakoff flow to ALL RCPs – Greater than 0.8 GPM

Op Test No.: 2013301 Scenario # 2 rev.3 Event # 5 Page 15 of 25

Event Description: RCP "C" No. 1 Seal Degrades and eventually fails

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BB-00002	**RO/BOP**	(Step B4) CHECK No. 1 Seal & Bearing Inlet Temperature - Less than 230 °F on ALL RCPs
	RO/BOP	(Step B5) CHECK No. 1 Seal & Bearing Inlet Temperature - Less than 200 °F on ALL RCPs
	RO/BOP	(Step B6) CHECK RCP Seal Injection Flow – Between 8 and 13 gpm per pump
	RO/BOP	(Step B7) CHECK No.1 Seal Leakoff Flow on Any RCP – Less than 0.8 GPM RNO – GO to Step B9
	RO/BOP	(Step B9) CHECK both of the following: • RCP Vibration – Normal • CCW to RCPs – Normal
	RO/BOP	(Step B10) Continue Monitoring RCP Parameters
	CRS	(Step B11) Contact Engineering To Determine Additional Actions to be Taken
	SIM OPER	***When Engineering is contacted, OR at the discretion of the Lead Examiner Fail the Seal completely, which will require a Reactor Trip and shutdown of the RCP***
NOTE		***(Continuous Action Step B2) CHECK No. 1 Seal Leakoff flow on ALL RCPs – Less than 6 gpm – YES*** ***RNO – If Reactor power is greater than 48% (P-8) lit), THEN Go to Att D, RCP Trip Greater than 48% (P-8 Lit)***
	RO	(Step D1) Manually TRIP the Reactor and Stabilize Plant using EOPs while continuing with this procedure

Op Test No.: 2013301 Scenario # 2 rev.3 Event # 5 Page 16 of 25

Event Description: RCP "C" No. 1 Seal Degrades and eventually fails

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BB-00002	**RO/BOP**	(Step D2) Trip the Affected RCP
	RO/BOP	(Step D3 and D4) Check A and B RCPs – RUNNING
	RO/BOP	(Step D5) Defeat Tavg and ΔT for idle RCS Loop
	RO/BOP	(Step D6) CHECK No. 1 Seal Leakoff Flow was less than 6 GPM prior to securing (BG FR-155) RNO – When the affected RCP has come to a stop (approximately 4 minutes), THEN Close #1 Seal Leakoff valve for the affected RCP: • BB HIS-8141C (RCP C)

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 6, 7, 8	Page 17 of 25
Event Description:	Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start		

Proc /Time	Position	Applicant's Actions or Behavior
E-0, Reactor Trip or Safety Injection		
	CRS	Implement E-0, Reactor Trip or Safety Injection
		NOTE *Steps 1 through 4 are immediate actions*
E-0	**RO**	(Step 1) CHECK Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux - Lowering
	BOP	(Step 2) CHECK Turbine Trip Turbine Stop Valves - Closed
	BOP	(Step 3) CHECK Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized
	RO	(Step 4) CHECK SI Status Actuated or Required – NO **RNO** – If SI is NOT required then Go to ES-0.1, Reactor Trip Response, Step 1
	CRS	Call STA to Initiate CSF Status Tree Monitoring
ES-0.1	**CAUTION**	If SI Actuation occurs during the performance of this procedure, E-0, Reactor Trip or Safety Injection, should be performed.
	RO	(Step 1) CHECK RCS Temperature Control a. Check RCPs – Any Running b. Check RCS temperature response - NORMAL

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 6, 7, 8	Page 18 of 25
Event Description:	Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start		

Proc /Time	Position	Applicant's Actions or Behavior
ES-0.1	**BOP**	(Step 2) CHECK Status of AC Buses a. Check Generator Output Breakers – OPEN b. Check All AC Buses – Energized by Offsite Power
	RO	(Step 3) CHECK PZR Pressure Control a. Pressure – Greater than 1849 b. Pressure – Stable at or trending to 2235
	RO/BOP	(Step 4) CHECK PZR Level Control a. PZR Level – Greater than 17% b. Check Instrument Air Supply Isolation Valve – OPEN c. Check charging – In Service d. Check letdown – In Service e. PZR level – trending to 25%
	RO	(Step 5) CHECK Shutdown Reactivity Status: a. Check all control rods – fully inserted b. Check if uncontrolled RCS dilution – in progress c. Align charging pump suction to RWST: 1) Open both Charging Pump Suction from RWST valves 2) Close both VCT Outlet valves
NOTE		***By this time the crew should be seeing the effects of the Large Break LOCA, Manually Actuate SI, and Transition back to E-0***
Critical Task	**CREW**	**Manually actuate Safety Injection prior to completing ES-0.1, Reactor Trip Response**

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Event Description: Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start

Proc /Time	Position	Applicant's Actions or Behavior
E-0	**RO**	(Step 1) CHECK Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux - Lowering
	BOP	(Step 2) CHECK Turbine Trip Turbine Stop Valves - Closed
	BOP	(Step 3) CHECK Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized
	RO	(Step 4) CHECK SI Status Actuated or Required Manually Actuate SI (If not actuated) Check both Trains of SI Actuated LOCA Sequencer ANN 30A – Lit LOCA Sequencer ANN 31A – Lit SB069 SI Actuate Red Light – Lit Solid
	RO/BOP	(Step 5) Perform Attachment A, Automatic Action Verification, while continuing with this procedure
E-0 Att A	**RO/BOP**	(Step A1) CHECK Charging Pumps – Both CCPs running
Critical Task	**CREW**	**Establish flow from at least one Centrifugal Charging Pump before transitioning from E-0, Reactor Trip or Safety Injection**
	RO/BOP	(Step A2) CHECK SI and RHR Pumps – All running – NO Start SI Pump "A"
	RO/BOP	(Step A3) CHECK ECCS Flow – BIH flow indicated

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Event Description: Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start

Proc /Time	Position	Applicant's Actions or Behavior
E-0 Att A	**RO/BOP**	(Step A4) CHECK ESW Pumps – BOTH RUNNING
	RO/BOP	(Step A5) CHECK CCW Alignment: • CCW Pumps – ONE RUNNING IN EACH TRAIN • CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN • OPEN CCW To RHR HX valves • CLOSE Spent Fuel Pool HX CCW Outlet Valves • STOP Spent Fuel Pool Cooling Pump(s) • RECORD The Time Spent Fuel Pool Cooling Pump Secured
	RO/BOP	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
	RO/BOP	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
	RO/BOP	(Step A8) CHECK If Containment Spray should Be Actuated - NO
	RO/BOP	(Step A9) CHECK If Main Steamlines Should Be Isolated
	RO/BOP	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
	RO/BOP	(Step A11) CHECK Containment Isolation Phase A
	RO/BOP	(Step A12) CHECK SG Blowdown Isolation
	RO/BOP	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation

Op Test No.: 2013301 Scenario # 2 rev.3 Event # 6, 7, 8 Page 21 of 25

Event Description: Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start

Proc /Time	Position	Applicant's Actions or Behavior
E-0 Att A	**RO/BOP**	(Step A14) CHECK Containment Purge Isolation
	RO/BOP	(Step A15) NOTIFY CRS of the following: • Unanticipated Manual actions taken. • Failed Equipment status • Attachment A, Automatic Action Verification, completed
E-0		**E-0, REACTOR TRIP OR SAFETY INJECTION**
	BOP	(Step 6) CHECK Generator Output Breakers – Open
	BOP	(Step 7) CHECK Feedwater Isolation • Main Feedwater Pumps – Tripped • Main Feedwater Reg Valves – Closed • Main Feedwater Reg Bypass Valves – Closed • Feedwater Isolation Valves – Closed
	BOP	(Step 8) CHECK AFW Pumps • MD AFW Pumps – Both Running • TD AFW Pump – Running
	BOP	(Step 9) CHECK AFW Valves – Proper Alignment • MD AFP Flow Control Valves – Throttled
	BOP	(Step 10) CHECK Total AFW Flow > 285,000 lbm/hr
	RO	(Step 11) CHECK PZR PORVs and Spray Valves • PZR PORVs – Closed • PZR PORVs – Both in AUTO • PORV Block Valves – Both Open • Normal PZR Spray Valves – Closed

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 6, 7, 8	Page 22 of 25
Event Description:	Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start		

Proc /Time	Position	Applicant's Actions or Behavior
E-0	**RO/BOP**	(Step 12) CHECK if RCPs should be Stopped • RCPs – Any Running • ECCS Pumps – At least One Running • RCS Pressure – Less than 1425 psig • YES – Stop all RCPs • RNO – Go To Step 13
NOTE		*This may be performed earlier using the Foldout Page for E-0*
Critical Task	**CREW**	**Trip all RCPs such that the core does not uncover (RVLIS<55%) AND prior to commencing an operator controlled cooldown**
	RO	(Step 13) CHECK RCS Temperatures • RCPs Running – Tavg 557 Deg F • No RCPs Running – Tcold 557 Deg F
	RO/BOP	(Step 14) CHECK if any SG is Faulted • Any SG pressure lowering uncontrollably • Any SG completely depressurized
	RO/BOP	(Step 15) CHECK if SG Tubes are Intact • Levels in all SGs – No NR Level rising uncontrollably • SG Steamline N16 radiation – Normal • Condenser Air Removal radiation – Normal before Isolation • SG Blowdown and Sample radiation – Normal for Isolation • SG ASD radiation – Normal • Turbine Driven Aux Feedwater Pump Exhaust radiation – normal

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 6, 7, 8	Page 23 of 25
Event Description:	Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start		

Proc /Time	Position	Applicant's Actions or Behavior
E-0	**RO**	(Step 16) CHECK if RCS is Intact • Containment Pressure Normal – NO • Containment Normal Sump Level Normal – NO • Containment Radiation – Normal Before Isolation – NO RNO – Go To E-1, Loss of Reactor or Secondary Coolant , Step 1
E-1		**Transition to E-1, Loss of Reactor Or Secondary Coolant**
	RO	(Step 1) CHECK if RCPs Should be stopped
Note		*These should have been stopped during the performance of E-0*
	BOP	(Step 2) CHECK if Any SG is Faulted a. Check pressures in all SGs b. Check all faulted SG(s) isolated
	BOP	(Step 3) CHECK Intact SG Levels a. Narrow levels great than 7% [25%] b. Control feed flow to maintain narrow levels between 7% [25%] and 52%
	BOP	(Step 4) CHECK Secondary Radiation - NORMAL
	RO	(Step 5) CHECK PZR PORVs and Block Valves a. Power to Block Valves – Available b. PZR PORVs – Closed c. Block Valves – Both OPEN

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 6, 7, 8	Page 24 of 25
Event Description:	Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start		

Proc /Time	Position	Applicant's Actions or Behavior
E-1	**RO**	(Step 6) CHECK IF ECCS Flow should be reduced a. RCS subcooling – Greater than 30°F [50°F] b. Secondary heat sink c. RCS pressure – Stable or Rising d. PZR level – Greater than 9% [29%] RNO – Go to Step 7
	BOP	(Step 7) CHECK of Containment Spray should be stopped a. Spray Pumps – Running – NO RNO – Go to Step 8
	BOP	(Step 8) CHECK if RHR Pumps should be stopped - NO
	BOP	(Step 9) CHECK SG and RCS Pressures • Check pressure in all SGs – Stable or Rising • Check RCS pressure Stable or Lowering
	RO/BOP	(Step 10) CHECK if Diesel Generators Should be Stopped a. AC emergency buses – Energized by Offsite Power b. RESET SI if necessary c. Load equipment on AC emergency bus(es) as necessary using EOP Addendum 8 d. Stop any unloaded DG(s) and PLACE in standby
	BOP	(Step 11) CHECK Ultimate Heat Sink – Normal a. NG01 and NG08 Bus annunciators – CLEAR b. Determine ESW Return Temperature c. Check UHS Cooling Tower Bypass Valve d. Check UHS Cooling Tower Fans Speeds

Op Test No.: 2013301	Scenario # 2 rev.3	Event # 6, 7, 8	Page 25 of 25
Event Description:	Reactor Trip / Large Break Loss of Coolant Accident / SI Fails to Automatically Actuate / "B" Centrifugal Charging pump fails to Auto Start		

Proc /Time	Position	Applicant's Actions or Behavior
E-1	**RO/BOP**	(Step 12) Initiate Evaluation of Plant Status a. Check cold leg recirculation capability • Train A - Available • Train B – Available b. Check Auxiliary Building radiation – NORMAL c. Obtain Samples d. Evaluate plant equipment e. Start additional plant equipment to assist in recovery as directed by the SM/CRS
	CRS	(Step 13) CHECK if RCS Cooldown and Depressurization is required a. RCS pressure – Greater than 325 psig – YES b. Go to ES-1.2, Post LOCA Cooldown and Depressurization
ES-1.2	**CRS**	**Transition to ES-1.2, Post LOCA Cooldown and Depressurization**
NOTE		**Once the crew has transitioned to ES-1.2 – The Scenario can be STOPPED and the Simulator FROZEN**

Facility: Callaway Scenario No.: 3, Rev 3 Op-Test No.: 2013301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 80% Power, Steady State Conditions

Turnover: The “B” Motor Driven Auxiliary Feedwater Pump is out of service for breaker maintenance and will not be returned to service until next shift. The NCP is vibrating excessively, so after the completion of Shift Turnover, shift to the "A" CCP.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	RO (N) SRO (N)	Swap Charging Pumps (High Vibration on NCP)
2	BBTE0411A1	SRO (I) RO (I)	RTD Fails High (Tech Spec)
3	AEFC0530_1	SRO (C) BOP (C)	MFW Reg Valve (FRV) “C” Fails Closed – Manual Control Available
4	BNLT0932	SRO (I)	Refueling Water Storage Tank (RWST) Level Channel Fails Low (Tech Spec)
5	PB03	SRO (M) RO (M) BOP (M)	Loss of Power Supply PB03 / Reactor Trip
6	PBG05A	SRO (C) RO (C)	Running CCP Trips (“A”) / Non Running CCP (“B”) must be manually started
7	SA036D_MD AFAS SA036E_MD AFAS	SRO (I) BOP (I)	Auxiliary Feedwater Actuation Signal (AFAS) fails to actuate on both trains
8	PAL02_1	SRO (C) BOP (C)	Turbine Driven Auxiliary Feedwater Pump trips following the Reactor Trip (Loss of Secondary Heat Sink)
9	ALV0043	SRO (C) BOP (C)	"A" Motor Driven Auxiliary Feedwater Pump Discharge Flow Degraded - Discharge Valve cannot be opened (Loss of Secondary Heat Sink)

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

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

Scenario Event Description
Callaway 2013 NRC Scenario #3

The plant is operating at 80%, steady state power. Motor Driven Auxiliary Feedwater (MDAFW) Pump "B" is out of service for breaker maintenance and will not be returned to service until next shift. The crew is directed to shift charging to Centrifugal Charging Pump (CCP) "A" after shift turnover due to excessive vibration reported on the Normal Charging Pump (NCP).

After the NCP is secured and pressurizer level has been stabilized, the Loop 1 Hot Leg RTD will fail high causing the control rods to drive in. The RO Candidate will take manual control of the control rods and respond in accordance with OTO-BB-00004, RCS RTD Channel Failures. Tech Spec 3.3.1 applies.

After Tech Specs have been addressed for the RTD, MFW Reg Valve (FRV) "C" fails closed. This causes a feedwater flow reduction and a lowering SG level. The crew should respond per OTO-AE-00001, Feedwater System Malfunction, and take manual control of the failed valve to prevent a reactor trip.

After Steam Generator "C" level has been stabilized, a Refueling Water Storage Tank (RWST) level channel fails low. The crew will respond IAW OTO-BN-00001, RWST Level Channel Malfunction, and refer to Tech Specs.

After Tech Specs have been reviewed for the RWST level channel a loss of Bus PB03 occurs. This results in the loss of a Heater Drain Pump "A" and Condensate Pumps "A" and "C". The crew should respond by manually tripping the reactor and entering E-0, Reactor Trip or Safety Injection. If the reactor is not tripped manually, it will trip automatically on SG low level.

When the reactor trips, CCP "A" will trip. CCP "B" will have to be manually started to provide RCS charging and seal injection to the Reactor Coolant Pumps. This could be on prudent operation action or from direction in ES-0.1, Reactor Trip Response, or from FR-H.1, Response to Loss of Secondary Heat Sink.

The Auxiliary Feedwater Actuation Signal-Motor Driven (AFAS-MD) fails to actuate on both trains from the SG low level. The crew should respond to the failed AFAS-MD signal by starting MDAFW Pump "A" ("B" pump is OOS for maintenance). The manual discharge valve for MDAFW Pump "A" is failed at 10% open and cannot be opened locally.

Once the crew has entered ES-0.1, Reactor Trip Response, and completed the first 3 steps, the Turbine Driven Aux Feedwater Pump will be tripped.

Due to the status of the AFW system, the crew should transition to FR-H.1. The crew should use EOP Addendum 38, Non Safety Auxiliary Feedwater Pump, as directed in FR-H.1, to restore Aux Feedwater flow.

The scenario can be terminated once the crew restores Aux Feedwater flow IAW EOP Addendum 38 or at the discretion of the lead evaluator.

Critical Tasks:

Event #3 CT - Take manual control of FRV “C” prior to a reactor trip occurring on low steam generator water level

Event #5 CT - Manually start CCP “B” prior to initiating a RCS bleed and feed due to having no CCPs in service

Event #8 CT - Manually start the Non Safety Auxiliary Feedwater Pump IAW FR-H.1, Response to Loss of Secondary Heat Sink, prior to initiating a RCS bleed and feed due to Steam Generator low level

References
OTN-BG-00001, Addendum 1, Shifting From The NCP to One Of The CCPs
OTO-BB-00004, RCS RTD Channel Failures
OTO-AE-00001, Feedwater System Malfunction
OTO-BN-00001, RWST Level Channel Malfunction
E-0, Reactor Trip or Safety Injection
ES-0.1, Reactor Trip Response
FR-H.1, Response To Loss Of Secondary Heat Sink
EOP Addendum 38, Non Safety Auxiliary Feedwater Pump
Tech Spec 3.3.1 for Reactor Trip System Instrumentation
Tech Spec 3.3.2 for ESFAS Instrumentation
ODP-ZZ-00025, EOP/OTO User's Guide

Scenario Setup Guide:

Establish the initial conditions of IC-166, MOL 80% power:

- RCS boron concentration 787 ppm
- CCP A 799 ppm minus 5 days
- CCP B 809 ppm minus 15 days
- Rod Control Bank D 186 steps, Other banks 228 steps
- "B" AFW Pump is tagged out with breaker in P-T-L and tag on handswitch
- **Ensure "A" CCW Train is in service (Support starting "A" CCP)**

==========SCENARIO PRELOADS / SETUP ITEMS==========

"B" AFW Pump is tagged out for maintenance

- ME Schematics (AL) e23al01b, NB0205 Breaker position = 3

"A" CCP trips when reactor trips

- Insert Malfunction (BG) PBG05A, Value = Trip, Conditional = rec009 le 1.0, Delay = 5 sec

Motor Driven AFAS fails to actuate – both trains

- Insert Malfunction (SA) SA036D_MDAFAS, Value = Block
- Insert Malfunction (SA) SA036E_MDAFAS, Value = Block

Motor Driven AFW Pump "A" discharge flow is degraded

- Insert Remote (AL) ALV0043, Value = 10.0

========== EVENT 2 ==========

RCS Loop 1 Hot Leg RTD fails high

- Insert Malfunction (BB) BBTE0411A1, Value= 650, Ramp = 10 sec

========== EVENT 3 ==========

MFW Reg Valve (FRV) "C" Fails Closed – Manual Control Available

- Insert Malfunction (AE) AEFC0530_1, Value = 0, Ramp = 90 sec

==========EVENT 4 ==========

RWST Level Channel fails low

- Insert Malfunction (BN) BNLT0932, Value = 0

==========EVENT 5 ==========

Loss of Bus PB03 – Reactor Trip

- Insert Malfunction (PB) PB03, Value = Trip

==========EVENT 6 PRELOADED==========

"A" CCP trips when reactor trips

SEE PRELOADS ABOVE

==========EVENT 7 PRELOADED==========

Motor Driven AFAS fails to actuate – both trains

SEE PRELOADS ABOVE

==========EVENT 8 PRELOADED==========

TD AFW Pump trips after reactor trip (Insert at ES-0.1, Step 3, or at Lead Examiner CUE)

- Insert Malfunction (AL) PAL02_1, Value = True

==========EVENT 9 PRELOADED==========

Motor Driven AFW Pump "A" discharge valve is shut

SEE PRELOADS ABOVE

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 1	Page 5 of 25
Event Description:	Shift Charging Flow from the NCP to "A" CCP		

Proc /Time	Position	Applicant's Actions or Behavior
Booth Operator Instructions • When contacted, acknowledge as RP that charging pumps are being swapped.		
OTN-BG-00001, Add 1, Shifting From The NCP To One Of The CCP's		
T = 0	**CRS**	Start the "A" CCP and secure the NCP
OTN-BG-00001, Add 1	**RO**	(Step 5.1.1) Initiate a FPIP for "A" CCP and commence hourly Fire Watch
	(NOTE)	*Per Turnover Sheet FPIP has been initiated and hourly Fire Watch has commenced.*
	RO	(Step 5.1.2) Notify RP that "A" CCP will be started and the NCP secured
	RO	(Step 5.1.3) Ensure CCP being started is supplied by CCW
	(NOTE)	*CCW "A" Train is in service*
	RO	(Step 5.1.4) Place BG FK-121, CCP Disch Flow Ctrl, in manual and set at minimum flow
	RO	(Step 5.1.5) CHECK BG HIS-8110, CCP A Recirc Vlv, is open
	RO	(Step 5.1.6) Place BG HIS-1AX, CCP A Aux L-O Pump, in auto and ensure the run light is on
	RO	(Step 5.1.7) Start CCP "A" using BG HIS-1A

Op Test No.: 2013301 Scenario # 3 rev.3 Event # 1 Page 6 of 25

Event Description: Shift Charging Flow from the NCP to "A" CCP

Proc /Time	Position	Applicant's Actions or Behavior
OTN-BG-00001, Add 1	**RO**	(Step 5.1.8) If this Add was entered from section for CCP Bkr Operability Check, check Bkr closed properly
	(NOTE)	*Step 5.1.8 is N/A*
	RO	(Step 5.1.9) CHECK BG HIS-1AX, CCP A Aux L-O Pump, run light has gone out and the stop light is lit after a reasonalble time following start of the CCP
	RO	(Step 5.1.10) Place BG FK-124, NCP Disch Flow Ctrl, in manual
	RO	(Step 5.1.11) When flow through the NCP is less than 65 gpm, ensure BGHV8109 is open using BG HIS-8109, NCP Recirc Vlv
	RO	(Step 5.1.12) Raise CCP flow using BG FK-121 while lowering NCP flow using BG FK-124 to maintain a constant charging flow as indicated on BG FI-121A, Chg Hdr Flow
	(NOTE)	*Two handed operation is allowed for Step 5.1.12 to maintain a constant charging flow*
	RO	(Step 5.1.13) If desired, when BG FK-124 indicates 0%, stop the NCP using BG HIS-3
	RO	(Step 5.1.14) Using BG HC-182, Chg Hdr Back Press Ctrl, ensure that the RCP seal water injection flow is 8 to 13 gpm per pump
	RO	(Step 5.1.15) CHECK PZR level stable, and then place BG FK-121 in auto

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 1	Page 7 of 25
Event Description:	Shift Charging Flow from the NCP to “A” CCP		

Proc /Time	Position	Applicant’s Actions or Behavior
NOTE		**At Lead Examiner’s discretion move to the next Event**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 2	Page 8 of 25
Event Description:	RCS Loop 1 Hot Leg RTD Fails High		

Proc /Time	Position	Applicant's Actions or Behavior
Booth Operator Instructions: • T = 15 minutes or at the discretion of the Lead Examiner • RCS Loop 1 Hot Leg Fails High • Insert Malfunction (BB) BBTE0411A1, Value = 650, Ramp = 10 sec • When contacted, respond as I&C. Acknowledge the request to trip bistables and to investigate the instrument/channel failure. • When contacted, respond as EDO. Acknowledge entry into the OTO.		
Indications Available:		
T = 15		ANN 65C, AUCT T AVG HI ANN 65E, T REF / T AUCT LO ANN 82B, OTΔT ROD STOP ANN 82C, OPΔT ROD STOP ANN 83C, RX PARTIAL TRIP
OTO-BB-00004, RCS RTD Channel Failures		
	CRS	Implement OTO-BB-00004, RCS RTD Channel Failures
	RO	(Step 1) Place rod control in manual • SE HS-9
	RO	(Step 2) CHECK RCS loop NR Tavg and Delta-T indicator - failed • Loop 1: BB TI-412 (Tavg) – failed high • Loop 1 BB TI-411A (ΔT) – failed high
	RO	(Step 3) Select ΔT and Tavg channel defeat switches to failed channel: • BB TS-411F, ΔT Defeat Switch – Select to T411 • BB TS-412T, Rod Control Tave Input Channel Defeat Switch – Select to T412

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 2	Page 9 of 25
Event Description:	RCS Loop 1 Hot Leg RTD Fails High		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BB-00004	**RO**	(Step 4 and Step 4 RNO) Check RCS Tavg within 1.5°F of Tref • RNO – Restore RCS Tavg to within 1.5°F of Tref using any of the following: - Adjust control rods - Adjust turbine load - Adjust RCS boron concentration
NOTE		*RNO may or may not have to be performed dependent on how quickly rods are placed in manual IAW Step 1*
	RO	(Step 5) CHECK rod control – in auto • SE HS-9
	RO	(Step 6) CHECK pressurizer level within one of the following: • Trending to program level or • At program level
	RO	(Step 7) Select an operable channel for the OPDT/OTDT temperature recorder: • SC TS-411E
	CRS	(Step 8) Review Attachment A, Effects Of RCS RTD Instrument Failure
	CRS	(Step 9) Review Applicable Technical Specifications: • Refer to Att J, Technical Specifications 3.3.1, Table 3.3.1-1, Item 6, Cond E 3.3.1, Table 3.3.1-1, Item 7, Cond E • Place channel in trip in 72 hours OR Be in Mode 3 in 78 hours
	CRS	(Step 10) Direct I&C to trip bistables

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 2	Page 10 of 25
Event Description:	RCS Loop 1 Hot Leg RTD Fails High		

Proc /Time	Position	Applicant's Actions or Behavior
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 3	Page 11 of 25
Event Description:	MFW Reg Valve "C" Fails Closed – Manual Control Available		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions: • T = 25 minutes or at the discretion of the Lead Examiner • MFW Reg Valve (FRV) "C" Fails Closed – Manual Control Available o Insert Malfunction (AE) AEFC0530_1, Value = 0, Ramp = 90 sec • If contacted as SOT to check for problems locally at FRV "C", report no abnormal conditions can be seen at the valve. • When contacted, respond as EDO. Acknowledge entry into the OTO.
Indications Available:		
T = 25		ANN 110D, SG C FLOW MISMATCH
OTO-AE-00001, Feedwater System Malfunction		
	CRS	Implement OTO-AE-00001, Feedwater System Malfunction
	(NOTE)	**Steps 1 through 3 are immediate action steps**
	RO	(Step 1) Place rod control in auto: • SE HS-9
	BOP	(Step 2) CHECK main feed pump tripped - NO • RNO – End of immediate actions – Go to Step 9
	BOP	(Step 9) CHECK running main feed pump(s) speed – meets both of the following • Controlling in auto • Stable
	BOP	(Step 10) CHECK if MFW reg valves – in service
	BOP	(Step 11) CHECK MFW reg valves – controlling in auto • AE FK-530 (SG C) – NO → Go to RNO

Op Test No.: 2013301 Scenario # 3 rev.3 Event # 3 Page 12 of 25

Event Description: MFW Reg Valve "C" Fails Closed – Manual Control Available

Proc /Time	Position	Applicant's Actions or Behavior
OTO-AE-00001	**BOP**	(Step 11 RNO) Perform the following: • Place the associated MFW reg valve in manual • Restore SG NR level between 45% and 55% • If SG level can not be restored using the MFW reg valve, then perform the following: (**Level can be restored using MFW reg valve in manual**)
Critical Task	**CREW**	**Take manual control of FRV "C" prior to a reactor trip occurring on low steam generator water level**
	BOP	(Step 12) CHECK if MFW reg valve bypass – in service • NO → Go to Step 14
	BOP	(Step 14) CHECK condensate pump – tripped • NO → Go to Step 18
	BOP	(Step 18) CHECK heater drain pump – tripped • NO → Go to Step 21
	BOP	(Step 21) CHECK steam generator NR level within one of the following: • Trending to between 45% and 55% or • Between 45% and 55%
	RO	(Step 22) Monitor rod control system responding to RCS Tavg/Tref deviation by ensuring one of the following: • Control rods are inserting and RCS Tavg trending to within 3°F of Tref or • RCS Tavg within 3°F of Tref
	BOP	(Step 23) CHECK MFP oil pressure - normal

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 3	Page 13 of 25
Event Description:	MFW Reg Valve "C" Fails Closed – Manual Control Available		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-AE-00001	**CRS**	(Step 24) Review applicable Technical Specifications • TS 3.7.3 – N/A – Valve is operable
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 4	Page 14 of 25
Event Description:	Refueling Water Storage Tank (RWST) Level Channel Fails Low		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions: • T = 35 minutes or at the discretion of the Lead Examiner • RWST Level Channel fails low o Insert Malfunction (BN) BNLT0932, Value = 0 • When contacted, respond as Operations Technician (OT) and inform the Control Room that no abnormalities are found in the RWST valve house associated with RWST level instruments. • When contacted, respond as EDO. Acknowledge entry into the OTO.
Indications Available:		
T = 35		ANN 47A, RWST EMPTY ANN 47B, RWST LEV LOLO 2 ANN 47D, RWST LEV HILO
OTO-BN-00001, RWST Level Channel Malfunction		
	CRS	Implement OTO-BN-00001, RWST Level Channel Malfunction
	BOP	(Step 1) CHECK RWST level instruments indications – reading abnormal • BN LI-932 – failed low
	CRS	(Step 2) Dispatch Operations Technician to the RWST valve house to inspect RWST level instruments
	CRS	(Step 3) Review applicable Technical Specifications: • 3.3.2, Table 3.3.2-1, Item 7.b, Cond K Restore channel to Operable status within 72 hours OR Be in Mode 3 in 78 hours AND Be in Mode 5 in 108 hours
	CRS	(Step 21) Perform notifications per ODP-ZZ-00001
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 5	Page 15 of 25
Event Description:	Loss of PB03 – results in Reactor Trip		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions: • T = 40 minutes or at the discretion of the Lead Examiner • Loss of Bus PB03 – Reactor Trip • Insert Malfunction (PB) PB03, Value = Trip • If contacted as SOT to check Bus PB03, report that there is a 186 lockout on PB03 feeder breaker PB0306. • If contacted as EDO, acknowledge entry into the OTO.
Indications Available:		
T = 40		ANN 16A, XPB03/04 XFMR LOCKOUT ANN 16B, PB03/04 BUS UV
OTO-AE-00001, Feedwater System Malfunction		
	CRS	Implement OTO-AE-00001, Feedwater System Malfunction
NOTE		*Crew may initially go to OTAs for loss of PB03 which will direct them to OTO-AE-00001*
	(NOTE)	**Steps 1 through 3 are immediate action steps**
	RO	(Step 1) Place rod control in auto: • SE HS-9
	BOP	(Step 2) CHECK main feed pump tripped - NO • RNO – End of immediate actions – Go to Step 9
	BOP	(Step 9) CHECK running main feed pump(s) speed – meets both of the following • Controlling in auto • Stable

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 5	Page 16 of 25
Event Description:	Loss of PB03 – results in Reactor Trip		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-AE-00001	**BOP**	(Step 10) CHECK if MFW reg valves – in service
	BOP	(Step 11) CHECK MFW reg valves – controlling in auto - YES
	BOP	(Step 12) CHECK if MFW reg valve bypass – in service • NO → Go to Step 14
	BOP	(Step 14) CHECK condensate pump – tripped - YES
	CREW	(Step 15) CHECK reactor power – greater than 45% - YES • If less than two condensate pumps are running, then perform the following: 1) Manually trip the reactor 2) Go to E-0, Reactor Trip or Safety Injection
NOTE		*Crew may trip the reactor prior to Step 14 based on prudent operator action if SG levels are approaching the trip setpoint*
		Once the reactor has been tripped → **GO TO THE NEXT EVENT**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 17 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions: • Insert TDAFW Pump trip, MALF (AL) PAL02_1, Value = Trip, at Step 3 of ES-0.1 or at Lead Examiner CUE. • If contacted as the Secondary Operator to investigate the TDAFP trip, inform the CR that the pump appears to have oversped and cannot be reset due to the linkage being bent. • If contacted as the Secondary Operator to investigate the "A" MDAFP, inform the CR that the discharge valve is bound up at about 10% open and cannot be opened further. • When contacted as the Secondary OT to line up the Non Safety Aux Feed Pump IAW Add 38, perform the following: Insert Remote (AL) ALV0200, Value = 100, Ramp = 10 sec Insert Remote (AP) APV0022, Value = 100 Insert Remote (AP) APV0012, Value = 0.0
Indications Available:		
		ANN 87F, MANUAL RX TRIP
		E-0, Reactor Trip or Safety Injection
	CRS	Implement E-0, Reactor Trip or Safety Injection
	(NOTE)	**Steps 1 through 4 are immediate action steps**
	RO	(Step 1) CHECK reactor trip: • Rod bottom lights – all lit • Reactor trip and bypass breakers – open • Neutron flux - lowering
	BOP	(Step 2) CHECK turbine trip: • All turbine stop valves - closed
	BOP	(Step 3) CHECK power to AC emergency buses: • AC emergency buses – at least one energized NB01 OR NB02 • AC emergency buses – both energized

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 18 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
E-0	**CREW**	(Step 4) CHECK SI status: • Check if SI is actuated – NO → Go to RNO
	CREW	(Step 4 RNO) CHECK if SI is required: • PZR pressure less than or equal to 1849 psig • Any SG pressure less than or equal to 615 psig • Containment pressure greater than or equal to 3.5 psig If SI is not required, then go to ES-0.1, Reactor Trip Response
ES-0.1	**CRS**	**Implement ES-0.1, Reactor Trip Response**
	CRS	Call STA to initiate CSF Status Tree Monitoring
	RO	(Step 1) CHECK RCS temperature control: • Check RCPs – any running • Check RCS temperature response - normal
	BOP	(Step 2) CHECK status of AC buses: • Check generator output breakers – open • Check all AC buses – energized by offsite power
	RO	(Step 3) CHECK PZR pressure control: • Pressure – greater than 1849 psig • Pressure – stable at or trending to 2235 psig
SIM Operator	**TDAFW Pump**	Insert Malf (AL) PAL02_1, Value = True, after completion of Step 3 or at the direction of the Lead Examiner (Trips TDAFW Pump)`

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 19 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
ES-0.1	**RO**	(Step 4) CHECK PZR level control: • PZR level – greater than 17% • Check instrument air supply containment isolation valve – open (KA HIS-29) • Check charging – in service NO → Go to RNO – See Below • Check letdown – in service • PZR level – trending to 25%
	RO	(Step 4 RNO for no charging in service) • Establish charging: • Check NCP running – NOT AVAILABLE • If NCP is not available, then perform the following: • Ensure CCP recirc valves are open: BG HIS-8110 BG HIS-8111 • Start one CCP: BG HIS-2A ("B" CCP)
Critical Task	**CREW**	**Manually start CCP "B" prior to initiating a RCS bleed and feed due to having no CCPs in service**
NOTE		*Crew may notice no charging flow prior to Step 4 and start CCP "B" at that time or they may not start CCP "B" until Step 2 of FR-H.1, dependent on when the transition to FR-H.1 occurs*
	RO	(Step 5) CHECK shutdown reactivity status: • Check all control rods – fully inserted • Check if uncontrolled RCS dilution – in progress NO → Go to RNO → Go to Step 6

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 20 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
ES-0.1	**BOP**	(Step 6) CHECK feedwater status: • Check RCS Tavg – less than 564°F • Main feedwater pumps – tripped • Check main feedwater reg valves – closed • Check main feedwater reg bypass valves – closed • Check total feed flow to SGs – greater than 285,000 lbm/hr NO → Go to RNO
	BOP	(Step 6 RNO for total AFW flow less than 285,000 lbm/hr) • Establish feed flow to SG(s) as necessary using AFW • If feed flow cannot be established, then monitor conditions for transition to FR-H.1
	(NOTE)	*Transition to FR-H.1 may occur prior to Step 6 if STA completes CSF review and reports heat sink red path to CRS prior to completion of ES-0.1, Step 6*
FR-H.1	**CRS**	**Implement FR-H.1, Response To Loss Of Secondary Heat Sink**
	RO	(Step 1) CHECK if secondary heat sink is required: • RCS pressure – greater than any non-faulted SG pressure • Check the following: - RCS temperature – greater than 350°F - RCS pressure – greater than 360 psig

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 21 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
FR-H.1	**RO/BOP**	(Step 2) CHECK if RCS bleed and feed – required: Any RCS bleed and feed condition – satisfied • WR level in any three SGs – less than 27% • PZR pressure – greater than 2335 psig due to loss of secondary heat sink • No CCPs – available **(CCP "B" could be started at this time if not already started)** Bleed and feed not required – Go to RNO Perform the following: • Monitor RCS bleed and feed conditions • If any condition occurs, then perform Step 2.b and 2.c • Continue with Step 3
	BOP	(Step 3) Try to establish AFW flow to at least one SG: • Check SG blowdown isolation - SG blowdown containment isolation valves – closed - SG sample outer containment isolation valves – closed • Check control room indications for cause of AFW failure - CST level - MD AFW pump power supply - TD AFW pump steam supply - AFW valve alignment – refer to EOP Addendum 18, as necessary • Try to restore AFW flow • Check total flow to SGs – greater than 285,000 lbm/hr NO → Go to RNO • If any feed flow to at least one SG is not verified, the perform the following: - Perform EOP Addendum 38, Non Safety Auxiliary Feedwater Pump - Go to Step 4
EOP Add 38	**CRS**	**Implement EOP Addendum 38, Non Safety Auxiliary Feedwater Pump (Addendum assigned to BOP)**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 22 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
EOP Add 38	**BOP**	(Step 1) CHECK AEPS 4.16 KV PB05 Bus energized by one of the following: • At least one alternate emergency power supply (AEPS) DG • Central electric power reform substation
	BOP	(Step 2) Locally align the non safety aux feedwater pump: • Open ALV0200, NS AFP TO TDAFP Disch Upstrm ISO • Open APV0022, CST Drain • Close APV0012, CST Makeup To Hotwell Iso Vlv • Notify control room NS AFP status
	BOP	(Step 3) Throttle the following TD AFP AFW Reg Valves – 25% open: • AL HK-8A • AL HK-10A • AL HK-12A • AL HK-6A
	BOP	(Step 4) Close CST makeup to hotwell level control valve: • Close condenser hotwell makeup level controller by placing controller in manual and zero output: - AD LIC-79B
	BOP	(Step 5) CHECK AEPS 4.16KV PB05 bus energized by one of the following: • At least one alternate emergency power supply (AEPS) DG • Central electric power reform substation

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 23 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
EOP Add 38	**BOP**	(Step 6) Start the non safety aux feedwater pump: • Check Step 2 alignment – complete • Using PBXY0001 close NS AFP FDR BKR PB0504: PB0504 • Monitor running NS AFW pump operation
	BOP	(Step 7) Establish and maintain NS AFW flow – less than 280,000 lbm/hr
	BOP	(Step 8) CHECK CST to AFP suction header pressure – greater than 2.75 psig
	BOP	(Step 9) Monitor AEPS system using PBXY0001: • Watts • Amps • Volts • Fuel (DG only)
	BOP	(Step 10) Notify Jefferson City Oil to refuel AEPS DGs as necessary:
	BOP	(Step 11) CHECK addendum entry status: • Entry – from FR-H.1 – Return to FR-H.1, Step 3.d
Critical Task	**CREW**	**Manually start the Non Safety Auxiliary Feedwater Pump IAW FR-H.1 prior to initiating a RCS bleed and feed due to Steam Generator low level**

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 24 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
FR-H.1	**RO**	(Step 4) Transfer Condenser Steam Dump to Steam Pressure Mode: a. Check Condenser – Available ● C-9 interlock – Lit ● MSIVs – Any Open b. Place Steam Header Pressure Controller in Manual and Zero Output: ● AB PK-507 c. Place Steam Dump Select switch in Stm Press position: ● AB US-500Z d. Place Steam Header Pressure Controller in Auto: ● AB PK-507
	RO	(Step 5) Stop All RCPs
	RO	(Step 6) Try To Establish Main Feedwater Flow To At Least One SG: a. Check Condensate System – In Service b. Reset SI if necessary: ● SB HS-42A ● SB HS-43A c. Reset FWIS: ● SB HS-17 ● SB HS-18 d. Bypass the FWIS using EOP Addendum 29, FWIS Bypass Operation
SIM Operator	**FW ISO Valves**	**If Crew attempts to use EOP Addendum 29, inform them that the FW Isolation Valves will not open**
	RO	(Step 6 cont'd) e. Open at least one Feedwater Isolation Valve: 6.e RNO – If No Feedwater Isolation Valve can be opened, Then Go To Step 10.

Op Test No.: 2013301	Scenario # 3 rev.3	Event # 6,7,8,9	Page 25 of 25
Event Description:	Reactor Trip/"A" CCP Trips/MDAFAS Fails to Actuate (Both Trains)/TDAFW Pump Trips/MDAFW Pump "A" Discharge Flow Degraded		

Proc /Time	Position	Applicant's Actions or Behavior
FR-H.1	**RO**	(Step 10) Check For Loss Of Secondary Heat Sink: • Wide Range level in any three SGs – less than 27% or • PZR pressure – greater than 2335 psig due to loss of secondary heat sink NO→Go to RNO→Return to Step 1
NOTE	**EVAL**	**Once flow has been established to the SGs through the Non Safety Aux Feedwater Pump IAW Addendum 38, or at the discretion of the Lead Evaluator, the scenario can be STOPPED and the Simulator Frozen**

Facility: Callaway Scenario No.: 4, Rev 4 Op-Test No.: 2013301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: A Reactor Startup has just been completed with Reactor power just above the Point of Adding Heat (POAH). "A" Train CCW is in Service.

Turnover: The plant is in Mode 2. A Reactor Startup has just been completed on the previous shift. Conditions are being held steady while the on-coming crew is performing Just In Time Training for the power increase. Callaway County is under a severe thunderstorm watch. The crew is directed to shift the CCW service loop to "B" Train and leave CCW Pump "A" in service due to scheduled surveillances later in the shift.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	RO (N) SRO (N)	Swap CCW Service Loop from "A" to "B" Train
2	BBPT0455	SRO (I) RO (I)	Pressurizer pressure fails high (Tech Spec)
3	ABPV0002A	BOP (C) SRO (C)	Atmospheric Steam Dump Failure on "B" SG (Tech Spec)
4	XMR01_1 PEF01B_1	SRO (C) BOP (C) RO (C)	Loss of ESF transformer XNB02 causing a Loss of NB02/ EDG "B" starts, ESW Pump "B" trips (Tech Spec)
5	MD	SRO (M) RO (M) BOP (M)	Loss of Offsite Power, Manual Reactor Trip, "A" EDG fails to start Automatically, Loss of All AC Power
6	BBPCV 0455A	RO (C) SRO (C)	Pressurizer PORV Fails Partially Open
7	PEF01A_2	SRO (C) BOP (C)	ESW Pump "A" Auto Start Failure

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

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

Scenario Event Description
Callaway 2013 NRC Scenario #4

The plant is in Mode 2. A Reactor Startup has just been completed on the previous shift. Conditions are being held steady while the on-coming crew is performing Just In Time Training prior to the plant startup. Callaway County is under a severe thunderstorm watch.

The crew starts the scenario by shifting the CCW service loop from the "A" to the "B" Train. This is to support surveillances scheduled later in the shift.

Once the CCW service loop has been shifted, Pressurizer Pressure Channel, PT-455 fails high. The crew should respond IAW OTO-BB-00006, Pressurizer Pressure Control Malfunction, and select away from the failed channel prior to the reactor tripping on low pressurizer pressure. T.S. 3.3.1, 3.3.2, and 3.3.4 apply.

Once Tech Specs are addressed, SG "B" Atmospheric Steam Dump fails open. The crew should respond per OTO-AB-00001, Steam Dump Malfunction, close the failed valve and initiate action to make repairs. T.S. 3.7.4 applies.

A fault on ESF Transformer XNB02 occurs, resulting in a loss of power to Bus NB02. "B" EDG starts, but Essential Service Water Pump "B" trips 3 minutes following pump start, forcing the crew to trip the affected Diesel and enter OTO-NB-00002, Loss of Power to NB02. T.S. 3.8.1 applies. The crew will also have to shift back to "A" Train CCW service loop and stop Aux Feed Flow to the Steam Generators from the Turbine Driven Aux Feed Pump.

Due to the severe weather, a fault at the Montgomery substation results in a Loss of Offsite power. Upon the loss of offsite power, the crew sees that the "A" EDG has not started causing a loss of power to NB01. Since there is no power to NB01 or NB02, the crew will transition to ECA-0.0, Loss of All AC Power, and perform the Immediate Actions. The reactor should be tripped when performing Immediate Actions.

When the crew gets to Step 5 of ECA-0.0, they will attempt to start the "A" Emergency Diesel Generator and it will start, however the "A" ESW pump fails to start automatically, but should be started manually. Also, when NB01 is energized in Step 5, PZR PORV, BB PCV-455A, fails partially open. BB PCV-455A should be isolated prior to RCS pressure lowering to the Safety Injection setpoint.

Once power is restored to NB01, the crew will transition to E-0, Reactor Trip or Safety Injection, and perform appropriate actions. Once the crew has completed applicable portions of E-0 and transitioned to ES-0.1, Reactor Trip Response, or as determined by the Lead examiner, the Scenario can be stopped.

Critical Tasks:

Event #2 CT – Select away from the failed Pressurizer Pressure Channel prior to Reactor tripping on low pressurizer pressure

Event #7 CT - Manually close the PORV before receiving a Safety Injection

Event #8 CT - Manually start ESW Pump A before Emergency Diesel Generator NE01 trips on high temperature

References
OTG-ZZ-00002, Reactor Startup
OTN-EG-00001, Component Cooling Water System
OTO-BB-00006, Pressurizer Pressure Control Malfunction
OTO-AB-00001, Steam Dump Malfunction
OTO-NB-00002, Loss of Power to NB02
OTO-ZZ-00012, Severe Weather
E-0, Reactor Trip or Safety Injection
ECA-0.0, Loss of All AC Power
ES-0.1, Reactor Trip Response
Tech Spec 3.3.1, Reactor Trip System Instrumentation
Tech Spec 3.3.2, ESFAS Instrumentation
Tech Spec 3.3.4, Remote Shutdown System
Tech Spec 3.7.4, Atmospheric Steam Dump Valves (ASDs)
Tech Spec 3.8.1, AC Sources – Operating
ODP-ZZ-00025, EOP/OTO User's Guide

Scenario Setup Guide:

Establish the initial conditions of IC-167, BOL 10-6% power:

- RCS boron concentration 1222 ppm
- CCP A and B 1222 minus 5 days
- Rod Control Bank C is 216 steps and Control Bank D is 100 steps, Other banks 228 steps
- **ENSURE BB PT-455 is selected on BB PS-455F**
- **ENSURE "A" Train CCW is in service**
- RCS Press / Temp – 2236 / 559.5
- PZR Master Controller pot set at 6.61 turns
- Screen set up for "OTGZZ3"

==========SCENARIO PRELOADS / SETUP ITEMS==========

NE01 fails to start automatically following Loss of Offsite Power

- Insert Remote (KJ) DGBLOCK_1, Value = Block_Auto

========== EVENT 2 ==========

Pressurizer Pressure Channel BB PT-455 fails high

- Insert Malfunction (BB) BBPT0455, Value = 2500, Ramp = 15 secs

========== EVENT 3 ==========

Atmospheric Steam Dump Failure on "B" SG

- Insert Malfunction (AB) ABPV0002A_1, Value = 1.0, Ramp = 30 secs

========== EVENT 4 ==========

Loss of Startup Transformer (SUT) – NE02 starts, but ESW Pump "B" Trips

- Insert Malfunction (NB) XNB02_1, Value = True

ESW Pump "B" Trips following start of EDG "B"

- Insert Malfunction (EF) PEF01B, Value = Trip, delay = 3 min, conditional = hwx19o241r eq 1

==========EVENT 5 ==========

Loss of Offsite Power / DG"A" to Auto Start / ESW Pump "A" Fails to Auto Start

"A" ESW Fails to start Automatically

- Insert Malfunction (EF) PEF01A_1, Value = Block

Loss of Offsite Power

- Run Lesson "ALL/GENERIC/lossofswitchyard"

NE01 Fails to start on Loss of Offsite Power

- SEE PRELOADS ABOVE

==========EVENT 6 ==========

Pressurizer PORV Fails Partially Open after Reactor Trip

- Insert Malfunction (BB) BBPCV0455A_1, Value = 0.1, Ramp = 5 sec, Delay = 30 sec, Conditional = hwx15o112r eq 1

==========EVENT 7 ==========

ESW Pump "A" Fails to Auto Start

- SEE EVENT 5 ABOVE

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 1	Page 5 of 21
Event Description:	Start “B” Component Cooling Water (CCW) Pump – Secure “A” CCW Pump		

Proc /Time	Position	Applicant’s Actions or Behavior
		Booth Operator Instructions • If asked which pump has the least amount of run time, inform the crew "B" Pump will be started. (Step 5.6.2) This will be addressed during shift turnover. • If asked what mode to place the CCW system, ensure they put it in the summer mode. (Step 5.6.8).
OTN-EG-00001, Component Cooling Water System Section 5.6, Running Both Trains, Shifting Trains Or Service Loop From Train A to Train B		
T=0	**CRS**	Shift from the "A" CCW Train to the "B" CCW Train by starting the "B" CCW Pump and shifting to the "B" Service Loop, but leave "A" CCW Pump running
OTN-EG-00001, Sect 5.6	**RO**	(Step 5.6.1) Ensure that SW/ESW cooling water is in service to the B CCW Heat Exchanger with EF HIS-52, ESW TRN B TO CCW HX B , open
	RO	(Step 5.6.2) If neither CCW pump B or D is running, Perform the following: • Ensure the B CCW Surge Tank level is greater than 50% • Determine the pump with the least run time on the equipment log (cued during the turnover) • Using the applicable switch, START the "B" CCW pump
	RO	(Step 5.6.3) If shifting service loop from A to train B, Perform the following: a. Using EG HIS-9, CLOSE EGRV00009 b. Using EG HIS-10, CLOSE EGRV0010 c. Using EG HS-16, OPEN EGHV0016 and EGHV0054 d. Using EG HS-15 CLOSE EGHV0015 and EGHV0053 e. Using EG HIS-9, OPEN EGRV00009 f. Using EG HIS-10, OPEN EGRV0010

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 1	Page 6 of 21
Event Description:	Start “B” Component Cooling Water (CCW) Pump – Secure “A” CCW Pump		

Proc /Time	Position	Applicant’s Actions or Behavior
OTN-EG-00001, Sect 5.6	**RO**	(Step 5.6.4) Using EC HIS-12, THROTTLE ECHV0012 as needed to clear flow alarms
	RO	(Step 5.6.5) If NOT Required for the safety loop loads (CCP, SFP, SI, RHR), STOP the running train A CCW pump and ENSURE the handswitches are in AUTO
NOTE		**The turnover has the crew keep the "A" CCW Pump running**
	RO	(Step 5.6.6) Inform the shift Chemistry technician that CCW Train B is in service
	RO	(Step 5.6.7) As necessary for coarse adjustment, using EG HIS-102, CCW TO RHR HX B, THROTTLE EGHV0102 to maintain annunciator 75 D, SFP TEMP HI, clear
	RO	(Step 5.6.8) Ensure the CCW Heat Exchanger being removed from service is either in the winter or summer alignment as appropriate per Step 3.2.10
NOTE		**At Lead Examiner’s discretion move to the next Event**

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 2	Page 7 of 21
Event Description:	Pressurizer Pressure Channel Fails High (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
Booth Operator Instructions: • T = 15 minutes or at the discretion of the Lead Examiner • Pressurizer Pressure Channel BB PT-455 fails high • Insert Malfunction (BB) BBPT0455, Value = 2500, Ramp = 15 secs • If contacted as I&C, acknowledge request to trip bistables and troubleshoot failed channel. • If contacted, respond as EDO. Acknowledge entry into the OTO.		
Indications Available:		
T= 15		ANN 33B, PZR HI PRESS DEV ANN 33C, PZR PRESS LO HTRS ON
OTO-BB-00006, Pressurizer Pressure Control Malfunction		
OTO-BB-00006	**CRS**	Implement OTO-BB-00006, Pressurizer Pressure Control Malfunction
	RO	(Step 1) CHECK pressurizer pressure indicator - failed • BB PI-455A → YES • BB PI-456 • BB PI-457 • BB PI-458
	RO	(Step 2) CHECK pressurizer pressure a. Between 2225 psig and 2250 psig RNO – Stabilize Pressurizer Pressure 1) PLACE PZR Press Master CTRL in MANUAL 2) RESTORE Pressurizer pressure between 2225 psig and 2250
	RO	(Step 3) If Required TRANSFER Pressurizer Pressure Control Selector to Remove Failed Channel From Control

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 2	Page 8 of 21
Event Description:	Pressurizer Pressure Channel Fails High (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
Critical Task	**CREW**	**Select away from the failed Pressurizer Pressure Channel prior to Reactor tripping on low pressurizer pressure.**
OTO-BB-00006	**RO**	(Step 4) CHECK Pressurizer Pressure Within one of the Following: • Trending to between 2225 psig and 2250 psig OR • Between 2225 and 2250 psig
	RO	(Step 5) RESTORE Pressurizer Pressure to AUTO CONTROL a. Verify PZR Spray Valves are in AUTO: • BB PK-455B, PZR Spray Loop 1 Ctrl • BB PK-455C, PZR Spray Loop 2 Ctrl b. PLACE PZR Press Master CTRL in AUTO • BB PK-455A
	RO	(Step 6) CHECK permissive P-11 is in the correct state within one hour of the pressurizer pressure channel failure • Current time _____
	RO	(Step 7) Select an operable channel for the following: • RCS pressurizer pressure recorder: ▪ BB PS-455G • OPDT/OTDT temperature recorder: ▪ SC TS-411E • Computer digital readout display: ▪ REP0480A ▪ REP0481A ▪ REP0482A ▪ REP0483A

Op Test No.: 2013301 Scenario # 4 rev.4 Event # 2 Page 9 of 21

Event Description: Pressurizer Pressure Channel Fails High (Tech Spec)

Proc /Time	Position	Applicant's Actions or Behavior
OTO-BB-00006	**CRS**	(Step 8) Review Applicable Technical Specifications: • Refer to Att J, Technical Specifications 3.3.1, Table 3.3.1-1, Item 6, 8b Cond E o Place channel in trip within in 72 hours OR be in Mode 3 within 78 hours 3.3.1, Table 3.3.1-1, Item 8a, Cond M o Place channel in trip within 72 hours OR reduce thermal power to < P-7 3.3.2, Table 3.3.2-1, Item 1d, 9b Cond D o Place channel in trip within 72 hours OR be in Mode 3 within 78 hours AND be in Mode 4 within 84 hours 3.3.2, Table 3.3.2-1, Item 8b, Cond L o Verify interlock is in required state for existing unit condition within 1 hour OR be in Mode 3 within 7 hours AND be in Mode 4 within 13 hours 3.3.4, Table 3.3.4-1, Item 3 o Restore required Function and required ASP Controls to Operable status within 30 days
	CRS	(Step 9) Record Permissive P-11 is in the correct state in the control room log
	CRS	(Step 10) Review Attachment A, Effects of Pressurizer Pressure Instrument Failure
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 3	Page 10 of 21
Event Description:	Atmospheric Steam Dump Failure on "B" SG (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions: • T = 25 minutes or at the discretion of the Lead Examiner Atmospheric Steam Dump Failure on "B" SG • Insert Malfunction (AB) ABPV0002A_1, Value = 1.0, Ramp = 30 secs • If contacted as Count Room Tech, acknowledge the time the "B" Steam Generator Atmospheric Steam Dump (ASD) was Open.
Indications Available:		
T = 25		ANN 109F, SG PORV OPEN
		OTO-AB-00001, Steam Dump Malfunction
	CRS	Implement OTO-AB-00001, Steam Dump Malfunction
OTO-AB-00001	**BOP**	(Step 1) CHECK Reactor Power – Less than 100% • SE NI-41B • SE NI-42B • SE NI-43B • SE NI-44B • BB TI-411A (ΔT) • BB TI-421A (ΔT) • BB TI-431A (ΔT) • BB TI-441A (ΔT)
	RO	(Step 2) CHECK at least One SG ASD – Failed Open
	BOP	(Step 3) Place the affected SG ASD Controller in Manual and CLOSE the Valve • AB PIC-2A
	BOP	(Step 4) Notify Count Room Technician of Opening and Closing Times of the SG ASD

Op Test No.: 2013301 Scenario # 4 rev.4 Event # 3 Page 11 of 21

Event Description: Atmospheric Steam Dump Failure on "B" SG (Tech Spec)

Proc /Time	Position	Applicant's Actions or Behavior
OTO-AB-00001	**BOP**	(Step 5) Go To Step 12
	BOP	(Step 12) Initiate Actions to Repair the failed component
	CRS	(Step 13) Review Technical Specification 3.7.4 A • Restore required ASD line to Operable status within 7 days
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 4	Page 12 of 21
Event Description:	Loss of ESF Transformer XNB02 causing Loss of NB02 / EDG "B" starts, ESW Pump "B" trips (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
		Booth Operator Instructions: • T = 30 minutes or at the discretion of the Lead Examine Loss of Startup Transformer / Loss of NB02 / EDG Starts / ESW Pump "B" Trips • Insert Malfunction (NB) XNB02_1, Value = True • Insert Malfunction (EF) PEF01B, Value = Trip (PRELOADED)
Indications Available:		
T = 30		ANN 21B, NB02 BUS UV ANN 22A, XNB02 XFMR LOCKOUT ANN 22E, NB02 BUS DGRD VOLT
		OTO-NB-00002, Loss of Power to NB02
OTO-NB-00002	**CRS/ RO**	(Step 1) CHECK 4160 VAC Bus NB02 - DEENERGIZED • RNO → Go To Attachment A, Power Restored to NB02
	BOP/RO	(Step A1) CHECK 4160VAC Bus NB02 - ENERGIZED • 4.16KV Bus NB02 light – LIT - YES • 4.16 KV Bus NB02 Voltage indicates approximately 4160 volts
	BOP/RO	(Step A2) CHECK EDG B – RUNNING
	BOP/RO	(Step A3) CHECK ESW Flow – Aligned to EDG B
	RO/RO	(Step A4) CHECK ESW Train A – Properly Aligned • ESW Pump A – Running EF HIS-55A • ESW Train A To CCW Hx A – Open EF HIS-51 • ESW Train A To UHS – Open EF HIS-37

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 4	Page 13 of 21
Event Description:	Loss of ESF Transformer XNB02 causing Loss of NB02 / EDG "B" starts, ESW Pump "B" trips (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-NB-00002		
	RO	(Step A5) CHECK Reactor Power – Less Than 100% • SE NI-41B • SE NI-42B • SE NI-43B • SE NI-44B • BB TI-411A (ΔT) • BB TI-421A (ΔT) • BB TI-431A (ΔT) • BB TI-441A (ΔT)
	RO	(Step A6) CHECK RHR – In Service Prior To The Event NO→Go To RNO→Go To Step A9 of this attachment
	(NOTE)	***ESW Pump B trips 3 minutes after starting – crew should perform the following:*** b. If ESW flow can not be established to EDG B AND control of the EDG is from the Control Room, THEN PRESS DG NE02 Stop switch to stop EDG B (This will not work because of the U/V) c. If ESW flow can not be established to EDG B AND control of the EDG is local, THEN PERFORM the following 1) PLACE Master Transfer Switch in LOCAL/MAN 2) Press DG train B local STOP push-button to stop to stop EDG
SIM Operator	**SIM**	**Insert Remote Function (KJ) KJHS0109, Value = Local_Manual** **Insert Remote Function (KJ) KJHS0108B, Value = Stop**

Op Test No.: 2013301 Scenario # 4 rev.4 Event # 4 Page 14 of 21

Event Description: Loss of ESF Transformer XNB02 causing Loss of NB02 / EDG "B" starts, ESW Pump "B" trips (Tech Spec)

Proc /Time	Position	Applicant's Actions or Behavior
NOTE		Crew should go back to Continuous Action Step #1, since the Bus is now DEENERGIZED
OTO-NB-00002	**CRS**	(Step 1) CHECK 4160 VAC Bus NB02 - DEENERGIZED
	RO	(Step 2) CHECK Reactor Power - Less than 100%
	RO/BOP	(Step 3) CHECK CCW Pump A or C – running • RNO – START CCW Pump A or CCW Pump C
	RO/BOP	(Step 4) CHECK CCW Service Loop is being supplied from Train A: • RNO – Perform the Following a. Close both CCW Surge Tank Vent Control valves b. Open CCW Train A Supply/Return valves c. Open ESW Train A to CCW Hx A d. Dispatch an Operator to locally close the following valves ▪ EGHV0016 ▪ EGHV0054 e. OPEN both CCW Surge Tank Vent Control valves
SIM OPER		**When contacted as the Primary Ops Tech:** **Insert Remote Function (EG) EGHV0016, Value = 0** **Insert Remote Function (EG) EGHV0054, Value = 0** **Wait 5 min and inform the Control Room valves are CLOSED**
	RO/BOP	(Step 5) CHECK if CCW aligned to the RCPs
	CRS	(Step 6) CHECK RHR- IN Service Prior to Event • RNO – Go To Step 9

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 4	Page 15 of 21
Event Description:	Loss of ESF Transformer XNB02 causing Loss of NB02 / EDG "B" starts, ESW Pump "B" trips (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-NB-00002	**BOP**	(Step 9) CHECK Steam Generator NR Level Within One of the Following: • Trending to between 45% and 55% OR • Between 45% and 55%
	BOP	(Step 10) CHECK Turbine Driven Auxiliary Feedwater Pump SECURED • RNO: • If Turbine Driven Auxiliary Feedwater Pump is NOT Required to maintain SG level, Then Throttle or CLOSE TD AFP AFW Reg Valves
	NOTE	*This may have been completed earlier*
	RO	(Step 11) CHECK Pressurizer Level Within One of the Following • Trending to program level OR • At Program Level
	RO	(Step 12) CHECK Pressurizer Pressure Within One of the Following: • Trending to between 2225 psig and 2250 psig OR • Between 2225 psig and 2250 psig
	CRS/RO	(Step 13) ENSURE the following 4160VAC bus NB02 loads shed: (LSELS actuation, handswitch lit green) • ESW Pump B • CCW Pump B/D • SI Pump B • Ctmt Spray Pump B • RHR Pump B

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 4	Page 16 of 21
Event Description:	Loss of ESF Transformer XNB02 causing Loss of NB02 / EDG "B" starts, ESW Pump "B" trips (Tech Spec)		

Proc /Time	Position	Applicant's Actions or Behavior
OTO-NB-00002	**RO**	(Step 14) OPEN NB02 Normal Alternate Feeder Breakers • NB HIS-4, NB02 Normal Supply Breaker NB0209 • NB HIS-5, NB02 Alternate Supply Breaker NB0212
NOTES		'B' Train CCW pump handswitches are placed in Pull-To-Lock to prevent breaker cycling while NB02 is de-energized
NOTE		**At Lead Examiner's discretion move to the next Event**

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 5/6/7	Page 17 of 21
Event Description:	Loss of Offsite Power and Failure of EDG "A" to AUTO Start Post Trip PZR PORV Fails Partially Open and ESW Pump "A" Fails to AUTO Start		

Proc /Time	Position	Applicant's Actions or Behavior

		Booth Operator Instructions:
		• T = 50 minutes or at the discretion of the Lead Examiner
		• Loss of Offsite Power / DG "A" Fails to Auto Start / ESW Pump "A" Fails to Auto Start
		  • Insert Malfunction (EF) PEF01A_1, Value = Block
		  • Run Lesson ALL/GENERIC/lossofswitchyard.lsn
		  • The Failure of EDG "A" to Auto Start is preloaded
		• PORV, BB PCV-455A, failure is preloaded
		• When contacted, respond as EDO. Acknowledge entry into the OTO.

Indications Available:		
T = 50		
		ECA-0.0, Loss of All AC Power
ECA-0.0	**CRS**	Transition to ECA-0.0, Loss of All AC Power
		Notes: • Steps 1 and 2 are immediate action steps • CSF status trees should be monitored for information only. Functional Restoration Procedures should NOT be implemented
	RO	(Step 1) CHECK Reactor Trip • Reactor Trip and Bypass Breakers –OPEN • Neutron Flux – Lowering ○ Manually TRIP reactor
	BOP	(Step 2) CHECK Turbine Trip • All Turbine Stop valves - CLOSED
	RO	(Step 3) Check if RCS is Isolated a. PZR PORVs – CLOSED • RNO - If PZR pressure is less than 2335 PSIG, THEN CLOSE PORV(s)

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 5/6/7	Page 18 of 21
Event Description:	Loss of Offsite Power and Failure of EDG "A" to AUTO Start Post Trip PZR PORV Fails Partially Open and ESW Pump "A" Fails to AUTO Start		

Proc /Time	Position	Applicant's Actions or Behavior
ECA-0.0	**RO**	(Step 3 cont'd) CHECK if RCS is isolated - NO b. Letdown isolation valves – CLOSE c. RCS to Excess Letdown valves –CLOSE d. Reactor Head Vent Valves – CLOSED
	BOP	(Step 4) Check AFW Flow – GREATER THAN 285,000 Lbm/hr
	RO/BOP	(Step 5) TRY to Restore Power to Any AC Emergency Bus: a. Energize AC emergency bus with diesel generator: 1) CHECK both DGs – RUNNING – NO • Manually START DG(s) 2) CHECK AC emergency buses – AT LEAST ONE ENERGIZED b. CHECK AC emergency buses – AT LEAST ONE ENERGIZED – YES c. CHECK ESW Pump associated with energized AC emergency bus(es) – RUNNING – NO 1) ENSURE ESW to UHS valves are OPEN 2) START ESW Pump(s) as necessary d. Return to procedure and step in effect and IMPLEMENT Functional Recovery Procedures as necessary
	(NOTE)	*At this time the CREW should attempt to start the "A" Emergency Diesel Generator and it will start and load onto the bus (BB PCV-455A fails open when NB01 reenergizes). Crew should transition to E-0, Reactor Trip or Safety Injection, once power is restored to NB01.*
Critical Task	**CREW**	**Manually start ESW Pump A before Emergency Diesel Generator NE01 trips on high temperature.**

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 6/7	Page 19 of 21
Event Description:	Loss of Offsite Power and Failure of EDG "A" to AUTO Start Post Trip PZR PORV Fails Partially Open and ESW Pump "A" Fails to AUTO Start		

Proc /Time	Position	Applicant's Actions or Behavior
		E-0, Reactor Trip Or Safety Injection
E-0	**CRS**	Implement E-0, Reactor Trip or Safety Injection
	(NOTE)	**Steps 1 through 4 are immediate action steps**
	RO	(Step 1) CHECK reactor trip: • Rod bottom lights – all lit • Reactor trip and bypass breakers – open • Neutron flux - lowering
	BOP	(Step 2) CHECK turbine trip: • All turbine stop valves - closed
	BOP	(Step 3) CHECK power to AC emergency buses: • AC emergency buses – at least one energized NB01 is now Energized • AC emergency buses – both energized – NO
	CREW	(Step 4) CHECK SI status: • Check if SI is actuated – NO → Go to RNO
	CREW	(Step 4 RNO) CHECK if SI is required: • PZR pressure less than or equal to 1849 psig • Any SG pressure less than or equal to 615 psig • Containment pressure greater than or equal to 3.5 psig If SI is not required, then go to ES-0.1, Reactor Trip Response
ES-0.1	**CRS**	**Implement ES-0.1, Reactor Trip Response**
	CRS	Call STA to initiate CSF Status Tree Monitoring

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 6/7	Page 20 of 21
Event Description:	Loss of Offsite Power and Failure of EDG "A" to AUTO Start Post Trip PZR PORV Fails Partially Open and ESW Pump "A" Fails to AUTO Start		

Proc /Time	Position	Applicant's Actions or Behavior
ES-0.1	**RO**	(Step 1) CHECK RCS temperature control: • Check RCPs – any running • Check RCS temperature response - normal
	BOP	(Step 2) CHECK status of AC buses: • Check generator output breakers – open • Check all AC buses – energized by offsite power
	RO	(Step 3) CHECK PZR pressure control: • Pressure – greater than 1849 psig • Pressure – stable at or trending to 2235 psig (If not closed previously, RCS pressure will be trending down at this time and Step 3 RNO will direct the crew to isolate the failed PORV)
Critical Task	**CREW**	**Manually close the PORV before receiving a Safety Injection.**
	RO	(Step 4) CHECK PZR level control: • PZR level – greater than 17% • Check instrument air supply containment isolation valve – open (KA HIS-29) • Check charging – in service • Check letdown – in service • PZR level – trending to 25%
	RO	(Step 5) CHECK shutdown reactivity status: • Check all control rods – fully inserted • Check if uncontrolled RCS dilution – in progress NO → Go to RNO → Go to Step 6

Op Test No.: 2013301	Scenario # 4 rev.4	Event # 6/7	Page 21 of 21
Event Description:	Loss of Offsite Power and Failure of EDG "A" to AUTO Start Post Trip PZR PORV Fails Partially Open and ESW Pump "A" Fails to AUTO Start		

Proc /Time	Position	Applicant's Actions or Behavior
ES-0.1	**BOP**	(Step 6) CHECK feedwater status: • Check RCS Tavg – less than 564°F • Main feedwater pumps – tripped • Check main feedwater reg valves – closed • Check main feedwater reg bypass valves – closed • Check total feed flow to SGs – greater than 285,000 lbm/hr
	BOP	(Step 7) CHECK SG Levels a. Narrow range levels – GREATER THAN 7% b. CONTROL feed flow to maintain narrow range levels between 7% and 52%
	BOP	(Step 8) TRANSFER Condenser Steam Dumps to Steam Pressure Mode: a. CHECK condenser – AVAILABLE – NO RNO: If Condenser steam dump is NOT available, THEN use SG ASD(s) as necessary for any subsequent cooldown.
NOTE	**EVAL**	**Once Steam Dumps have been addressed or at the discretion of the Lead Evaluator, the scenario can be STOPPED and the Simulator Frozen**