

JPM INFORMATION SHEET

JPM NUMBER

SONGS Oct 2006 RO/SRO
NRC JPM A.1.a

INITIAL PLANT CONDITIONS

Unit 2 is in **MODE 3** following a Reactor trip from full power **30 hours** ago. The Unit was at full power for **25 EFPD**.

Conditions are as follows:

- Core life is **BOC, 50 EFPD** per Reactor Engineering.
- RCS Boron Concentration is **2600 ppm** via the Boronometer.
- **Tave** is **545°F** and **three RCPs** are running.
- All CEAs are fully inserted except for **CEA #44** which is **untripable** and **fully withdrawn**.
- **No correction factors** have been provided by Reactor Engineering for **B-10 depletion**.
- Use **OPS Table 4.4** for **CEA Worths**.

TASK TO BE PERFORMED

The Shift Manager directs you to perform a Shutdown Margin calculation using SONGS Unit 2 Cycle 14 Operations Physics Summary Data, Revision 51 and SO23-3-3.29, Determination of Reactor Shutdown Margin.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM A.1.a

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR	X
ACTUAL TESTING ENVIRONMENT:	PLANT	_____	SIMULATOR	_____
ACTUAL TESTING METHOD:	PERFORMED	_____	SIMULATED	_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
2	Compared against SO23-3-3.29, Rev. 14. Made modifications for MOC Cycle worths.	LRZ	06/30/00	WLL
2-1	Compared against SO23-3-3.29, Rev. 16 and M38100, Rev. 46. Added M38100 as a reference. Updated required parameter values to reflect current revision of references. Changed core burnup to 210 EFPD to more clearly indicate MOC time in life.	RCW	11/19/03	FM
2-2	Converted to an ADMIN JPM.	RCW	09/29/04	MRN
2-3	Compared against SO23-3-3.29, Rev. 16-1 and M38100, Rev. 49. Modified JPM by changing boron concentration and core burnup to arrive at new critical boron concentration. Made modifications for MOC Cycle worths.	LRZ	02/28/05	AHH
3	Compared against SO23-3-3.29, Rev. 16-1 and M38100, Rev. 49 and modified initial conditions to generate a different Shutdown Margin.	LRZ	09/08/05	REV
4	Compared against SO23-3-3.29, Rev. 17-1 and M38100, Rev. 51 and modified all initial conditions to generate a different Shutdown Margin.	LRZ	08/08/06	REV

SET-UP

EXAMINER:

NOTE: This JPM was validated using M-38100, Operations Physics Summary, Unit 2, Cycle 14, BOC, Rev. 51.

Provide examinee with a copy of SO23-3-3.29, Determination of Reactor Shutdown Margin and M-38100, Operations Physics Summary, Unit 2, Cycle 14, BOC, Rev. 51.

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide the examinee with a copy of SO23-3-3.29, Determination of Reactor Shutdown Margin and the Operations Physics Summary, Unit 2, Cycle 14, BOC, Rev. 51.</p>				
1	Complete Step 1.0, Prerequisites of S023-3-3.29, Attachment 2.	COMPLETE Step 1.0, Prerequisites of S023-3-3.29, Attachment 2.		Start Time: _____
2	Record present RCS boron concentration.	RECORD present RCS boron concentration of 2600 ppm via Boronometer.		
3	Record present RCS T _{avg} .	RECORD RCS T _{avg} of 545°F .		
4	Record present cycle burnup.	RECORD present cycle burnup of 50 EFPD .		
5	Calculate the adjusted critical boron concentration for potential reactivity bias.	CALCULATE the adjusted critical boron concentration from OPS Fig. 2.2-1 and ADD 150 ppm for B-10 depletion. 2000 ppm (CBC @ 50 EFPD) + 150 ppm (Correction Factor) = 2150 ppm (Adjusted CBC)		
6	Calculate the critical boron margin.	CALCULATE the critical boron margin. 2600 ppm (Present Boron) - 2150 ppm (Adjusted CBC) = + 450 ppm (CB Margin)		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
7	Determine the inverse boron worth for the present RCS T_{avg} and boron concentration.	DETERMINE the inverse boron worth from OPS Figure 3.3. 144 ppm / % $\Delta K/K$		
8	Calculate the boron reactivity defect.	CALCULATE the boron reactivity defect. 450 ppm / 144 ppm / % $\Delta K/K$ = + 3.125% $\Delta K/K$		
9	Determine Total CEA worth: (Use data listed for ARI condition.)	DETERMINE Total CEA worth from OPS Table 4.4 for ARI condition. Total CEA Worth = 7.944% $\Delta K/K$		
10	Determine Net CEA worth: (Use data listed for ARI-WRSO condition.)	DETERMINE Net CEA worth from OPS Table 4.4 for ARI-WRSO condition. Net CEA Worth = 7.535% $\Delta K/K$		
11	Determine Available CEA Worth with an <i>inoperable</i> (untripplable) CEA, from ONE of the following: 1 CEA Inoperable (untripplable).	DETERMINE Available CEA Worth with an <i>inoperable</i> (untripplable) CEA. Total CEA Worth = 7.944% $\Delta K/K$ - Stuck Pair Worth = 1.553% $\Delta K/K$ = Available CEA Worth = 6.391% $\Delta K/K$		
12	Determine the withdrawn CEA worth.	DETERMINE the withdrawn CEA worth to be zero. Withdrawn CEA Worth = 0% $\Delta K/K$		
13	Determine the Xenon worth based on present cycle burnup and Xenon decay time.	DETERMINE the Xenon worth using OPS Table 7.1. Xenon Worth = 1.492% $\Delta K/K$		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
14*	Calculate actual Shutdown Margin.	CALCULATE actual Shutdown Margin. 3.125% ΔK/K + 6.391% ΔK/K + 1.492% ΔK/K = 11.008 ± 0.1 % ΔK/K		
15*	Calculate percent shutdown of the Reactor.	CALCULATE percent shutdown of the Reactor. 3.125% ΔK/K + 1.492% ΔK/K + 7.944% ΔK/K + 0.0% ΔK/K + = 12.561 ± 0.1 % ΔK/K		
16*	Determine the actual Shutdown Margin is greater than or equal to 5.15% ΔK/K in Mode 3.	DETERMINE the actual Shutdown Margin is greater than 5.15% ΔK/K for Mode 3 and circles YES .		
<p>TERMINATING CUE: This JPM is complete.</p>				<p>Stop Time: _____</p>

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM A.1.b**

INITIAL PLANT CONDITIONS

Unit 2 is in **MODE 4** with the following conditions:

- **Charging Pump MP-191** is **aligned** to **Train B**.
- **Charging Pump MP-192** has been **cleared** for packing replacement.
- **HPSI Pump MP-018** is **aligned** to **Train A**.
- **HPSI Pump MP-017** is **cleared** for weld repair to the pump casing.
- **Bus 2B04** is **de-energized** due to supply breaker failure.
- All other **components** are **OPERABLE** and in their required state.

TASK TO BE PERFORMED

The Shift Manager directs you to perform Scheduled Surveillance for Boric Acid Flowpath Operability Verification per SO23-3-3.1, Boric Acid Flowpath Testing to verify adequate boration flowpaths exist.

- Complete (Initial or N/A) each Step in Attachment 1.
- Check each associated box supporting each Step on the Attachment 1 Flowpath Diagram.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM A.1.b

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR	X
ACTUAL TESTING ENVIRONMENT:	PLANT	_____	SIMULATOR	_____
ACTUAL TESTING METHOD:	PERFORMED	_____	SIMULATED	_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM A.1.b

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 10 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 189963

TASK DESCRIPTION

Evaluate plant status against Technical Specifications requirements.

KA NUMBER: 2.1.12

KA VALUES: **RO** 2.9 **SRO** 4.0

10CFR55.45 APPLICABILITY: 12

REFERENCES:

SO23-3-3.1, Boric Acid Flow Path Testing, Rev. 14-2.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
	New	-	-	-

SET-UP

EXAMINER:

Provide the examinee with a copy of Technical Specifications.

Provide the examinee with a copy of SO23-3-3.1, Boric Acid Flow Path Testing.

JPM: SONGS RO/SRO NRC JPM A.1.b TITLE: Boric Acid Flowpath Operability Verification

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Provide the examinee with a copy of SO23-3-3.1, Boric Acid Flow Path Testing.				
1	Complete Section 1.0, Prerequisites.	COMPLETE Section 1.0, Prerequisites by performing the following: <ul style="list-style-type: none"> • INITIAL Step 1.1. • INITIAL Step 1.2 and CHECK the box for Scheduled Surveillance. • N/A Step 1.3. 		Start Time: _____
2	Review Section 2.1, Performance Requirements.	REVIEW Section 2.1, Performance Requirements.		
3	Complete Section 2.2, RWST to Charging Pump Suction.	COMPLETE Section 2.2, RWST to Charging Pump Suction by performing the following: <ul style="list-style-type: none"> • INITIAL Steps 2.2.1 through 2.2.4 • CHECK appropriate boxes on Flowpath Diagram. 		
4	Complete Section 2.3, BAMU to Charging Pump Suction.	COMPLETE Section 2.3, BAMU to Charging Pump Suction by performing the following: <ul style="list-style-type: none"> • INITIAL Steps 2.3.1 through 2.3.4. • N/A Steps 2.3.5 through 2.3.7. • INITIAL Step 2.3.8. • CHECK appropriate boxes on Flowpath Diagram. 		

JPM: SONGS RO/SRO NRC JPM A.1.b TITLE: Boric Acid Flowpath Operability Verification

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
5	Complete Section 2.4, Charging Pump.	COMPLETE Section 2.4, Charging Pump by performing the following: <ul style="list-style-type: none"> • INITIAL Steps 2.4.1 and 2.4.3 • N/A Steps 2.4.2 and 2.4.4. • CHECK appropriate boxes on Flowpath Diagram. 		
6	Complete Section 2.5, Charging to RCS.	COMPLETE Section 2.5, Charging to RCS by performing the following: <ul style="list-style-type: none"> • INITIAL Steps 2.5.1, 2.5.2 and 2.5.4. • N/A Steps 2.5.3 and 2.5.5. • CHECK the appropriate boxes on the Flowpath Diagram. 		
7	Complete Section 2.6, Charging to #2 HPSI Header.	COMPLETE Section 2.6, Charging to #2 HPSI Header by performing the following: <ul style="list-style-type: none"> • INITIAL Steps 2.6.1 and 2.6.2. • CHECK the appropriate boxes on the Flowpath Diagram. 		

JPM: SONGS RO/SRO NRC JPM A.1.b TITLE: Boric Acid Flowpath Operability Verification

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
8	Complete Section 2.7, HPSI to RCS.	COMPLETE Section 2.7, HPSI to RCS by performing the following: <ul style="list-style-type: none"> • INITIAL Step 2.7.1 and CIRCLE MP-018. • INITIAL Step 2.7.2 through 2.7.4 • N/A Steps 2.7.5 through 2.7.8. • INITIAL Steps 2.7.9 through 2.7.12. • CHECK the appropriate boxes on the Flowpath Diagram. 		
9*	Complete Step 3.1: Select the Operable Train A Boric Acid Flow Paths as documented in Section 2.0.	DETERMINE there is NO OPERABLE Train A Boric Acid Flow Path and INITIAL Step 3.1.		
10*	Complete Step 3.2: Select the Operable Train B Boric Acid Flow Paths as documented in Section 2.0.	DETERMINE there is an OPERABLE Train B Boric Acid Flow Path and CHECK Two Boric Acid Makeup Tanks as the OPERABLE flowpath and INITIAL Step 3.2.		
11	Complete Steps 3.3.1 and 3.3.2 for Test Acceptance Criteria.	CHECK and INITIAL Step 3.3.1 UNSATISFACTORY box for Train A and CHECK and INITIAL Step 3.3.2 SATISFACTORY box for Train B .		
TERMINATING CUE: This JPM is complete.				Stop Time: _____

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

SONGS Oct 2006 RO NRC JPM A.2

INITIAL PLANT CONDITIONS

The Unit 2 Boric Acid Makeup Pump 2MP175 requires an overhaul and is ready to be aligned for maintenance. The BAMU Pump is stopped.

A Work Authorization Request must be prepared to allow repairs to the pump.

TASK TO BE PERFORMED

The Shift Manager directs you to identify the Clearance boundaries required to allow overhaul of Unit 2 Boric Acid Makeup Pump 2MP175.

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR	X
		_____		_____
ACTUAL TESTING ENVIRONMENT:	PLANT	_____	SIMULATOR	_____
		_____		_____
ACTUAL TESTING METHOD:	PERFORMED	_____	SIMULATED	_____
		_____		_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO NRC JPM A.2

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 30 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 182153

TASK DESCRIPTION

Prepare a Work Authorization Record tagout.

KA NUMBER: 2.2.13

KA VALUES: **RO** 3.6 **SRO** 3.8

10CFR55.45 APPLICABILITY: 12, 13

REFERENCES:

SO123-XX-5, Work Authorizations, Revision 14.

SO23-3-2.2, Makeup Operations, Revision 19-4.

Boric Acid Makeup P&ID #40125A, Revision 14.

Boric Acid Makeup P&ID #40125B, Revision 18.

480 V Load Center Bus 2BY One Line Diagram #30162, Revision 33.

480 V Load Center Bus 2BZ One Line Diagram #30164, Revision 39.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
0	New	-	-	-
0-1	Compared against SO123-XX-5, Rev 14 and SO23-3-2.2, Rev 19-4 with no changes required. Compared against latest One-Line Diagrams and P&IDs with no changes required to P&IDs and minor changes to One-Line Diagrams. Changed Clearance to BAMU Pump P-175 from P-174.	LRZ	06/05/06	

SET-UP

EXAMINER:

Obtain P&IDs for:

- Boric Acid Makeup Pump #40125A
- Boric Acid Makeup Pump #40125B

Obtain One-Line Diagram for:

- 480 V Load Center Bus 2BY #30162
- 480 V Load Center Bus 2BY #30164

The P&IDs may be prepared by the examinee as follows:

- Highlight in **BLUE** the problem area(s).
- Highlight in **YELLOW** the Cleared line(s).
- Highlight in **RED** the isolation area(s).

Provide the examinee with a blank Work Authorization Record Tag Installation sheet (Attachment 4) and colored highlighters to outline the flowpath.

Provide the examinee with a copy of SO123-XX-5, Work Authorizations, SO23-3.2.2, Makeup Operations and the applicable P&IDs and electrical prints.

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide the examinee with a copy of SO123-XX-5, Work Authorizations, SO23-3.2.2, Makeup Operations and copies of P&IDs and electrical prints.</p>				
1	Review P&IDs and One-Line Diagram for the Boric Acid Makeup Pump.	REVIEW P&IDs for: <ul style="list-style-type: none"> • Unit 2 Reactor Coolant CVCS System #1218 - #40125A • Unit 2 Reactor Coolant CVCS System #1218 - #40125B OBTAIN One-Line Diagram for: <ul style="list-style-type: none"> • Unit 2 One-Line Diagram 480 V Motor Control Center 2BY #30162 • Unit 2 One-Line Diagram 480 V Motor Control Center 2BZ #30164 		Start Time: _____
2	Locate the component to be isolated.	LOCATE the Boric Acid Makeup Pump on P&ID #40125B.		
3*	Determine the BAMU Pump P-175 clearance boundaries to be used to isolate the repair area.	DETERMINE BAMU Pump P-175 clearance boundaries to be: <ul style="list-style-type: none"> • S21218MU034 discharge CLOSED. • S21218MU078 discharge flush OPEN. • S21218MU079 suction flush OPEN. • S21218MU005 suction valve CLOSED. 		
4	Locate the component to be isolated.	LOCATE the Boric Acid Makeup Pump Recirculation Valves on P&ID #40125A.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
5*	Determine the BAMU Pump P-175 clearance boundaries to be used to isolate the repair area.	DETERMINE BAMU Pump P-175 Recirc. Valve clearance boundaries to be: <ul style="list-style-type: none"> • S21218MU042 recirc valve CLOSED. • S21218MU043 recirc valve CLOSED. 		
6	Locate the component to be isolated.	LOCATE the Boric Acid Makeup Pump power supply on One-Line Diagram 30162.		
7*	Determine the BAMU Pump P-175 power supply clearance boundaries to be used to isolate the repair area.	DETERMINE BAMU Pump P-175 power supply clearance boundaries to be: <ul style="list-style-type: none"> • Pump breaker 2BY15 OPEN. 		
<p>NOTE: The examinee may list all, some, or none of the components in Step 8. They are shown as potential examples of additional tags that may be hung.</p>				
8	Determine the optional clearance boundaries to be used to isolate the repair area.	DETERMINE the optional clearance boundaries to be: <ul style="list-style-type: none"> • Motor enclosure heater 2BY40D OFF. • 2HV-9231 alternate recirc valve CLOSED. • S21218MR078 recirc vent OPEN. • S21218MR155 root valve Uncapped OPEN. • 2P-175 Control Room Switch in OFF. 		
<p>TERMINATING CUE: This JPM is complete.</p>				<p>Stop Time: _____</p>

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

SONGS Oct 2006 SRO NRC JPM A.2

INITIAL PLANT CONDITIONS

Unit 2 is in Mode 1 at 100% power. Saltwater Cooling System Pump P-112 is out-of-service for maintenance. The breaker for Saltwater Cooling System Pump P-307 has just tripped on overcurrent.

Two hours later, Maintenance Engineering contacts the Control Room to report that a review of radiographs performed during the last outage to LPSI Pump P-016 have revealed a series of hairline cracks.

TASK TO BE PERFORMED

Perform a Safety Function Determination Program (SFDP) analysis per SO123-0-A5, Technical Specification LCOAR/EDMR for the LPSI System and identify the following parameters:

1. Inoperable Equipment: _____
2. Previously Inoperable Equipment: _____
3. Safety Function Affected: _____
4. Redundant System(s): _____
5. Support System(s): _____
6. Supported System(s): _____
7. SFDP Assessment (SAT / UNSAT): _____
8. SFDP Rules and Logic Applied to reach SFDP Determination: _____

JOB PERFORMANCE MEASURE

SONGS SRO NRC JPM A.2

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR	X
		<hr/>		<hr/>
ACTUAL TESTING ENVIRONMENT:	PLANT		SIMULATOR	
		<hr/>		<hr/>
ACTUAL TESTING METHOD:	PERFORMED		SIMULATED	
		<hr/>		<hr/>

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS SRO NRC JPM A.2

JPM LEVEL: SRO

ESTIMATED TIME TO COMPLETE: 20 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CRS

TASK SYS ID: 189963

TASK DESCRIPTION

Evaluate plant status against Technical Specification requirements.

KA NUMBER: 2.2.22

KA VALUES: **RO** 3.4 **SRO** 4.1

10CFR55.45 APPLICABILITY: 13

REFERENCES:

SO123-0-A5, Technical Specification LCOAR/EDMR, Revision 2-2.

Unit 2 Technical Specifications.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
0	New	-	-	-
0-1	Compared against SO123-0-A5, Rev. 2-2 with no changes required.	LRZ	08/18/06	

SET-UP

EXAMINER:

Provide the examinee with a copy of SO123-0-A5, Technical Specification LCOAR/EDMR and Unit 2 Technical Specifications.

Definitions:

LCOAR – Limiting Condition for Operation ACTION Requirement

EDMR – Equipment Deficiency MODE Restraint

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: When located, provide the examinee with a copy of SO123-0-A5, Technical Specification LCOAR/EDMR and Technical Specifications.</p>				
1	Determine the <i>inoperable</i> system or component.	DETERMINE that the Train B LPSI System is the <i>inoperable equipment</i> .		Start Time: _____
2	Determine the previously <i>inoperable</i> system or component.	DETERMINE that the Train A SWC System is the previously inoperable equipment .		
3*	Determine the Safety Function impacted by the <i>inoperable</i> system or component.	DETERMINE that a loss of injected borated water on SIAS signal and/or removal of decay heat is the Safety Function impacted.		
4*	Determine the Redundant System(s) impacted by the <i>inoperable</i> system or component.	DETERMINE that the Train A LPSI System is the Redundant System impacted by the <i>inoperable</i> system or component.		
5	Determine the Support System(s) impacted by the <i>inoperable</i> system or component.	DETERMINE that CCW, SWC, and AC Distribution are the Support Systems impacted by the <i>inoperable</i> system or component.		
6	Determine the Supported System(s) impacted by the <i>inoperable</i> system or component.	DETERMINE that ECCS is the Supported System impacted by the <i>inoperable</i> system or component.		
7*	Determine the SFDP Assessment for the <i>inoperable</i> system or component.	DETERMINE that the SFDP Assessment for the <i>inoperable</i> system or component is UNSAT .		

JPM: SONGS SRO NRC JPM A.2

TITLE: Complete a Safety Function Determination

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
8	Determine the SFDP Rules and Logic Applied to reach SFDP Determination for the <i>inoperable</i> system or component.	DETERMINE the SFDP Rules and Logic Applied to reach SFDP Determination: <ul style="list-style-type: none"> • Train B LPSI Pump is <i>inoperable</i> affecting Train B ECCS Safety Function. • Train A SWC is <i>inoperable</i> affecting Train A ECCS Safety Function. 		
<p style="text-align: center;">TERMINATING CUE: This JPM is complete.</p> <p style="text-align: right;">Stop Time: _____</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/06/06

JPM INFORMATION SHEET

JPM NUMBER

SONGS Oct 2006 RO/SRO NRC JPM A.3

INITIAL PLANT CONDITIONS

A LOCA with fuel damage has occurred on Unit 3. An operator has been seriously injured in the Train B Shutdown Heat Exchanger Room.

Extremely high radiation levels require a volunteer to attempt a life saving rescue. The Emergency Coordinator has authorized a volunteer to attempt a rescue.

The estimated dose to the rescuer is 75 Rem.

The TSC and OSC have NOT yet been activated.

TASK TO BE PERFORMED

The Emergency Coordinator has directed you to select the most appropriate volunteer from the list of candidates available in accordance with SO23-VIII-30, Units 2/3 Operations Leader Duties, EPIP Form EP (123) 3, Emergency Exposure Authorization and other accepted exposure control practices.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM A.3

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR	X
ACTUAL TESTING ENVIRONMENT:	PLANT	_____	SIMULATOR	_____
ACTUAL TESTING METHOD:	PERFORMED	_____	SIMULATED	_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM A.3

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 10 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 186266

TASK DESCRIPTION

Implement exposure control in the control room during an emergency event.

KA NUMBER: 2.3.4

KA VALUES: **RO** 2.5 **SRO** 3.1

10CFR55.45 APPLICABILITY: 10

REFERENCES:

SO23-VIII-30, Units 2/3 Operations Leader Duties, Rev. 12.

EPIP Form EP (123) 3, Emergency Exposure Authorization, Rev. 1.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
0	New	-	-	-
0-1	Compared against SO23-VIII-30, Rev. 9 with minor changes required. Modified JPM to have the examinee select an appropriate volunteer.	LRZ	04/05/05	AHH
0-2	Compared against SO23-VIII-30, Rev. 10-1 with minor changes required. Changed answer to Volunteer B.	LRZ	08/29/05	AHH
1	Compared against SO23-VIII-30, Rev. 12 with minor changes required. Modified list of volunteers to arrive at a different volunteer.	LRZ	08/09/06	REV

SET-UP

EXAMINER:

Provide the examinee with copies of SO23-VIII-30, Units 2/3 Operations Leader Duties, EPIP Form EP (123) 3, Emergency Exposure Authorization and a list of available volunteers (located at the end of this JPM).

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>CUE: Provide examinee with SO23-VIII-30, Units 2/3 Operations Leader Duties, EPIP Form EP (123) 3, Emergency Exposure Authorization and a list of available volunteers (located at the end of this JPM).</p>				
1	Refer to SO23-VIII-30 Section 6.7 and EPIP Form EP (123) 3.	REFER to guidance in SO23-VIII-30 Section 6.7 and EPIP Form EP (123).		Start Time: _____
2	Determine if individual is a volunteer.	DETERMINE that all individuals have volunteered for Emergency Exposure. <ul style="list-style-type: none"> • Eliminates Volunteer I who changed their mind. 		
3	Determine age of volunteer.	DETERMINE the desired age of the volunteer is > 45 years old. <ul style="list-style-type: none"> • Eliminates Volunteers C, D, F and H due to age. 		
<p>NOTE: Examinee may also eliminate Volunteer A due to age.</p>				
4	Determine if volunteer is pregnant.	DETERMINE that the ideal volunteer has not declared herself pregnant. <ul style="list-style-type: none"> • Eliminates Volunteer A who is not declared pregnant but may be. 		
5	Determine if volunteer can read and understand the potential biological consequences.	DETERMINE that the ideal volunteer can read and understand the potential biological consequences. <ul style="list-style-type: none"> • Eliminates Volunteer G who cannot read English. 		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
6	Determine if volunteer is allergic to shellfish and has a history of thyroid disease.	DETERMINE ideal volunteer is NOT allergic to shellfish and has NO history of thyroid disease. <ul style="list-style-type: none"> • Eliminates Volunteer E due to shellfish allergies. • Eliminates Volunteer B due to hypothyroidism. 		
7*	Select a volunteer.	SELECT Volunteer J as the most appropriate candidate for Emergency Exposure based on age.		
TERMINATING CUE: This JPM is complete.				Stop Time: _____

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

List of Available Volunteers

1. Volunteer A is a 26 year old female who is trying to start a family.
2. Volunteer B is a 44 year old female who recently underwent treatment for hypothyroidism.
3. Volunteer C is a 39 year old male who recently qualified as a Primary PEO with an open wound on his forearm.
4. Volunteer D is a 44 year old male contractor with a lifetime exposure of 125 REM.
5. Volunteer E is a 45 year old male that reports he got sick the last time he ate oysters.
6. Volunteer F is a 28 year old female that tells you she is not feeling well today.
7. Volunteer G is a 50 year old male that speaks but cannot read English.
8. Volunteer H is a 24 year old male recently qualified as a Secondary PEO.
9. Volunteer I is a 34 year old female who has changed her mind about being a volunteer.
10. Volunteer J is a 50 year old male with a lifetime exposure of 45 REM.

JPM INFORMATION SHEET

JPM NUMBER

SONGS Oct 2006 SRO NRC JPM A.4

INITIAL PLANT CONDITIONS

Given the following plant conditions:

- The Unit has experienced a small break LOCA following a Reactor trip.
- The leak rate is estimated at 60 gpm.
- A loss of offsite power occurred and 2G003 EDG Output breaker will not close.
- 2G002 is running and providing necessary loads.
- All swing equipment was aligned to Train A prior to the trip.
- ECCS has not actuated, nor does its actuation appear imminent.
- All other ESF functions have actuated successfully.
- AFW Pump P-140 has tripped on overspeed and AFW Pump P-141 appears to be cavitating with discharge pressure fluctuating between 250 and 1000 psig

TASK TO BE PERFORMED

The Shift Manager directs you to classify the event using SO123-VIII-1, Recognition and Classification of Emergencies.

JOB PERFORMANCE MEASURE

SONGS SRO NRC JPM A.4

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR	X
		<hr/>		<hr/>
ACTUAL TESTING ENVIRONMENT:	PLANT		SIMULATOR	
		<hr/>		<hr/>
ACTUAL TESTING METHOD:	PERFORMED		SIMULATED	
		<hr/>		<hr/>

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS SRO NRC JPM A.4

JPM LEVEL: SRO

ESTIMATED TIME TO COMPLETE: 10 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: SM

TASK SYS ID: 192840

TASK DESCRIPTION

Classify emergency events requiring emergency plan implementation.

KA NUMBER: 2.4.41

KA VALUES: **RO** 2.3 **SRO** 4.1

10CFR55.45 APPLICABILITY: 11

REFERENCES:

SO123-VIII-1, Recognition and Classification of Emergencies, Revision 24

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: A. Hagemeyer _____

DATE: _____

APPROVED BY: M. Jones _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
0	New	-	-	-

SET-UP

EXAMINER:

Provide the Examinee with a copy of SO123-VIII-1, Recognition and Classification of Emergencies.

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide the Examinee with a copy of SO123-VIII-1, Recognition and Classification of Emergencies.</p>				
<p>NOTE: The following steps can be performed in any order.</p>				
1	Determine the Event Category.	DETERMINE the event to be a Loss of Safety Equipment Event.		Start Time: _____
2	Match plant conditions with the EALs listed in the selected Event Category tabs.	REVIEW EAL descriptions to determine the EAL that most closely matches the plant conditions.		
3	Review the notes preceding/following the selected EAL to find the highest level applicable EAL.	REVIEW notes preceding / following the EAL.		
4*	Classify the emergency using the highest applicable Event Code.	CLASSIFY event as a Site Area Emergency per Tab D3-7.		
<p style="text-align: center;">TERMINATING CUE: This JPM is complete.</p> <p style="text-align: right;">Stop Time: _____</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-1**

INITIAL PLANT CONDITIONS

A Unit 2 Reactor trip occurred 15 minutes ago.

SG pressures are approximately 1000 psia.

Steam Generator E-089 and Steam Generator E-088 levels are increasing through 35%.

The Control Room team is preparing to verify EFAS-1 and EFAS -2 actuation.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to verify proper EFAS-1 and 2 actuation per SO23-3-2.22, EFAS System Operation, Attachment 13.

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR <u> X </u>
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM S-1

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 10 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 186173

TASK DESCRIPTION

Verify the proper actuation, reset and restoration of the auxiliary feedwater system following automatic actuation of EFAS or DEFAS.

KA NUMBER: 013 A3.02

KA VALUES: **RO** 4.1 **SRO** 4.2

10CFR55.45 APPLICABILITY: 5, 7

REFERENCES:

SO23-3-2.22, Engineered Safety Features Actuation System Operation, Rev. 15-2.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
1	Compared against SO23-3-2.22, Rev. 15-2 with minor changes required.	LRZ	06/19/06	

SET-UP

MACHINE OPERATOR:

Use IC #181 for the 2006 NRC JPM Exam.

Otherwise use any 100% IC and establish the following Simulator conditions:

- Reactor tripped.
- E088 SG level approximately 40% and rising.
- E089 SG level approximately 35% and rising.
- Two (2) malfunctions:

RP_K211A TRUE

EXAMINER:

Provide the Examinee with a copy of SO23-3-2.22, ESFAS System Operation, Attachment 13, EFAS/DEFAS Actuation Verification, with the Prerequisites completed.

NOTE: Maintain the simulator in freeze until the Examinee is ready to start the JPM. This will assist in keeping the level low in the Steam Generators.

JPM: SONGS RO/SRO NRC JPM S-1 TITLE: Verify the Proper Operation of the AFW System Following an EFAS

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide the Examinee with a copy of SO23-3-2.22, Attachment 13, EFAS/DEFAS Actuation Verification, with the Prerequisites completed.</p>				
1	Ensure P-141 Motor Driven AFW Pump started.	VERIFY 2HS-4707-1, AFWP 2P141 running with red START light illuminated and ~130 amps indicated.		Start Time: _____
2	Ensure HV-4713, 2P-141 Flow Control Valve to 2E-089, is closed.	VERIFY 2HV-4713, AFWP 2P141 to SG E089 Discharge Valve closed and OBSERVE green JOG CLOSE light illuminated.		
3	Ensure HV-4731, S/G E-089 Containment Isolation Valve, is CLOSED.	VERIFY 2HV-4731, AFW to SG E089 Iso Valve closed and OBSERVE green CLOSE light illuminated.		
4	Ensure HV-8200, Main Steam to P-140 Isolation, is OPEN.	OBSERVE 2HV-8200, Main Steam to AFWPT 2K007 SG 2E089 Iso Valve red OPEN light illuminated.		
5	Ensure HV-4706, P-140 Flow Control Valve to 2E-089, is CLOSED.	OBSERVE 2HV-4706, AFWP 2P140 to SG 2E089 Disch Valve green JOG CLOSE light illuminated.		
6	Ensure HV-4715, SG 2E-089 Containment Isolation Valve, is CLOSED.	OBSERVE 2HV-4715, AFW to SG 2E-089 Iso Valve green JOG CLOSE light illuminated.		
7	Ensure HV-4053, SG 2E-089 Blowdown Isolation Valve, is CLOSED.	OBSERVE 2HV-4053-2, SG 2E089 Blowdown Iso Valve green CLOSE light illuminated.		

JPM: SONGS RO/SRO NRC JPM S-1 TITLE: Verify the Proper Operation of the AFW System Following an EFAS

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
8	Ensure HV-4763, P-141 Discharge Bypass Valve to 2E-089, is CLOSED.	OBSERVE 2HV-4763, AFWP 2P141 to SG 2E089 Disch Valve Bypass green CLOSE light illuminated.		
9	Ensure HV-4716, Main Steam Valve to 2P-140, is OPEN.	OBSERVE 2HV-4716, AFWPT 2K007 Steam Inlet Valve red OPEN light illuminated.		
10	Ensure Motor Driven AFW Pump P-504 STARTED.	OBSERVE 2HS-4733-2, AFWP 2P504 red START light illuminated.		
11	Ensure HV-4712, P-504 flow control valve to E088, CLOSED.	OBSERVE 2HV-4712, AFWP 2P504 to SG E088 Disch Valve green JOG CLOSE light illuminated.		
12	Ensure HV-4714, SG E088 Containment Isolation Valve, CLOSED.	OBSERVE 2HV-4714, AFW to SG E088 Iso Valve green CLOSE light illuminated.		
13	Ensure HV-8201, Main Steam to P-140 Isolation, OPEN.	OBSERVE 2HV-8201, Main Steam to AFWPT 2K007 SG E088 Iso Valve red OPEN light illuminated.		
NOTE: The following two steps represent the alternate path of this JPM.				
14*	Ensure HV-4705, P-140 Flow Control Valve to E088, CLOSED.	DEPRESS and HOLD JOG CLOSE on 2HV-4705, AFWP 2P140 to SG E088 Disch Valve until green JOG CLOSE light illuminated.		
15*	Ensure HV-4730, SG E088 containment isolation valve, CLOSED.	DEPRESS and HOLD JOG CLOSE 2HV-4730, AFW to SG E088 Iso Valve until green JOG CLOSE light illuminated.		
16	Ensure HV-4054, SG E088 BD Isolation Valve, CLOSED.	OBSERVE 2HV-4054, SG E088 Blowdown Iso Valve green CLOSE light illuminated.		

JPM: SONGS RO/SRO NRC JPM S-1 TITLE: Verify the Proper Operation of the AFW System Following an EFAS

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
17	Ensure HV-4762, P-504 discharge bypass valve to E088, CLOSED.	OBSERVE 2HV-4762, AFWP 2P504 to SG E088 Disch Valve Bypass green CLOSE light illuminated.		
18	Ensure HV-4716, Main Steam Valve to 2P-140, is OPEN.	OBSERVE 2HV-4716, AFWPT 2K007 Steam Inlet Valve red OPEN light illuminated.		
19	Ensure A-443, AFW Pump Room Fan, is STARTED.	OBSERVE 2HS-9532-2, AFW Pump Area Fan 2A443 red START light illuminated.		
20	Ensure A-394, AFW Pump Room Fan, is STARTED.	VERIFY 2HS-9581-1, AFW Pump Area Fan 2A394 running and OBSERVE red START light illuminated.		
21	Verify E-128, Pressurizer Backup Heater on CR-50, is OFF.	OBSERVE 2HS-0100F1, Backup Heaters Bank 128 from 2B0402 green OFF light illuminated.		
22	Verify E-129, Pressurizer Backup Heater on CR-50, is OFF.	OBSERVE 2HS-0100I2, Backup Heaters Bank 129 from 2B0602 green OFF light illuminated.		
<p>TERMINATING CUE: This JPM is complete.</p>				<p>Stop Time: _____</p>

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-2**

INITIAL PLANT CONDITIONS

Chemistry informs you that T-084, Waste Gas Decay Tank is ready for release. The Gaseous Effluent Release Permit Cover Sheet for T-084 is complete per SO123-III-5.1.23, Units 2(3) Effluent Sampling and Analysis.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to prepare **and** release Waste Gas Decay Tank T-084 per SO23-8-15, Radwaste Gas Discharge, Attachment 1, starting at Step 1.7.

JOB PERFORMANCE MEASURE SONGS RO/SRO NRC JPM S-2

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR X _____
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM S-2

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 15 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 186269

TASK DESCRIPTION

Coordinate radioactive gas releases.

KA NUMBER: 2.3.11

KA VALUES: **RO** 2.7 **SRO** 3.2

10CFR55.45 APPLICABILITY: 8, 12

REFERENCES:

SO23-8-15, Radwaste Gas Discharge, Rev. 16-1.

CH(123) 5-90, Gaseous Effluent Release Permit Cover Sheet, Rev. 3.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
0	New	-	-	-
1	Compared against SO23-8-15, Rev 16-1 with no changes required. Modified this JPM to include steps for isolating the waste gas release upon receipt of a high radiation alarm.	LRZ	06/19/06	REV

SET-UP

MACHINE OPERATOR:

Use IC #182 for the 2006 NRC JPM Exam and perform the following:

- Place 2/3FIC-7202 in “MANUAL.”
- Select and lower “OPERATOR SETPOINT (OSP)” to a value less than 50%.
- Place 2/3FIC-7202 in the “OUT” (output) Mode.
- Using a blank yellow magnetic “CAUTION” tag and a “white board marker CREATE a “CAUTION” tag reading “WASTE GAS RELEASE IN PROGRESS, DO NOT RESET” and place near 2/3FIC-7202.
- Ensure 2/3FV-7202, Waste Gas Decay Tank Header Vent Valve, is closed.
- Reboot and reload DAS to remove previous examinee’s trend.
- Place DAS on Home Page.

Otherwise, use any 100% IC and perform the following:

- Insert malfunction RM04V to 100,000 μ ci/sec.

EXAMINER:

Provide a partially completed copy of SO23-8-15, Radwaste Gas Discharge Attachment 1 up to and including Prerequisite Step 1.6. Also ensure the Gaseous Effluent Release Permit Cover Sheet for T-084 (located at the end of this JPM) box for Weather Evaluation is marked N/A.

Ensure the following actions are completed each time the JPM is performed:

- Place 2/3FIC-7202 in “MANUAL.”
- Select and lower “OPERATOR SETPOINT (OSP)” to a value less than 50%.
- Leave 2/3FIC-7202 in the “OUT” (output) Mode.
- Ensure 2/3FV-7202, Waste Gas Decay Tank Header Vent Valve, is closed.
- Reboot and reload DAS to remove previous examinee’s trend.
- Place DAS on Home Page.

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Ensure that setup page is completed before each examinee performs this JPM.</p>				
<p>NOTE: Provide the examinee with a copy of SO23-8-15, Radwaste Gas Discharge, Attachment 1 (completed up to and including Prerequisite Step 1.6) and Gaseous Effluent Release Permit Cover Sheet for T-084 (located at the end of this JPM). Ensure box for Weather Evaluation is marked N/A.</p>				
1	Perform a Channel Check on 2/3FIT-7202.	PERFORM a Channel Check on 2/3FIT-7202.		Start Time: _____
2	Verify no outstanding LCOAR/EDMRs related to 2/3FIT-7202.	VERIFY no outstanding LCOAR/EDMRs related to 2/3FIT-7202 by CHECKING the Radiation Monitoring Panel and/or LCOAR Book.		
<p>CUE: No outstanding LCOAR/EDMRs related to 2/3FIT-7202 currently exist.</p>				
3*	Verify 2/3FIC-7202 < 0.0 SCFM.	DEPRESS SEL on 2/3 FIC-7202, Waste Gas Decay Tanks HDR Vent Control and VERIFY 2/3FIC-7202 process flow reading is 0.0 SCFM.		
4	Verify 2/3FIT-7202 < 5 SCFM. (63' Radwaste - LOCAL).	VERIFY 2/3FIT-7202 < 5 SCFM. at the 63' Radwaste local indication.		
<p>CUE: Radwaste Operator reports 2/3FIT-7202 is reading 0 SCFM.</p>				
5	Document that the Channel Check was completed satisfactorily.	DOCUMENT that the Channel Check was completed satisfactorily by CHECKING YES <u>and</u> MARK Steps 1.7.1 and 2.3.4 "N/A."		
6	Ensure 2/3 RIC-7808G, PVS Radiation Monitor is Operable.	ENSURE 2/3RIC-7808G, PVS Radiation Monitor Operability by PERFORMING Channel, Source and DAS Checks.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
7	2/3 RIC-7808G Channel Check; Green OPERATE LED illuminated.	VERIFY 2/3 RIC-7808G, Green OPERATE LED illuminated in Control Room Hallway.		
8	2/3 RIC-7808G Channel Check; Red TEST LED extinguished.	VERIFY 2/3 RIC-7808G, Red TEST LED extinguished. in Control Room Hallway.		
9	2/3 RIC-7808G Channel Check; Normal channel behavior on DAS.	VERIFY 2/3 RIC-7808G, Normal channel behavior on DAS.		
10	2/3 RIC-7808G Source Check; Green OPERATE LED illuminated.	VERIFY 2/3 RIC-7808G, Green OPERATE LED illuminated in Control Room Hallway.		
CUE: Source Check for 2/3RIC-7808G is satisfactory.				
11	DAS Channel Check; Clock on DAS Home page is updating.	VERIFY clock on Data Acquisition System (DAS) Home page is updating.		
12	DAS Channel Check; Status of 2/3RIC-7808G on DAS Home page matches LCOAR/EDMR book.	VERIFY status of 2/3RIC-7808G on DAS Home page matches LCOAR/EDMR book.		
CUE: DAS Home page matches LCOAR/EDMR book.				
13	DAS Channel Check; 2/3RIC-7808G on DAS Trend page shows NORMAL status.	VERIFY 2/3RIC-7808G on DAS Trend page shows NORMAL status.		
14	DAS Channel Check; DAS Trend page matches RDU trend.	VERIFY DAS Trend page matches RDU trend.		
CUE: DAS Trend page matches RDU trend.				
15	Circle YES for 2/3RIC-7808G Channel Check, Source Check and DAS Channel Check.	CIRCLE YES for 2/3RIC-7808G Channel Check, Source Check and DAS Channel Check.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
16	Verify that all Steps in Section 1.0 are complete and all Steps in Section 1.0 and 2.0 required to be marked N/A, are correctly marked N/A.	VERIFY that all Steps in Section 1.0 are complete and all Steps in Section 1.0 and 2.0 required to be marked N/A, are correctly marked N/A.		
CUE: SRO Operations Supervisor acknowledges that all steps are complete or marked N/A and initials Step 1.9.				
17	Verify the Release Permit Setpoint is less than the Rad Monitor HI-HI setpoint.	COMPARE 2/3 RIC-7808G on DAS with Release Permit and VERIFY the Release Permit Setpoint is less than the Rad Monitor HI-HI setpoint.		
18	Verify CLOSED 2/3 FV-7202 Header Vent Valve.	VERIFY CLOSED 2/3FV-7202 Waste Gas Decay TK HDR Vent Valve by OBSERVING green CLOSE light illuminated.		
19*	RESET 2/3 FQI-7202, Waste Gas Discharge Totalizer.	RESET 2/3 FQI-7202, Waste Gas Disch HDR Total Flow by DEPRESSING the Totalizer Reset pushbutton.		
20	Install a Caution Tag on 2/3FQI-7202 which states "Waste Gas release in progress, do not reset."	INSTALL a Caution Tag on 2/3FQI-7202 which states "Waste Gas release in progress, do not reset."		
21	Align the WGDT selected in Step 1.2.	PREPARE to align WGDT T-084 by CIRCLING valves SA1902MU076 and SA1902MU032.		
22	Close the Waste Gas N ₂ Valve.	CLOSE the Waste Gas N ₂ Valve SA1902MU076.		
CUE: Radwaste Operator reports that Waste Gas N₂ Valve SA1902MU076 is closed.				

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
23	Open the Waste Gas Outlet Valve.	OPEN the Waste Gas Outlet Valve SA1902MU032.		
CUE: Radwaste Operator reports that Waste Gas Outlet Valve SA1902MU032 is open.				
24	Transfer the numeric identifier of the valve positioned in Step 2.2.3.1 to Steps 2.4.4.2 and 2.5.1.	TRANSFER the numeric identifier of the valve positioned in Step 2.2.3.1 to Steps 2.4.4.2 and 2.5.1.		
25	Transfer the numeric identifier of the valve positioned in Step 2.2.3.2 to Step 2.5.2.	TRANSFER the numeric identifier of the valve positioned in Step 2.2.3.2 to Step 2.5.2.		
26	ENSURE 2/3PV-7814, Waste Gas Discharge Header Control Valve, is aligned.	ENSURE 2/3PV-7814, Waste Gas Discharge Header Control Valve, is aligned.		
CUE: Radwaste Operator reports that Step 2.2.4 is complete.				
27*	In AUTO , ADJUST 2/3FIC-7202 Operator Setpoint (OSP) to 50 (100% of controller scale).	SELECT 2/3FIC-7202, Waste Gas Decay TK HDR Vent Control to AUTO and PRESS OSP (Operator Setpoint) and RAISE setpoint to 50% (100% of controller scale).		
28*	OPEN 2/3FV-7202 by depressing the OPEN Pushbutton.	DEPRESS 2/3FV-7202, Waste Gas Decay TK HDR Vent Control OPEN pushbutton and OBSERVE the red OPEN light illuminated.		
29	Record the Release Start Time.	RECORD the Release Start Time on the Gaseous Effluent Release Permit Cover Sheet.		
30	SLOWLY THROTTLE OPEN SA1902MU089, WGDT to Exhaust Plenum.	DIRECT the Radwaste Operator to SLOWLY THROTTLE OPEN SA1902MU089, WGDT to Exhaust Plenum.		

JPM: SONGS RO/SRO NRC JPM S-2 TITLE: Prepare and Release a Waste Gas Decay Tank

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
MO CUE: EXECUTE remote function WD55 to OPEN the Waste Gas Decay Tank Valve.				
CUE: Radwaste Operator acknowledges to slowly throttle open SA1902MU089.				
31	As required, ADJUST 2/3 PIC-7814 to establish stable flow and pressure.	DIRECT the Radwaste Operator to ADJUST 2/3 PIC-7814 to establish stable flow and pressure.		
CUE: Radwaste Operator reports stable flow and pressure on 2/3PIC-7814.				
NOTE: The following steps represent the alternate path of this JPM.				
32	Verify 2/3 RIC-7808G, PVS Radmonitor is responding as expected to release.	OBSERVE 2/3 RIC-7808G, PVS Radmonitor on DAS and DETERMINE that 2/3 RIC-7808G is above alarm setpoint with a Unit 2 Critical Parameter Problem alarm (63B02) and NOT responding as expected.		
33*	CLOSE 2/3FV-7202, WGDT Header Vent Valve.	DEPRESS 2/3 FV-7202, Waste Gas Decay TK HDR Vent Valve CLOSE pushbutton and OBSERVE green CLOSE light illuminated.		
34	IMMEDIATELY notify the Shift Manager.	Immediately NOTIFY the Shift Manager.		
<p style="text-align: center;">TERMINATING CUE: Stop Time: _____</p> <p style="text-align: center;">The Shift Manager has been notified. This JPM is complete.</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (does not meet threshold criterion of K/A 3.0 or greater for the RO, however performance of this evolution is required).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

Prerelease Data (Prepared by Chemistry)		
Unit	<u>2</u>	_____ / _____
Source	<u>T-084</u>	_____ / _____
Type	<u>Gas</u>	_____ / _____
Release must start by:	<u>Tonight</u>	Date / Time _____ / _____
Permit expires on:	<u>Tomorrow</u>	Date / Time _____ / _____
Maximum release flow rate	<u>50</u>	CFM _____ / _____
Number of fans required:	<u>2</u>	_____ / _____
Monitor ID:	<u>2/3 RIC-7808G</u>	_____ / _____
Recommended setpoint:	<u>3.04E+4</u>	µci / sec _____ / _____
ODCM Maximum Limit:	<u>1.75E+5</u>	µci / sec _____ / _____
RELEASE PERMIT PREREQUISITES		
		Initials
<input type="checkbox"/> Weather Evaluation Required <ul style="list-style-type: none"> <input type="checkbox"/> DESIRABLE <input type="checkbox"/> UNDESIRABLE (Note reason for release) _____ 		
<input type="checkbox"/> N/A if continuous release <input type="checkbox"/> N/A (Met. Tower unavailable) CURRENT X / Q _____		LRZ
COMMENTS: _____		
Actual release data (Performed by Operations)		
		<u>Initials</u>
Setpoint installed for release	5.26 E+4	µci / sec LRZ
Number of fans running	2	LRZ
Release start	_____	Date / Time _____
Monitor reading during release	_____	_____ (Units or INOP) _____
Release stop	_____	Date / Time _____
Maximum actual release rate	_____	CFM _____
Monitor returned to pre-release	[] YES [] NO []	_____
COMMENTS: _____		

REVIEWED BY: (SRO OPS SUPV) _____ DATE _____

REVIEWED BY: (CHEMISTRY SUPV) _____ DATE _____

REVIEWED BY: (EFFLUENT ENG) _____ DATE _____

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-3**

INITIAL PLANT CONDITIONS

The plant has experienced a small break LOCA. The Control Room team has entered SO23-12-3, Loss of Coolant Accident.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to initiate SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-7, Verify SI Throttle/Stop Criteria.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM S-3

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR <u> X </u>
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM S-3

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 20 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 192210

TASK DESCRIPTION

Perform HPSI Throttle / Stop action.

KA NUMBER: EA2.11

KA VALUES: **RO** 3.9 **SRO** 4.3

10CFR55.45 APPLICABILITY: 6, 7, 8, 12, 13

REFERENCES:

SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-7 Verify SI Throttle / Stop, Rev. 4.

AUTHOR: Clark F. Baker

DATE: 09/04/00

OPERATIONS REVIEW: R. Clement

DATE: 09/05/00

APPROVED BY: W. Lyke

DATE: 09/06/00

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
2	Compared against SO23-12-3, Rev. 16 and made corrections as required for established standards. Added changes to cause lowering of PZR level following initial throttle/stop response to drive Examinee to reestablish SI flow (RNO actions).	CFB	09/04/00	WLL
2-1	Changed setup page to establish the final severity of the leak at 0% and set the future severity of the leak at 50% that is triggered from the STOP pushbuttons of the Charging Pumps.	JJM	10/25/00	WLL
2-2	Compared against SO23-12-11, Rev. 2. Updated set-up page. Added several new steps and CUEs. Minor wording changes.	RCW	08/26/04	MRN
2-3	Modified Initial Plant Conditions.	RCW	09/13/04	AH
2-4	Minor modifications to Set-up page and to JPM step 21 standard.	RCW	09/30/04	MRN
2-5	Compared against SO23-12-11, Rev. 4 with minor wording changes required.	LRZ	06/19/06	

SET-UP

MACHINE OPERATOR:

Use IC #183 for 2006 NRC JPM exam.

Ensure Auxiliary Feedwater is set for 140 gpm to each SG with SG levels ~40% and slowly trending upward, with SBCS in AUTO.

This IC uses an event file for automatically adjusting break flow. Go to RUN after the JPM brief has taken place. Activate the event file after going to RUN.

Otherwise, use any at power IC, and perform the following:

Insert RC03 at 25% and allow to proceed until approximately 1345 psia, then reduce the severity of the malfunction to 0%. Ensure RCPs are stopped.

If HPSI P-018 is operating on Train A then HPSI P-019 should be operating on Train B.

If HPSI P-018 is operating on Train B then HPSI P-017 should be operating on Train A.

Ensure Auxiliary Feedwater is set for 140 gpm to each S/G with S/G levels ~40% and slowly trending upward, and ADVs set for MANUAL and 0% output.

Ensure Pressurizer level greater than 30% and not lowering.

After examinee has initially throttled SI flow to control PZR level, increase leak rate to ~50%. This should be triggered from the OVERRIDE pushbuttons of Charging Pumps P-190, P-191, and P-192.

EXAMINER:

Provide examinee with a copy of SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-7, Verify SI Throttle / Stop Criteria.

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide examinee with a copy of SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-7, Verify SI Throttle / Stop Criteria.</p>				
1	VERIFY at least one S/G operating: SBCS - available OR ADV - available AND Feedwater - available.	OBSERVE Steam Generators have Steam Bypass Control System operating and feedwater is available to both SGs.		Start Time: _____
2	VERIFY Pressurizer Level - greater than 30% AND - NOT lowering.	OBSERVE Pressurizer Level instruments 2LIC-0110, 2LR-0110A/B, 2LI-0110A1/A2 or 2LI-0103 and VERIFY level greater than 30% and not lowering.		
3	VERIFY Core Exit Saturation Margin greater than or equal to 20°F: QSPDS page 611 CFMS page 311	OBSERVE Core Exit Saturation Margin on QSPDS (page 611) or CFMS (page 311) and VERIFY Core Exit Saturation Margin greater than 20°F.		
4	VERIFY Reactor Vessel level - greater than or equal to 100% (Plenum): QSPDS page 622 CFMS page 312 Attachment 4	OBSERVE Reactor Vessel level on QSPDS (page 622) or CFMS (page 312) or use Attachment 4 and VERIFY Reactor Vessel level ≥ 100% (Plenum).		
5	RCS Cooldown not in progress.	VERIFY RCS Cooldown not in progress.		
<p>CUE: There is no cooldown in progress.</p>				
<p>NOTE: To satisfy the critical nature of stopping/throttling HPSI flow, each train must have, at a minimum, the valves throttled or the pump stopped. Additionally, it may be required to stop one or all Charging Pumps to stabilize PZR level. Sequence of steps is NOT critical, however, injection flow must be re-established for the examinee to be successful.</p>				

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Mark N/A the steps below that were <u>not</u> required to be performed.</p>				
6	VERIFY SI pumps - NOT operating per SO23-12-9, Attachment FR-1, RECOVERY - REACTIVITY CONTROL to meet RC-3 Success Path.	VERIFY SI pumps NOT operating per SO23-12-9, Attachment FR-1, RECOVERY - REACTIVITY CONTROL to satisfy RC-3 Success Path.		
<p>CUE: Safety Injection Pumps are NOT operating to satisfy RC-3 Success Path.</p>				
<p>NOTE: Examinee may elect to either stop HPSI Pumps <u>and/or</u> close HPSI Loop Isolation Valves.</p>				
7*	OVERRIDE and CLOSE HV-9333.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9333, HDR 1 to Loop 2B JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		
8*	OVERRIDE and CLOSE HV-9324.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9324, HDR 1 to Loop 1A JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		
9*	OVERRIDE and CLOSE HV-9327.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9327, HDR 1 to Loop 1B JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
10*	OVERRIDE and CLOSE HV-9330.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9330, HDR 1 to Loop 2A JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		
11*	OVERRIDE and STOP the Train A HPSI pump.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HS-9393-1, HPSI Pump 2P-018 STOP pushbutton and OBSERVE green STOP light illuminated and ammeter at zero.		
12*	OVERRIDE and CLOSE HV-9332.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9332, HDR 2 to Loop 2B JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		
13*	OVERRIDE and CLOSE HV-9323.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9323, HDR 2 to Loop 1A JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		
14*	OVERRIDE and CLOSE HV-9326.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9326, HDR 2 to Loop 1B JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
15*	OVERRIDE and CLOSE HV-9329.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9329, HDR 2 to Loop 2A JOG CLOSE pushbutton until green JOG CLOSE light is illuminated and red JOG OPEN light is extinguished.		
16*	OVERRIDE and STOP the Train B HPSI pump.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HS-9394-2, HPSI Pump 2P-019 STOP pushbutton and OBSERVE green STOP light illuminated and ammeter at zero.		
17	VERIFY Charging pumps - NOT operating per SO23-12-9, Attachment FR-1, RECOVERY - REACTIVITY CONTROL to meet RC-2 Success Path.	VERIFY Charging pumps - NOT operating per SO23-12-9, Attachment FR-1, RECOVERY - REACTIVITY CONTROL to meet RC-2 Success Path.		
CUE: Charging pumps are NOT operating to satisfy RC-2 Success Path.				
18	VERIFY Pressurizer level - less than 80%.	VERIFY Pressurizer level less than 80%.		
NOTE: Charging pumps may be stopped in any order.				
19*	STOP Charging Pumps as required one at a time.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2P-190, Charging Pump STOP pushbutton and OBSERVE green STOP light illuminated.		
20*	STOP Charging Pumps as required one at a time.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2P-191, Charging Pump STOP pushbutton and OBSERVE green STOP light illuminated.		

JPM: SONGS RO/SRO NRC JPM S-3 TITLE: Verify SI Throttle / Stop Criteria

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
21*	STOP Charging Pumps as required one at a time.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2P-192, Charging Pump STOP pushbutton and OBSERVE green STOP light illuminated.		
NOTE: When the first Charging Pump is stopped, RCS leakage will increase to ~50%.				
NOTE: The following steps represent the alternate path of this JPM.				
22	MAINTAIN criteria of steps a through e - satisfied.	RECOGNIZE lowering PZR level and IMPLEMENT RNO actions for Steps b. through d.		
NOTE: After the Examinee has recognized the changing plant condition and has taken action(s) to raise SI flow, the JPM can be terminated when a HPSI Pump is started and one (1) HPSI Loop Injection Valve is throttle opened.				
23*	IF any criteria of steps b through d - NOT satisfied, <ul style="list-style-type: none"> • OPERATE Charging and SI systems as necessary to maintain Throttle /Stop criteria - satisfied. • THROTTLE Loop Injection Valves - as required. 	PERFORM one (1) or all of the following: <ul style="list-style-type: none"> • START Charging Pumps as required. • START any HPSI Pump and THROTTLE OPEN at least one (1) HPSI Loop Injection Valve. 		
TERMINATING CUE: This JPM is complete. Stop Time: _____				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-4**

INITIAL PLANT CONDITIONS

Bus 2A06 is cross-tied to Bus 3A06 due to a recent electrical transient resulting in a transfer to the bus tie.

TASK TO BE PERFORMED

The Control Room Supervisor directs a Restoration from 1E 4 kV Bus 2A06 to Bus 3A06 Cross-Tie Operations by aligning Bus 2A06 to the Reserve Auxiliary Transformer 2XR2.

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR X _____
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM S-4

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 20 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 271

TASK DESCRIPTION

Manually transfer 1E 4KV bus power source.

KA NUMBER: 062 A4.07

KA VALUES: **RO** 3.1 **SRO** 3.1

10CFR55.45 APPLICABILITY: 6

REFERENCES:

SO23-6-2, Transferring of 4 kV Buses, Rev 10-4.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
1	Compared against SO23-6-2, Rev. 7 with minor changes required. Updated format.	LRZ	06/15/00	WLL
2	Updated SO23-6-2 Revision and changed JPM to reflect A06 vice A04.	JGA	08/04/03	KR
2-1	Compared against SO23-6-2, Rev. 7 with minor changes required. Updated format.	LRZ	08/04/03	MRN
3	Compared against SO23-6-2, Rev. 10-4 with changes required. Steps were deleted / replaced and re-ordered as necessary for the updated procedure.	LRZ	06/19/06	REV

SET-UP

MACHINE OPERATOR:

Use IC #182 for the 2006 NRC JPM Exam.

Otherwise, use any 100% power IC and cross-tie Bus 2A06 to Unit 3 Bus 3A06, using SO23-6-2, Section 6.2.

EXAMINER:

Provide the examinee with a copy of SO23-6-2, Transferring of 4 kV Buses.

JPM: SONGS RO/SRO NRC JPM S-4 TITLE: Restore from Bus 2A06 to Bus 3A06 Cross-Tie Operations

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Provide the examinee with a copy of SO23-6-2, Transferring of 4 kV Buses.				
1	Ensure the affected Switchgear Room is clear of all unnecessary personnel and maintain it clear until after 4kV bus transfer is complete.	DISPATCH PEO to clear personnel from Unit 2 and 3 Train B Switchgear Rooms and MAINTAIN them clear.		
CUE: Unit 2 and 3 Train B Switchgear Rooms are clear.				
2*	SELECT 2HS-1627-2, ESF B Sync. Master Control, to ON.	PLACE synchroscope, 2/3SI-1627A, in service by TURNING key operated Train B SYNC CKT Control, 2HS-1627-2 ESF B SYNC Master Control switch to ON.		
3*	DEPRESS the SYNC pushbutton for the INCOMING Transformer breaker to energize the synchronizing circuit: • 2A0618, 2XR2 Reserve Aux. Transformer	DEPRESS white SYNC pushbutton for Incoming Breaker 2HS-1637-2, RES AUX XFMR 2XR2 FDR Breaker 2A0618.		
4	VERIFY ILLUMINATED the incoming Transformer breaker SYNC pushbutton.	OBSERVE white SYNC light illuminated on 2HS-1637-2, RES AUX XFMR 2XR2 FDR Breaker 2A0618.		
5	VERIFY ILLUMINATED the SYNC IN MODE light.	OBSERVE white SYNC IN MODE light illuminated on Train B SYNC CKT Control, 2HS-1627-2 ESF B SYNC Master Control Switch.		

JPM: SONGS RO/SRO NRC JPM S-4 TITLE: Restore from Bus 2A06 to Bus 3A06 Cross-Tie Operations

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
6	VERIFY EXTINGUISHED the SYNC RELAYS TROUBLE light.	VERIFY amber SYNC RELAYS TROUBLE light extinguished on Train B SYNC CKT Control, 2HS-1627-2 ESF B SYNC Master Control Switch.		
7	VERIFY the synchroscope moves to the straight up (12 o'clock) position.	VERIFY synchroscope 2/3SI-1627A moves to straight up (12 o'clock) position.		
8	<u>If</u> synchronizing circuit does not respond correctly, <u>then</u> remove the synchronizing circuit from service, <u>and</u> contact Electrical Test.	DETERMINE that the synchronizing circuit has responded correctly.		
9	VERIFY MATCHED Incoming and Running voltages.	VERIFY Incoming and Running voltages matched on 2/3EI-1627A, Running Volts & 2/3EI-1627B, Incoming Volts.		
10	VERIFY MATCHED Incoming and Running frequencies.	VERIFY Incoming and Running frequencies matched on 2/3SI-1627C, Running Hertz & 2/3SI-1627D, Incoming Hertz.		
11*	CLOSE the INCOMING Transformer breaker: • 2A0618, 2XR2 Reserve Aux. Transformer	DEPRESS 2HS-1637-2, RES AUX XFMR 2XR2 FDR Breaker 2A0618 CLOSE pushbutton and OBSERVE red CLOSE light illuminated.		
12	VERIFY ANNUNCIATED 2UA63C58 2A06 / 3A06 PARALLELED.	OBSERVE 2UA63C58 - 2A06 / 3A06 PARALLELED alarm on Unit 2 Panel 63C.		

JPM: SONGS RO/SRO NRC JPM S-4 TITLE: Restore from Bus 2A06 to Bus 3A06 Cross-Tie Operations

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
13	VERIFY 3UA63C58 3A06 / 2A06 PARALLELED REMAINS ANNUNCIATED.	OBSERVE 3UA63C58 - 3A06 / 2A06 PARALLELED is still in alarm on Unit 3 Panel 63C.		
CUE: 3UA63C58 - 3A06 / 2A06 PARALLELED is still in alarm.				
14*	OPEN (TRIP) 2A0619, Bus Tie 2A06 to 3A06 Feeder Breaker.	DEPRESS 2HS-1639A2, Bus Tie 2A06 to 3A06 FDR BKR 2A0619 TRIP pushbutton and OBSERVE green TRIP light illuminated.		
15	VERIFY RESET 2UA63C58 2A06 / 3A06 PARALLELED.	RESET 2UA63C58 - 2A06 / 3A06 PARALLELED alarm on Unit 2 Panel 63C.		
16	VERIFY RESET 3UA63C58 3A06 / 2A06 PARALLELED.	RESET 3UA63C58 - 3A06 / 2A06 PARALLELED alarm on Unit 3 Panel 63C.		
CUE: 3UA63C58 - 3A06 / 2A06 PARALLELED alarm is reset.				
17*	DEPRESS the SYNC pushbutton for the INCOMING Transformer breaker to de-energize the synchronizing circuit: • 2A0618, 2XR2 Reserve Aux. Transformer	DEPRESS white SYNC pushbutton for Incoming Breaker 2HS-1637-2, RES AUX XFMR 2XR2 FDR Breaker 2A0618.		
18	VERIFY EXTINGUISHED the INCOMING Transformer breaker SYNC pushbutton.	OBSERVE white SYNC light extinguished on 2HS-1637-2, RES AUX XFMR 2XR2 FDR Breaker 2A0618.		

JPM: SONGS RO/SRO NRC JPM S-4 TITLE: Restore from Bus 2A06 to Bus 3A06 Cross-Tie Operations

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
19*	SELECT 2HS-1627-2, ESF B Sync. Master Control, to OFF.	REMOVE synchroscope, 2/3SI-1627A, from service by TURNING key operated Train B SYNC CKT Control, 2HS-1627-2 ESF B SYNC Master Control switch to OFF.		
20	Verify bus 2A06 voltage is stable.	OBSERVE 2EI-1641-2, 4.16 KV Bus 2A06 Volts and VERIFY Bus voltage indication is stable.		
21*	OPEN (TRIP) 3A0603, Bus Tie 3A06 to 2A06 Feeder Breaker	DEPRESS 3HS-1639A2, Bus Tie 3A06 to 2A06 FDR BKR 3A0603 TRIP pushbutton and OBSERVE green TRIP light illuminated.		
22*	Return Bus Tie Breakers transfer controls to automatic, as follows: SELECT 3HS-1639B2, 3A06 to 2A06 Tie Breaker 3A0603 AUTO / MANUAL Transfer Switch, to AUTO .	DEPRESS 3HS-1639B2, Bus Tie 3A06 to 2A06 FDR BKR 3A0603 AUTO Selector pushbutton and OBSERVE amber AUTO light illuminated.		
23*	Return Bus Tie Breakers transfer controls to automatic, as follows: SELECT 2HS-1639B2, 2A06 to 3A06 Tie Breaker 2A0619 AUTO / MANUAL Transfer Switch, to AUTO .	DEPRESS 2HS-1639B2, Bus Tie 2A06 to 3A06 FDR Breaker 2A0619 Selector AUTO pushbutton and OBSERVE amber AUTO light illuminated.		
TERMINATING CUE: This JPM is complete.				Stop Time: _____

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-5**

INITIAL PLANT CONDITIONS

Unit 2 is at 98.7% power.

RCS Boron Concentration is 1538 ppm via Chemistry sample. BAMU tanks are 5750 ppm in T-071 and 5749 ppm in T-072.

The plant is experiencing an identified rise in RCS temperature and an inadvertent dilution event is confirmed.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to perform SO23-13-11, Emergency Boration of the RCS / Inadvertent Dilution or Boration to mitigate the effects of an inadvertent dilution.

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR <u> X </u>
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM S-5

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 10 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** NO

POSITION: CO

TASK SYS ID: 252607

TASK DESCRIPTION

Respond to an inadvertent dilution / emergency boration of the RCS.

KA NUMBER: 004 A2.06

KA VALUES: **RO** 4.2 **SRO** 4.3

10CFR55.45 APPLICABILITY: 5, 6, 7, 10

REFERENCES:

SO23-13-11, Emergency Boration of the RCS/Inadvertent Dilution or Boration, Rev. 8.

SO23-3-2.2, Makeup Operations, Rev. 19-4.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
0	New	-	-	-

SET-UP

MACHINE OPERATOR:

Use IC #182 for the 2006 NRC JPM Exams.

Otherwise use any 100% IC and perform the following:

- Ensure Primary Water Pump 2P-200 Discharge Valve is circled on CR-56.
- Lower 2TIC-0223 OSP to 110°F.
- Set the Operator Setpoint (OSP) to 28 for PMW flow controller and 15 for BA flow controller, respectively.

EXAMINER:

Provide the Examinee with a copy of SO23-13-11, Emergency Boration of the RCS/Inadvertent Dilution or Boration and SO23-3-2.2, Makeup Operation.

Prior to repeating the JPM, perform the following with the Simulator in RUN:

- **Depress 2TV-0224B, Ion Exchanger Bypass Valve blue MANUAL pushbutton followed by the green ION EXCH pushbutton and then the amber AUTO pushbutton. This sets up 2TV-0224B for appropriate actions in Step 5e of SO321-13-11.**
- **Ensure local PMS page MAIN MENU is “double” selected to preclude history use of previous examinee.**
- **Ensure Operator Setpoint (OSP) set to 28 for PMW flow controller and 15 for BA flow controller, respectively.**

JPM: SONGS RO/SRO NRC JPM S-5 TITLE: Respond to an Inadvertent Dilution

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Ensure the setup page information for 2TV-0224B, PMS Main Menu is complete.				
NOTE: Provide the examinee with a copy of SO23-13-11, Emergency Boration of the RCS/Inadvertent Dilution or Boration.				
1	VERIFY Refueling NOT in progress.	DETERMINE Refueling NOT in progress with Unit at power.		Start Time: _____
2*	PLACE Makeup Mode Selector to MANUAL.	PLACE 2HS-0210, Makeup Mode Selector to MANUAL.		
3	ENSURE Primary Makeup Water Pumps STOPPED.	OBSERVE 2P-200 and 2P-201 Primary Makeup Water Pumps green STOP lights illuminated.		
4	ENSURE Letdown Heat Exchanger Outlet temperature maintaining at 120°F with TIC-0223, CCW Temperature Controller, in AUTO.	DEPRESS SEL pushbutton on 2TIC-0223, Letdown HX 2E062 Temp Control and OBSERVE TIC-0223 < 120°F or OBSERVE 2TI-0224, Letdown HX 2E062 Outlet Temp < 120°F on CR58.		
NOTE: The following step represents the alternate path of this JPM.				
5*	PLACE TIC-0223 in MANUAL and adjust as necessary.	DEPRESS A/M pushbutton on 2TIC-0223 Letdown HX 2E062 Temp Control to place in MANUAL then PUSH (▼) pushbutton to bring controller output to 120°F.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
6*	PLACE 2(3)TV-0224B, CVCS Ion Exchanger in BYPASS	DEPRESS the MANUAL pushbutton then the BYPASS pushbutton on 2TV-0224B, Ion Exchanger Bypass Valve and OBSERVE blue MANUAL light and red BYPASS lights illuminated with amber AUTO and green ION EXCH lights extinguished.		
7	VERIFY Deborating Ion Exchanger NOT in service.	VERIFY Deborating Ion Exchanger NOT in service by OBSERVING the CVCS Ion Exchanger Operator Aid on CR-56 or REQUEST this information from Chemistry or Radwaste Operator.		
CUE: Chemistry reports the Deborating Ion Exchanger is not in service.				
8	ENSURE dilution flow paths isolated: <ul style="list-style-type: none"> • CLOSE S2(3)1901MU589, Demineralized Water to Charging Pump Suction [RM 410A(B)]. 	CONTACT the Radwaste Operator to CLOSE S21901MU589, Demineralized Water to Charging Pump Suction in Room 410A.		
CUE: Radwaste Operator reports that valve S2-1901-MU589 is closed.				
9	ENSURE dilution flow paths isolated: <ul style="list-style-type: none"> • CLOSE S2(3)1415MU152, Nuclear Condensate to Purification Ion Exchanger ME-074 [RM 305G(CC)]. 	CONTACT the Radwaste Operator to CLOSE S21415MU152, Nuclear Condensate to Purification Ion Exchanger ME-074 in Room 305G.		
CUE: Radwaste Operator reports that valve S2-1415-MU152 is closed.				

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
10	ENSURE dilution flow paths isolated: <ul style="list-style-type: none"> • CLOSE S2(3)1415MU439, Nuclear Condensate to Purification Ion Exchanger ME-075 [RM 305H (DD)]. 	CONTACT the Radwaste Operator to CLOSE S21415MU439, Nuclear Condensate to Purification Ion Exchanger ME-075 in Room 305H.		
CUE: Radwaste Operator reports that valve S2-1415-MU439 is closed.				
11	ENSURE dilution flow paths isolated: <ul style="list-style-type: none"> • CLOSE S2(3)1415MU151, Nuclear Condensate to Purification Ion Exchanger ME-078. [RM 305F (BB)] 	CONTACT the Radwaste Operator to CLOSE S21415MU151, Nuclear Condensate to Purification Ion Exchanger ME-078 in Room 305F.		
CUE: Radwaste Operator reports that valve S2-1415-MU151 is closed.				
12	ENSURE FIC-0210X, PMW Flow Controller, and FIC-0210Y, BAMU Flow Controller, are set for correct blended makeup per SO23-3-2.2, Section to Establish Automatic Makeup Mode.	ENSURE FIC-0210X, PMW Flow Controller, and FIC-0210Y, BAMU Flow Controller, are set for correct blended makeup per SO23-3-2.2, Section to Establish Automatic Makeup Mode.		
NOTE: Provide the examinee with a copy of SO23-3-2.2, Makeup Operations.				
13	LOCATE Section 6.3 Establish Automatic Makeup Mode in SO23-3-2.2, Makeup Operations.	LOCATE Section 6.3 Establish Automatic Makeup Mode in SO23-3-2.2, Makeup Operations.		
CUE: If necessary, direct the examinee to use the PMS Computer for the RCS Makeup calculation.				

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
14	Determine the existing RCS boron concentration from the most recent chemistry sample analysis.	On any PMS Computer Terminal, SELECT Main Menu / User Function / Coolant System to access RCS Calculation .		
15	Enter selected BAMU Tank PPM value <u>and</u> the current RCS PPM value into PMS.	ENTER 5750 ppm for BAMU Tank T-071 or 5749 ppm for BAMU Tank T-072 for BAMU Tank Concentration into PMS Computer Terminal.		
16	Enter selected BAMU Tank PPM value <u>and</u> the current RCS PPM value into PMS.	ENTER 1538 ppm as the Current RCS Boron Concentration into PMS Computer Terminal.		
CUE: The CRS directs you to set Total Flowrate for 44 gpm.				
17	Enter TOTAL desired Makeup flowrate into PMS to obtain the required BAMU and PMW flowrates for this blend.	ENTER 44 gpm desired Makeup flowrate into PMS and OBSERVE the required BAMU and PMW flowrates for this blend.		
18*	POSITION 2FIC-0210Y, BAMU Flow Controller to AUTOMATIC and SET to the required flowrate.	POSITION 2FIC-0210-Y, Flow Control to AUTO and SET to 11.8 gpm.		
19*	POSITION 2FIC-0210-X, Flow Control to AUTOMATIC and SET to the required flowrate.	POSITION 2FIC-0210-X, Flow Control to AUTO and SET to 32.2 gpm.		
20	Ensure the selected BAMU Pump is associated with the BAMU Tank PPM value entered into PMS.	ENSURE the selected BAMU Pump is associated with the BAMU Tank PPM value entered into PMS.		
NOTE: If examinee entered 5750 ppm, then ensure BAMU Tank T-071 and BAMU Pump 2P-174 is selected. If examinee entered 5749 ppm, then ensure BAMU Tank T-072 and BAMU Pump 2P-175 is selected.				

JPM: SONGS RO/SRO NRC JPM S-5 TITLE: Respond to an Inadvertent Dilution

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
21	Ensure the Discharge Valve is circled Open for the PMW Pump selected.	VERIFY PMW Pump P-200 is circled.		
22	SELECT FV-9253, Blended Makeup to VCT Isolation for AUTOMATIC operation.	SELECT 2FV-9253, Blended Makeup to VCT Block Valve to AUTO.		
23*	SELECT HS-0210, Makeup Mode Selector to AUTOMATIC.	SELECT 2HS-0210, Makeup Mode Selector to AUTO.		
<p align="center">TERMINATING CUE: This JPM is complete.</p>				<p align="right">Stop Time: _____</p>

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-6**

INITIAL PLANT CONDITIONS

Unit 2 is in MODE 3.

A Unit heat up is in progress to the point of starting the fourth Reactor Coolant Pump (RCP) P-001.

All actions of SO23-3-1.7, Reactor Coolant Pump Operation, through Step 6.1.17 are complete.

An Operator is stationed at the Reactor Coolant Pump (RCP) in Containment.

TASK TO BE PERFORMED

The Control Room, Supervisor directs you to start RCP P-001 using SO23-3-1.7, Reactor Coolant Pump Operation, beginning with Step 6.1.18.

JOB PERFORMANCE MEASURE

RO/SRO NRC JPM S-6

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR X _____
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

RO/SRO NRC JPM S-6

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 12 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 192368

TASK DESCRIPTION

Startup a Reactor Coolant Pump.

KA NUMBER: 003 A4.06

KA VALUES: **RO** 2.9 **SRO** 2.9

10CFR55.45 APPLICABILITY: 5, 6, 7, 8

REFERENCES:

SO23-3-1.7, Reactor Coolant Pump Operation, Rev. 27.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
1	Compared against SO23-3-1.7, Rev. 27 with minor changes required. Modified JPM to identify different conditions that require tripping the RCP.	LRZ	06/19/06	REV

SET-UP

MACHINE OPERATOR:

Use IC #186 for 2006 NRC Exam and display PMS Trend Group Data page for RCP P001 by performing the following:

- Go to MAIN MENU on PMS.
- Select MAIN POINTS.
- Select "POINT I."
- Point Type Selected to "SERVER GROUP."
- Select "RCP 1 ARMS."

Otherwise, perform the following using any MODE 4 IC with RCS temperature > 400°F:

- DISPLAY PMS Trend Group Data page for RCP P001 per instructions above.
- INSERT Key #38, CPC A Trip Bypass to ON.
- INSERT Key #42, CPC B Trip Bypass to ON.
- INSERT Key #46, CPC C Trip Bypass to ON.
- INSERT Key #50, CPC D Trip Bypass to ON.
- Override Annunciator 56C34 one minute after starting P-001.

EXAMINER:

Provide the Examinee with a copy of SO23-3-1.7, Reactor Coolant Pump Operation completed to Step 6.1.17.

JPM: SONGS RO/SRO NRC JPM S-6 TITLE: Startup a Reactor Coolant Pump

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Ensure the setup page information for PMS Trend Group Data is complete.				
NOTE: Provide the examinee with a copy of SO23-3-1.7, Reactor Coolant Pump Operation completed to Step 6.1.17.				
1*	START one Oil Lift Pump by selecting the NORMAL mode.	DEPRESS the NORMAL pushbutton on either 2HS-9108A, 2P001 Oil Lift Pump 2P260, or 2HS-9109A, 2P001 Oil Lift Pump 2P261 and VERIFY the amber NORMAL light is illuminated.		Start Time: _____
NOTE: Annunciator alarm 56C33 will come in and reset. This is an expected alarm.				
2	ENSURE the second oil lift pump selected to STANDBY	DEPRESS the STANDBY pushbutton on either 2HS-9108A, 2P001 Oil Lift Pump 2P260 or 2HS-9109A, 2P001 Oil Lift Pump 2P261, whichever was not started in the previous step and VERIFY the amber STANDBY light is illuminated.		
CUE: Two minutes has elapsed.				
3*	After the Oil Lift System has run approximately 2 minutes, then START one ARRD Lube Oil Pump by selecting the NORMAL mode.	DEPRESS the NORMAL pushbutton on either 2HS-9166, 2P001 ARRD Pump 2P399 or 2HS-9167, 2P001 ARRD Pump 2P400 and VERIFY the amber NORMAL light is illuminated.		

JPM: SONGS RO/SRO NRC JPM S-6 TITLE: Startup a Reactor Coolant Pump

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
4	ENSURE the second ARR D pump is available by selecting the STANDBY mode.	DEPRESS the STANDBY pushbutton on either 2HS-9166, 2P001 ARR D Pump 2P399 or 2HS-9167, 2P001 ARR D Pump 2P400, whichever was not started in the previous step and VERIFY the amber STANDBY light is illuminated.		

JPM: SONGS RO/SRO NRC JPM S-6 TITLE: Startup a Reactor Coolant Pump

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
5	VERIFY the following alarms on Panel CR56 are clear prior to starting the RCP: <ul style="list-style-type: none"> • RCP P001 THRUST BEARINGS TEMP HI, 56C03 • RCP P001 LUBE OIL FLOW LO, 56C13 • RCP P001 REVERSE ROTATION, 56C14 • RCP P001 OIL LIFT FLOW LO, 56C23 • RCP P001 OIL LIFT PRESS LO, 56C33 • RCP P001 CCW FLOW LO, 56C34 • RCP P001 ARRD LUBE OIL FLOW LO, 56C43 	OBSERVE alarms on Panel CR56 are clear prior to starting the RCP: <ul style="list-style-type: none"> • 56C03 - RCP P001 THRUST BRG TEMP HI • 56C13 - RCP P001 LUBE OIL FLOW LO • 56C14 - RCP P001 REVERSE ROTATION • 56C23 - RCP P001 OIL LIFT FLOW LO • 56C33 - RCP P001 OIL LIFT PRESS LO • 56C34 - RCP P001 CCW FLOW LO • 56C43 - RCP P001 ARRD LUBE OIL FLOW LO 		
6	Verify PMS Points selected in Step 6.1.6 not in alarm: <ul style="list-style-type: none"> • Computer Trend Groups • RCP Controlled Bleed-off Flow • CCW Seal Heat Exchanger Temperature Hi 	OBSERVE the following alarms on PMS: <ul style="list-style-type: none"> • Computer Trend Groups • RCP Controlled Bleed-off Flow • CCW Seal Heat Exchanger Temperature Hi 		

JPM: SONGS RO/SRO NRC JPM S-6 TITLE: Startup a Reactor Coolant Pump

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
CUE: There are NO PMS points in alarm for the RCPs.				
7	Verify RCP CONTROLLED BLEED-OFF FLOW (PMS) is clear or proper RCP CBO flow for the existing RCS pressure.	VERIFY RCP Controlled Bleed-Off Flow (PMS) is clear or proper RCP CBO flow for the existing RCS pressure (~1.5 gpm).		
8	Verify CCW SEAL EXCHANGER TEMPERATURE HI(PMS) alarm is clear.	VERIFY CCW Seal Exchanger Temperature HI (PMS) alarm is clear.		
9	Final configuration check is to VERIFY: <ul style="list-style-type: none"> • One Oil Lift Pump selected to NORMAL • One Oil Lift Pump selected to STANDBY • One ARRD Pump selected to NORMAL • One ARRD Pump selected to STANDBY • Vibration Alarm reset 	PERFORM final configuration check: <ul style="list-style-type: none"> • VERIFY one Oil Lift Pump, 2P260 and/or 2P261 selected to NORMAL. • VERIFY one Oil Lift Pump, 2P260 and/or 2P261 selected to STANDBY. • VERIFY one ARRD Pump, 2P399 and/or 2P400 selected to NORMAL. • VERIFY one ARRD Pump, 2P399 and/or 2P400 selected to STANDBY. • VERIFY Vibration Alarm reset on 2HS-0151, Vibration Monitor Reset. 		
10	VERIFY RCP Zero Speed lamp illuminated.	OBSERVE 2SL-9107, RCP P001 Zero Speed indication white light illuminated.		

JPM: SONGS RO/SRO NRC JPM S-6 TITLE: Startup a Reactor Coolant Pump

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
11	ANNOUNCE pump start using local area page.	ANNOUNCE pump start using local area page.		
12*	START the Reactor Coolant Pump P001.	DEPRESS 2HS-9160A, 2P001 START pushbutton and OBSERVE the red START light illuminated.		
13	Verify motor amps stabilize between 470 and 800 amps.	OBSERVE RCP P001 Motor Ammeter and VERIFY motor amps stabilize between 470 and 800 amps on 2HS-9160A handswitch.		
<p>NOTE/CUE: Annunciator alarm 50A51, Vibration and Loose Parts Monitor System Trouble will come in and reset. This is an expected alarm when starting the RCP. If examinee attempts to research cause of the alarm, state that another operator is at 2L-194 verifying alarm was due to starting the RCP.</p>				
14	Closely MONITOR RCS pressure.	Using any combination of Control Board, CFMS, QSPDS or PMS indicators, OBSERVE RCS pressure is satisfactory.		
15	Verify the Oil Lift and ARRD Pumps automatically stop and Zero Speed lamp extinguishes.	<p>OBSERVE:</p> <ul style="list-style-type: none"> • Oil Lift Pump indicators for 2P001 Oil Lift Pump 2P266 and 2P267, green STOP indicating lights illuminated. • ARRD Pump Indicators for 2P001 ARRD Pump 2P405 and 2P406, green STOP indicating lights illuminated. • Zero Speed white light extinguished. 		
16	Check RCP Oil Reservoir levels SAT.	DIRECT an Operator to OBSERVE RCP P001 Oil Reservoir levels.		

JPM: SONGS RO/SRO NRC JPM S-6 TITLE: Startup a Reactor Coolant Pump

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
CUE: Operator at the pump reports oil levels are satisfactory.				
17	Acknowledge Annunciator 56C34, RCP P001 CCW FLOW LO.	ACKNOWLEDGE annunciator 56C34, RCP P001 CCW FLOW LO and REFER to 56C34 Annunciator Response Procedure.		
CUE: If the applicant checks PMS tends for P001 CCW Flow Low, REPORT that CCW flow is low and temperature is rising.				
NOTE: The following guidance is provided in Annunciator Response Procedure for 56C34.				
18	If in Modes 3-5, then stop 2(3) MP-001, RCP.	RECOGNIZE operation in Mode 4 and DETERMINE RCP P001 must be stopped.		
NOTE: The following steps represent the alternate path of this JPM.				
19*	Trip RCP P001.	DEPRESS 2HS-9160A, P001 STOP Pushbutton and VERIFY green STOP light illuminated.		
20	ENSURE the Oil Lift Pump and ARRD Pump START.	Oil Lift Pump indicators for 2P001 Oil Lift Pump 2P260 and 2P261, red START indicating lights illuminated.		
21	ENSURE the Oil Lift Pump and ARRD Pump START.	ARRD Pump Indicators for 2P001 ARRD Pump 2P399 and 2P400, red START indicating lights illuminated.		
<p style="text-align: center;">TERMINATING CUE:</p> <p style="text-align: center;">This JPM is complete.</p> <p style="text-align: right;">Stop Time: _____</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (K/A is < 3.0, however, task is infrequently performed).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM S-7**

INITIAL PLANT CONDITIONS

The plant has experienced a LOCA inside Containment.

Containment pressure had risen to 18 psig and is now 10 psig and decreasing.

The Control Room Team is performing SO23-12-11, EOI Supporting Attachments, Attachment 2, Floating Steps and SO23-12-3, LOCA.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to initiate SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-14, Terminate Containment Spray Operation.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM S-7

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR <u> X </u>
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM S-7

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 15 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 2628

TASK DESCRIPTION

Terminate Containment Spray.

KA NUMBER: 09 EA-2.11

KA VALUES: **RO** 3.1 **SRO** 3.7

10CFR55.45 APPLICABILITY: 6, 7, 8 and 12

REFERENCES:

SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-14, Terminate Containment Spray Operation, Rev. 4.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
1-2	Compared against SO23-12-11, Rev. 4, with no changes required.	LRZ	06/19/06	

SET-UP

MACHINE OPERATOR:

Use IC #187 for the 2006 NRC JPM exam.

Otherwise, use a full power IC, insert a steam line break inside Containment (MS03A@1.5%) until 14 psig in Containment then MS03A to 0%. Then insert RC03, small break LOCA at 20%. Ensure RCPs are stopped and reduce break sized to ~1%.

EXAMINER:

Provide the Examinee with a copy of SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-14, Terminate Containment Spray Operation.

NOTE: Verify that the CCW to Letdown Heat Exchanger valve is re-opened when repeating this JPM.

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide the examinee with a copy of SO23-12-11, EOI Supporting Attachments, Attachment 2, FS-14, Terminate Containment Spray Operation.</p>				
<p>NOTE: Verify that the CCW to Letdown Heat Exchanger valve is re-opened when repeating this JPM.</p>				
1	Verify Containment pressure less than 14 psig and stable or lowering.	On CR-57 OBSERVE Containment Pressure Narrow Range PI-0351-1, 2, 3, and 4, Containment Pressure Wide Range PI-0352-1, 2, 3, and 4, Containment Pressure Wide-Wide Range PI-0353-1 or PI-0354-2 or QSPDS, page 503 less than 14 psig and stable or lowering.		Start Time: _____
2	Verify at least two Containment Emergency Cooling Units operating. <u>Train A</u> <u>Train B</u> E-399 E-400 E-401 E-402	<u>For Train A ECU E-399:</u> OBSERVE 2HS-9953-1, Containment ECU 2E399(SW) red START light illuminated <u>and</u> 2HV-6370, CCW to CNTMT ECU 2E399 and 2HV-6371, CCW from CNTMT ECU 2E399 red OPEN lights illuminated.		
3	Verify at least two Containment Emergency Cooling Units operating. <u>Train A</u> <u>Train B</u> E-399 E-400 E-401 E-402	<u>For Train A ECU E-401:</u> OBSERVE 2HS-9947-1, Containment ECU 2E401(NW) red START light illuminated <u>and</u> 2HV-6366, CCW to CNTMT ECU 2E401 and 2HV-6367, CCW from CNTMT ECU 2E401 red OPEN lights illuminated.		

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
4	Verify at least two Containment Emergency Cooling Units operating. <u>Train A</u> <u>Train B</u> E-399 E-400 E-401 E-402	<u>For Train B ECU E-400:</u> OBSERVE 2HS-9939-2, Containment ECU 2E400(SE) red START light illuminated and 2HV-6368, CCW to CNTMT ECU 2E400 and 2HV-6369, CCW from CNTMT ECU 2E400 red OPEN lights illuminated.		
5	Verify at least two Containment Emergency Cooling Units operating. <u>Train A</u> <u>Train B</u> E-399 E-400 E-401 E-402	<u>For Train B ECU E-402:</u> OBSERVE 2HS-9955-2, Containment ECU 2E402(NE) red START light illuminated and 2HV-6372, CCW to CNTMT ECU 2E402 and 2HV-6373, CCW from CNTMT ECU 2E402 red OPEN lights illuminated.		
6	Request Shift Manager or Operations Leader to evaluate Containment Spray – NOT required for: 1. Containment Iodine Removal. 2. Decay heat removal post-RAS.	REQUEST this information from Shift Manager or Operations Leader.		
<p>CUE: Shift Manager reports Containment Spray is not required for Containment iodine removal or decay heat removal post-RAS.</p>				
7*	Override and stop Containment Spray pump P-012.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HS-9395-1, Containment Spray Pump 2P-012 STOP pushbutton and OBSERVE green STOP light illuminated and ammeter at zero.		

JPM: RO-SRO NRC JPM S-7

TITLE: Terminate Containment Spray Operation

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
8*	Override and stop Containment Spray pump P-013.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HS-9396-2, Containment Spray Pump 2P-013 STOP pushbutton and OBSERVE green STOP light illuminated and ammeter at zero.		
9*	Override and close Containment Spray Pump Discharge valve 2HV-9367.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9367, Cntmt Spray Hdr No 1 Control Valve JOG CLOSE pushbutton and OBSERVE green JOG CLOSE light illuminated and 0% indication on positioner.		
10*	Override and close Containment Spray Pump Discharge valve 2HV-9368.	DEPRESS white OVERRIDE pushbutton, then DEPRESS 2HV-9368, Cntmt Spray Hdr No 2 Control Valve JOG CLOSE pushbutton and OBSERVE green JOG CLOSE light illuminated and 0% indication on positioner.		
11	RESET CSAS per SO23-3-2.22, ESFAS OPERATION.	RESET CSAS per SO23-3-2.22, ESFAS Operation.		
<p>TERMINATING CUE:</p> <p>Another operator will reset CSAS.</p> <p>This JPM is complete.</p>				<p>Stop Time: _____</p>

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO
NRC JPM S-8**

INITIAL PLANT CONDITIONS

A computer technician is preparing to perform investigative work on CPC Channel B.

CEAC No. 2 is OPERABLE.

CEAC No. 1 INOP flags are to be set in all 4 CPCs per direction of the Control Room Supervisor.

Shift Manager approval has been given.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to set CEAC No. 1 INOP flag in **CPC Channel D** per SO23-3-2.13, Core Protection/Control Element Assembly Calculator Operation starting at Step 6.3.10.

JOB PERFORMANCE MEASURE

SONGS RO NRC JPM S-8

SUGGESTED TESTING ENVIRONMENT:	PLANT _____	SIMULATOR X _____
ACTUAL TESTING ENVIRONMENT:	PLANT _____	SIMULATOR _____
ACTUAL TESTING METHOD:	PERFORMED _____	SIMULATED _____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO NRC JPM S-8

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 6 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: CO

TASK SYS ID: 185094

TASK DESCRIPTION

Change the value of a CPC addressable constant.

KA NUMBER: 012 A4.05

KA VALUES: RO 3.6 SRO 3.6

10CFR55.45 APPLICABILITY: 2, 4

REFERENCES:

SO23-3-2.13, Core Protection/Control Element Assembly Calculator Operation, Rev. 14.

SO23-XXXVII-4.7, Control of Core Protection Calculator Addressable Constants, Rev. 1-1.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
3	Compared against SO23-3-2.13, Rev. 14 with changes required due to re-positioning of steps in procedure.	LRZ	16/19/06	REV

SET-UP

MACHINE OPERATOR:

Use IC-182 for 2006 NRC Exam.

Otherwise, use any 100% IC.

EXAMINER:

Provide Key #52 for the CPC D FUNCTION keylock, when located.

Provide examinee with a copy of SO23-3-2.13, Core Protection/Control Element Assembly Calculator Operation and a copy of "CEANOP" Log page (from SO23-XXXVII-4.7), with the following items filled in:

Top of the page:

Unit	CPC Channel	CPC Point ID	Program Label
2	D	062	CEANOP

On the first (or last filled in) line:

Installer Initials:	NFC
Date:	10/20/06
Time:	0400
Before and After PID 406:	2.04
Before and After PID 179:	11.96
Value Entered:	0
CPC Readout Value:	0.0000
CPC Readout n:	0
Indep. Verif. Initials:	HFD
SM or CRS Initials:	EMS
Type I Notif. Comp.:	Leave Blank

JPM: SONGS RO NRC JPM S-8 TITLE: Set CEAC No. 1 Inoperable Flag in CPC Channel D

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>NOTE: Provide examinee with a copy of SO23-3-2.13, Core Protection/Control Element Assembly Calculator Operation as well as the "CEANOP" Log Page with appropriate information filled out.</p>				
<p>CUE: All Addressable Constant changes will be documented using the Addressable Constant Change Log provided by the examiner.</p>				
<p>CUE: Another operator has initiated SO23-3-3.25, Attachment for CEA Position Verification - Four Hour Monitoring.</p>				
<p>CUE: If asked, report PID 334 and PID 406 are both greater than 1.70 and CEA INOP flag PID 062 will be changed without installing the DNBR and LPD trip bypasses per the Shift Manager.</p>				
1	SELECT CPC mode on the Operator Module.	PLACE the Calculator Select switch to the CPC position and OBSERVE white CPC light ON.		
2	If changing Addressable Constant Point IDs 060 through 104, <u>then</u> RECORD the initial values for point IDs 179 and 406 in the CPC Addressable Constants Change Log.	DEPRESS the DISPLAY pushbutton and then 1, 7, 9 on the keypad. RECORD the resulting value in the appropriate column of the CPC Addressable Constants Change Log.		
3	If changing Addressable Constant Point IDs 060 through 104, <u>then</u> RECORD the initial values for point IDs 179 and 406 in the CPC Addressable Constants Change Log.	DEPRESS the DISPLAY pushbutton and then 4, 0, 6 on the keypad. RECORD the resulting value in the appropriate column of the CPC Addressable Constants Change Log.		
4*	TURN the FUNCTION keylock to ON (allows the operation of the function keys).	OBTAIN Key #52 for CPC D FUNCTION keylock, INSERT and TURN the FUNCTION KEYS keylock to ON and OBSERVE amber FUNCTION KEYS light illuminated.		

JPM: SONGS RO NRC JPM S-8 TITLE: Set CEAC No. 1 Inoperable Flag in CPC Channel D

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
5*	DEPRESS CHANGE VALUE.	DEPRESS the CHANGE VALUE pushbutton.		
6*	ENTER the 3-digit Point ID number; leading zeros maybe required to make Point ID number three digits.	DEPRESS 0, 6, and 2 on the keypad.		
7	VERIFY the value for Point ID displayed matches the value in the CPC Addressable Change Constants Log.	REFER to CPC Addressable Change Constants Log and VERIFY current PID 062 display matches the last entry in the log (0).		
8*	DEPRESS the ENTER key.	DEPRESS the ENTER key.		
9*	ENTER the new value for the point being changed.	DEPRESS 0, 0, 1 or 1 on the keypad. (Either method works.)		
10*	PRESS EXECUTE to complete the value change.	DEPRESS the EXECUTE key.		
11	VERIFY that VALUE displayed on CPC Readout is correct.	OBSERVE the VALUE display and VERIFY that it is 1.		
12	TURN the FUNCTION keylock to OFF.	TURN the FUNCTION KEYS keylock to the OFF position.		
13	<u>When</u> all constants have been changed for a given channel, <u>then</u> Operations INDEPENDENTLY VERIFY the FUNCTION keylock switch in OFF <u>and</u> make a log entry documenting status.	CONTACT another operator to PERFORM an Independent Verification.		
CUE: Another operator will perform the Independent Verification.				

JPM: SONGS RO NRC JPM S-8 TITLE: Set CEAC No. 1 Inoperable Flag in CPC Channel D

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
14	If changing Addressable Constant Point IDs 060 through 104, <u>then</u> RECORD the final values for Point ID 179 and 406 in the CPC Addressable Constants Change Log.	DEPRESS the DISPLAY pushbutton and then 1, 7, 9 on the keypad. RECORD the resulting value in the appropriate column of the CPC Addressable Constants Change Log.		
15	If changing Addressable Constant Point IDs 060 through 104, <u>then</u> RECORD the final values for Point ID 179 and 406 in the CPC Addressable Constants Change Log.	DEPRESS the DISPLAY pushbutton and then 4, 0, 6 on the keypad. RECORD the resulting value in the appropriate column of the CPC Addressable Constants Change Log.		
16	If changing Point ID 062 (CEAC INOP Flag) to a value of 1, 2, or 3, <u>then</u> VERIFY the CEAC INOP light illuminates on the CPC Operators Module.	OBSERVE the CEAC INOP light illuminated on the CPC Operators Module.		
17	If changing Addressable Constant Point IDs 060 through 104, <u>then</u> ENSURE that the CPC Addressable Constants Change Log has been updated for the Point ID that was changed, <u>and</u> that the value recorded was actually entered into the CPC.	RECORD the value "1" in the "Value Entered" Column of CPC Addressable Constants Change Log and RECORD the CPC Readout on the CPC Addressable Constants Change Log.		
18	ENSURE Addressable Constant Point ID 419 is reset to 0.	DEPRESS the DISPLAY pushbutton and then 419 on the keypad and OBSERVE the value for Point ID 419 is zero (0).		

JPM: SONGS RO NRC JPM S-8 TITLE: Set CEAC No. 1 Inoperable Flag in CPC Channel D

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
19	If a Type I Addressable Constant was changed, <u>then</u> ENSURE the TYPE I Constant Change Notification has been completed.	CONTACT the Control Room Supervisor to DETERMINE if a TYPE I Constant Change Notification has been completed.		
<p style="text-align: center;">TERMINATING CUE:</p> <p style="text-align: center;">The TYPE I Constant Change Notification is being addressed by the CRS. This JPM is complete.</p> <p style="text-align: right;">Stop Time: _____</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM P-1**

INITIAL PLANT CONDITIONS

You are the Unit 2 (Unit 3) Primary ACO.

The Control Room has been evacuated due to dense smoke. All operators are stationed at plant locations required for this condition, and are available to perform actions at their locations.

The fire has resulted in a loss of offsite power. Bus 2A04 (Bus 3A04) is energized by Diesel Generator 2G002 (3G002).

Offsite power is now available and the Control Room is habitable.

The process of returning the Control Room command function to the Control Room is in progress using SO23-13-2, Shutdown from Outside the Control Room, Attachment 18.

TASK TO BE PERFORMED

Transfer 1E 4 kV Bus 2A04 (Bus 3A04) from 2G002 (3G002) Diesel Generator to the Reserve Auxiliary Transformer per SO23-13-2, Shutdown from Outside the Control Room, Attachment 18, using Step 3.4.

When complete, shutdown Diesel Generator 2G002 (3G002) locally and transfer control back to the Control Room using SO23-2-13, Diesel Generator Operation, Attachment 2, Step 2.9.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM P-1

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR
		_____	_____
ACTUAL TESTING ENVIRONMENT:	PLANT	_____	SIMULATOR
		_____	_____
ACTUAL TESTING METHOD:	PERFORMED	_____	SIMULATED
		_____	_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM P-1

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 11 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: PPEO

TASK SYS ID: 705, 2802

TASK DESCRIPTION

Perform Primary ACO assigned actions during shutdown of the unit from outside the Control Room.

Restore offsite power during response to an emergency event.

KA NUMBER: 068 AA1.31

KA VALUES: **RO** 3.9 **SRO** 4.0

10CFR55.45 APPLICABILITY: 6, 8

REFERENCES:

SO23-13-2, Shutdown From Outside the Control Room, Rev. 8-1.

SO23-2-13, Diesel Generator Operation, Rev. 26-3.

AUTHOR: L. Zilli _____

DATE: 08/15/01 _____

OPERATIONS REVIEW: W. Reeves _____

DATE: 09/28/01 _____

APPROVED BY: A. Hagemeyer _____

DATE: 10/08/01 _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
2	Updated to current rev of procedure and corrected Attachment numbers. Incorporated new procedure SO23-3-3.23 used to shutdown the EDG and added critical steps as necessary to comply with procedure steps. Modified JPM so that it can be performed on either unit.	LRZ	08/10/01	REV
2-1	Updated SO23-13-2 Revision number and compared steps in JPM to updated references. Added more details to Initial Plant Condition. Added Cues at beginning of SO23-2-13 actions. Changed DG reference to reflect different procedure usage (SO23-2-13)	JGA	08/04/03	KR
2-1	Compared against SO23-13-2, Rev. 8-1 and SO23-2-13, Rev. 26-3 with changes required to address procedure revisions.	LRZ	07/14/06	

SET-UP

EXAMINER:

NOTE: Circle the unit on which this JPM will be performed and inform the examinee.

Provide the examinee with a copy of SO23-13-2, Shutdown From Outside the Control Room, Attachment 18, Returning the Control Room Command Function to the Control Room.

Provide the examinee with a copy of SO23-2-13, Diesel Generator Operation, Attachment 2, Diesel Generator Operation, with Section 1.0 and appropriate N/As filled in for a local stop from idle speed.

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Circle the unit on which this JPM will be performed and inform the Examinee.				
NOTE: Provide the examinee with a copy of SO23-13-2, Shutdown from Outside the Control Room, Attachment 18.				
CUE: You have Safe Shutdown Kit 23 (33).				
CUE: All steps in this JPM will be simulated.				
1*	ENSURE all Mode Select and Fire Isolation Switches aligned to allow control from the Control Room: G-002 D/G Control on L-160 is selected to REMOTE & LOCAL.	PLACE 2(3)HS-1670A1, Fire ISO. Switch DG Control on 2(3)L-160, in REM & LOC position.		Start Time: _____
CUE: The switch is in the Remote & Local position.				
2*	ENSURE all Mode Select and Fire Isolation Switches aligned to allow control from the Control Room: G-002 Gov. and Exct. Cont. on L-160 is selected to REMOTE & LOCAL.	PLACE 2(3)HS-1669A1, Fire ISO. Switch GOV. & EXCT. CONT on 2(3)L-160, in REM & LOC position.		
CUE: The switch is in the Remote & Local position.				
3*	ENSURE all Mode Select and Fire Isolation Switches aligned to allow control from the Control Room: G-002 D/G Building Fans on L-160 is selected to REMOTE & LOCAL.	PLACE 2(3)HS-9537E1, Fire ISO. Switch DG BLDG Fans on 2(3)L-160, in REM & LOC position.		
CUE: The switch is in the Remote & Local position.				

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
4*	ENSURE all Mode Select and Fire Isolation Switches aligned to allow control from the Control Room: Fuel Oil Transfer Pumps on L-160A (L-161A) selected to C.R.	PLACE Fuel Oil Transfer Pump switches on 2L-160A (3L-161A) in the CONTROL ROOM position: <ul style="list-style-type: none"> • 2(3)HS-5901B1 for Pump P093 • 2(3)HS-5902B1 for Pump P096 		
CUE: The switches are in the Control Room position.				
5	ENSURE all Mode Select and Fire Isolation Switches aligned to allow control from the Control Room: D/G G-002 Output Breaker A0413 on L-412 selected to REMOTE.	CONTACT Operator at ESF Switchgear Room to obtain status of A0413 breaker control at 2(3)L-412.		
CUE: G-002 Output Breaker A0413 on 2(3)L-412 is selected to Remote.				
6	ENSURE all Mode Select and Fire Isolation Switches aligned to allow control from the Control Room: LOCAL Mode Select HS-1665-1 (HS-1664-2) on CR-63 Backlight extinguished.	CONTACT Control Room to verify LOCAL CONTROL Mode Selector 2HS-1665-1 (3HS-1664-2) on CR-63 Backlight is extinguished.		
CUE: Control Room reports 2HS-1665-1 (3HS-1664-2) on CR-63 Local Control backlight extinguished.				
7	Ensure CLOSED DC control power breaker for the associated 1E 4 kV Bus Supply Breaker: A04-18, Reserve Aux. Transformer.	CONTACT Control Room or local Operator to VERIFY DC control power breaker for 2(3)A0418, Reserve Auxiliary Transformer is closed.		
CUE: The 22 (32) reports 2(3)A0418 DC control power breaker closed.				

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
8	Transfer 1E loads to the Reserve Aux. Transformer per SO23-2-13, Attachment for Diesel Generator Operation, by performing the following Sections: <ul style="list-style-type: none"> • Paralleling a Diesel Supplied Bus to the RAT • Unloading the Diesel Generator • Stopping the Diesel Generator 	TRANSFER 1E loads to the Reserve Aux. Transformer per SO23-2-13, Attachment for Diesel Generator Operation, by performing the following Sections: <ul style="list-style-type: none"> • Paralleling a Diesel Supplied Bus to the RAT • Unloading the Diesel Generator • Stopping the Diesel Generator 		
CUE: The Control Room has energized Bus 2(3)A04 from Reserve Aux Transformer 2(3)XR1.				
CUE: The Control Room has unloaded DG 2(3)G002 and opened the output breaker. DG 2(3)G002 is running at 900 RPM. The Control Room Supervisor directs you to stop the Diesel Generator using SO23-2-13, Section 2.9.				
NOTE: Provide the Examinee with a copy of SO23-2-13, Diesel Generator Operations, Attachment 2, Diesel Generator Operation.				
9	Transfer Diesel Control to LOCAL as follows: TRANSFER HS-1665-1(HS-1644-2), MODE SELECTOR to LOCAL CONTROL at CR-63.	NOTIFY Control Room to transfer Diesel Control to LOCAL CONTROL at CR-63.		
CUE: The Control Room has transferred the 2(3)G002 Diesel to LOCAL.				
10	Transfer Diesel Control to LOCAL as follows: VERIFY ILLUMINATED ZL-E918 (ZL-E968), LOCAL CONTROL light. [L-160(L-161)]	OBSERVE LOCAL CONTROL light 2(3)ZL-E918 on Panel 2(3)L-160 illuminated.		

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
CUE: The LOCAL CONTROL light is ON.				
11*	Reduce speed to idle, as follows: DEPRESS HS-1701A(B), IDLE SPEED ON pushbutton. [L-160(L-161)]	DEPRESS 2(3)HS-1701A, IDLE SPEED ON red pushbutton on 2(3)L-160.		
CUE: Diesel generator sound changes to indicate a reduction in speed.				
12	Reduce speed to idle, as follows: VERIFY ILLUMINATED ZL-1700A(B), IDLE SPEED light. [L-160(L-161)]	OBSERVE 2(3)ZL-1700A IDLE SPEED indicator white light illuminated on 2(3)L- 160.		
CUE: The IDLE SPEED light is ON.				
13	Reduce speed to idle, as follows: Verify the Diesel at idle speed.	OBSERVE 2(3)G002 Diesel fuel rack movement and/or INDICATE the sound of the Diesel speed lowering would be heard.		
CUE: The Diesel was loaded. It is now running at idle speed.				
14	Allow to run at idle for at least: (Check one.) Diesel was loaded: 15 minutes	CHECK "15 minute" block and VERIFY diesel runs at idle speed for at least 15 minutes.		
CUE: 15 minutes have passed.				
15	Ensure both AC Lube Oil Circulating Pumps <u>and</u> both Turbocharger Pumps are operating.	OBSERVE indicating lights on: <ul style="list-style-type: none"> • 2(3)ZL-E925B Engine 1 AC Lube Oil Circ Pump/Turbocharger Pump on 2(3)L- 160. • 2(3)ZL-E925A Engine 2 AC Lube Oil Circ Pump/Turbocharger Pump on 2(3)L- 160. 		

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
	CUE: The red lights for both sets of pumps are ON.			

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
16	Verify the Air Start Manifolds > 185 psig as indicated on PI-5958A(C) & PI-5958B(D).	OBSERVE pressure indicators for the Air Start Manifolds greater than 185 psig on: <ul style="list-style-type: none"> • 2(3)PI-5958A on 2(3)L-286, Engine 2. • 2(3)PI-5958B on 2(3)L-287, Engine 1. 		
CUE: Both Air Start Manifolds indicate 200 psig.				
17*	Locally Shut Down the Diesel as follows: <u>After</u> notifying the Control Room that the Diesel has run in idle for >15 minutes or >5 minutes, as required, <u>or</u> if <i>locally stopping</i> from 900 rpm, <u>then</u> ROTATE HS-5995-1(2), Local Engine Control, to STOP and RECORD time.	NOTIFY the Control Room that the Diesel has run for 15 minutes then ROTATE 2(3)HS-5995-1, Local Engine Control Switch to the STOP position and RECORD the time.		
CUE: Control Room acknowledges securing of the Diesel. The Diesel is stopped.				
18*	Return Diesel Control to Control Room, as follows: DEPRESS HS-1702A(B), IDLE SPEED OFF. [L-160(L-161)].	DEPRESS 2(3)HS-1702A, IDLE SPEED OFF green pushbutton on 2(3)L-160.		
19	Return Diesel Control to Control Room, as follows: VERIFY EXTINGUISHED ZL-1700A (B), IDLE SPEED light. [L-160(L-161)].	VERIFY 2(3)ZL-1700A, IDLE SPEED indicator light extinguished on 2(3)L-160.		
CUE: The Idle Speed light is off.				

JPM: SONGS RO/SRO NRC JPM P-1 TITLE: Transfer 4 kV Bus from EDG to the RAT then to the Control Room

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
20	Return Diesel Control to Control Room, as follows: DEPRESS HS-1665-1(HS-1644-2), MODE SELECTOR, LOCAL CONTROL pushbutton at CR-63 to transfer Diesel Control to the Control Room.	NOTIFY the Control Room that Diesel Control is ready to be transferred to the Control Room.		
CUE: The Control Room has transferred the 2(3) G002 Diesel to Remote.				
21	Return Diesel Control to Control Room, as follows: VERIFY EXTINGUISHED ZL-E918 (ZL-E968), LOCAL CONTROL light. [L- 160(L-161)].	OBSERVE LOCAL CONTROL light 2(3)ZL-E918 on Panel 2(3)L-160 is OFF.		
<p style="text-align: center;">TERMINATING CUE:</p> <p style="text-align: center;">The Local Control light is OFF.</p> <p style="text-align: center;">This JPM is complete.</p> <p style="text-align: right;">Stop Time: _____</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM P-2**

INITIAL PLANT CONDITIONS

As a Radwaste Operator, you have been notified by the Unit 2 (Unit 3) Control Room of a "CEDMCS TIMER FAILURE" alarm and directed to investigate the problem.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to perform the actions of Unit 2 (Unit 3) Annunciator Response Procedure SO23-15-50.A2, CEDMCS TIMER FAILURE (50A40) using the locally posted instructions.

JOB PERFORMANCE MEASURE

SONGS RO/SRO NRC JPM P-2

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR
	_____	_____	_____
ACTUAL TESTING ENVIRONMENT:	PLANT		SIMULATOR
	_____	_____	_____
ACTUAL TESTING METHOD:	PERFORMED		SIMULATED
	_____	_____	_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM P-2

JPM LEVEL: RO/SRO

ESTIMATED TIME TO COMPLETE: 14 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: RWOP

TASK SYS ID: 1076

TASK DESCRIPTION

Transfer a CEA to the hold bus.

KA NUMBER: 001 A2.14

KA VALUES: **RO** 3.7 **SRO** 3.9

10CFR55.45 APPLICABILITY: 3, 13

REFERENCES:

SO23-15-50.A2, CEDMCS Timer Failure, Rev. 10-1.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
2	Compared against SO23-15-50.A2, Rev. 6, TCN 6-3 with major changes required. Deleted steps no longer required to place a CEA on the hold bus.	LRZ	07/10/00	WLL
2-1	Compared against SO23-15-50.A2, Rev. 8, TCN 8-4, 50A40. Added one non-critical step and one cue to reflect changes in procedure.	RCW	11/4/03	AHH
3	Compared against SO23-15-50.A2, Rev. 10-1, 50A40. Modified JPM as follows: Deleted one critical step and replaced with a different critical step to comply with the procedure change for a CEDMCS Timer failure.	LRZ	07/19/06	REV

SET-UP

EXAMINER:

NOTE: Circle the unit on which this JPM will be performed and inform the examinee.

Provide the examinee with a copy of SO23-15-50.A2, CEDMCS Timer Failure.

JPM: SONGS RO/SRO NRC JPM P-2 TITLE: CEDMCS Timer Failure Actions

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Circle the unit on which this JPM will be performed and inform the examinee.				
NOTE: Provide the examinee with a copy of SO23-15-50.A2, CEDMCS Timer Failure.				
CUE: All steps in this JPM will be simulated.				
1	Proceed to Unit 2(3) CEDMCS Room.	PROCEED to Unit 2(3) CEDMCS Room.		Start Time: _____
NOTE: Provide the next two cues as the examinee reads the posted instructions.				
2	Verify the alarm is solid.	CONTACT the Control Room to DETERMINE if the 50A40, CEDMCS Timer Failure alarm is solid.		Start Time: _____
CUE: The 50A40, CEDMCS Timer Failure alarm in the Control Room is in solid.				
3	DETERMINE CEA(s) affected by observing the CEA Timer Failure Alarm lamps lit on 2(3)L-038(C-4).	DETERMINE CEA(s) affected by OBSERVING the CEA Timer Failure Alarm lamps lit on 2(3)L-038(C-4), on Panel 2(3)UI-J120.		
CUE: CEA #22 Timer Failure lamp is illuminated on Panel 2(3)L-038(C-4).				
4	Verify the Holding Bus is available as indicated by the following lamps extinguished (on appropriate Maintenance Supply Lamp Panel): <ul style="list-style-type: none"> • HOLDING BUS FAILURE • SUBGROUP MAINTENANCE 	OBSERVE “HOLDING BUS FAILURE” and “SUBGROUP MAINT” lamps for C2 on Maintenance Supply Lamp Panel 2(3)UI-J122.		
CUE: “HOLDING BUS FAILURE” and “SUBGROUP MAINTENANCE” lamps for C2 are extinguished.				

JPM: SONGS RO/SRO NRC JPM P-2 TITLE: CEDMCS Timer Failure Actions

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
5	Notify the Control Room of the Holding Bus / Subgroup Maintenance Lamps status and intentions of performing Step1.3.3.	NOTIFY the Control Room that the Holding Bus Failure and Subgroup Maintenance Lamps are extinguished and intention to PERFORM Step1.3.3.		
CUE: The Control Room acknowledges the performance of Step 1.3.3.				
6*	SELECT the Subgroup Maintenance switch to the UP position for the affected Subgroup.	PLACE Subgroup Maintenance switch in UP position for Subgroup 05, Supplied From Hold Bus C2 on Panel 2(3)UI-J122.		
CUE: Subgroup lamp for Subgroup 05 is illuminated.				
7*	ACTUATE the MAN TRANS switch on the respective ACTM.	ACTUATE the MAN TRANS switch on ACTM 22 located behind Panel 2(3)UY-J133C, Card Status Monitor.		
8*	OPEN the circuit breaker(s) to the CEAs that have their CEA Timer Failure Alarm Lamps illuminated.	OPENING CEA #22 individual disconnect circuit breaker on 2(3)UI-J131C, Power Switch Assembly for Subgroup 05.		
9	Initiate an AR for I&C to troubleshoot / investigate.	INITIATE an Action Report for I&C to troubleshoot / investigate.		
CUE: Another operator will initiate the Action Request.				
10	Verify 50A40 alarm is clear in the Control Room.	CONTACT the Control Room and VERIFY 50A40 alarm has cleared.		
<p style="text-align: center;">TERMINATING CUE: Control Room reports that the 50A40 alarm has cleared. This JPM is complete.</p> <p style="text-align: right;">Stop Time: _____</p>				

JPM INFORMATION SHEET

JPM NUMBER

**SONGS Oct 2006 RO/SRO
NRC JPM P-3**

INITIAL PLANT CONDITIONS

You are the Auxiliary Operator.

Unit 2 (Unit 3) is in MODE 3, Hot Standby.

The Unit 2 (Unit 3) Atmospheric Dump Valve, 2HV-8419 (3HV-8419), was operated locally during the last shift and is currently 10% open.

TASK TO BE PERFORMED

The Control Room Supervisor directs you to restore Unit 2 (Unit 3) Atmospheric Dump Valve, 2HV-8419 (3HV-8419), to remote operation per SO23-3-2.18.1, Attachment 4, Step 2.2, Local Manual Operation of the Atmospheric Dump Valves.

SUGGESTED TESTING ENVIRONMENT:	PLANT	X	SIMULATOR
		_____	_____
ACTUAL TESTING ENVIRONMENT:	PLANT	_____	SIMULATOR
		_____	_____
ACTUAL TESTING METHOD:	PERFORMED	_____	SIMULATED
		_____	_____

OPERATOR'S NAME: _____

The operator's performance was evaluated against the standards contained in this JPM and is determined to be:

SATISFACTORY: _____
UNSATISFACTORY: _____

DOCUMENTATION

SONGS RO/SRO NRC JPM P-3

JPM LEVEL: RO / SRO

ESTIMATED TIME TO COMPLETE: 8 minutes

TIME CRITICAL JPM: NO **CRITICAL TIME:** N/A

POSITION: PPEO

TASK SYS ID: 141183

TASK DESCRIPTION

Operate the Atmospheric Dump Valve in Local Manual.

KA NUMBER: 039 A2.04

KA VALUES: **RO** 3.4 **SRO** 3.7

10CFR55.45 APPLICABILITY: 6

REFERENCES:

SO23-3-2.18.1, Atmospheric Dump Valve Operation, Rev. 13.

AUTHOR: L. Zilli _____

DATE: _____

OPERATIONS REVIEW: M. Jones _____

DATE: _____

APPROVED BY: A. Hagemeyer _____

DATE: _____

MODIFICATION HISTORY

REV	DESCRIPTION OF CHANGE	MODIFIED BY	DATE MODIFIED	SOT APPROVAL
1	Updated the JPM to the current New Format, separated combined steps, isolated the cues fro	GLM	09/13/93	MJK
1-1	Changed setup page; minor editorial corrections for clarity; changed estimated time from 15 to 8 minutes based on history.	HJW	03/17/94	N/A
1-2	Corrected KA number.	HJW	08/04/95	N/A
1-3	Compared to SO23-13-2.18.1, Rev. 8. No changes required. Updated KA to NUREG-1122, Rev. 1.	SGA	06/27/97	N/A
1-4	Compared against SO23-3-2.18.1, Rev. 10 with no changes required. Changed old task number to VISION SYS ID and updated the KA designation.	JJM	09/22/00	WLL
1-5	Compared against SO23-3-2.18.1, Rev. 10 with minor editorial changes required.	LRZ	05/11/01	WLL
1-6	Compared against SO23-3-2-18.1, TCN 11-1 and changed the number of the attachment to 4 from 6.	JJM	11/28/01	KR
1-7	Compared against SO23-3-2-18.1, TCN 12-1. Made minor editorial changes. Updated Task Sys ID.	RCW	09/01/04	AH
2	Compared against SO23-3-2-18.1, Rev. 13. Added step required by procedure revision.	LRZ	07/19/06	REV

SET-UP

EXAMINER:

NOTE: Circle the unit on which this JPM will be performed and inform the examinee.

Provide the examinee with a copy of SO23-3-2.18-1, Atmospheric Dump Valve Operation, Attachment 4.

JPM: SONGS RO/SRO NRC JPM P-3 TITLE: Operate the Atmospheric Dump Valve in Local-Manual

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
NOTE: Circle the unit on which this JPM will be performed and inform the examinee.				
NOTE: Provide examinee with a copy of SO23-3-2.18.1, Atmospheric Dump Valve Operation, Attachment 4.				
CUE: All steps in this JPM will be simulated.				
1*	MANUALLY CLOSE HV-8419.	TURN 2(3)HV-8419, S/G 2E088 Main Steam Dump to Atmosphere Train A handwheel in the clockwise direction.		Start Time: _____
CUE: The valve is closed.				
2*	ROTATE the Handwheel back and forth until pressure is relieved from the clevis.	ROTATE 2(3)HV-8419 S/G 2E088 Main Steam Dump to Atmosphere Train A handwheel BACK and FORTH until pressure is relieved from the clevis.		
CUE: The pressure is relieved from the clevis.				
3*	REMOVE the clevis from the detent in the Actuator Shaft.	REMOVE the clevis from the detent in the actuator shaft on 2(3)HV-8419, S/G 2E088 Main Steam Dump to Atmosphere Train A.		
CUE: The clevis is removed.				
4*	FULLY EXTEND the Manual Override Shaft by TURNING the Handwheel Counter-Clockwise until resistance is encountered.	FULLY EXTEND the Manual Override Shaft on 2(3)HV-8419, S/G 2E088 Main Steam Dump to Atmosphere Train A by TURNING the handle counter-clockwise until resistance is encountered.		
CUE: You feel resistance.				

JPM: SONGS RO/SRO NRC JPM P-3 TITLE: Operate the Atmospheric Dump Valve in Local-Manual

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
5*	<u>When</u> the Manual Override Shaft is fully extended, <u>then</u> SCREW the clevis fully into the Manual Override Shaft.	SCREW the clevis into the Manual Override Shaft on 2(3)HV-8419, S/G 2E088 Main Steam Dump to Atmosphere Train A.		
CUE: The clevis is in the Manual Override Shaft.				
6	ENSURE 2(3)PIC-8419-1, HV-8419 Controller, is adjusted to FULL CLOSED (0%) (CR-52).	CONTACT the Control Room to VERIFY that 2(3)PIC-8419-1, HV-8419 Atmospheric Dump Valve Position Controller is adjusted to FULL CLOSED 0% position at CR-52 in Control Room.		
CUE: The positioner is at zero.				
7	ENSURE 2(3) HS-8419-A1, HV-8419 Handswitch, selected to CLOSE (CR-52).	CONTACT the Control Room to VERIFY that the 2(3) HS-8419-A1, HV-8419 Atmospheric Dump Valve Control Switch is selected to CLOSE at CR-52 in Control Room.		
CUE: The hand switch is selected to CLOSE.				
8	ENSURE 2(3)HIC-8419-1, HV-8419 Controller, is adjusted to FULL CLOSED (0%) (L-042).	CONTACT the Control Room to VERIFY that 2(3)HIC-8419-1, HV-8419 Atmospheric Dump Valve Position Controller is adjusted to FULL CLOSED (0%) at L-042, Remote Shutdown Panel.		
CUE: The positioner is at zero.				

JPM: SONGS RO/SRO NRC JPM P-3 TITLE: Operate the Atmospheric Dump Valve in Local-Manual

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
9	ENSURE 2(3)HS-8419-B1, HV-8419 Handswitch, selected to CLOSE (L-042).	CONTACT the Control Room to VERIFY that the 2(3)HS-8419-B1, HV-8419 Atmospheric Dump Valve Control Handswitch is selected to CLOSE at L-042, Remote Shutdown Panel.		
CUE: The hand switch is selected to CLOSE.				
10*	CLOSE S2(3)1301MU1264, HV-8419 Controller Equalizing Valve.	CLOSE the Atmospheric Dump Valve 2(3)HV-8419, Valve Actuator Equalizing Valve, S2(3)1301MU1264.		
CUE: The equalizing valve is CLOSED.				
11*	OPEN S2(3)1301MU1304, HV-8419 Controller Instrument Air Isolation Valve.	OPEN the ADV Controller Instrument Air Isolation Valve, S2(3)1301MU1304, Instrument Air Header Inlet ISO Valve to 2(3)HV-8419 Actuator Train A.		
CUE: The valve is OPEN.				
12*	OPEN S2(3)1301MU1328, HV-8419 Positioner Nitrogen Isolation Valve.	OPEN the Atmospheric Dump Valve 2(3)HV-8419 Positioner Nitrogen Isolation Valve S2(3)1301MU1328, 2(3)HV-4819 Backup N ₂ Supply block Valve Train A.		
CUE: The valve is OPEN.				
13	PERFORM Remote Functional Stroke Test of HV-8419 Atmospheric Dump Valve.	CONTACT the Control Room to INFORM them that the Atmospheric Dump Valve is aligned for remote operation and ready for remote functional stroke testing after independent verification.		

JPM: SONGS RO/SRO NRC JPM P-3 TITLE: Operate the Atmospheric Dump Valve in Local-Manual

* Denotes a CRITICAL STEP

NO	PERFORMANCE STEP	STANDARD	S/U	COMMENTS (Required for Unsat)
<p>TERMINATING CUE: The Control Room has been contacted. This JPM is complete.</p> <p>Stop Time: _____</p>				

JPM CHECKLIST

1. The JPM is:
 - a. X Supported by facility's job task analysis.
 - b. X Operationally important (meets threshold criterion of K/A 3.0 or greater).
 - c. X Designed as either SRO only, or RO/SRO.

2. Each JPM includes:
 - a. X Initial conditions.
 - b. X Initiating cues.
 - c. X References, including associated procedures.
 - d. X Performance standards which are specific in that control and indication nomenclature and criteria (switch position, meter reading) are specified, even if these criteria are not specified in the procedural step.
 - e. X System response cues that are complete and correct so that the examiner can properly cue the Examinee, if asked.
 - f. X Statements describing important actions or observations that should be made by the Examinee.
 - g. X Criteria for successful completion.
 - h. X Identification of the critical steps and their associated performance standards.
 - i. X Validated time limits (average time allowed for completion).
 - j. X JPMs identified as time critical or not time critical by the Operations Division based on NRC commitments.

COMPLETED BY: L. Zilli **DATE:** 09/05/06

Facility:	San Onofre	Scenario No.:	1	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> • ~98.7% power - RCS Boron is 1542 ppm by Chemistry Sample • Train A Component Cooling Water Pump (P-025) in service • Train A Charging Pump (P-190) OOS • Train A Saltwater Cooling Pump (P-307) OOS • Train A Low Pressure Safety Injection Pump (P-015) OOS • Condenser Air Ejector Low Range Radiation Monitor (RM-7818) OOS 				
Turnover:	Maintain steady-state power conditions..				
Critical Tasks:	<ul style="list-style-type: none"> • Restore feedwater flow to one Steam Generator. • Restore power to 4 kV Bus A03 and/or A07. 				
Event No.	Malf. No.	Event Type*	Event Description		
1 + 5 min			Security Warning from the Security Shift Commander.		
2 +15 min	CV22B	C (CO, CRS) TS (CRS)	Charging Pump P-191 trip.		
3 +25 min	RC16B	I (CO, CRS) TS (CRS)	Pressurizer Level Control Channel fails high (LT-0110-2).		
4 +35 min	CV16B	I (CO, CRS)	Volume Control Tank Level Instrument fails low (LT-0227).		
5 +40 min	FW11	C (ACO, CRS)	Condensate Pump P-050 overcurrent trip.		
6 +45 min	ED04A FW23	M (ALL)	Bus 2A03 overcurrent trip. Loss of Condenser vacuum (+2 min post-trip). Loss of Main Feedwater.		
7 +45 min	Bus 2A07 XFR LP	C (ACO)	Bus 2A07 fails to transfer upon Unit trip.		
8 +45 min	FW02A FW02B FW25	C (ACO)	Aux. Feedwater Pump P-141 shaft seizure (+2 min post-trip). Aux. Feedwater Pump P-504 shaft seizure (+2 min post-trip). Aux. Feedwater Pump P-140 overspeed trip (+1 min post-trip).		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specifications					

SCENARIO SUMMARY NRC #1

The crew will assume the shift and maintain steady-state conditions per SO23-5-1.7, Power Operations.

The scenario will begin with the crew receiving a security warning.

Portions of this scenario were redacted during SUNSI review.

When the security event actions are complete, Charging Pump P-191 will trip and be addressed per the Annunciator Response Procedures (ARPs) and SO23-3-2.1, Chemical and Volume Control System Operations. The CRS will evaluate Technical Specifications.

After the crew has stabilized the plant, a Pressurizer Level instrument fails high and will require crew actions per the ARPs and AOI SO23-13-27, Pressurizer Pressure and Level Malfunction. The CRS will evaluate Technical Specifications.

When the plant is stable, the VCT Level Transmitter (LT-227) will fail low. The crew will secure Charging and Letdown per the ARPs and SO23-3-2.1, CVCS Charging and Letdown Operations and/or SO23-3-2.2, Makeup Operations. The Control Operator will manually operate the Charging Pumps to control Pressurizer level.

When plant conditions are stable, a Condensate Pump will trip and the standby pump will fail to auto start. The crew will respond per the Annunciator Response Procedures.

The major event begins with a loss of Bus 2A03 and total loss of vacuum. This will require a plant trip due to a loss of Main Feedwater flow. The crew will enter SO23-12-1, Standard Post Trip Actions. This is followed by a total loss of feedwater that will necessitate entry into SO23-12-6, Loss of Feedwater. The ACO will be required to manually transfer Bus 2A07 during post-trip SPTAs.

Event termination will occur when Bus 2A07 power is restored and the Steam Generators are depressurized sufficiently to allow the remaining Condensate Pumps to supply feedwater flow.

Risk Significance:

- Risk important components out of service: Charging P-190, LPSI P-015, SWC P-307
- Risk significant core damage sequence: Loss of all feedwater
- Risk significant operator actions: Depressurize and restore feedwater flow to at least one SG

Scenario Event Description

NRC Scenario 1

SONGS

2006 Facility NRC Initial License Examination

Simulator Scenario Setup

Scenario 1

MACHINE OPERATOR'S INSTRUCTIONS

SETUP

IC: Use IC #181 and see attached Event File for NRC Scenario #1.

Op Test No.:	<u> NRC </u>	Scenario #	<u> 1 </u>	Event #	<u> 1 </u>	Page	<u> 4 </u>	of	<u> 22 </u>
Event Description:	Security Event								
Time	Position	Applicant's Actions or Behavior							

Machine Operator: EXECUTE IC #181 and NRC Scenario #1 SETUP file to align components.

ENSURE Control Board Tags are hung on P-190, P-015 and P-307.

ENSURE Operator Aid Tags #029 (CVCS) and #005-4 (CVCS Ion Exchanger) reflect the scenario boron concentration.

ENSURE procedures in progress are on the CO desk:

- Copy of SO32-5-1.7, Power Operations, open to Section 6.4, Guidelines for Steady State Operation.

Control Room Annunciators in Alarm at 100%:

57A51 – SI / ECW SYS TRAIN A INOPERABLE
58A51 – CHARGING PUMP P-190 OVERRIDE / NOT IN AUTO

Machine Operator: this event redacted from public view due to SUNSI requirements.

Indications available:

None

+1 min	CRS	
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	CRS	
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+2 min	CO/ACO	
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	CRS	
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+5 min	CRS	
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When the AOI actions are addressed, or at Lead Evaluator's discretion, PROCEED to Event 2.

Op Test No.: NRC Scenario # 1 Event # 1 Page 5 of 22

Event Description: Security Event

Time	Position	Applicant's Actions or Behavior
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Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>2</u>	Page	<u>6</u>	of	<u>22</u>
Event Description:		Charging Pump P-191 Trip							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE CV22B, Charging Pump P-191 trip.		
<u>Indications available:</u>		
58A42 – CHARGING PUMP P191 TRAIN A OC		
58A12 – CHARGING HEADER FLOW LO		
+30 secs	CO	REFER to Annunciator Response Procedures.
	CO	DETERMINE Charging Pump P-191 is tripped and INFORM the CRS.
	CRS	DIRECT placing a Standby Charging Pump P-192 in service.
	CO	START Charging Pump P-192 and PLACE P-192 as the Lead Pump in Auto.
	CO	PLACE Charging Pump P-191 in MANUAL and STOP.
+2 min	CRS	DISPATCH a PEO to the 50' Control Building to determine the cause of the trip and DIRECT performance of SO23-3-2.1, CVCS Operations to align systems to normal.
M.O. Cue: If directed to check Charging Pump 2P-191, WAIT 3 minutes, then REPORT that the motor is hot and has an odor of burnt insulation. If directed to rack out Charging Pump 2P-191 breaker, WAIT 2 minutes, then EXECUTE remote functions CV77B, DC power on Train A and CV78B, P-191 Breaker, and REPORT that P-191 breaker is racked out.		
+4 min	CRS	CONTACT Maintenance to investigate Charging Pump P-191.
+4 min	CRS/CO	DIRECT performance of SO23-6-9, Section 6.9 kV, 4kV and 480V Bus And Feeder Faults for P-191.

Op Test No.: NRC Scenario # 1 Event # 2 Page 7 of 22

Event Description: Charging Pump P-191 Trip

Time	Position	Applicant's Actions or Behavior
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+10 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> <li data-bbox="565 478 1333 548">• 3.1.9.A, Boration Systems - Operating is applicable (72 hour ACTION).
		<ul style="list-style-type: none"> <li data-bbox="618 569 1281 600">• Restore boron injection flowpath to OPERABLE.
<p><i>When systems are re-aligned to normal <u>and</u> Technical Specifications are addressed, PROCEED to Event 3.</i></p>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>3</u>	Page	<u>8</u>	of	<u>22</u>
Event Description:		PZR Level Control Channel LT-0110-2 Fails High							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE RC16B, PZR Level Controlling Channel Y LT-0110-2 fails high.		
<u>Indications available:</u>		
50A22 – PZR LVL ERROR HI		
50A12 – PZR LVL HI-HI		
Letdown flow INCREASING		
+1 min	CO	REFER to Annunciator Response Procedures.
	CO	OBSERVE minimum Charging flow and maximum Letdown flow.
	CO	DETERMINE Letdown and Charging systems are NOT responding as desired and PERFORM the following:
		<ul style="list-style-type: none"> • DEPRESS the A/M button on LIC-0110, PZR Level Controller, to place PZR level control in MANUAL. • START Charging Pumps to match Letdown flow as closely as possible. • ADJUST LIC-0110, PZR Level Controller, to match Letdown and Charging flows. • SECURE PZR heaters as necessary to control RCS pressure. • MONITOR PZR level and maintain stable.
+2 min	CO	DETERMINE that PZR Level Channel Y (LI-0110A2) is cause of failure and INFORM the CRS AOI SO23-13-27 entry required.
	CRS	DIRECT performance of SO23-13-27, Pressurizer Pressure and Level Malfunction, to transfer PZR Level Control to the operable transmitter.
	CO	VERIFY Level Channel X (LI-0110X) is OPERABLE.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>3</u>	Page	<u>9</u>	of	<u>22</u>
Event Description:		PZR Level Control Channel LT-0110-2 Fails High							
Time	Position	Applicant's Actions or Behavior							

	CO	ENSURE LIC-0110 is in MANUAL with stable Letdown flow.
+5 min	CO	POSITION HS-0110, PZR Level Channel Select switch, to Channel X.
	CO	On LIC-0110 (page 1), MATCH actual level (middle column) with the Pressurizer Level setpoint (left column) by ADJUSTING the output (right column) to within 2%.
	CO	TRANSFER LIC-0110 PZR Level Controller to AUTO by depressing the A/M pushbutton.
	CO	DEPRESS HS-0100C, PZR Lo-Lo Level Heater Cutout Channel selector, selecting OPERABLE Level Transmitter X.
	CO	RESET PZR heaters by depressing OFF, then AUTO.
	CO	RESTORE Backup Charging Pumps to AUTO.
NOTE:	Crew may elect to switch the CFMS point display for PZR level from Channel Y to Channel X.	

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

Event Description: PZR Level Control Channel LT-0110-2 Fails High

Time	Position	Applicant's Actions or Behavior
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+10 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> • 3.3.11.A, Post Accident Monitoring Instrumentation is applicable (30 day ACTION).
		<ul style="list-style-type: none"> • Restore required channel to OPERABLE status.
		<ul style="list-style-type: none"> • 3.4.9.B, Pressurizer Heaters is applicable (72 hour ACTION).
		<ul style="list-style-type: none"> • Restore required group of Pressurizer Heaters to OPERABLE status.
<p><i>When Technical Specifications are addressed, or at Lead Evaluator's discretion, PROCEED to Event 4.</i></p>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>4</u>	Page	<u>11</u>	of	<u>22</u>
Event Description:		VCT Level Transmitter LT-0227 Fails Low							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE CV16B, VCT Level Transmitter, LT-0227 fails low.		
<u>Indications available:</u>		
58A04 - VCT LEVEL LO/LO		
VCT Level Indicator LI-0227A lowering (on PMS)		
VCT Outlet Valve LC-0227B closes		
RWST to Charging Pump Suction Valve LV-0227C opens		
+30 sec	CO	REFER to Annunciator Response Procedures.
	CO	DETERMINE that VCT suction has shifted from the VCT to the RWST and INFORM the CRS that ARP SO23-15.58A entry required.
	CO	CHECK VCT Level indicator LI-0226 and DETERMINE that level is normal.
	CO	IDENTIFY that VCT level indicator LI-0227 has failed low.
+1 min	CRS	DIRECT securing of Charging and Letdown.
	CO	STOP any operating Charging Pumps.
	CO	ISOLATE Letdown by CLOSING TV-0221 or HV-9204 or HV-9205 or HV-9267.
	CO	OPERATE Charging Pumps as necessary to control Pressurizer level.
+5 min	CRS	DIRECT performance of SO23-3-2.2, Makeup Operations to ensure proper CVCS alignment is achieved.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>4</u>	Page	<u>12</u>	of	<u>22</u>
Event Description:	VCT Level Transmitter LT-0227 Fails Low								
Time	Position	Applicant's Actions or Behavior							

+10 min	CRS	REQUEST I&C assistance.
<i>When Charging Pump control is established and Letdown is isolated, or at Lead Evaluator's discretion, PROCEED to Event 5.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>5</u>	Page	<u>13</u>	of	<u>22</u>
Event Description:		Condensate Pump P-050 Trip							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE FW11, Condensate Pump P-050 trip.

Indications available:

53B44 - CONDENSATE PUMP OC
53B47 - CONDENSATE PRESSURE LO
52A13 - FWCS TROUBLE

+1 min	ACO	REFER to Annunciator Response Procedures.
	ACO	DETERMINE that Condensate Pump P050 has tripped on overcurrent and INFORM the CRS that ARP SO23-15.53A entry required.
	ACO	DETERMINE that Condensate Pump P053 has NOT auto started and recommend starting Condensate Pump P053.
	CRS	DIRECT starting of Condensate Pump P053.
	ACO	START Condensate Pump P053 and OBSERVE normal running current.
	CRS/ACO	OBSERVE Condensate and Feedwater System operation for any abnormal conditions.
+5 min	CRS	NOTIFY Electrical Maintenance to troubleshoot tripping of P050.

When the AOI actions are addressed, or at Lead Evaluator's discretion, PROCEED to Events 6, 7 and 8.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>14</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE ED04A, Bus 2A03 Trip, Failure of Bus 2A07 to transfer, FW25, P-140 trip (+1 minute post-trip), FW02A and FW02B, P-141 and P-504 trip (+2 minutes post-trip) and FW23, Loss of Vacuum at 100% severity (+2 minutes post-trip).		
<u>Indications available:</u> 53A03 – MFWP TURBINE K006 TRIP 53A08 – MFWP NPSH LO TRIP 53B03 – MFWP TURBINE K005 TRIP 53B05 – CONDENSATE PUMP P050 FLOW LO 53B06 – CONDENSATE PUMP P051 FLOW LO		
+30 secs	ACO	RECOGNIZE loss of both Main Feed Pumps and INFORM the CRS that reactor trip is required.
	CRS	DIRECT a Reactor trip and DIRECT crew to perform actions of SO23-12-1, Standard Post Trip Actions.
	CO/ACO	TRIP the Reactor and ENTER SO23-12-1, Standard Post Trip Actions.
NOTE: Crew may take all action required during SPTAs prior to reporting status.		
	CRS	INITIATE Administrative Actions:
		• RECORD time of Reactor trip.
		• ANNOUNCE Reactor trip via PA System.
		• INITIATE Attachment 4, WORKSHEET.
		• INITIATE Attachment 5, ADMINISTRATIVE ACTIONS.
	CO	VERIFY Reactivity Control criteria satisfied:
		• VERIFY Reactor trip circuit breakers (8) open

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>15</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • VERIFY maximum of one full length CEA – NOT fully inserted.
		<ul style="list-style-type: none"> • VERIFY Reactor power lowering and startup rate negative.
	CRS	DIRECT initiation of EFAS 1 and 2 due to loss of feedwater.
	ACO	INITIATE EFAS 1 and 2 due to loss of feedwater.
	ACO	VERIFY Vital Auxiliaries functioning properly:
		<ul style="list-style-type: none"> • VERIFY Main Turbine tripped.
		<ul style="list-style-type: none"> • HP and LP Stop and Governor Valves – closed.
		<ul style="list-style-type: none"> • MWE output – lowering.
		<ul style="list-style-type: none"> • VERIFY both Unit Output Breakers – open.
		<ul style="list-style-type: none"> • VERIFY Main Turbine speed - less than 2000 RPM OR - lowering.
		<ul style="list-style-type: none"> • VERIFY CCW Pump aligned to Non-Critical Loop (NCL) and Letdown Heat Exchanger.
		<ul style="list-style-type: none"> • VERIFY both 1E 4 kV Buses – energized.
		<ul style="list-style-type: none"> • VERIFY both 1E 480 V Buses B04 and B06 - energized.
		<ul style="list-style-type: none"> • VERIFY all 6.9 kV and Non-1E Buses – energized.
		<ul style="list-style-type: none"> • DETERMINE Bus 2A03 and Bus 2A07 both de-energized.
		<ul style="list-style-type: none"> • VERIFY all Class 1E DC Buses – energized.
CRITICAL TASK	ACO	Manually TRANSFER Bus 2A07 to the Reserve Auxiliary Transformer.
	CO	VERIFY RCS Inventory Control criteria satisfied:
		<ul style="list-style-type: none"> • VERIFY PZR level:
		<ul style="list-style-type: none"> • Between 10% and 70%.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>16</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Trending to between 30% and 60%.
		<ul style="list-style-type: none"> VERIFY Core Exit Saturation Margin greater than or equal to 20°F
		<ul style="list-style-type: none"> QSPDS page 611
		<ul style="list-style-type: none"> CFMS page 311
	CO	VERIFY RCS Pressure Control criteria satisfied:
		<ul style="list-style-type: none"> VERIFY PZR pressure (WR and NR):
		<ul style="list-style-type: none"> Between 1740 and 2380 psia and controlled.
		<ul style="list-style-type: none"> TRENDING to between 2025 psia and 2275 psia.
	CO	VERIFY Core Heat Removal criteria satisfied:
		<ul style="list-style-type: none"> VERIFY at least one RCP – operating.
		<ul style="list-style-type: none"> VERIFY core loop $\Delta T (T_H - T_C)$ – less than 10°F.
		<ul style="list-style-type: none"> VERIFY Core Exit Saturation Margin – greater than or equal to 20°F:
		<ul style="list-style-type: none"> QSPDS page 611
		<ul style="list-style-type: none"> CFMS page 311.
	ACO	DETERMINE RCS Heat Removal criteria NOT satisfied:
		<ul style="list-style-type: none"> DETERMINE SG levels are NOT between 21% and 80% NR.
		<ul style="list-style-type: none"> DETERMINE AFW is NOT available to restore SG levels.
		<ul style="list-style-type: none"> PREVENT SG High level:
		<ul style="list-style-type: none"> CLOSE MFW Block Valves HV-4047 and HV-4051.
		<ul style="list-style-type: none"> VERIFY heat removal adequate.
		<ul style="list-style-type: none"> Tc less than 555°F.
		<ul style="list-style-type: none"> SG Pressures approximately 1000 psia.
		<ul style="list-style-type: none"> VERIFY Tc greater than 545°F or controlled.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>17</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • VERIFY SG pressures greater than 740 psia.
	CRS	DIRECT outside Operator to reset AFW Pump P-140.
	ACO	PLACE AFW Pump P-140 HV-4716 hand switch to OVERRIDE, then CLOSE.
M.O. Cue: If directed to reset AFW Pump P140, WAIT 4 minutes then REPORT that AFW Pump P140 HV-4716 linkage is broken and cannot be reset.		
M.O. Cue: If directed to inspect P141 and P504 breaker, WAIT 3 minutes then REPORT both breakers are tripped on overcurrent (151 flags dropped on Phases A & C).		
M.O. Cue: If requested to inspect P141 and P504 pumps, WAIT 3 minutes then REPORT both motors have an odor of burned insulation.		
	CO	VERIFY Containment Isolation criteria satisfied: <ul style="list-style-type: none"> • VERIFY Containment pressure less than 1.5 psig. • VERIFY Containment Radiation monitors energized, AND not alarming or trending to alarm. • VERIFY secondary plant radiation monitors energized, AND not alarming or trending to alarm.
	CO	VERIFY Containment Temperature, Pressure and Combustible Gas Control criteria satisfied: <ul style="list-style-type: none"> • VERIFY Containment average temperature less than 120°F. • VERIFY Containment pressure less than 1.5 psig.
+15 min	CRS	DIAGNOSE event in progress: <ul style="list-style-type: none"> • DETERMINE all safety function criteria are NOT met per Attachment 4, Worksheet. • COMPLETE Attachment 1, Recovery Diagnostic.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>18</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • DIAGNOSE event as Loss of Feedwater.
		<ul style="list-style-type: none"> • NOTIFY personnel of event in progress.
		<ul style="list-style-type: none"> • DESIGNATE SRO in Charge.
		<ul style="list-style-type: none"> • DIRECT initiation Steps 11-14.
	CRS	DIRECT performance of SO23-12-6, Loss of Feedwater.
	CRS	VERIFY Loss of Feedwater diagnosis:
		<ul style="list-style-type: none"> • INITIATE SO23-12-10, Safety Function Status Checks.
		<ul style="list-style-type: none"> • INITIATE Foldout Page.
		<ul style="list-style-type: none"> • DIRECT performance of FS-18, Establish Secondary Plant Protection.
		<ul style="list-style-type: none"> • DIRECT performance of Attachment 22, Non-Qualified Loads Restoration (post-SIAS initiation).
		<ul style="list-style-type: none"> • DIRECT performance of FS-11, Reset P-140 Overspeed Trip.
		<ul style="list-style-type: none"> • ENSURE EFAS 1 and 2 actuated.
		<ul style="list-style-type: none"> • VERIFY loss of feedwater diagnosis.
		<ul style="list-style-type: none"> • INITIATE Administrative Actions.
	CRS	DIRECT stopping all RCPs.
	CO	STOP all RCPs.
	CRS	DIRECT closing SG Blowdown and Sample valves.
	CRS	DETERMINE Condensate Pumps P-052 and P-053 available for low pressure feedwater with restoration of power to Bus A07.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>19</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

	CRS	DIRECT bypassing Full Flow Condensate Polishing Demineralizers (FFCPD).
	ACO	ENSURE FFCPD Bypassed: FV-4902A open; HV-4900A and HV-4900B closed.
	CRS	DIRECT outside Operator to unlock and initiate OPENING 1305MU024, MFW Pump Bypass Valve.
M.O. Cue: When directed to unlock/open MFW Pump Bypass Valve 1305MU024, EXECUTE remote function FW57, MFWP Bypass MU024 @ 100%.		
	CRS	DIRECT outside Operator to adjust Condensate Pump Mini-flow Controller FIC-3294 to 3000 gpm.
M.O. Cue: When directed to adjust Condensate Pump Mini-flow Controller, EXECUTE remote function FW79, FIC-3294 Condensate Pump Mini-Flow @ 3000 gpm.		
	CRS	DIRECT placing MFW Regulator Bypass Valves HV-1105 and HV-1106 in LOCAL and CLOSE.
	ACO	PLACE MFW Regulator Bypass Valves in LOCAL at 0% demand.
	ACO	ENSURE FFCPD Inlet/Outlet valves closed and Bypass valve open.
+30 min	CRS	DIRECT manual initiation of SIAS and CCAS.
	CO/ACO	Manually ACTUATE SIAS and CCAS.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>20</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

	CRS	DIRECT overriding and operating Charging Pumps as necessary to maintain Pressurizer level.
	CO	OPERATE Charging Pumps to maintain Pressurizer level.
	CRS	DIRECT initiation of Attachment 22, Non-Qualified Load Restoration.
M.O. Cue: When directed to restore Non-Qualified Loads, WAIT 3 minutes, then CALL the Control Room and state that you are ready to restore. When directed, EXECUTE Remote Function ED85, Non-Qualified Loads Restoration. When complete, INFORM the Control Room that you have restored Non-Qualified Loads.		
	CO	VERIFY boration flow \geq 40 gpm.
	CRS	DIRECT raising steaming rate on both SGs to lower SG pressures to < 500 psia.
	ACO	RAISE steaming rate on both SGs using ADVs.
	CRS	DIRECT resetting MSIS setpoint as cooldown proceeds.
	CO	RESET MSIS setpoint during cooldown.
	ACO	ENSURE MFW Pumps tripped and MFW Mini-flow Valves closed.
	ACO	VERIFY intact feedwater flowpath available.
	CO	VERIFY CIAS not actuated.

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>6, 7 and 8</u>	Page	<u>21</u>	of	<u>22</u>
Event Description:	Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater								
Time	Position	Applicant's Actions or Behavior							

	ACO	VERIFY MFW Isolation Valves HV-4048 and HV-4052 OPEN.
	CRS	DIRECT starting at least one Condensate Pump.
	ACO	START Condensate Pump(s) as directed.
	CRS	DIRECT opening MFW Regulator Bypass valves to 20% open.
	ACO	OPEN MFW Regulator Bypass Valves to 20% open.
	CRS	If MSIS actuates during cooldown, then DIRECT MSIS reset.
M.O. Cue:	<p>If directed to reset MSIS, EXECUTE Events as follows: (NOTE: SG pressure must be > MSIS setpoint for reset to function.)</p> <p>EVENT: MSIS Reset on Channel B and D @ PPS Cabinets.</p> <p>L032 Key Lock Channel B (RP61A to Unlock) L032 MSIS Channel B Reset (RP62F to Reset) L032 Key Lock Channel B (RP61A to Lock) L032 Key Lock Channel D (RP61B to Unlock) L032 MSIS Channel D Reset (RP63F to Reset) L032 Key Lock Channel D (RP61B to Lock)</p> <p>EVENT: Floor Action – Reset A and C MSIS @ PPS Cabinets. (Floor Operator to accomplish this action.)</p>	
M.O. Cue:	<p>If directed to reset MSIS, EXECUTE the following Events <u>after</u> MSIS reset has been completed at the PPS Cabinets:</p> <p>EVENT: MSIS L/O Reset – L034/L035 (Aux Relay Cabinets).</p> <p>L034 MSIS Train A Lockout Reset (RP57D to Reset) L034 MSIS Train A Lockout Reset (RP57D to Normal) L035 MSIS Train B Lockout Reset (RP59D to Reset) L035 MSIS Train B Lockout Reset (RP59D to Normal)</p>	
	CRS	If MSIS actuated and reset, DIRECT opening MFW Isolation

Op Test No.: NRC Scenario # 1 Event # 6, 7 and 8 Page 22 of 22

Event Description: Loss of Bus 2A03 / Loss of Vacuum / Bus 2A07 Fails to Transfer / Loss of Feedwater

Time	Position	Applicant's Actions or Behavior
		Valves HV-4048 and HV-4052.
	ACO	If MSIS actuated and reset, OPEN MFW Isolation Valves.
CRITICAL TASK	ACO	CONTINUE cooldown and SG depressurization until feedwater flow to SGs is established (SG pressure ~ 600 psia).
+40 min	CRS	DIRECT maintaining reduced MFW flow for 5 minutes.
<i>When feedwater is restored to any Steam Generator, TERMINATE the scenario.</i>		

Facility:	San Onofre	Scenario No.:	2	Op Test No.:	NRC
Examiners:	_____	Operators:	_____	_____	_____
Initial Conditions:	<ul style="list-style-type: none"> • 70% power – RCS Boron is 1619 ppm by Chemistry sample • Train A Component Cooling Water Pump (P-025) in service • Train A Charging Pump (P-190) OOS • Train A Saltwater Cooling Pump (P-307) OOS • Train A Low Pressure Safety Injection Pump (P-015) OOS • Condenser Air Ejector Low Range Radiation Monitor (RM-7818) OOS 				
Turnover:	Holding at 70% power.				
Critical Tasks:	<ul style="list-style-type: none"> • Restore flow to the CCW Non-Critical Loop (RCPs operating). • Trip any RCP not satisfying RCP operating limits. • Stabilize RCS temperature/pressure following loss of heat removal from the faulted SG. • Manually Trip the Reactor (RPS Failure). 				
Event No.	Malf. No.	Event Type*	Event Description		
1 +10 min	CC03A	C (ACO, CRS) TS (CRS)	Component Cooling Water Train A header ruptures at the SDC Heat Exchanger.		
2 +20 min	RC11A	I (CO, ACO CRS)	Reactor Coolant System Loop 1 Thot fails high (TT-0111X1).		
3 +30 min	SG06A	C (CO, CRS) TS (CRS)	Steam Generator tube leak on E-088 requiring plant shutdown.		
4 +45 min		R (CO) N (ACO, CRS)	Rapid Power Reduction.		
5 +50 min	SG06A	M (ALL)	Steam Generator Tube Rupture on E-088.		
6 +50 min	RP03	C (ACO)	Auto and manual Reactor trip failure (ATWS).		
7 +50 min	MS03B	M (ALL)	Excess Steam Demand Event on E-089 inside Containment (5 minutes post-trip).		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specifications					

SCENARIO SUMMARY NRC #2

The crew will assume the watch maintaining steady state power per SO23-5-1.7, Power Operations.

When turnover is complete a Train A Component Cooling Water header rupture is initiated. The crew will respond per SO23-2-17, Component Cooling System Operation and/or Abnormal Operating Instruction (AOI) SO23-13-7, Loss of Component Cooling Water (CCW) / Saltwater Cooling (SWC). The crew will align SWC & CCW Train B per pump configuration requirements. The ruptured header will be removed from service. The CRS will evaluate Technical Specifications.

When the CCW and SWC systems are properly aligned, a Thot instrument fails high and will require crew actions per the ARPs and Abnormal Operating Instruction (AOI) SO23-13-27, Pressurizer Pressure and Level Malfunction.

With the plant in a stable condition, a Steam Generator tube leak will commence on E088. The crew will enter AOI SO23-13-14, Reactor Coolant System Leak and the CRS will be required to evaluate Technical Specifications. The CRS will determine that a rapid plant shutdown per the AOI is required.

When the crew has demonstrated adequate control of the downpower, the leak size will increase to that of a SGTR and be accompanied by an ATWS. The crew will respond to the ATWS by opening breakers to Buses B15 and B16. Five minutes later, an ESDE inside Containment will occur. The crew performs SO23-12-1, Standard Post Trip Actions and diagnoses an ESDE and a SGTR and transitions to SO23-12-9, Functional Recovery.

The scenario is terminated when RCS temperature and pressure are stabilized while in the Functional Recovery procedure and associated Floating Steps.

Risk Significance:

- Risk important components out of service: Charging P-190, LPSI P-015, SWC P-307
- Failure of risk important system prior to trip: CCW Header Rupture
- Risk significant core damage sequence: SGTR and ESDE
- Risk significant operator actions: Manually trip Reactor on ATWS

Scenario Event Description

NRC Scenario 2

SONGS

2006 Facility NRC Initial License Examination

Simulator Scenario Setup

Scenario 2

MACHINE OPERATOR'S INSTRUCTIONS

SETUP

IC: Use IC #182 and see attached Event File for NRC Scenario #2.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>4</u>	of	<u>23</u>
Event Description:	CCW Train A Header Rupture								
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u>			<p>EXECUTE IC #182 and NRC Scenario #2 SETUP file to align components.</p> <p>ENSURE Control Board Tags are hung on P-190, P-015 and P-307.</p> <p>ENSURE Operator Aid Tags #029 (CVCS) and #005-4 (CVCS Ion Exchanger) reflect the scenario born concentration.</p> <p>ENSURE procedures in progress are on the CO desk:</p> <ul style="list-style-type: none"> - Copy of SO32-5-1.7, Power Operations open to Section 6.4, Guidelines for Steady State Operation. <p>ENSURE SBCS is selected to Loop #1.</p>
<u>Control Room Annunciators in Alarm at 70%:</u>			<p>57A51 – SI / ECW SYS TRAIN A INOPERABLE</p> <p>58A51 – CHARGING PUMP P-190 OVERRIDE / NOT IN AUTO</p>
<u>Machine Operator:</u>			When directed, EXECUTE CC03A, CCW Train A Header rupture at the SDC Heat Exchanger E004 @ 500 gpm.
<u>Indications available:</u>			<p>64A07 – CCW PUMP TRAIN A DISCH PRESS LO</p> <p>64A45 – CCW HX TRAIN A OUTLET PRESS LO</p> <p>64A26 – CCW SURGE TANK TRAIN A LEVEL HI/LO (on time delay)</p> <p>64A17 – CCW TRAIN A RETURN FLOW LO</p> <p>56C58 – SAFETY EQPT BLDG SUMP LEVEL HI-HI (on time delay)</p>
+30 sec	ACO	REFER to Annunciator Response Procedures.	
	ACO	RECOGNIZE lowering surge tank level and CCW Pump discharge pressure and INFORM the CRS AOI 13-7 entry required.	
+1 min	CRS	DIRECT performance of AOI SO23-13-7, Loss of SWC/CCW.	
	ACO	ISOLATE Radwaste by closing 2HV-6465 and 3HV-6465.	

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>5</u>	of	<u>23</u>
Event Description:		CCW Train A Header Rupture							
Time	Position	Applicant's Actions or Behavior							

	CRS/ACO	DETERMINE that the leak is not isolated.
M.O. Cue: If contacted to report status of Unit 3 CCW Surge Tank Level, REPORT that Train A CCW Surge Tank level is stable and unchanged.		
	CRS	DIRECT placing Train B CCW in service.
	ACO	START CCW Pump P-026 and VERIFY that SWC P-114 automatically starts.
+3 min	CRS	DIRECT transfer of the CCW Non-Critical Loop to Train B.
CRITICAL TASK	ACO	TRANSFER the CCW Non-Critical Loop to Train B.
	CRS	DIRECT transfer of Letdown HX to Train B.
	ACO	TRANSFER Letdown HX to Train B.
	CRS/CO	DISPATCH PEO to investigate flooding alarms.
	CRS	DIRECT securing CCW Pump P-025.
	ACO	STOP CCW Pump P-025 and SWC Pump P-112.
M.O. Cue: If directed to rack out breaker for CCW Pump P-024, WAIT 3 minutes and EXECUTE remote functions CC57A (DC to P-024) and CC58A (P-024 Breaker). If directed to rack out breaker for CCW Pump P-025, WAIT 3 minutes and EXECUTE remote functions CC57B (DC to P-025) and CC58B (P-025 Breaker).		

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>23</u>
Event Description:		CCW Train A Header Rupture							
Time	Position	Applicant's Actions or Behavior							

	CRS/ACO	DISPATCH PEO to close Loop A CCW Surge Tank Outlet, HV-6225.
M.O. Cue: If directed to close HV-6225, Loop A CCW Surge Tank Outlet, WAIT 3 minutes and EXECUTE remote function CC60.		
+10 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> LCO 3.7.7.A, Component Cooling Water System is applicable (72 hour ACTION).
		<ul style="list-style-type: none"> Restore CCW Train to OPERABLE status.
		<ul style="list-style-type: none"> LCO 3.7.8.A, Saltwater Cooling System is applicable (72 hour ACTION).
		<ul style="list-style-type: none"> Restore SWC Train to OPERABLE status.
NOTE: The crew may decide to place CCW pumps P-024 and P-025 OOS, swap CCW Pump P-025 to Train B, and/or place Train A HPSI and CS Pumps OOS. Crew may remove DC Control Power for Train A HPSI and CS pumps to avoid damage due to lack of cooling water.		
M.O. Cues: If directed to open the DC power supply breaker for the Train A ESF Pumps, ACKNOWLEDGE the order but do not perform (Time restriction). If directed to transfer Emergency Chiller E-336 to Unit 3, ACKNOWLEDGE the order but do not perform (Time restriction). If directed to transfer CCW Pump P-025 from Train A to Train B, ACKNOWLEDGE the order but do not perform (Time restriction).		
	CRS	ENSURE ECCS is not required.
		<ul style="list-style-type: none"> HPSI, LPSI, CS pumps are stopped.
When Technical Specifications are addressed, or at Lead Evaluator's discretion, PROCEED to Event 2.		

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>7</u>	of	<u>23</u>
Event Description: Control Channel That Transmitter Fails High									
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE RC11A @ 625°F, Loop 1B NR That TT-0111X1 fails high.

Indications Available:

**50A02 - COLSS ALARM
50A05 - TAVG HI
50A15 - HOT LEG LOOP 1 TEMP HI
Letdown lowers to minimum
TI-0111AX indication rising**

+30 sec	CO	REFER to Annunciator Response Procedures.
	CO	RECOGNIZE That failure and INFORM the CRS AOI SO23-13-27 entry required.
	CRS	DIRECT performance of SO23-13-27, Pressurizer Pressure and Level Malfunction.
	CO	DETERMINE Charging and Letdown systems are NOT responding as desired.
+1 min	CO	DEPRESS the A/M button on LIC-0110, PZR Level Controller, to place PZR level control in MANUAL.
	CO	STOP Charging pumps to match Letdown flow as closely as possible.
	ACO	POSITION SBCS Tavg Selector Switch to Tavg 2 to restore control of SBCS.
+2 min	CO	ADJUST LIC-0110, PZR Level Controller, to match Letdown and Charging flows.
	CO	MONITOR PZR level and maintain stable.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>8</u>	of	<u>23</u>
Event Description: Control Channel That Transmitter Fails High									
Time	Position	Applicant's Actions or Behavior							

	CO/CRS	DETERMINE that a Loop 1 That transmitter, TT-0111X1, has failed high.
	CRS	DIRECT transfer of Pressurizer Level Remote Setpoint.
	CO	SELECT (TAG) to page 2 on LIC-0110 controller and OBSERVE "IN1" displayed.
	CO	DEPRESS SEL pushbutton to display "IN2."
	CO	DETERMINE IN2 will be selected to control PZR level.
	CO	DISPLAY the PZR level Remote Setpoint currently selected and DEPRESS SEL until the Selected Indicating Light is extinguished.
	CO	SELECT the new Remote Setpoint:
		<ul style="list-style-type: none"> To select IN2, DEPRESS the RAISE (▲) pushbutton once.
+5 min	CO	RETURN PZR level controller LIC-0110 to AUTO:
		<ul style="list-style-type: none"> SELECT (TAG) to page 1 on the controller. Manually ADJUST the output (right column) until the actual level (middle column) is matched with the generated setpoint (left column). When within 2%, DEPRESS the A/M pushbutton to transfer LIC-0110 to AUTO. OBSERVE Letdown flow and pressure to ensure no unusual oscillations. RESTORE PZR heaters to service as required to control RCS pressure.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>9</u>	of	<u>23</u>
Event Description:		Control Channel That Transmitter Fails High							
Time	Position	Applicant's Actions or Behavior							

+10 min	CO	RESTORE Backup Charging Pump P-192 to AUTO.
<i>When PZR Level Control is returned to Auto, or at Lead Evaluator's discretion, PROCEED to Event 3.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>10</u>	of	<u>23</u>
Event Description:		SG Tube Leak on E088 @ 50 gpm Requiring Plant Shutdown							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE SG06A @ 0.14%, SG E088 Tube Leak of ~50 gpm.		
<u>Indications available:</u>		
60A46 – SECONDARY RADIATION HI 63B02 – UNIT 2 CRITICAL PARAMETERS PROBLEM		
	CO/ACO	REFER to Annunciator Response Procedures.
	ACO	RECOGNIZE increasing radiation levels and INFORM the CRS AOI SO23-13-14 entry required.
+1 min	CRS	DIRECT performance of SO23-13-14, RCS Leak, Section for Primary to Secondary leakage.
		<ul style="list-style-type: none"> REQUEST Chemistry to confirm and quantify the Steam Generator tube leak by sampling the Condenser Air Ejector discharge.
M.O. Cue: When contacted as Chemistry, WAIT 5 minutes and REPORT that a frisk of the SG sample indicates high activity in SG E088. WAIT another 5 minutes, and then REPORT that high activity in SG E088 is verified.		
	CREW	DETERMINE Radiation Monitor status:
		<ul style="list-style-type: none"> Air Ejector High Range 7870 in alarm. Main Steam Line 7874A1 (E088) in alarm. SG Blowdown 6759 (E088) in alarm after a time delay.
	CRS	DETERMINE that high radiation is due to a SG Tube Leak on SG E088.
	CRS/CO	VERIFY PZR level is lowering.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>11</u>	of	<u>23</u>
Event Description:		SG Tube Leak on E088 @ 50 gpm Requiring Plant Shutdown							
Time	Position	Applicant's Actions or Behavior							

	CRS/CO	VERIFY VCT level is being maintained within programmed band.
	CRS/CO	DETERMINE RCS leak is greater than 25 gpm.
	CRS	DIRECT a rapid shutdown per SO23-5-1.7.
NOTE: Depending on crew actions, they may identify the leak at >25 gpm and go to the RNO which requires a Rapid Power Reduction (see Event 4) per SO23-5-1.7, otherwise, this will occur later in the AOI.		
+5 min	CRS/CO	DETERMINE PZR level NOT stable or rising.
	CRS/CO	VERIFY that the SG Tube Leak is large enough to be confirmed by:
		<ul style="list-style-type: none"> • A mismatch in Charging and Letdown indications, AND • Air Ejector, Steam Generator Blowdown, or Main Steam Line Rad Monitor indications.
	ACO	Manually INITIATE one (1) Train of CRIS.
	CREW	CONFIRM leakage using all available indications.
	CRS	DETERMINE leak rate and action from Step 4.p table:
		<ul style="list-style-type: none"> • Leakage is > 720 GPD (1/2 gpm). • DIRECT performance of Attachment 3, Minimizing Contamination During a SG Tube Leak. • Concurrently DIRECT a rapid shutdown per SO23-5-1.7 to be < 50% power within 1 hour and in Mode 3 within next 2 hours.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>12</u>	of	<u>23</u>
Event Description:		SG Tube Leak on E088 @ 50 gpm Requiring Plant Shutdown							
Time	Position	Applicant's Actions or Behavior							

	ACO	PERFORM Attachment 3, Minimizing Contamination During a SG Tube Leak.
		<ul style="list-style-type: none"> PLACE Vacuum Pump P054 in service.
		<ul style="list-style-type: none"> PLACE A-361, Air Ejector Unit in DIRECT.
		<ul style="list-style-type: none"> ISOLATE Blowdown to E088.
		<ul style="list-style-type: none"> PLACE LV-3245, Condenser Draw Off Valve to DISABLE.
		<ul style="list-style-type: none"> NOTIFY Chemistry to sample Condenser Draw Off line.
		<ul style="list-style-type: none"> PLACE Condenser Hotwell Overboarding System in MANUAL.
		<ul style="list-style-type: none"> BYPASS the Full Flow Condensate Polishers.
+10 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> LCO 3.4.13.A, RCS Operational Leakage is applicable (4 hour ACTION).
		<ul style="list-style-type: none"> Reduce LEAKAGE to within limits.
<i>When Technical Specifications are addressed, PROCEED to Event 4.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>4</u>	Page	<u>13</u>	of	<u>23</u>
Event Description:		Rapid Power Reduction							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> If contacted as Grid Control Center, ACKNOWLEDGE Rapid Power Reduction due to SG tube leak.		
<u>Indications available:</u> None		
	CRS	DIRECT performance of actions in SO23-5-1.7, Power Operations, Rapid Power Reduction.
	CO/ACO	IMPLEMENT Attachment 8 to determine the amount of Boration and CEAs to be used (located on Control Board).
		<ul style="list-style-type: none"> A combination of CEA insertion and/or Boron will be used.
	ACO	LOWER Turbine load (to raise Tc) until SBCS permissives are in.
	CO	BORATE to the Charging Pump suction (Borate Mode).
	CO	USE CEAs for power reduction and ASI control.
	CO	STOP CEA insertion any time the PPDIL alarm is received. Proceed after PPDIL alarm has reset.
+15 min	CO	FORCE Pressurizer Normal Spray flow using both spray valves.
<i>When power level is lowered 3-5%, or at Lead Evaluator's discretion, PROCEED to Events 5, 6, and 7.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>5, 6, and 7</u>	Page	<u>14</u>	of	<u>23</u>
Event Description:		SGTR on E088 / ATWS / ESDE on E089							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE SG06A, SGTR on E088 to 1.4% (~500 gpm), RP03, ATWS, MS03B, SG E089 ESDE inside Containment @ 1.2% (5 minutes post-trip).

Indications Available:

56A55 – CONTAINMENT SUMP LEVEL HI
 56A56 – CONTAINMENT SUMP LEVEL HI-HI
 60A02 – CONTAINMENT HUMIDITY HI
 60A03 – CONTAINMENT / FHB TEMP HI
 60A12 – REACTOR CAVITY TEMP HI (time delay)
 COLSS alarm
 Reactor Power rising
 RCS temperature lowering

+1 min	CREW	RECOGNIZE uncontrollable increase in RCS leakrate along with a post-trip increase in Containment pressure and sump level.
	CRS	DIRECT isolation of Letdown.
	CO	ISOLATE Letdown by closing TV-0221 or HV-9204.
+2 min	CRS	DIRECT a Reactor trip and DIRECT performance of SO23-12-1, Standard Post Trip Actions.
NOTE: Crew may take all action required during SPTAs prior to reporting status.		
	CRS	INITIATE Administrative Actions:
		<ul style="list-style-type: none"> • RECORD time of Reactor trip. • ANNOUNCE Reactor trip via PA System. • INITIATE Attachment 4, WORKSHEET. • INITIATE Attachment 5, ADMINISTRATIVE ACTIONS.
	CO	DETERMINE Reactivity Control criteria is NOT satisfied:

Op Test No.: NRC Scenario # 2 Event # 5, 6, and 7 Page 15 of 23

Event Description: SGTR on E088 / ATWS / ESDE on E089

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • DETERMINE Reactor trip circuit breakers (8) are NOT open.
		<ul style="list-style-type: none"> • DETERMINE more than one full length CEA – NOT fully inserted.
		<ul style="list-style-type: none"> • DETERMINE Reactor power is NOT lowering and startup rate is NOT negative.
	CO	REPORT Reactor fails to AUTO or MANUAL trip.
	CRS	DIRECT opening B15 and B16 Load Center supply breakers.
CRITICAL TASK	ACO	OPEN B15 and B16 Load Center supply breakers.
	CO	VERIFY Reactor trip.
	ACO	VERIFY Vital Auxiliaries functioning properly: <ul style="list-style-type: none"> • VERIFY Main Turbine tripped. • HP and LP Stop and Governor Valves closed. • MWe output lowering. • VERIFY both Unit Output Breakers open. • VERIFY Main Turbine speed less than 2000 rpm or lowering. • VERIFY CCW pump aligned to Non-Critical Loop and Letdown – Operating. • VERIFY both 1E 4 kV Buses energized. • VERIFY both 1E 480 V Buses B04 and B06 energized. • VERIFY all 6.9 kV and Non-1E 4 kV Buses energized. • VERIFY all Class 1E DC buses energized.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>5, 6, and 7</u>	Page	<u>16</u>	of	<u>23</u>
Event Description: SGTR on E088 / ATWS / ESDE on E089									
Time	Position	Applicant's Actions or Behavior							

M.O. Cue: When directed to check Main Steam Safety Valve status, REPORT as the 25 (Full Flow Operator) that all safety valves appear to be seated with no steam coming from the MSIV roof.

	CO	DETERMINE RCS Inventory Control criteria is NOT satisfied:
		<ul style="list-style-type: none"> DETERMINE PZR level: <ul style="list-style-type: none"> Is NOT between 10% and 70%. Is NOT trending to between 30% and 60%. VERIFY Core Exit Saturation Margin greater than or equal to 20°F. <ul style="list-style-type: none"> QSPDS page 611. CFMS page 311. ENSURE PZR Level Control System operating in AUTO.
	CO	DETERMINE RCS Pressure Control criteria is NOT satisfied:
		<ul style="list-style-type: none"> DETERMINE PZR pressure (WR and NR) is NOT between 1740 and 2380 psia and NOT controlled and NOT trending to between 2025 psia and 2275 psia. ENSURE Auxiliary Spray Valve closed. DETERMINE PZR pressure (WR) is less than 1740 psia and ENSURE SIAS actuated.
	CRS	RECORD time of SIAS.
	CO	DETERMINE Core Heat Removal criteria is NOT satisfied:
CRITICAL TASK		<ul style="list-style-type: none"> STOP all RCPs due to CIAS. DETERMINE no RCPs are operating. RECORD time of all RCPs off. VERIFY operating loop Delta T (Th-Tc) less than 58°F. VERIFY Th and Tc not rising.

Op Test No.: NRC Scenario # 2 Event # 5, 6, and 7 Page 17 of 23

Event Description: SGTR on E088 / ATWS / ESDE on E089

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • VERIFY Core Exit Saturation Margin greater than or equal to 20°F.
		<ul style="list-style-type: none"> • QSPDS page 611.
		<ul style="list-style-type: none"> • CFMS page 311.
		<ul style="list-style-type: none"> • VERIFY operating loop Th and REP CET within 16°F.
		<ul style="list-style-type: none"> • QSPDS page 611.
		<ul style="list-style-type: none"> • CFMS page 311.
		<ul style="list-style-type: none"> • VERIFY Reactor Vessel level greater than or equal to 100% (plenum).
		<ul style="list-style-type: none"> • QSPDS page 622.
		<ul style="list-style-type: none"> • CFMS page 312.
<p>NOTE: It is acceptable for CO to report "Monitoring for Natural Circulation."</p>		
	ACO	DETERMINE RCS Heat Removal criteria is NOT satisfied:
		<ul style="list-style-type: none"> • DETERMINE E089 SG level is NOT between 21% and 80% NR.
		<ul style="list-style-type: none"> • DETERMINE AFW available to restore E088 SG level between 40% NR and 80% NR.
		<ul style="list-style-type: none"> • PREVENT SG High level:
		<ul style="list-style-type: none"> • CLOSE MFW Block Valves HV-4047 and HV-4051.
		<ul style="list-style-type: none"> • VERIFY heat removal adequate:
		<ul style="list-style-type: none"> • Tc less than 555°F.
		<ul style="list-style-type: none"> • DETERMINE SG Pressures are NOT ~1000 psia.
		<ul style="list-style-type: none"> • DETERMINE E089 is affected SG for ESDE and E088 is affected SG for SGTR.
		<ul style="list-style-type: none"> • DETERMINE Tc less than 545°F and NOT controlled.
		<ul style="list-style-type: none"> • ENSURE SBCS valves closed.
		<ul style="list-style-type: none"> • ENSURE ADVs closed.
		<ul style="list-style-type: none"> • ENSURE SG Blowdown valves closed.
		<ul style="list-style-type: none"> • ENSURE Main Steam to Reheater valves closed.

Op Test No.: NRC Scenario # 2 Event # 5, 6, and 7 Page 18 of 23

Event Description: SGTR on E088 / ATWS / ESDE on E089

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> DETERMINE E089 SG pressures less than 740 psia.
		<ul style="list-style-type: none"> ENSURE MSIS Actuation.
		<ul style="list-style-type: none"> RECORD time of MSIS.
	CO	DETERMINE Containment Isolation criteria is NOT satisfied:
		<ul style="list-style-type: none"> DETERMINE Containment pressure exceeds 3.4 psig, and ENSURE the following actuated:
		<ul style="list-style-type: none"> SIAS, CIAS, CCAS, CRIS
		<ul style="list-style-type: none"> ENSURE all RCPs stopped.
		<ul style="list-style-type: none"> VERIFY Containment Radiation monitors energized and not alarming or trending to alarm.
		<ul style="list-style-type: none"> DETERMINE secondary plant radiation monitors energized and alarming or trending to alarm.
		<ul style="list-style-type: none"> RECORD status of radiation monitors.
	CO	DETERMINE Containment Temperature, Pressure and Combustible Gas Control criteria NOT satisfied:
		<ul style="list-style-type: none"> DETERMINE Containment average temperature greater than 120°F.
		<ul style="list-style-type: none"> ENSURE proper functioning of Normal Containment Cooling.
	CO	DETERMINE Containment pressure greater than 14 psig:
		<ul style="list-style-type: none"> ENSURE CSAS actuated.
		<ul style="list-style-type: none"> ENSURE all available Containment Spray header flows are greater than 1600 GPM.
	CRS	RECORD time of CSAS.

Op Test No.: NRC Scenario # 2 Event # 5, 6, and 7 Page 19 of 23

Event Description: SGTR on E088 / ATWS / ESDE on E089

Time	Position	Applicant's Actions or Behavior
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	CRS	DIAGNOSE event in progress:
		<ul style="list-style-type: none"> DETERMINE all safety function criteria are NOT met per Attachment 4, Worksheet.
		<ul style="list-style-type: none"> COMPLETE Attachment 1, Recovery Diagnostic.
		<ul style="list-style-type: none"> DIAGNOSE feed break/ESDE on SG E089 inside Containment and SGTR on E088.
		<ul style="list-style-type: none"> NOTIFY personnel of event in progress.
		<ul style="list-style-type: none"> DESIGNATE SRO in Charge.
		<ul style="list-style-type: none"> DIRECT initiation of Steps 11 – 14.
	CRS	DIRECT performance of SO23-12-9, Functional Recovery.
	CRS	RECORD time of EOI entry.
+15 min	CRS	VERIFY FR diagnosis:
		<ul style="list-style-type: none"> INITIATE SO23-12-10, Safety Function Status Checks.
		<ul style="list-style-type: none"> INITIATE Foldout Page.
		<ul style="list-style-type: none"> DIRECT performance of FS-7, SI Throttle/Stop Criteria.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 3, Cooldown Depressurization.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 22, Non-Qualified Load Restoration.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 28, Isolation of SG with ESDE.
		<ul style="list-style-type: none"> DIRECT performance of FS-30, Establish Stable RCS Temperature During ESDE.
		<ul style="list-style-type: none"> DIRECT Chemistry to sample both SGs for radioactivity and boron.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>5, 6, and 7</u>	Page	<u>20</u>	of	<u>23</u>
Event Description: SGTR on E088 / ATWS / ESDE on E089									
Time	Position	Applicant's Actions or Behavior							

M.O. Cue:			If directed to sample SGs, WAIT 10 minutes and then REPORT that E089 has activity near background and E088 activity is elevated with high boron levels. If the SG sample valves are closed, REPORT unable to establish sample flow.
	CRS	INITIATE Administrative Actions:	
		<ul style="list-style-type: none"> NOTIFY Shift Manager/Operations Leader of SO23-12-9, Functional Recovery. 	
		<ul style="list-style-type: none"> ENSURE Emergency Plan is initiated. 	
		<ul style="list-style-type: none"> IMPLEMENT Placekeeper. 	
	CO	VERIFY ESF actuation:	
		<ul style="list-style-type: none"> VERIFY SIAS actuation required. 	
		<ul style="list-style-type: none"> PZR pressure less than SIAS setpoint. 	
		<ul style="list-style-type: none"> ENSURE the following actuated: 	
		<ul style="list-style-type: none"> SIAS/CCAS/CRIS 	
M.O. Cue:			If directed to energize Auxiliary Spray Valve, EXECUTE remote functions CV76 for MU130, CV55 for BE-17 Auxiliary Spray Valve power and CV75 for MU084 as required for the Charging Header Isolation Valve.
	ACO	STOP all unloaded Diesel Generators.	
	ACO	INITIATE SO23-12-11, Attachment 22, Non-Qualified Load Restoration.	
M.O. Cue:			When directed to restore Non-Qualified Loads, WAIT 3 minutes, then CALL the Control Room and state that you are ready to restore. When directed, EXECUTE Remote Function ED85, Non-Qualified Loads Restoration. When complete, INFORM the Control Room that you have restored Non-Qualified Loads.
	CO	ESTABLISH optimum SI alignment.	

Op Test No.: NRC Scenario # 2 Event # 5, 6, and 7 Page 21 of 23

Event Description: SGTR on E088 / ATWS / ESDE on E089

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> ESTABLISH two train operation
		<ul style="list-style-type: none"> VERIFY all Charging Pumps operating.
		<ul style="list-style-type: none"> DETERMINE two HPSI trains and two LPSI trains operating.
		<ul style="list-style-type: none"> VERIFY all Cold leg flow paths aligned.
		<ul style="list-style-type: none"> VERIFY SI flow required: <ul style="list-style-type: none"> SI flow indicated or RCS pressure >1250 psia
		<ul style="list-style-type: none"> RCS pressure greater than 1250 psia, OR VERIFY FS-7, Verify HPSI Throttle/Stop criteria satisfied.
	CRS	EVALUATE Immediate Safety Function Recovery Actions: <ul style="list-style-type: none"> VERIFY any Safety Function Recovery Attachments (FR-1 through FR-8) indicated by any optimal EOI. IMPLEMENT precautionary actions: <ul style="list-style-type: none"> DIRECT Boration at greater than 40 gpm.
	CO/ACO	VERIFY SI Throttle/Stop Criteria NOT met: <ul style="list-style-type: none"> VERIFY at least one SG operating <ul style="list-style-type: none"> DETERMINE SBCS is NOT Available. DETERMINE ADV available and Feedwater available. DETERMINE PZR level <30% and NOT rising.
+35 min	CO/ACO	<ul style="list-style-type: none"> DETERMINE RCS Cooldown is in progress.
	CO	MAINTAIN boration at least 40 gpm.

Op Test No.:	<u>NRC</u>	Scenario #	<u>2</u>	Event #	<u>5, 6, and 7</u>	Page	<u>22</u>	of	<u>23</u>
Event Description:		SGTR on E088 / ATWS / ESDE on E089							
Time	Position	Applicant's Actions or Behavior							

	CRS	DIRECT performance of FS-30, Establish Stable RCS Temperature during ESDE.
	ACO	DETERMINE SG E088 affected by SGTR.
	CRS	OBTAIN approval from the Shift Manager/Operations Leader to steam the isolated SG and NOTIFY Shift Manager/Operations Leader to monitor radiological release rates and applicable area dose rates.
CRITICAL TASK	ACO	OPERATE ADV on SG E088 to stabilize RCS temperatures as faulted SG level lowers.
		<ul style="list-style-type: none"> SG E089 at 10% WR, positions SG E088 ADV, HV-8419 to 10% open.
		<ul style="list-style-type: none"> SG E089 at 5% WR, set SG E088 ADV, HV-8419, at P_{sat} for lowest T_c.
		<ul style="list-style-type: none"> SG E089 initial dryout, adjust SG E088 ADV, HV-8419, at P_{sat} for lowest T_c attained as SG boils dry.
	ACO	STABILIZE least affected SG E088 pressure.
		<ul style="list-style-type: none"> OPERATE ADV in automatic.
		<ul style="list-style-type: none"> STABILIZE AFW flow.
	CRS	DIRECT Initiation of SO23-12-11, Attachment 28, Isolation of SG with ESDE.
	ACO	IDENTIFY SG E089 as most affected by ESDE.
	ACO	VERIFY SG E088 available for heat removal AND affected by SGTR.
	CRS	REQUEST Shift Manager/Operations Leader to evaluate radiological releases from that SG.

Op Test No.: NRC Scenario # 2 Event # 5, 6, and 7 Page 23 of 23

Event Description: SGTR on E088 / ATWS / ESDE on E089

Time	Position	Applicant's Actions or Behavior
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Time	Position	Applicant's Actions or Behavior
Floor Cue: DIRECT the CRS to isolate Steam Generator E089.		
	ACO	ISOLATE affected SG E089.
		<ul style="list-style-type: none"> • CLOSE/STOP the following:
		<ul style="list-style-type: none"> • MSIV HV-8204
		<ul style="list-style-type: none"> • MSIV Bypass HV-8202
		<ul style="list-style-type: none"> • ADV HV-8421 and PIC-8421 in MANUAL
		<ul style="list-style-type: none"> • MFIV HV-4052
		<ul style="list-style-type: none"> • AFW valves HV-4731 and HV-4715
		<ul style="list-style-type: none"> • Steam to AFW P-140 HV-8200
		<ul style="list-style-type: none"> • SG Blowdown isolation HV-4053
		<ul style="list-style-type: none"> • SG Water Sample Isolation HV-4057
+30 min		<ul style="list-style-type: none"> • Electric AFW Pump P-141
When SG E089 is isolated, TERMINATE the scenario.		

Facility:	San Onofre	Scenario No.:	3	Op Test No.:	NRC
Examiners:	_____	Operators:	_____	_____	_____
Initial Conditions:	<ul style="list-style-type: none"> • 33% power - RCS Boron is 1753 ppm • Train A Component Cooling Water Pump (P-025) in service • Train A Charging Pump (P-190) OOS • Train A Saltwater Cooling Pump (P-307) OOS • Train A Low Pressure Safety Injection Pump (P-015) OOS • Condenser Air Ejector Low Range Radiation Monitor (RM-7818) OOS 				
Turnover:	Dilution and power increase in progress at 10% per hour.				
Critical Tasks:	<ul style="list-style-type: none"> • Reduce Reactor Coolant System Thot to less than 530°F. • Isolate the most affected Steam Generator (SGTR). 				
Event No.	Malf. No.	Event Type*	Event Description		
1 +15 min		R (CO) N (ACO, CRS)	Dilution and power increase in progress at 10% per hour.		
2 +25 min	RC24B	C (CO, CRS) TS (CRS)	Pressurizer Spray Valve fails open (PV-0100B).		
3 +30 min	TP02B	C (ACO, CRS)	Turbine Plant Cooling Water Pump P-120 trip with TPCW Pump P-119 auto start failure.		
4 +55 min	ED07A	C (CO, CRS) TS (CRS)	Loss of Inverter Y-001.		
5 +55 min	SG06A	M (ALL)	Steam Generator Tube Rupture on E-088.		
6 +55 min	FW23	C (ACO)	Total loss of Condenser vacuum.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specifications					

SCENARIO SUMMARY NRC #3

The crew will assume the watch at approximately 33% power with a dilution in progress. The crew will raise power per SO23-5-1.7, Power Operations.

When the power change is underway, the Pressurizer Spray Valve will fail 40% open. Crew will respond and stabilize primary plant using Annunciator Response Procedures (ARP) and AOI SO23-13-27, Pressurizer Pressure and Level Malfunction. The CRS will evaluate Technical Specifications.

When plant conditions are stable, TPCW Pump P-120 will trip, and P-119 fails to automatically start. The ACO must manually start TPCW Pump P-119 in accordance with Annunciator Response Procedures to prevent a potential trip on high stator cooling water temperature.

A vital bus failure will cause the crew to enter AOI SO23-13-18, Loss of Vital Bus. The CRS will evaluate Technical Specifications and the bus will be re-energized from the alternate supply per SO23-6-17, 120 VAC Vital Bus Power Supply System Operation.

A Steam Generator Tube Rupture will occur and the crew will trip the plant and respond per SO23-12-1, Standard Post Trip Actions. The crew will then transition to SO23-12-4, Steam Generator Tube Rupture. A loss of Condenser vacuum will require crew actions to reduce RCS temperature using the Atmospheric Dump Valves.

Event termination will occur when T_{hot} is $< 530^{\circ}\text{F}$ and plant temperature and pressure are stable and the Steam Generator is isolated.

Risk Significance:

- Risk important components out of service: Charging P-190, LPSI P-015, SWC P-307
- Failure of risk important system prior to trip: Loss of Vital Inverter
- Risk significant core damage sequence: SGTR with loss of vacuum

Scenario Event Description

NRC Scenario 3

SONGS

2006 Facility NRC Initial License Examination

Simulator Scenario Setup

Scenario 3

MACHINE OPERATOR'S INSTRUCTIONS

SETUP

IC: Use IC #183 and see attached Event File for NRC Scenario #3.

Op Test No.:	<u> NRC </u>	Scenario #	<u> 3 </u>	Event #	<u> 1 </u>	Page	<u> 4 </u>	of	<u> 20 </u>
Event Description:	Dilution and Power Increase in Progress at 10% per hour								
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u>		<p>EXECUTE IC #183 and NRC Scenario #3 SETUP file to align components.</p> <p>ALIGN <u>both</u> Pressurizer Spray Valves to Automatic.</p> <p>ENSURE Control Board Tags are hung on P-190, P-015 and P-307.</p> <p>ENSURE Operator Aid Tags #029 (CVCS) and #005-4 (CVCS Ion Exchanger) reflect the scenario born concentration.</p> <p>ENSURE procedures in progress are on the CO desk:</p> <ul style="list-style-type: none"> - Copy of SO23-5-1.7 open to Step 6.3.11, 30-50% Reactor Power. - Copy of SO23-3-2.2 with Steps 6.6.1 through 6.6.5 checked off. - Copy of SO23-3-1.10 open to Section 6.2, Forcing Pressurizer Sprays. - Verify Tcold on ASI Curve at 545°F (ACO desk).
<u>Control Room Annunciators in Alarm at 33%:</u>		<p>57A51 – SI / ECW SYS TRAIN A INOPERABLE</p> <p>58A51 – CHARGING PUMP P-190 OVERRIDE / NOT IN AUTO</p> <p>56A30/40/50/60 – LOSS OF LOAD CHANNEL 1/2/3/4 TRIP DISABLED</p> <p>53A20 – MFWP MINI FLOW VALVE OPEN</p> <p>53A49 – 5TH POINT HEATER LEVEL HI/LO</p> <p>53A50 – 6TH POINT HEATER LEVEL HI/LO</p>
NOTE:		Crew turnover will be performed with simulator in FREEZE due to dilution and power increase in progress at turnover.
	CRS	DIRECT performance of SO23-5-1.7, Power Operations, SO23-3-2.2, Makeup Operations, and SO23-10-1, Main Turbine Operations.
	CO	VERIFY Batch Counter and Makeup Integrator settings.
	CO	VERIFY dilution valve alignment.
		<ul style="list-style-type: none"> • FV-9253 open and FIC-0210X in AUTO.
		<ul style="list-style-type: none"> • HS-0210 selected to DILUTE.

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>5</u>	of	<u>20</u>
Event Description:		Dilution and Power Increase in Progress at 10% per hour							
Time	Position	Applicant's Actions or Behavior							

	CO	VERIFY Tcold changing as dilution progresses.
	CO	When VCT level increases, DIVERT the VCT to Radwaste per SO23-3-2.2.
+15 min	ACO	MAINTAIN Tcold within required band by raising Main Generator load using HS-2210, Main Turbine Speed Load Control to RAISE.
<i>When power has been raised 3-5%, or at Lead Evaluator's discretion, PROCEED to Event 2.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>2</u>	Page	<u>6</u>	of	<u>20</u>
Event Description:		Spray Valve Fails Open							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE RC24B @ 80%, Pressurizer Spray Valve fails open.		
<u>Indications available:</u> 50A14 – PZR PRESS HI/LO (+3 min from event initiation)		
NOTE: Because both Spray Valves will be open during the power ascension, PV-100B is failed 80% open. This is equivalent to a 40% open failure when not forcing sprays with all heaters energized.		
+2 min	CO	REFER to Annunciator Response Procedures.
	CO	RECOGNIZE PZR Pressure Control failure and INFORM the CRS AOI SO23-13-27 entry required.
	CRS	DIRECT performance of SO23-13-27, Pressurizer Pressure and Level Malfunction.
	CO	START PZR Backup and Proportional Heaters.
	CO/CRS	DETERMINE Pressurizer Pressure channel is NOT between 2225 and 2275 psig.
	CO/CRS	DETERMINE Pressurizer Pressure is NOT stable.
	CO	OBSERVE PV-0100B, Pressurizer Spray Valve from Loop 1B, is failed ~60% open.
M.O. Cue: Closely MONITOR pressure and REDUCE malfunction RC24B to 60% once identified (this will allow pressure to stabilize and avoid a plant trip).		

Op Test No.: <u> NRC </u> Scenario # <u> 3 </u> Event # <u> 2 </u> Page <u> 7 </u> of <u> 20 </u>		
Event Description: Spray Valve Fails Open		
Time	Position	Applicant's Actions or Behavior
+6 min	CRS	DIRECT an ARO to fail closed PV-0100B, PZR Spray Valve, by removing the connector block at Cabinet L-139, SPEC 200 Power Supply Cabinet, Nest 2, Slot 7. (HC-0100B)
M.O. Cue: REDUCE malfunction RC24B to 0% and REPORT to the Control Room that the connector block at Cabinet L-139, SPEC 200 Power Supply Cabinet, NEST 2, SLOT 7 was removed.		
	CO/CRS	DETERMINE Pressurizer pressure is recovering.
	CO	VERIFY the Pressurizer Pressure signal has not failed high.
	CO	VERIFY Pressurizer Pressure Control System is operating properly in automatic.
	CO	VERIFY Pressurizer Spray was not initiated with delta temperature > 180°F.
+10 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> LCO 3.4.1.A, RCS DNB Limits is applicable (2 hour ACTION). Restore Pressurizer pressure to within limit.
<i>When Technical Specifications are addressed, or at Lead Evaluator's discretion, PROCEED to Event 3.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>3</u>	Page	<u>8</u>	of	<u>20</u>
Event Description:		TPCW Pump P-120 Trip With P-119 Auto Start Failure							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE TP02B, TPCW Pump P-120 overcurrent trip and Remote Function 2HS-6940-CR64-S03 to prevent auto start of P-119.

Indications available:

99A31 – TPCW PUMP OC
 99A41 – ISO PHASE BUS HX FLOW LO
 99A51 – TPCW PUMP OOS / NOT IN AUTO
 99A12 – TPCW PRESS LO-LO
 99A17 – TPCW SURGE TANK OUTLET VALVE CLOSED
 99C52 – GENERATOR CASING GAS TROUBLE (in ~45 seconds with no action)
 99C05 – STATOR WATER TEMP HIGH PRETRIP (in ~1 minute with no action)
 99C04 – STATOR WATER TEMP HIGH TURBINE TRIP (in ~1.5 minutes with no action)
 TPCW P120 will trip and P119 remains in standby

+10 sec	ACO	REFER to Annunciator Response Procedures and REPORT that TPCW Pump P-120 has tripped.
+1 min	ACO	DETERMINE Standby TPCW pump has not started. <ul style="list-style-type: none"> Manually START TPCW P-119.
	CRS	CONTACT Maintenance to determine cause of failure.
+5 min	CRS	DISPATCH PEO to check TPCW Pump and breaker.
M.O. Cue:	If sent to check TPCW Pump P-120 and breaker, REPORT that there is an overcurrent flag at the breaker, and the pump appears normal. If sent to check P-119, REPORT that there is no apparent problem at the pump or breaker.	
<i>When TPCW P-119 is running and Stator Water Cooling alarms are clear, or at Lead Evaluator's discretion, PROCEED to Event 4.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>4</u>	Page	<u>9</u>	of	<u>20</u>
Event Description:	Loss of Inverter Y001								
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE ED07A, Loss of Inverter Y001.

Indications Available:

57C01 – VITAL BUS 1 INVERTER INPUT VOLTAGE LO

57C03 – VITAL BUS 1 INVERTER FAILURE

57C07 – CHANNEL A INSTRUMENT RACK POWER SUPPLY FAILURE

Numerous other Vital Bus 1 related alarms

+15 sec	CREW	DETERMINE failure by observing instrumentation for the affected channel AND alternate redundant indications monitoring the same plant parameters.
	CO/ACO	RECOGNIZE inverter failure and INFORM the CRS AOI SO23-13-18 entry required.
	CRS	DIRECT performance of SO23-13-18, Loss of a Vital Bus.
	CREW	DETERMINE a Loss of a Vital Bus Y01 has occurred.
	ACO	VERIFY annunciator 63A32 – 2D1 125 VDC BUS TROUBLE NOT alarming.
	CO	TRANSFER Pressurizer Level Control to the unaffected channel.
	CO	TRANSFER Pressurizer Heater Control as required to maintain RCS pressure.
	CREW	CONFIRM failure does NOT affect RPS/ESFAS Matrix Logic, RPS/ESFAS Initiation Logic, RTCBs, or RPS/ESFAS Manual Trip, or ESFAS Actuation Logic.
+3 min	CRS	INITIATE re-energizing Y001 from the Alternate source per SO23-6-17 within 2 hours.

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>4</u>	Page	<u>10</u>	of	<u>20</u>
Event Description:		Loss of Inverter Y001							
Time	Position	Applicant's Actions or Behavior							

M.O. Cue:			Do not restore power until the ACO has completed bypassing Channel A Feedwater Signals. When contacted, PERFORM actions to place Y001 on its Alternate Source using remote functions ED51A and ED59A.
	CRS	DIRECT performance of Attachment 1 for loss of Vital Bus Y01.	
+10 min	CRS	EVALUATE Technical Specifications.	
		<ul style="list-style-type: none"> LCO 3.8.7.A, Inverters - Operating is applicable (2 hour and 24 hour ACTIONS). 	
		<ul style="list-style-type: none"> Power AC vital bus from its Class 1E constant voltage source transformer within 2 hours. 	
		<ul style="list-style-type: none"> LCO 3.8.9.B, Distributions Systems - Operating is applicable (2 hour ACTION). 	
		<ul style="list-style-type: none"> Restore AC vital bus subsystem to OPERABLE status. 	
		<ul style="list-style-type: none"> LCO 3.7.5.H, Auxiliary Feedwater System is applicable (4 hour ACTION). 	
		<ul style="list-style-type: none"> Close the affected valve or its block valve. 	
	CO	VERIFY Protection System bistable NOT TRIPPED on PPS Channels B and D ROMs.	
	CO	VERIFY all ESFAS function lights ILLUMINATED on PPS Channels B and D ROMs.	
	CO	VERIFY Safety Channel indications providing input to PPS Channels B, C, and D do not indicate that a Plant Protection Trip setpoint has been exceeded.	
	ACO	ENSURE SO23-6-17, Attachment for Re-energizing Vital Bus Y01 from the Alternate Source, in progress.	

Op Test No.: NRC Scenario # 3 Event # 4 Page 11 of 20

Event Description: Loss of Inverter Y001

Time	Position	Applicant's Actions or Behavior
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	ACO	VERIFY EFAS Valves OPEN:
		<ul style="list-style-type: none"> HV-4714
		<ul style="list-style-type: none"> HV-4730
		<ul style="list-style-type: none"> HV-4713
		<ul style="list-style-type: none"> HV-4706
		<ul style="list-style-type: none"> HV-4716
	CO	VERIFY RTCBs 1, 2, 5, and 6 OPEN:
		<ul style="list-style-type: none"> VERIFY RX Trip Path 3 and 4 lights LIT.
		<ul style="list-style-type: none"> VERIFY RTCBs 3, 4, 7 and 8 are CLOSED.
		<ul style="list-style-type: none"> VERIFY RX Trip Path 1 and 2 indicating lights EXTINGUISHED.
	CO	VERIFY TGIS, FHIS, CPIS, and CRIS Train A actuated.
		<ul style="list-style-type: none"> VERIFY proper actuation of ESFAS components.
	CO	VERIFY SIAS, CCAS, CIAS, MSIS, CSAS, RAS:
		<ul style="list-style-type: none"> Trip Paths 1 and 3 actuated.
		<ul style="list-style-type: none"> VERIFY ESFAS alarms on CR-57 not annunciated.
	CRS	INITIATE SO123-0-A7, Section for State Office of Emergency Services Communication Guidelines.
	CRS	DIRECT performance of SO23-3-2.28, Section for Bypassing Selected Feedwater Control Signals.
	ACO	When directed, BYPASS Channel A SG Pressure, NR Level, and WR Level.
NOTE: The next steps are performed when power is restored.		

Op Test No.: NRC Scenario # 3 Event # 4 Page 12 of 20

Event Description: Loss of Inverter Y001

Time	Position	Applicant's Actions or Behavior
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	ACO	When directed, CLOSE AFW Valves that opened:
		• HV-4714
		• HV-4713
		• HV-4730
		• HV-4706
		• HV-4716
	CO	RESET DEFAS per SO23-3-2.22, Section for ESFAS Actuation and Reset.
	CO	CLOSE the affected RTCBs per SO23-3-2.12, Section for Closing Operation of the Reactor Trip Breakers.
M.O. Cue: When directed, CLOSE Reactor TCBs 2 & 6 using remote functions RP61A, RP62G, RP62H, then RP61A. RESET DEFAS 1 using remote function RP69C.		
	CO	When CPC Channel A DNBR and LPD values are within range, RESET the associated Auxiliary Trips.
	CO	RESET the HI Log Power Trip.
+25 min	ACO	RESET ESFAS per SO23-3-2.22, Section for ESFAS Actuation and Reset.
When the Vital Bus is restored, or at Lead Evaluator's discretion, PROCEED to Events 5 and 6.		

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>5 and 6</u>	Page	<u>13</u>	of	<u>20</u>
Event Description:		SGTR on E088 / Loss of Condenser Vacuum							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE SG06A @ 0.71%, SG E088 Tube Rupture (~300 gpm) and FW23, Loss of Condenser vacuum @ 100%.

Indications available:

50A23 – PZR LEVEL ERROR LO

60A46 – SECONDARY RADIATION HI

63B02 – UNIT 2 CRITICAL PARAMETERS PROBLEM

	CREW	RECOGNIZE RCS leakrate increasing uncontrollably.
+1 min	CRS	DIRECT isolation of Letdown.
	CO	ISOLATE Letdown by closing TV-0221 or HV-9204.
	CO	VERIFY 2 nd Charging Pump starts.
	CO	DETERMINE PZR level continues to decrease.
	CO/ACO	RECOGNIZE that a Steam Generator Tube Rupture is in progress and INFORM the CRS SO23-12-1 entry required.
	CRS	DIRECT a Reactor trip and DIRECT crew to perform actions of SO23-12-1, Standard Post Trip Actions.
	CO/ACO	TRIP the Reactor and ENTER SO23-12-1, Standard Post Trip Actions.
NOTE: Crew may take all action required during SPTAs prior to reporting status.		
	CRS	INITIATE Administrative Actions:
		<ul style="list-style-type: none"> RECORD time of Reactor trip. ANNOUNCE Reactor trip via PA System.

Op Test No.: NRC Scenario # 3 Event # 5 and 6 Page 14 of 20

Event Description: SGTR on E088 / Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> INITIATE Attachment 4, WORKSHEET.
		<ul style="list-style-type: none"> INITIATE Attachment 5, ADMINISTRATIVE ACTIONS.
	CO	VERIFY Reactivity Control criteria satisfied: <ul style="list-style-type: none"> VERIFY Reactor Trip Circuit Breakers (8) – open. VERIFY maximum of one full length CEA – NOT fully inserted. VERIFY Reactor power lowering and startup rate negative.
	ACO	VERIFY Vital Auxiliaries functioning properly: <ul style="list-style-type: none"> VERIFY Main Turbine tripped. <ul style="list-style-type: none"> HP and LP Stop and Governor Valves – closed. MWE output – lowering. VERIFY both Unit Output Breakers – open. VERIFY Main Turbine speed - less than 2000 RPM OR - lowering. VERIFY CCW Pump aligned to Non-Critical Loop (NCL) and Letdown Heat Exchanger – operating. VERIFY both 1E 4 kV Buses A04 and A06 – energized. VERIFY both 1E 480 V Buses B04 and B06 - energized. VERIFY all 6.9 kV and Non-1E Buses – energized. VERIFY all Class 1E DC Buses – energized.
	CO	DETERMINE RCS Inventory Control criteria NOT satisfied: <ul style="list-style-type: none"> DETERMINE PZR level NOT between 10% and 70% AND NOT trending to between 30% and 60%. VERIFY Core Exit Saturation Margin – greater than or equal to 20°F:
		QSPDS page 611.
		CFMS page 311.

Op Test No.: NRC Scenario # 3 Event # 5 and 6 Page 15 of 20

Event Description: SGTR on E088 / Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
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	CO	DETERMINE RCS Pressure Control criteria NOT satisfied:				
		<ul style="list-style-type: none"> DETERMINE PZR pressure (WR and NR) NOT between 1740 PSIA and 2380 PSIA AND NOT controlled AND NOT trending to between 2025 PSIA and 2275 PSIA. 				
	CO	VERIFY Core Heat Removal criteria satisfied:				
		<ul style="list-style-type: none"> VERIFY at least one RCP – operating. VERIFY core loop ΔT ($T_H - T_C$) – less than 10°F. VERIFY Core Exit Saturation Margin – greater than or equal to 20°F: <ul style="list-style-type: none"> QSPDS page 611 CFMS page 311. 				
	ACO	VERIFY RCS Heat Removal criteria satisfied:				
		<ul style="list-style-type: none"> VERIFY both SGs level – greater than 21% NR. VERIFY both SGs level – less than 80% NR. VERIFY the following: <ul style="list-style-type: none"> Auxiliary feedwater available to restore both SGs level – between 40% NR and 80% NR. Main feedwater NOT available to restore SG level. PREVENT SG high level: <ul style="list-style-type: none"> CLOSE MFW Block Valves: <table border="0" style="margin-left: 20px;"> <tr> <td><u>E-088</u></td> <td><u>E-089</u></td> </tr> <tr> <td>HV-4047</td> <td>HV-4051</td> </tr> </table> VERIFY heat removal adequate: <ul style="list-style-type: none"> T_C – less than 555°F. SG pressures – approximately 1000 PSIA. VERIFY T_C - greater than 545°F or controlled. VERIFY SG pressures – greater than 740 PSIA. 	<u>E-088</u>	<u>E-089</u>	HV-4047	HV-4051
<u>E-088</u>	<u>E-089</u>					
HV-4047	HV-4051					

Op Test No.: NRC Scenario # 3 Event # 5 and 6 Page 16 of 20

Event Description: SGTR on E088 / Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
	ACO	OPERATE ADVs as necessary to control system pressure.
	CO	DETERMINE Containment Isolation criteria NOT satisfied: <ul style="list-style-type: none"> • VERIFY Containment pressure – less than 1.5 PSIG. • VERIFY Containment Area Radiation Monitors energized AND NOT alarming or trending to alarm. • DETERMINE Secondary Plant Radiation Monitors energized AND alarming or trending to alarm.
	CO	VERIFY Containment Temperature, Pressure and Combustible Gas Control criteria satisfied: <ul style="list-style-type: none"> • VERIFY Containment average temperature – less than 120°F. • VERIFY Containment pressure – less than 1.5 PSIG.
+15 min	CRS	DIAGNOSE Event in Progress: <ul style="list-style-type: none"> • DETERMINE all safety function criteria are NOT met per Attachment 4, WORKSHEET. • COMPLETE Attachment 1, Recovery Diagnostic. <ul style="list-style-type: none"> • DIAGNOSE SGTR on E088 in progress. • NOTIFY personnel of event in progress. • DESIGNATE SRO-in-charge. • DIRECT initiation of Steps 11 through 14. • DIRECT stopping one RCP in each loop.
	CO	STOP one RCP in each loop.
	CRS	DIRECT performance of SO23-12-4, Steam Generator Tube Rupture.
	CRS	ENSURE SO23-12-1, Standard Post Trip Actions, Steps 1-10, complete.

Op Test No.:	<u>NRC</u>	Scenario #	<u>3</u>	Event #	<u>5 and 6</u>	Page	<u>17</u>	of	<u>20</u>
Event Description:		SGTR on E088 / Loss of Condenser Vacuum							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> RECORD time of EOI entry.
	CRS	VERIFY SGTR Diagnosis: <ul style="list-style-type: none"> INITIATE SO23-12-10, Safety Function Status Checks. INITIATE Foldout Page. DIRECT performance of FS-7, SI Throttle/Stop Criteria. DIRECT performance of SO23-12-11, Attachment 22, Non-Qualified Load Restoration. VERIFY SGTR diagnosis using Figure 1, Break Identification Chart. INITIATE sampling of both Steam Generators for radioactivity and boron.
M.O. Cue: If directed to sample SGs, WAIT 10 minutes and then REPORT that E088 has elevated radiation levels and boron levels. If the SG sample valves are closed, REPORT that you are unable to establish sample flow.		
	CRS	INITIATE Administrative actions: <ul style="list-style-type: none"> NOTIFY Shift Manager/Operations Leader of SO23-12-4, Steam Generator Tube Rupture initiation. ENSURE Emergency Plan is initiated. IMPLEMENT Placekeeper.
CRITICAL TASK	CRS	DIRECT lowering RCS T _H to less than 530°F:
	ACO	<ul style="list-style-type: none"> VERIFY both SGs available for cooldown.
	CO	<ul style="list-style-type: none"> ENSURE one RCP in each loop – stopped.
	CO	<ul style="list-style-type: none"> INITIATE lowering T_H to less than 530°F using ADVs.

Op Test No.: NRC Scenario # 3 Event # 5 and 6 Page 18 of 20

Event Description: SGTR on E088 / Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
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	CO	<ul style="list-style-type: none"> RESET SG Low Pressure Setpoints during controlled cooldown.
	CO	VERIFY ESF Actuation: <ul style="list-style-type: none"> VERIFY SIAS actuation. PZR pressure less than SIAS setpoint, OR trending to SIAS setpoint. ENSURE the following – actuated: <ul style="list-style-type: none"> SIAS CCAS CRIS RECORD time of SIAS _____.
	ACO	<ul style="list-style-type: none"> STOP unloaded Diesel Generators.
	ACO	<ul style="list-style-type: none"> INITIATE SO23-12-11, Attachment 22, Non-Qualified Load Restoration.
M.O. Cue: When directed to restore Non-Qualified Loads, WAIT 3 minutes, then CALL the Control Room and state that you are ready to restore. When directed, EXECUTE Remote Function ED85, Non-Qualified Loads Restoration. When complete, INFORM the Control Room that you have restored Non-Qualified Loads.		
	CO	<ul style="list-style-type: none"> VERIFY Containment pressure – less than Instrument Air pressure.
	CO	<ul style="list-style-type: none"> OVERRIDE and OPEN HV-5388 Instrument Air to Containment Isolation Valve, and ENSURE Excess Flow Check Valve HV-5343 open.
	CO	ESTABLISH Optimum SI Alignment:

Op Test No.: NRC Scenario # 3 Event # 5 and 6 Page 19 of 20 Event Description: SGTR on E088 / Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
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	CO	<ul style="list-style-type: none"> ESTABLISH two SI trains in operation: <ul style="list-style-type: none"> ENSURE all available Charging Pumps – operating. DETERMINE two HPSI trains and one LPSI train operating. VERIFY all Cold Leg flow paths are aligned. VERIFY SI flow required: <ul style="list-style-type: none"> SI flow – indicated, OR RCS pressure – greater than 1250 PSIA.
	CO	<ul style="list-style-type: none"> DETERMINE FS-7, VERIFY SI Throttle/Stop Criteria is NOT satisfied.
	CREW	IDENTIFY E088 as affected SG: <ul style="list-style-type: none"> EVALUATE SG radioactive release indications – rising: <ul style="list-style-type: none"> SG Blowdown monitors. SG sample results. Steam line monitors.
	ACO	<ul style="list-style-type: none"> EVALUATE indications on E088: <ul style="list-style-type: none"> SG level – rising when not feeding. SG feedwater flowrate – significantly mismatched between SGs. Steam/feed flow prior to trip – NOT normal.
	CRS	<ul style="list-style-type: none"> NOTIFY Shift Manager/Operations Leader that E088 is affected SG.
	ACO	VERIFY Heat Removal by SG E089: <ul style="list-style-type: none"> VERIFY electric AFW pump to SG E089 – operating. VERIFY SG E089 available for continued heat removal.

Op Test No.: NRC Scenario # 3 Event # 5 and 6 Page 20 of 20

Event Description: SGTR on E088 / Loss of Condenser Vacuum

Time	Position	Applicant's Actions or Behavior
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CRITICAL TASK	CREW	ISOLATE the most affected Steam Generator (SGTR).
	CO	<ul style="list-style-type: none"> ENSURE RCS T_H less than 530°F.
	ACO	ISOLATE SG E088. CLOSE/STOP the following components:
		<ul style="list-style-type: none"> MSIV HV-8205
		<ul style="list-style-type: none"> MSIV Bypass HV-8203
		<ul style="list-style-type: none"> ADV HV-8419
		<ul style="list-style-type: none"> MFIV HV-4048
		<ul style="list-style-type: none"> AFW valves HV-4714, HV-4730
		<ul style="list-style-type: none"> Steam to AFW P-140 HV-8201
		<ul style="list-style-type: none"> SG Blowdown Isolation HV-4054
		<ul style="list-style-type: none"> SG Water Sample Isolation HV-4058
+30 min		<ul style="list-style-type: none"> Electric AFW Pump P-504
<i>When the SG is isolated and RCS temperature is controlled, TERMINATE the scenario.</i>		

Facility:	San Onofre	Scenario No.:	4	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> Reactor Critical at $\sim 3 \times 10^{-4}$% power – RCS Boron is 1342 ppm by Chemistry Sample Train A Component Cooling Water Pump (P-025) in service Train A Saltwater Cooling Pump (P-307) OOS Condenser Air Ejector Low Range Radiation Monitor (RM-7818) OOS 				
Turnover:	Power increase in progress to ~ 2 % power.				
Critical Tasks:	<ul style="list-style-type: none"> Restore flow to the CCW Non-Critical Loop (RCPs operating). Restore power to at least one 1E 4kV Bus. Establish Reactivity Control (≥ 2 FLCEAs Not Fully Inserted & No SIAS). 				
Event No.	Malf. No.	Event Type*	Event Description		
1 +15 min		R (CO) N (ACO, CRS)	Rod withdrawal and power increase in progress to ~ 2 % power.		
2 +25 min	RC15B	I (CO, CRS) TS (CRS)	Pressurizer Pressure Control Channel fails high (PT-0100Y).		
3 +35 min	ED08B	C (CO, ACO, CRS)	Loss of Non-1E Instrument Bus Q0612.		
4 +45 min	ED03A	C (ACO, CRS) TS (CRS)	Bus 2A04 Overcurrent lockout.		
5 +50 min	PG24	M (ALL)	Loss of Offsite Power.		
6 +50 min	EG08B	C (ACO)	Emergency Diesel Generator 2G003 mechanical failure. Station Blackout		
7 +50 min	RD8802 RD8902 RD9002 RD9102	C (CO)	Four fully stuck CEAs; Loss of Reactivity Control.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Technical Specifications					

SCENARIO SUMMARY NRC #4

The crew will assume the watch with the Reactor critical at $\sim 3 \times 10^{-4}\%$ power. The crew will raise power using rod withdrawal per SO23-5-1.3.1, Plant Startup from Hot Standby to Minimum Load.

After the crew has demonstrated control of the power change, a Pressurizer Pressure instrument fails high and will require crew actions per the Annunciator Response Procedures (ARPs) and Abnormal Operating Instruction (AOI) SO23-13-27, Pressurizer Pressure and Level Malfunction. The CRS will evaluate Technical Specifications.

After the crew has restored the Pressurizer Pressure instrument, a loss of Non-1E Instrument Bus Q0612 will occur and require crew actions per the ARPs and AOI SO23-13-19, Loss of Non-1E Instrument Buses.

With Letdown restoration in progress, a bus fault and lockout will occur on Bus 2A04. The crew will refer to SO23-13-26, Loss of Power to an AC Bus. The CRS will evaluate Technical Specifications.

Once the decision to shutdown is made, a Loss of Offsite Power will occur. The Reactor will trip and the crew will perform SO23-12-1, Standard Post Trip Actions. EDG 2G003 will trip. Four rods remain stuck out of the core requiring manual boration alignment on the part of the CO in preparation for Bus 2A06 power restoration.

The crew diagnoses a Loss of Reactivity Control due to a Station Blackout and enters SO23-12-9, Functional Recovery. The success path will require cross-tying power with Unit 3 and establishing a boration flowpath.

The scenario is terminated when Bus 2A06 is energized and boration at greater than 40 gpm is established.

Risk Significance:

- Risk important components out of service: SWC P-307
- Failure of risk important system prior to trip: Loss of Vital Inverter
- Risk significant core damage sequence: SBO with Loss of Reactivity Control
- Risk significant operator actions: Vital AC power restoration
Establish boration flowpath

Scenario Event Description

NRC Scenario 4

SONGS

2006 Facility NRC Initial License Examination

Simulator Scenario Setup

Scenario 4

MACHINE OPERATOR'S INSTRUCTIONS

SETUP

IC: Use IC #184 and see attached Event File for NRC Scenario #4.

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>1</u>	Page	<u>4</u>	of	<u>20</u>
Event Description:		Rod Withdrawal and Power Increase in Progress to ~2% power							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: EXECUTE IC #184 and NRC Scenario #4 SETUP file to align components.

ENSURE Control Board Tags are hung on P-307.

ENSURE Operator Aid Tags #029 (CVCS) and #005-4 (CVCS Ion Exchanger) reflect the scenario born concentration.

ENSURE procedures in progress are on the CO desk:

- Copy of SO23-5-1.3.1 completed through Step 6.4.

ENSURE that Control Rods are in the appropriate position.

PLACE the MOC Operations Physics Summary Book on the CO Desk.

PLACE the MOC Attachment 8 from SO23-5-1.7 in the Plexiglas holder next to Rod Control.

Control Room Annunciators in Alarm at $3 \times 10^{-4}\%$:

50A02 – COLSS ALARM
 50A07 – SBCS DEMAND PRESENT
 53A03 – MFWP TURBINE K006 TRIP
 53A27 – MFWP P062 DISCH PRESS LO
 53A28 – MFWP P062 FLOW LO
 53A47 – 3rd POINT HEATER DRAIN TANK LEVEL HI/LO
 53B03 – MFWP TURBINE K005 TRIP
 53B27 – MFWP P063 DISCH PRESS LO
 53B28 – MFWP P063 FLOW LO
 56A30/40/50/60 – LOSS OF LOAD CHANNEL 1/2/3/4 TRIP DISABLED
 63E10 – SCE CB TRIP
 99A02 – EMERGENCY PUSHBUTTON TURBINE TRIP
 99A24 – TURBINE TRIP RELAY TRIPPED
 99B01 – GENERATOR TRIP
 99B19 – VACUUM PROTECTION PLC TROUBLE
 99B41 – AVR CH A FAULT
 99B42 – AVR CH B FAULT

+1 min	CRS	DIRECT performance of SO23-5-1.3.1, Plant Startup from Hot Standup to Minimum Load.
	CO	REFER to LCS Figure 3.1.102-1 and commence maintaining the Control Rods in the proper sequence of overlap.

Op Test No.:	<u> NRC </u>	Scenario #	<u> 4 </u>	Event #	<u> 1 </u>	Page	<u> 5 </u>	of	<u> 20 </u>
Event Description:		Rod Withdrawal and Power Increase in Progress to ~2% power							
Time	Position	Applicant's Actions or Behavior							
	CO	POSITION Group Select switch to the CEA Group 6.							
	CO	POSITION Mode Select Switch to MG (Manual Group) or MS (Manual Sequential).							
	CO/CRS	When directed by the CRS, WITHDRAW Control Rods as required.							
	CO	When CEA positioning is complete, PLACE the Mode Select Switch to OFF.							
+15 min	ACO	MAINTAIN Tcold within required band by monitoring the Steam Bypass Control System operation.							
<i>When power has been raised to ~2%, or at Lead Evaluator's discretion, PROCEED to Event 2.</i>									

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>2</u>	Page	<u>6</u>	of	<u>20</u>
Event Description:		PZR Pressure Transmitter PT-0100Y Fails High							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u> When directed, EXECUTE RC15B, Pressurizer Pressure Control Channel PT-0100Y fails high.		
<u>Indications available:</u>		
50A04 – PZR PRESS DEVIATION HI/LO		
50A14 – PZR PRESS HI/LO		
PZR Heaters Trip OFF		
PZR Spray valves modulate OPEN if control channel drifts high enough prior to action		
+1 min	CO	REFER to Annunciator Response Procedures.
	CO	DETERMINE which channel initiated the alarm using PR-100.
		<ul style="list-style-type: none"> RECOGNIZE Channel Y (PR-0100B) has failed high and NOTIFY CRS that SO23-13-27 entry required.
	CO	If desired, SELECT PIC-100 to MANUAL, and return pressure to the normal band and ensure Spray Valves close and PZR pressure trending to normal.
	CRS	DIRECT PERFORMANCE OF SO23-13-27 to place PZR Pressure Control to the unaffected channel.
	CO	VERIFY PI-0100X is OPERABLE.
	CO	POSITION HS-0100A, Pressurizer Pressure Channel Select Switch to Channel X.
	CO	If required, TRANSFER PIC-0100, PZR Pressure Controller, to AUTO by DEPRESSING the A/M pushbutton and VERIFY proper system response.

Op Test No.: NRC Scenario # 4 Event # 2 Page 7 of 20

Event Description: PZR Pressure Transmitter PT-0100Y Fails High

Time	Position	Applicant's Actions or Behavior
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	CO	RESTORE PZR heaters to normal configuration.
		<ul style="list-style-type: none"> • PLACE heater control switches to OFF, then AUTO (May wait until PZR pressure has been returned to the normal band).
	ACO	RECOGNIZE and REPORT SBCS Permissives are active. (Not recoverable or controllable.)
+10 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> • LCO 3.4.1.A, RCS DNB Limits is applicable (2 hour ACTION).
		<ul style="list-style-type: none"> • Restore Pressurizer pressure to within limit.
<i>When Technical Specifications are addressed, or at Lead Evaluator's discretion, PROCEED to Event 3.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>3</u>	Page	<u>8</u>	of	<u>20</u>
Event Description:		Loss of Instrument Bus Q0612							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE ED08B, Loss of Instrument Bus Q0612.

Indications Available:

63B34 - 2Q0612 INST BUS 2 POWER SUPPLY FAILURE
Non-1E Pressurizer Heaters de-energize
SBCS Automatic operation is lost
Charging Pump P-191 (in AUTO) will stop
Loss of Letdown due to closure of 2TV-9267, Letdown Regen HX outlet
58A01 - REGEN HX TSH-9267 LETDOWN TEMP HI
50A05 - TAVG HI
50A06 - TAVG LO
58A04 - VCT LEVEL HI/LO
58A05 - VCT LEVEL LO/LO
VCT Outlet Valve LV-0227B will close
RWST Outlet Valve LV-0227C will open

+30 sec	CO/ACO	REFER to Annunciator Response Procedures.
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	ACO	DETERMINE that Non-1E Instrument Bus Q0612 has de-energized and INFORM the CRS SO23-13-19, Loss of Non-1E Instrument Buses entry required.
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	CRS	DIRECT performance of SO23-13-19, Loss of Non-1E Instrument Buses.
--	-----	--

	CRS	DISPATCH PEO to transfer Instrument Bus #2 (Q0612) to Emergency Source per SO23-6-17.1.
--	-----	---

M.O. Cue: When directed to transfer Q0612 to the Emergency Source, WAIT two (2) minutes, then REPORT you are ready for transfer. When directed, EXECUTE remote function ED81, Transfer Q0612 to Emergency Source and DELETE malfunction ED08B. Ensure that SBCS Master Controller is placed in Manual prior to transfer.

+1 min	ACO	PLACE SBCS Master Controller in MANUAL.
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Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>3</u>	Page	<u>9</u>	of	<u>20</u>
Event Description:		Loss of Instrument Bus Q0612							
Time	Position	Applicant's Actions or Behavior							

	CO	MAINTAIN PZR pressure at 2250 psia using 1E pressurizer heaters.
+5 min	CO	STOP Charging Pump P190 then MANUALLY operate Charging Pumps as necessary to maintain Pressurizer level.
NOTE: If a Charging Pump is started, a boration will occur due to the valve alignment changes for Charging Pump suction source on loss of Q0612.		
	ACO	MAINTAIN Tcold by adjusting SBCS as necessary.
+10 min	CRS	Upon restoration of Bus Q0612, DIRECT restoration of automatic control.
NOTE: The CO will make preparations to restore Letdown, however, restoration is not required prior to proceeding to the next event. (Scenario time restriction).		
<i>When Instrument Bus Q0612 has been re-energized, or at Lead Evaluator's discretion, PROCEED to Event 4.</i>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>4</u>	Page	<u>10</u>	of	<u>20</u>
Event Description:		Bus 2A04 Overcurrent Lockout							
Time	Position	Applicant's Actions or Behavior							

Machine Operator: When directed, EXECUTE ED03A, Bus 2A04 overcurrent.

Indications Available:

63B05 - 2A04 VOLTAGE LO

63B06 - 2B04 VOLTAGE LO

63B25 - 2A04 SUPPLY BREAKER 2A0418 OC

63B40 - DIESEL GEN 2G002 DAY TANK TROUBLE

+30 sec	CO/ACO	REFER to Annunciator Response Procedures.
	CO/ACO	RECOGNIZE low bus voltage and INFORM the CRS AOI SO23-13-26 entry required.
	CRS	DIRECT performance of SO23-13-26, Loss of Power to an AC Bus.
	CRS	DIRECT aligning of Train B CCW and SWC.
+1 min	ACO	START the Train B CCW Pump (within 5 minutes of loss).
CRITICAL TASK		<ul style="list-style-type: none"> TRANSFER the Non-Critical Loop to Train B. TRANSFER the Letdown Heat Exchanger to Train B.
	ACO	VERIFY loss of the 1E 4 kV Bus is NOT due to a fire in the 1E Switchgear Room.
	ACO	DETERMINE overcurrent annunciators are alarming on 2A04.
	CRS	DIRECT initiation of SO23-6-9, 6.9 kV, 4 kV and 480V Bus and Feeder Faults, to return Bus A04 to service.
	CRS	DIRECT initiation of Equipment Actions for Loss of the 1E 4 kV Bus 2A04.

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>4</u>	Page	<u>11</u>	of	<u>20</u>
Event Description:		Bus 2A04 Overcurrent Lockout							
Time	Position	Applicant's Actions or Behavior							

+5 min	ACO	STOP G002 Diesel Generator by placing in MAINTENANCE LOCKOUT.
	CRS	Within 1 hour, DIRECT performance of SO23-3-3.23, Attachment for AC Sources Verification, for both Units.
	CO	SELECT HS-0210, Makeup Mode Selector Switch to MANUAL and PLACE a Caution Tag at the switch to prevent inadvertent dilution.
	CO	ALIGN Feedwater flow to SG E-089.
		<ul style="list-style-type: none"> START P-140 and ALIGN AFW Valves.
+15 min	CRS	EVALUATE Technical Specifications.
		<ul style="list-style-type: none"> LCO 3.0.3, is applicable for loss of two 1E Battery Chargers.
		<ul style="list-style-type: none"> Within 1 hour, place the Unit in MODE 3 within 7 hours.
M.O. Cue: When the crew decides to place Channel A in Bypass, EXECUTE remote functions RP51, 52C, and 52D, then DELETE remote function RP51.		
	CRS	DIRECT Bypassing Channel A DNBR and LPD trips.
+15 min	CRS	DIRECT setting CEAC 2 INOP Flags in all CPCs by changing each CPC Addressable Constant Point ID 062 to 2.
When Technical Specifications have been addressed, or at Lead Evaluator's discretion, PROCEED to Events 5, 6, and 7.		

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>5, 6, and 7</u>	Page	<u>12</u>	of	<u>20</u>
Event Description:		Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure							
Time	Position	Applicant's Actions or Behavior							

<u>Machine Operator:</u>			When directed, EXECUTE PG24, Loss of Offsite Power, EG08B, 2G003 EDG Mechanical Failure, RD8802/8902/9002/9102, Stuck CEAs, and PG57, Loss of SDGE Switchyard (+5 minutes) trip.
<u>Indications available:</u>			
Numerous Loss Of Offsite Power Related Alarms			
+10 secs	CO/ACO	RECOGNIZE Reactor trip and Loss of Offsite Power and INFORM the CRS SO23-12-11 entry required.	
	CRS	DIRECT performance of SO23-12-1, Standard Post Trip Actions.	
NOTE: Crew may take all action required during SPTAs prior to reporting status.			
	CRS	INITIATE Administrative Actions:	
		<ul style="list-style-type: none"> • RECORD time of Reactor trip. 	
		<ul style="list-style-type: none"> • ANNOUNCE Reactor trip via PA System. 	
		<ul style="list-style-type: none"> • INITIATE Attachment 4, WORKSHEET. 	
		<ul style="list-style-type: none"> • INITIATE Attachment 5, ADMINISTRATIVE ACTIONS. 	
	CO	DETERMINE Reactivity Control criteria NOT satisfied:	
		<ul style="list-style-type: none"> • VERIFY Reactor Trip Circuit Breakers (8) – open. 	
		<ul style="list-style-type: none"> • DETERMINE four full length CEAs – NOT fully inserted. 	
		<ul style="list-style-type: none"> • VERIFY Reactor power lowering and startup rate negative. 	
	CO	When available, COMMENCE emergency boration at > 40 gpm.	

Op Test No.: NRC Scenario # 4 Event # 5, 6, and 7 Page 13 of 20

Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure

Time	Position	Applicant's Actions or Behavior
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	ACO	DETERMINE Vital Auxiliaries NOT functioning properly:
		<ul style="list-style-type: none"> • VERIFY Main Turbine tripped.
		<ul style="list-style-type: none"> • VERIFY both Unit Output Breakers – open.
		<ul style="list-style-type: none"> • DETERMINE CCW Pump NOT aligned to Non-Critical Loop (NCL) and Letdown Heat Exchanger.
		<ul style="list-style-type: none"> • DETERMINE both 1E 4 kV Buses A04 and A06 de-energized.
		<ul style="list-style-type: none"> • DETERMINE both 1E 480 V Buses B04 and B06 de-energized.
		<ul style="list-style-type: none"> • DETERMINE all 6.9 kV and Non-1E Buses de-energized.
		<ul style="list-style-type: none"> • VERIFY all Class 1E DC Buses – energized.
	ACO	PLACE DG G003 in Maintenance Lockout.
	ACO	INITIATE Attachment 6, DG Failure Followup Actions for Buses 2A04 and 2A06.
M.O. Cue: If directed to investigate 2G003, WAIT 3 minutes and REPORT it is shutdown and there is a large amount of oil on the DG room floor.		
	CO	DETERMINE RCS Inventory Control criteria NOT satisfied:
		<ul style="list-style-type: none"> • DETERMINE PZR level between 10% and 70% and NOT trending to between 30% and 60%.
		<ul style="list-style-type: none"> • VERIFY Core Exit Saturation Margin – greater than or equal to 20°F:
		<ul style="list-style-type: none"> • QSPDS page 611.
		<ul style="list-style-type: none"> • CFMS page 311.
	CO	DETERMINE RCS Pressure Control criteria NOT satisfied:
		<ul style="list-style-type: none"> • DETERMINE PZR pressure (WR and NR) between 1740 PSIA and 2380 PSIA and NOT controlled AND trending to between 2025 PSIA and 2275 PSIA.

Op Test No.: NRC Scenario # 4 Event # 5, 6, and 7 Page 14 of 20

Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure

Time	Position	Applicant's Actions or Behavior
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Time	Position	Applicant's Actions or Behavior
	CO	DETERMINE Core Heat Removal criteria is NOT satisfied:
		<ul style="list-style-type: none"> • DETERMINE no RCPs are operating.
		<ul style="list-style-type: none"> • RECORD time of all RCPs off.
		<ul style="list-style-type: none"> • VERIFY operating loop Delta T (Th-Tc) less than 58°F.
		<ul style="list-style-type: none"> • VERIFY Th and Tc not rising.
		<ul style="list-style-type: none"> • VERIFY operating loop Th and REP CET within 16°F.
		<ul style="list-style-type: none"> • QSPDS page 611.
		<ul style="list-style-type: none"> • CFMS page 311.
		<ul style="list-style-type: none"> • VERIFY Core Exit Saturation Margin $\geq 20^\circ\text{F}$.
		<ul style="list-style-type: none"> • QSPDS page 611.
		<ul style="list-style-type: none"> • CFMS page 311.
		<ul style="list-style-type: none"> • VERIFY Reactor Vessel level $\geq 100\%$ (plenum).
		<ul style="list-style-type: none"> • QSPDS page 622.
		<ul style="list-style-type: none"> • CFMS page 312.
NOTE: It is acceptable for CO to report "Monitoring for Natural Circulation."		
	ACO	DETERMINE RCS Heat Removal criteria NOT satisfied:
		<ul style="list-style-type: none"> • VERIFY both SGs level – greater than 21% NR.
		<ul style="list-style-type: none"> • VERIFY both SGs level – less than 80% NR.
		<ul style="list-style-type: none"> • VERIFY Auxiliary feedwater available to restore both SGs level – between 40% NR and 80% NR.
		<ul style="list-style-type: none"> • PREVENT SG high level:
		<ul style="list-style-type: none"> • CLOSE MFW Block Valves:
		<p style="text-align: center;"><u>E-088</u> <u>E-089</u></p>
		<p style="text-align: center;">HV-4047 HV-4051</p>
		<ul style="list-style-type: none"> • VERIFY heat removal adequate:
		<ul style="list-style-type: none"> • T_C – less than 555°F.

Op Test No.: NRC Scenario # 4 Event # 5, 6, and 7 Page 15 of 20

Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • SG pressures – approximately 1000 PSIA.
		<ul style="list-style-type: none"> • DETERMINE T_C - less than 545°F and NOT controlled.
	ACO	<ul style="list-style-type: none"> • CLOSE MSIVs due to loss of offsite power.
		<ul style="list-style-type: none"> • VERIFY SG pressures – greater than 740 PSIA.
	CO	VERIFY Containment Isolation criteria satisfied:
		<ul style="list-style-type: none"> • VERIFY Containment pressure – less than 1.5 PSIG.
		<ul style="list-style-type: none"> • DETERMINE some Containment Area Radiation Monitors energized and NOT alarming or trending to alarm.
		<ul style="list-style-type: none"> • DETERMINE some Secondary Plant Radiation Monitors energized and NOT alarming or trending to alarm.
	CO	DETERMINE Containment Temperature, Pressure and Combustible Gas Control criteria NOT satisfied:
		<ul style="list-style-type: none"> • DETERMINE Containment average temperature – greater than 120°F.
		<ul style="list-style-type: none"> • VERIFY Containment pressure – less than 1.5 PSIG.
+15 min	CRS	DIAGNOSE Event in Progress:
		<ul style="list-style-type: none"> • DETERMINE all safety function criteria are NOT met per Attachment 4, WORKSHEET.
		<ul style="list-style-type: none"> • COMPLETE Attachment 1, Recovery Diagnostic.
		<ul style="list-style-type: none"> • DIAGNOSE loss of Reactivity Control and Station Blackout.
		<ul style="list-style-type: none"> ○ NOTIFY personnel of event in progress.
		<ul style="list-style-type: none"> ○ DESIGNATE SRO-in-charge.
		<ul style="list-style-type: none"> ○ DIRECT initiation of Steps 11 through 14.
<p>M.O. Cue: If SC&E GCC is contacted for grid status, REPORT that cause of grid loss is unknown and field crews are investigating. No estimate on time to restore a line.</p>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>5, 6, and 7</u>	Page	<u>16</u>	of	<u>20</u>
Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure									
Time	Position	Applicant's Actions or Behavior							

M.O. Cue: If Unit 3 status is requested, REPORT that Bus 3A06 is energized from EDG 3G003 and Bus 3A04 is energized from EDG 3G002.		
	CRS	DIRECT performance of SO23-12-9, Functional Recovery.
M.O. Cue: When SO23-12-9 is initiated, CALL as SDG&E GCC and REPORT that SONGS Switchyard appears to have several faults and will not be available until a crew can be dispatched to determine the problem.		
	CRS	VERIFY Functional Recovery diagnosis:
		<ul style="list-style-type: none"> INITIATE SO23-12-10, Safety Function Status Checks.
		<ul style="list-style-type: none"> INITIATE Foldout Page.
		<ul style="list-style-type: none"> DIRECT performance of FS-3, Monitor Natural Circulation.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 19, Non-1E DC Load Reduction.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 20, Class1E Battery Load Reduction.
		<ul style="list-style-type: none"> DIRECT performance of FS-18, Secondary Plant Protection.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 24, Supply 1E 4 kV Bus with Opposite Unit Diesel.
		<ul style="list-style-type: none"> DIRECT performance of SO23-12-11, Attachment 6, Diesel Generator Failure Follow-up Actions.
		<ul style="list-style-type: none"> DIRECT Chemistry to sample both SGs for radioactivity and boron.
M.O. Cue: If directed to sample SGs, WAIT 10 minutes and REPORT that E088 and E089 sample lines were frisked, and both have activity near background. If the SG sample valves are closed, REPORT that you are unable to establish sample flow.		
M.O. Cue: When directed to initiate Non-1E DC Load Reduction, ACKNOWLEDGE and STATE you will report when complete.		

Op Test No.: NRC Scenario # 4 Event # 5, 6, and 7 Page 17 of 20

Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure

Time	Position	Applicant's Actions or Behavior
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M.O. Cue: When directed to initiate Class 1E Battery Load Reduction, ACKNOWLEDGE and STATE you will report when complete.

	CRS	DIRECT performance of SO23-12-11, Attachment 24, Supplying 1E 4 kV Bus with Opposite Unit Diesel.
	CRS	DETERMINE Train B is available.
	CRS	OBTAIN approval of Shift Manager to cross connect Train B using 10 CFR 50.54(x) on both units to supply 1E 4 kV Bus 2A06 with the opposite unit Diesel Generator.
	CRS	REQUEST SM initiates NRC notification within one hour regarding actions per this attachment.
	CRS	NOTIFY opposite unit SRO that automatic sequencing of ESF loads onto opposite Unit 1E 4kV Bus 3A06 will be blocked.
	ACO	ENSURE 1E 4kV Bus Tie breaker AUTO/MANUAL transfer switches selected to MANUAL. <ul style="list-style-type: none"> • 2A0619 (2HS-1639B2) and 3A0603 (3HS-1639B2).
	ACO	ENSURE 1E 4kV Bus Tie breakers open. <ul style="list-style-type: none"> • 2A0619 and 3A0603.
	ACO	ENSURE 2G003 Diesel Generator selected to MAINTENANCE LOCKOUT.
	CRS	DIRECT performance of Train B Diesel Generator Cross-Tie Permissive switch alignment on 50' Elevation.

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>5, 6, and 7</u>	Page	<u>18</u>	of	<u>20</u>
Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure									
Time	Position	Applicant's Actions or Behavior							

	ACO	CONTACT the PPEO and INITIATE Unit 2 Train A Diesel Generator Cross-Tie Permissive switch alignment on 50' Elevation.
		<ul style="list-style-type: none"> • VERIFY feeder faults NOT indicated by relay flags on: <ul style="list-style-type: none"> • 2A0616 – Unit Aux Transformer • 2A0618 – Reserve Aux Transformer • 2A0619 – 2A06 Bus Tie • 2A0613 – 2G003 EDG
M.O. Cue: When asked, REPORT no feeder faults on breakers.		
	ACO	DIRECT the PPEO to SELECT both Unit 2 Train B Diesel Generator Cross-Tie Permissive switches on Fire Isolation Panel 2L-413 to 50.54X.
		<ul style="list-style-type: none"> • 2HS-5054XA2 and 2HS-5054XB2
M.O. Cue: When directed, PERFORM remote functions EG62A and EG62B and REPORT that the Unit 2 50.54X switches have been aligned.		
	ACO	CONTACT the PPEO and INITIATE Unit 3 Train B Diesel Generator Cross-Tie Permissive switch alignment on 50' Elevation.
		<ul style="list-style-type: none"> • VERIFY feeder faults NOT indicated by relay flags on: <ul style="list-style-type: none"> • 3A0603 – 3A06 Bus Tie
M.O. Cue: When asked, REPORT no feeder faults on breakers.		
	ACO	DIRECT the PPEO to SELECT both Unit 3 Train B Diesel Generator Cross-Tie Permissive switches on Fire Isolation Panel 3L-413 to 50.54X.
		<ul style="list-style-type: none"> • 3HS-5054XA2 and 3HS-5054XB2

Op Test No.:	<u>NRC</u>	Scenario #	<u>4</u>	Event #	<u>5, 6, and 7</u>	Page	<u>19</u>	of	<u>20</u>
Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure									
Time	Position	Applicant's Actions or Behavior							

M.O. Cue: When directed PERFORM remote functions EG62C and EG62D and REPORT that the Unit 3 50.54X switches have been aligned.		
	ACO	VERIFY 3G003 Diesel Generator loading less than 3.4 MW.
	ACO	VERIFY Bus 2A06 NOT energized.
	ACO	VERIFY Unit 2 overcurrent/ground alarms reset.
		<ul style="list-style-type: none"> 63C15 SUPPLY BKR A0616 OC 63C25 SUPPLY BKR A0618 OC
	ACO	VERIFY 1E DC bus voltages 2D2 and 3D2 greater than 108 VDC.
M.O. Cue: When asked, REPORT 3D2 voltage at 129 VDC.		
	ACO	ESTABLISH final Train B configuration.
	ACO	ENSURE 1E 4kV Bus 2A06 supply breakers open.
		<ul style="list-style-type: none"> 2A0616 – Unit Aux Transformer 2A0618 – Reserve Aux Transformer 2A0613 – 2G003 EDG
	ACO	ENSURE 1E 4kV Bus A06 tie breakers open.
		<ul style="list-style-type: none"> 2A0619 – 2A06 Bus Tie 3A0603 – 3A06 Bus Tie
	ACO	ENSURE 1E 4kV Bus 2A06 load breakers open.
		<ul style="list-style-type: none"> Emergency Chillers Containment Spray Pumps

Op Test No.: NRC Scenario # 4 Event # 5, 6, and 7 Page 20 of 20

Event Description: Loss of Offsite Power / Four Stuck CEAs / 2G003 Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • HPSI Pumps
		<ul style="list-style-type: none"> • LPSI Pumps
		<ul style="list-style-type: none"> • AFW Pumps
		<ul style="list-style-type: none"> • CCW Pumps
		<ul style="list-style-type: none"> • SWC Pumps
	ACO	VERIFY Train B Diesel Generator Cross-Tie Permissive switches on both units are in the 50.54X position. (Total of 4 switches).
	ACO	CLOSE Unit 3 Bus Tie breaker 3A0603.
	ACO	VERIFY Unit 3 Diesel Generator 3G003 output breaker remains closed.
CRITICAL TASK	ACO	Restore power to at least one 1E 4kv Bus; CLOSE Unit 2 Bus Tie breaker 2A0619.
	ACO	VERIFY Unit 2 1E buses 2A06 and 2B06 energized.
	ACO	START CCW Pump P-026 on Train B.
CRITICAL TASK	CO	Establish Reactivity Control (≥ 2 FLCEAs Not Fully Inserted & No SIAS)
	CO	START Charging Pump P-192 on Train B and COMMENCE boration at >40 gpm.
		<ul style="list-style-type: none"> • OPEN HV-9245 and HV-9240 Gravity Feed Valves.
+35 min		<ul style="list-style-type: none"> • CLOSE LV-227B VCT Outlet Block Valve.
<p>When power is restored to Bus 2A06 and emergency boration is started, TERMINATE the scenario.</p>		