

JPM: SRO/RO A1.a

**KEY**

System: Conduct of Operations JTA Task #: (New)

Task Title: Determine Pressurizer Heater Operability

KSA Ref: 2.1.33 PEO: \_\_\_\_\_ RO: 3.4 SRO: 4.0

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

**IPO-001A "Plant Heatup from Cold Shutdown to Hot Standby"**

Tools, Equipment, Job Aids, etc:

Selected parameters from the plant, captured on Attachment 1 of this JPM, and a calculator.

**JPM: SRO/RO A1.a**

***KEY***

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The plant is ready to enter Mode 3. The Unit Supervisor has directed you to determine the operability of the Pressurizer Heaters by performing step 5.3.1 of IPO-001A, "Plant Heatup from Cold Shutdown to Hot Standby". Plant data is provided.

Terminating Conditions:

Calculations are complete and an Operability determination has been made.

JPM: SRO/RO A1.a

**KEY**

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
1	Provide the candidate with the initiating cue, the plant data sheet, and a copy of IPO-001A step 5.3.1.		<i>Note Start time.</i>	
2	Candidate correctly transfers data to the procedure.	See Attached Key		
3	Candidate performs calculations.	See Attached Key		
*4	Candidate determines operability  <b>TASK COMPLETE.</b>	B/U Heater Groups A, B and Control Heater Group C are OPERABLE. B/U Heater Group D is INOPERABLE  <i>Note Completion time.</i>		

JPM: SRO/RO A1.a

**KEY****INITIATING CUE:**

The plant is ready to enter Mode 3. The Unit Supervisor has directed you to determine the operability of the Pressurizer Heaters by performing step 5.3.1 of IPO-001A, "Plant Heatup from Cold Shutdown to Hot Standby". Plant data is provided.

## Plant Data

Parameter	Value from Last Reading Sheets (OPT-XXX)	Current Value
1/1-PCPR1 Amps	580	580
1/1-PCPR Amps	0	200
1/1-PCPR2 Amps	565	565
1/1P-CPR3 Amps	0	176
1B1 Volts	474	468
1B2 Volts	483	476
1B3 Volts	476	470
1B4 Volts	485	480
PC point V6303A	487.2	486.9
PC point V6302A	488.1	487.1
PC point V6301A	487.2	486.9
PC point V6304A	488.3	487.1
PC point A6801A	571.2	570.1
PC point A6802A	0	193
PC point A6803A	559.8	560
PC point A6804A	0	176
1EA1 Amps	282.7	261.4
1EA2 Amps	358.5	423.7

NOTE: The candidate can use either the MCB meter amperages or the plant computer values for heater amperages. The IPO allows both and there is no significant difference.

NOTE: The shaded parameters should NOT be used. The following problems exist with the shaded data:

1. The pressurizer heaters are supplied by 1EB1-4, NOT 1B1-4
2. 1EA1/2 amperage is not necessary to complete the calculations.
3. Data from the last set of logs should NOT be used for the Operability determination. Plant conditions could have changed significantly since the readings were taken. The IPO wants current plant data to determine Operability.

JPM: SRO/RO A1.a

**KEY**

Circle the correct status for each Bank of Pressurizer Heaters

Heater Bank	Status	Status
B/U Heater Grp. A	Operable	Inoperable
B/U Heater Grp. B	Operable	Inoperable
Control Grp. C	Operable	Inoperable
B/U Heater Grp. D	Operable	Inoperable

Example of the completed procedure:

**5.3 Heatup And Pressurization For MODE 3 Entry**

[C]

This section describes steps for heatup and pressurization to enter MODE 3.

5.3.1 Verify at least two groups of pressurizer heaters have a capacity of at least 150KW each.(TS SR 3.4.9.2)

A. Energize each group of heaters, as required, to measure current. \_\_\_\_\_

B. Record voltage and current AND calculate power for each group of heaters.  
(Voltage x current x 0.001732 = power)

- Backup Heater Group A

$$\begin{array}{l}
 1EB3 \quad 1-II-PCPR1 \text{ or} \\
 \text{Or } \underline{486.9} \text{ x } \text{ or } \underline{570.1} \text{ x} \quad 0.001732 = \quad \underline{480.77} \text{ KW} \\
 V6303A \quad A6801A
 \end{array}$$

- Backup Heater Group B

$$\begin{array}{l}
 1EB2- \quad 1-II-PCPR2 \\
 \text{or } \underline{487.1} \text{ x } \text{ or } \underline{193} \text{ x} \quad 0.001732 = \quad \underline{162.8} \text{ KW} \\
 V6302A \quad A6803A
 \end{array}$$

- ! Control Heater Group C

$$\begin{array}{l}
 1EB1 \quad 1-II-PCPR \\
 \text{or } \underline{486.9} \text{ x } \text{ or } \underline{560} \text{ x} \quad 0.001732 = \quad \underline{472.54} \text{ KW} \\
 V6301A \quad A6803A
 \end{array}$$

- ! Backup Heater Group D

$$\begin{array}{l}
 1EB4 \quad 1-II-PCPR3 \\
 \text{or } \underline{487.1} \text{ x } \text{ or } \underline{176} \text{ x} \quad 0.001732 = \quad \underline{148.5} \text{ KW} \\
 V6304A \quad A6804A
 \end{array}$$

C. Operate pressurizer heaters as needed for plant conditions. \_\_\_\_\_

D. IF any group(s) of pressurizer heaters does NOT have a capacity of > 150KW, THEN initiate a LCOAR per ODA-308. \_\_\_\_\_

JPM: RO A1.b

**KEY**

System: Conduct of Operations JTA Task #: (New)

Task Title: Calculate RCS Leakrate

KSA Ref: 2.1.23 PEO: \_\_\_\_\_ RO: 3.9 SRO: 4.0

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

ABN-103 "Excessive Reactor Coolant Leakage"

Tools, Equipment, Job Aids, etc:

Selected parameters from the plant, captured on Attachment 1 of this JPM, and a calculator.

**JPM: RO A1.b**

***KEY***

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The plant is operating at 100% power, BOL. The crew is responding to the indications of a Reactor Coolant System leak. The Unit Supervisor has directed you to determine the size of the leak by performing Attachment 1 of ABN-103, "Excessive Reactor Coolant Leakage". Plant data is provided.

Terminating Conditions:

Calculations are complete and a RCS Leak Rate determination has been made.

JPM: RO A1.b

**KEY**

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
1	Provide the candidate with the initiating cue, the plant data sheet, and a copy of ABN-103 Attachment 1.		<i>Note Start time.</i>	
2	Candidate correctly transfers data to the procedure.	See Attached Key		
3	Candidate performs calculations.	See Attached Key		
*4	Candidate determines operability  <b>TASK COMPLETE.</b>	Leak rate is determined to be approx 5 gpm. See key for allowed variances in parameters  <i>Note Completion time.</i>		

JPM: RO A1.b

**KEY****INITIATING CUE:**

Parameter	Value at 1429	Value at 1446
CHG FLO (F6138A)	140.7	143.8
LTDN FLO (F6134A)	130.9	130.9
FR-157 (RCP 1 Leak Off)	2.8	2.8
FR-156 (RCP 1 Leak Off)	2.8	2.8
FR-155 (RCP 1 Leak Off)	2.8	2.8
FR-154 (RCP 1 Leak Off)	2.8	2.8
VCT LVL (L6112A)	52.8	50.4
T0400A (Loop 1 Tave)	589.8	589.8
T0420A (Loop 2 Tave)	588.6	588.6
T0440A (Loop 3 Tave)	589.7	589.7
T0460A (Loop 4 Tave)	588.7	588.7
L6480A (PZR Level 1)	60	59.5
L6481A (PZR Level 2)	60	59.5
L6482A (PZR Level 3)	60	59.5

NOTE: There was no VCT auto make-up. There were no diversions of letdown flow during this period.

JPM: RO A1.b

**KEY**

Attachment 1

CPSES ABNORMAL CONDITIONS PROCEDURES MANUAL	UNIT 1 AND 2	PROCEDURE NO. ABN-103
EXCESSIVE REACTOR COOLANT LEAKAGE	REVISION NO 8	PAGE 22 OF 28

ATTACHMENT 1  
PAGE 2 OF 2

PARAMETER	INITIAL VALUE FINAL VALUE	AVERAGE VALUE
TIME	(-) __1429__ + __1446__	= __17__ Δt
* CHRГ FLO (F6138A)	$\frac{\underline{\quad 140.7 \quad} + \underline{\quad 143.8 \quad}}{2}$	= __142.25__ GPM
* LTDN HX OUT FLOW (F6134A)	$\frac{\underline{\quad 130.9 \quad} + \underline{\quad 130.9 \quad}}{2}$	= __130.9__ GPM
* RCP SEAL LKOFF FLO (FR-157, 156, 155 & 154)	$\frac{\underline{\quad 11.2 \quad} + \underline{\quad 11.2 \quad}}{2}$	= __11.2__ GPM
* VCT LVL (L6112A)	$\frac{(\underline{\quad 52.8 \quad} - \underline{\quad 50.4 \quad})(19.4\text{gal}/\%) }{46.56}$ ( __17__ )t in MIN	= __2.74__ GPM
RC LOOP 1-4 TAVE (T0400A, T0420A, T0440A OR T0460A)	$\frac{(\underline{\quad \quad} - \underline{\quad \quad})(93\text{gal}/^\circ\text{F}) }{0}$ ( __17__ )t in MIN	= __0__ GPM
PRZR LVL (L6480A, L6481A OR L6482A)	$\frac{(\underline{\quad 60 \quad} - \underline{\quad 59.5 \quad})(65\text{gal}/\%) }{32.5}$ ( __17__ )t in MIN	= __1.9__ GPM

Shaded areas NOT REQUIRED

CALCULATION FORMULA

Flow adjust method:	(+) _____	- _____	- _____	- ( ) _____	+ ( ) _____	= _____ GPM
	CHRG FLO	LTDN FLOW	SEAL LKOFF FLO	TAVG ADJUST	PRZR LVL ADJUST	RCS LEAKAGE

**OR**

VCT level adjust method	( ) __2.74__	- ( ) __0__	+ ( + ) __1.9__	= __4.65__ GPM	Allowed (4.1 - 5.2)
	VCT LVL ADJUST Allowed (2.5-3.0)	TAVG ADJUST	PRZR LVL ADJUST Allowed (1.6 - 2.2)	RCS LEAKAGE	

\* Either Chrg Flo, Ltdn Flow, and RCP Seal Lkoff Flo (Flow adjust method) OR VCT Lvl (VCT level adjust method) should be used, but NOT both.

**JPM: RO A1.b**

***KEY***

JPM: RO A2

System: Equipment Control JTA Task #: (New)

Task Title: Check Completed Surveillance Procedure for Accuracy

KSA Ref: 2.2.12 PEO: \_\_\_\_\_ RO: 3.0 SRO: 3.4

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

**OPT-207A "Service Water System"**

Tools, Equipment, Job Aids, etc:

Selected parameters from the plant, captured on Attachment 1 of this JPM..

**JPM: RO A2**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The plant is operating at 100% power, BOL. You are the CPC RO. The Unit Supervisor has directed you to review the just completed OPT-207 A, Service Water System, for accuracy. Circle any mistakes in the OPT and return the marked up copy to the Lead Examiner.

Terminating Conditions:

The OPT has been reviewed and 2 of the three errors have been correctly identified.



**JPM: RO A2**

**INITIATING CUE:**

The plant is operating at 100% power, BOL. You are the CPC RO. The Unit Supervisor has directed you to review the just completed OPT-207A, Service Water System, for accuracy. Circle any mistakes in the OPT and return the marked up copy to the Lead Examiner.

**JPM: RO A2**

**Attachment 1. Completed OPT.**

**NOTE TO EXAMINER: Ensure candidate is provided the filled out OPT. This must be done manually.**

JPM: RO A2

ROUTINE TEST-SURVEILLANCE WORK ORDER

page 1

Resp. Group: POSS OPS SHIFT MANAGER

WO #: 5-05-505395-AA

Tag #: CP1-SWAPSW-01
See Equipment List
More Tags and Locations

Unit: 1
System: SW
Bldg/Elev: SI 0796

Train (Sys): A
Train (Elect): NA
Room: X-275

Tag Desc: STATION SERVICE WATER PUMP 1-01

Comp't Quality: Y Safety Class: 3 SEIS CAT: I MOV XI: N PVO: A EQ: M
SURVEILLANCE SUMMARY

DESC: OPT-207A, TRN A STATION SERVICE WATER PMP/MLV OPERBILITY TEST

Compliance Date/Time: 03/21/2005 10:05 Source Doc't: IST

Violation Date/Time: 04/05/2005 10:05 Test Section: 8.2

Adj Schedule Date/Time: Test Procedure: OPT-207A

Work Week Test Type: FI
Frequency: 92 Days

Last Performed Date/Time: 01/09/2005 10:005

Last Perf. WO: 5-04-505395-AE

SPECIAL INSTRUCTIONS

Permit-RWP: N #: Confined Space: N #:
Fire Permit: N #: Combust. Loading: N #:
Fire Impair: N #: Cleanliness Class: C Housekeeping Zone: IV
Clearance/MTD: N #: STA-720 Req'd: No Barrier Impair Form: No
Postwork Testing Req't: N Ventilation Pressure Boundary Breach: No

APPROVAL/AUTHORIZATION TO START

Ops-Shift Manager Technical: Date:
Radiation Protection: Date:
Shift Manager: Date:
Ops-Shift Manager Safety: Date:
Revisions 1 2 3 4 5 6

POSS
QC
ANII
RP
Ops SM

INITIAL SURVEILLANCE RESULTS

As Found Condition: Unsat (Sign&Date) Date:
Shift Manage Informed (Sign&Date) Date:

FINAL SURVEILLANCE RESULTS

Duration (Est/Act) 7 / Start Time Date:
Test Completed: Sat Unsat Tech Spec Acceptance Checked: Sat Unsat

Test Completed by: Time: Date:

SURVEILLANCE ACCEPTANCE

Tech Spec Acceptance Criteria Met: Sat Unsat
Shift Manager: Date: Time:

SURVEILLANCE REVIEWS

Ops-Shift Manager: Date:
Ops-Shift Manager: Date:
Ops-Shift Manager: Date:
Ops-Shift Manager: Date:

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 2

Tag # CP1-SWAPSW-01  
AA

WO # : 5-04-505395-

\*\*\*\*\* WORK PLAN \*\*\*\*\*

MANPOWER ESTIMATES  
(enter actual manhours)

MEASURING AND TEST EQUIPMENT

Discipline Code	MANHOURS Est/Act	M&TE TAG#	CAL DUE DATE	M&TE TAG#	CAL DUE DATE
IWCM	0/		/ /		/ /
POS	0/		/ /		/ /
POSS	0/ 1		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /

\*\*\*\*\* SPECIAL PARTS AND SPECIAL TOOLS \*\*\*\*\*

Enter actual quantity used and unique identifier such as Serial #, Heat #  
RR#, RIR #, QAT # etc. if applicable

Qty Reqd	UI	Qty Used	It ID) (TSN)	Unique ID (SN, RR, RIR, QAT, HT# etc)	Description	ISSUE/ STAGED Flag	PMMS STATUS
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 3

Tag # CP1-SWAPSW-01

WO # : 5-05-505395-AA

\*\*\*\*\*RELATED EQUIPMENT / VERIFICATION LIST\*\*\*\*\*

+ Stop + Locate + Touch +Verify + Anticipate + Manipulate + Observe +

Verify the Equipment Tags being worked / tested relate to the work order. Verify W.O. tags using the following related equipment / verification list.

\*\*\*\*\*

Tag Number	Bldg-EI	Room	Tag Stat	Sys Trn	Elec Trn	ASME III/XI	Saf CL	Seis CTGY	Q R	E Q
CP1-SWAPSW-01	SI-0796	X-275	ACT	A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: SW Station Service Water Pump 1-01										
Specific Loc: SSW PMP 1-01 Bay										
Comments: _____										Failure Code: NA
*****										
1-HV-4286	SI-0796	X-275	ACT	A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: SSW PMP 1-01 DISCH VLV										
Specific Loc:										
Comments: _____										Failure Code: NA
*****										
1-HV-4393	SG-810	1-082		A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: Hallway										
Comments: _____										Failure Code: NA
*****										
1-SW-0374	SG-810	1-082		A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: DISCH OF PMP										
Comments: _____										Failure Code: NA

Other Tags / Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*PROCEDURES\*\*\*\*\*

OPT-207A SERVICE WATER SYSTEM

\*\*\*\*\*INSTRUCTIONS\*\*\*\*\*

Resp Planner: Harold (Chuck) Jackson X 5953

This test will verify the Service Water System; Train A, Pump and Valve operability as defined by ASME, Section XI requirements. This test will be performed at least once per ninety-two days in all operation Modes.

\*\*\*\*\*

Step Instructions continued on next page ----- >

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 4

Tag # CP1-SWAPSW-01

WO #: 5-05-505395-AA

INSTRUCTIONS (continued)

< ----- Step Instruction Continued from Previous Page

\* This test may be performed in any mode.

\* Performance of this test satisfies RI-IST requirements:  
CP1-SWAPSW-01 (PT/3M)  
1-HV-4286 (ET-0/ET-C/18M)  
1-HV-4393 (ET-0/18M)  
1SW-0374 (CV-C/CV0/3M)

\* QC Support required for acoustic monitoring per STA-750.

Contacted: \_\_\_\_\_ / \_\_\_\_\_

Required  
Yes \_\_\_ No \_\_\_

\* PROMPT TEAM support required to monitor pump vibration

\* Both Trains of SSW are in service (SOP-501A).

\* Computer is available to obtain flow data and observe bearing temperatures.

\* Data Sheet OPT-207A-4.

\*\*\*\*\*

\*\*

1. QC or other applicable test personnel install acoustic emission test equipment in accordance with STA-750 if required. QC/OPS \_\_\_\_

2. Perform OPT-207A, Section 8.2, Train A, Station Service Water Pump 1-01 Operability Test OPS \_\_\_\_

3. QC record acoustic emission data in accordance with STA-750 if required. QC/OPS \_\_\_\_

4. PROMPT TEAM record pump vibration data. PT/OPS \_\_\_\_

5. QC remove acoustic emission test equipment if installed. QC/OPS \_\_\_\_

\*\*\*\*\*

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 5

Tag # CP1-SWAPSW-01

WO #: 5-05-505395-AA

\*\*\*\*\* WORK PERFORMED / PROBABLE CAUSE \*\*\*\*\*

As found  
condition: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective Action  
Taken: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

As Left  
Condition: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Probable Cause of  
Problem/Failure: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Work Duration (Est./Act.) 7.0 / \_\_\_\_

Work Completed by: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Work Supervisor: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

\*\*\*\*\*

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 6

Tag # CP1-SWAPSW-01  
AA

WO #: 5-05-505395-

\*\*\*\*\*RELATED WORK ORDERS\*\*\*\*\*

\*\* NO RELATED WORK ORDERS \*\*

\*\*\*\*\*RELATED ACTIVITIES\*\*\*\*\*

\*\* NO RELATED ACTIVITIES \*\*

\*\*\*\*\*OTHER RELATIONSHIPS\*\*\*\*\*

Rel Type	Related Item Number	Sheet #	Related Item Description	Rel Class
DOC	OPT-207A		Service Water System	Proc
SPTOOL	Accelerometer, 196		1 EA	XREF
SPTOOL	Pocket Dial, Therm		1 EA	XREF
SPTOOL	Smartmeter, 1330		1 EA	XREF
SPTOOL	Stopwatch		1 EA	XREF
SPTOOL	Therm, Type 3 +/- 5D		1 EA or Better	XREF

\*\*\*\*\*RELATED CLEARANCE\*\*\*\*\*

\*\* NO OTHER CLEARANCE \*\*

\*\*\*\*\*SURVEILLANCE REQUIREMENTS\*\*\*\*\*

Surveillance Requirement	Surveillance Requirement Description
5.5.8	Refer to Tech Spec Manual

\*\* END OF REPORT\*\*

\*\*\*\*\*BOTTOM OF DATA\*\*\*\*\*

**JPM: RO A2**

SSWP 1-01 DATA SHEET

NOTE: This for is used to record test data as required by section 8.2

STEP	OBSERVED	ACCEPTANCE CRITERA	INITIALS
6.2 PREREQUISITES MET	N/A	N/A	_____
8.2 D. X-LI-4288 LEVEL	_____	N/A	_____
E. Reference Discharge Pressure	_____ PSIG	N/A	_____
G. ● P3251A Discharge Pressure	_____ PSIG	N/A	_____
● And Time	_____	N/A	_____

I. F6258A SSWP 1 DISCH FLO

$$\frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} +$$

$$\frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} + \frac{\text{_____}}{\text{GPM}} =$$

\_\_\_\_\_ TOTAL \_\_\_\_\_

J. AVERAGE FLOW

$$\frac{\text{_____}}{\text{(Total Step 8.2.1)}} \div 10 = \frac{\text{_____}}{\text{Average}} \text{ GPM}$$

Refer Value	Action Limit Low	Alert Limit Low	Average Value	Action Limit High	Units
12.918	<12,014	<12,272	_____	>14,210	GPM

K. VIBRATION AMPLITUDE

Test Parameter	Refer Value	Calculated Value	Alert Limit High	Action Limit High	Units	Initials
MOH	0.064	_____	>0.160	>0.384	in/sec pk	_____
MOV	0.071	_____	>0.178	>0.426	in/sec pk	_____
MOA	0.054	_____	>0.135	>0.324	in/sec pk	_____

**JPM: RO A2**

SSWP 1-01 DATA SHEET

<u>STEP</u>		<u>OBSERVED</u>	<u>ACCEPTANCE CRITERIA</u>	<u>INITIALS</u>
8.2	O 1-HV-4286	Open/Closed	OPEN	_____
	P SSWP 1 (NOTE 1)	_____ sec /	< 5 sec Reverse	_____
		Reverse Rotation	Rotation	_____
	Q 1-SW-0023	Locked Open/ Closed	N/A	_____
	R 1-HV-4286	10% Open/Open	10% Open	_____
	T 1-HV-4286	Open/ 10%Open	Open	_____
	U 1 FI-4258A Flow (NOTE 2)	_____ GPM	≥ 16,456 GPM	_____
	V 1-HV-4393	Open/Closed	OPEN	_____
	W Measured Data within Limits	Yes / No	N/A	_____
	ODA-308 Initiated	Yes / No	N/A	_____
	Technical Specification Action Required	Yes / No	N/A	_____
	<u>COMPONENT</u>	<u>OSBSERVED POSITION</u>	<u>REQUIRED</u>	<u>VERIFIED</u>
9.0	B 1-SW-0023	Locked Open/____	Locked Open	_____
	1-HS-4286	Auto Open/_____	Auto Open	_____

NOTE 1: SSWP rotating in the reverse direction ≤ 5 sec satisfies the full closure stroke of 1SW-0374.  
 NOTE 2: Flow ≥ 16,456 gpm satisfied the fill open stroke of 1SW-0374.

Comments/Discepancies: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Corrective  
 Actions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Performed by: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

OPT-207A-4  
 Page 1 of 2  
 R-11

JPM: RO A2

- KEY -

ROUTINE TEST-SURVEILLANCE WORK ORDER

Resp. Group: POSS OPS SHIFT MANAGER

WO #: 5-05-505395-AA

Tag #: CP1-SWAPSW-01  
See Equipment List  
More Tags and Locations

Unit: 1  
System: SW  
Bldg/Elev: SI 0796

Train (Sys): A  
Train (Elect): NA  
Room: X-275

Tag Desc: STATION SERVICE WATER PUMP 1-01

Comp't Quality: Y Safety Class: 3 SEIS CAT: I MOV XI: N PVO: A EQ: M

SURVEILLANCE SUMMARY

DESC: OPT-207A, TRN A STATION SERVICE WATER PMP/VLV OPERBILITY TEST

Compliance Date/Time : 03/21/2005 10:05 Source Doc't : IST  
Violation Date/Time : 04/05/2005 10:05 Test Section : 8.2  
Adj Schedule Date/Time: / / Test Procedure: OPT-207A  
Work Week Test Type : FI  
Frequency : 92 Days

Last Performed Date/Time : 01/09/2005 10:005

Last Perf. WO : 5-04-505395-AE

SPECIAL INSTRUCTIONS

Permit-RWP : N #: \_\_\_\_\_ Confined Space : N #: \_\_\_\_\_  
Fire Permit : N #: \_\_\_\_\_ Combust. Loading : N #: \_\_\_\_\_  
Fire Impair : N #: \_\_\_\_\_ Cleanliness Class: C Housekeeping Zone: IV  
Clearance/MTD : N #: \_\_\_\_\_ STA-720 Req'd : No Barrier Impair Form: No  
Postwork Testing Req't: N Ventilation Pressure Boundary Breach: No

APPROVAL/AUTHORIZATION TO START

Ops-Shift Manager Technical : [Signature] Date: 3/29/05  
Radiation Protection : [Signature] Date: 03/29/2005  
Shift Manager : [Signature] Date: 3/29/2005  
Ops-Shift Manager Safety : [Signature] Date: / /  
Revisions 1 2 3 4 5 6

POSS \_\_\_\_\_  
QC \_\_\_\_\_  
ANII \_\_\_\_\_  
RP \_\_\_\_\_  
Ops SM \_\_\_\_\_

INITIAL SURVEILLANCE RESULTS

As Found Condition: \_\_\_\_\_ Unsat (Sign&Date) \_\_\_\_\_ Date: / /  
Shift Manage Informed (Sign&Date) \_\_\_\_\_ Date: / /

FINAL SURVEILLANCE RESULTS

Duration (Est/Act) 7 / 4.5 Start Time 1422 Date: 3/29/2005  
Test Completed:  Sat  Unsat Tech Spec Acceptance Checked:  Sat  Unsat  
Test Completed by: [Signature] Time: 1733 Date: 3/29/05

SURVEILLANCE ACCEPTANCE

Tech Spec Acceptance Criteria Met: \_\_\_ Sat \_\_\_ Unsat  
Shift Manager: \_\_\_\_\_ Date: / / Time: \_\_\_\_\_

SURVEILLANCE REVIEWS

Ops-Shift Manager : \_\_\_\_\_ Date: / /  
Ops-Shift Manager : \_\_\_\_\_ Date: / /  
Ops-Shift Manager : \_\_\_\_\_ Date: / /  
Ops-Shift Manager : \_\_\_\_\_ Date: / /

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 2

Tag # CP1-SWAPSW-01  
AA

WO # : 5-04-505395-

\*\*\*\*\* WORK PLAN \*\*\*\*\*

MANPOWER ESTIMATES  
(enter actual manhours)

MEASURING AND TEST EQUIPMENT

Discipline Code	MANHOURS Est/Act	M&TE TAG#	CAL DUE DATE	M&TE TAG#	CAL DUE DATE
IWCM	0/	TP - OBS	8/16/05		/ /
POS	0/	WDI - 56	1/14/06		/ /
POSS	0/ 1		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /
	/		/ /		/ /

\*\*\*\*\* SPECIAL PARTS AND SPECIAL TOOLS \*\*\*\*\*

Enter actual quantity used and unique identifier such as Serial #, Heat # RR#, RIR #, QAT # etc. if applicable

Qnty Reqd	UI	Qnty Used	It ID (TSN)	Unique ID (SN, RR, RIR, QAT, HT# etc)	Description	ISSUE/STAGED Flag	PMMS STATUS
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							
N/A							

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 3

Tag # CP1-SWAPSW-01

WO # : 5-05-505395-AA

\*\*\*\*\*RELATED EQUIPMENT / VERIFICATION LIST\*\*\*\*\*

+ Stop + Locate + Touch +Verify + Anticipate + Manipulate + Observe +

Verify the Equipment Tags being worked / tested relate to the work order. Verify W.O. tags using the following related equipment / verification list.

Tag Number	Bldg-El	Room	Tag Stat	Sys Trn	Elec Trn	ASME III/XI	Saf CL	Seis CTGY	Q R	E Q
CP1-SWAPSW-01	SI-0796	X-275	ACT	A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: SW Station Service Water Pump 1-01										
Specific Loc: SSW PMP 1-01 Bay										
Comments: _____										Failure Code: NA
1-HV-4286	SI-0796	X-275	ACT	A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: SSW PMP 1-01 DISCH VLV										
Specific Loc:										
Comments: _____										Failure Code: NA
1-HV-4393	SG-810	1-082		A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: Hallway										
Comments: _____										Failure Code: NA
1-SW-0374	SG-810	1-082		A	N/A	3 N 3	3	I	Y	M
Un: 1 Sys: DISCH OF PMP										
Comments: _____										Failure Code: NA

Other Tags / Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\*PROCEDURES\*\*\*\*\*

OPT-207A SERVICE WATER SYSTEM

\*\*\*\*\*INSTRUCTIONS\*\*\*\*\*

Resp Planner: Harold (Chuck) Jackson X 5953

This test will verify the Service Water System; Train A, Pump and Valve operability as defined by ASME, Section XI requirements. This test will be performed at least once per ninety-two days in all operation Modes.

Step Instructions continued on next page ----- >

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 4

Tag # CP1-SWAPSW-01

WO #: 5-05-505395-AA

INSTRUCTIONS (continued)

< ----- Step Instruction Continued from Previous Page

- \* This test may be performed in any mode.
- \* Performance of this test satisfies RI-IST requirements:  
 CP1-SWAPSW-01 (PT/3M)  
 1-HV-4286 (ET-0/ET-C/18M)  
 1-HV-4393 (ET-0/18M)  
 1SW-0374 (CV-C/CV0/3M)
- \* QC Support required for acoustic monitoring per STA-750.

Contacted: *[Signature]* 3/29/05

Required  
Yes  No

- \* PROMPT TEAM support required to monitor pump vibration
- \* Both Trains of SSW are in service (SOP-501A).
- \* Computer is available to obtain flow data and observe bearing temperatures.
- \* Data Sheet OPT-207A-4.

\*\*\*\*\*

\*\*

- |    |  |                           |
|----|--|---------------------------|
| 1. | QC or other applicable test personnel install acoustic emission test equipment in accordance with STA-750 if required. | QC/OPS <i>[Signature]</i> |
| 2. | Perform OPT-207A, Section 8.2, Train A, Station Service Water Pump 1-01 Operability Test                               | OPS <i>[Signature]</i>    |
| 3. | QC record acoustic emission data in accordance with STA-750 if required.   | QC/OPS <i>[Signature]</i> |
| 4. | PROMPT TEAM record pump vibration data.  | PT/OPS <i>[Signature]</i> |
| 5. | QC remove acoustic emission test equipment if installed.   | QC/OPS <i>[Signature]</i> |

\*\*\*\*\*

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 5

Tag # CP1-SWAPSW-01

WO #: 5-05-505395-AA

\*\*\*\*\* WORK PERFORMED / PROBABLE CAUSE \*\*\*\*\*

As found condition: OPERABLE

Corrective Action Taken: N/A

As Left Condition: OPERABLE

Probable Cause of Problem/Failure: NA

Work Duration (Est./Act.) 7.0 / 4.5  
Work Completed by: Steven Thomas Date: 3/29/05  
Work Supervisor: [Signature] Date: 5/29/2005

\*\*\*\*\*

JPM: RO A2

ROUTINE TEST-SURVEILLANCE  
WORK ORDER

page 6

Tag # CP1-SWAPSW-01  
AA

WO #: 5-05-505395-

\*\*\*\*\*RELATED WORK ORDERS\*\*\*\*\*

\*\* NO RELATED WORK ORDERS \*\*

\*\*\*\*\*RELATED ACTIVITIES\*\*\*\*\*

\*\* NO RELATED ACTIVITIES \*\*

\*\*\*\*\*OTHER RELATIONSHIPS\*\*\*\*\*

Rel Type	Related Item Number	Sheet #	Related Item Description	Rel	Class
DOC	OPT-207A		Service Water System		Proc
SPTOOL	Accelerometer, 196		1 EA		XREF
SPTOOL	Pocket Dial, Therm		1 EA		XREF
SPTOOL	Smartmeter, 1330		1 EA		XREF
SPTOOL	Stopwatch		1 EA		XREF
SPTOOL	Therm, Type 3 +/- 5D		1 EA or Better		XREF

\*\*\*\*\*RELATED CLEARANCE\*\*\*\*\*

\*\* NO OTHER CLEARANCE \*\*

\*\*\*\*\*SURVEILLANCE REQUIREMENTS\*\*\*\*\*

Surveillance Requirement	Surveillance Requirement Description
5.5.8	Refer to Tech Spec Manual

\*\* END OF REPORT\*\*

\*\*\*\*\*BOTTOM OF DATA\*\*\*\*\*

JPM: RO A2

SSWP 1-01 DATA SHEET

NOTE: This for is used to record test data as required by section 8.2

STEP	OBSERVED	ACCEPTANCE CRITERIA	INITIALS
6.2 PREREQUISITES MET	N/A	N/A	ST
8.2 D. X-LI-4288 LEVEL	773	N/A	ST
E. Reference Discharge Pressure	39 PSIG	N/A	—
G. • P3251A Discharge Pressure	38 PSIG	N/A	ST
• And Time	1427	N/A	ST

I. F6258A SSWP 1 DISCH FLO

$$\frac{12205}{\text{GPM}} + \frac{12619}{\text{GPM}} + \frac{12456}{\text{GPM}} + \frac{12450}{\text{GPM}} + \frac{12380}{\text{GPM}}$$

$$\frac{12100}{\text{GPM}} + \frac{12080}{\text{GPM}} + \frac{12150}{\text{GPM}} + \frac{12205}{\text{GPM}} + \frac{12205}{\text{GPM}}$$

#1  
ST TOTAL 122,880

J. AVERAGE FLOW

$$\frac{122,880}{\text{(Total Step 8.2.1)}} \div 10 = \frac{12,288}{\text{Average}} \text{ GPM}$$

ST

Refer Value	Action Limit Low	Alert Limit Low	Average Value	Action Limit High	Units
12.918	<12,014	<12,272	12,288	>14,210	GPM

ST

K. VIBRATION AMPLITUDE

Test Parameter	Refer Value	Calculated Value	Alert Limit High	Action Limit High	Units	Initials
MOH	0.064	.091	>0.160	>0.384	in/sec pk	BT
MOV	0.071	.184	>0.178	>0.426	in/sec pk	BT
MOA	0.054	.12	>0.135	>0.324	in/sec pk	BT

#1 Transposition Error

JPM: RO A2

SSWP 1-01 DATA SHEET

STEP		OBSERVED	ACCEPTANCE CRITERIA	INITIALS	
8.2	O	1-HV-4286	Open/Closed	OPEN	BT
	P	SSWP 1 (NOTE 1)	1.1 sec / Reverse Rotation	< 5 sec Reverse Rotation	BT
	Q	1-SW-0023	Locked Open / Closed	N/A	IC
	R	1-HV-4286	10% Open / Open	10% Open	BT
	T	1-HV-4286	Open / 10% Open	Open	BT
U	1 FI-4258A Flow (NOTE 2)	17,000 GPM	≥ 16,456 GPM	BT	
V	1-HV-4393	Open/Closed	OPEN	BT	
W	Measured Data within Limits ODA-308 Initiated Technical Specification Action Required COMPONENT	Yes / No	N/A	BT	
		Yes (No) #2	N/A	BT	
		Yes (No)	N/A	BT	
		<u>OBSERVED POSITION</u>	<u>REQUIRED</u>	<u>VERIFIED</u>	
9.0	B	1-SW-0023	Locked Open	Locked Open	BT
		1-HS-4286	Auto Open / #3	Auto Open	BT

NOTE 1: SSWP rotating in the reverse direction ≤ 5 sec satisfies the full closure stroke of 1SW-0374.  
 NOTE 2: Flow ≥ 16,456 gpm satisfied the fill open stroke of 1SW-0374.

Comments/Discrepancies: None

Corrective Actions: NA

Performed by: Steven Thomas Teodoro Btkline Date: 3/29/2005

Reviewed by: [Signature] Date: 3/29/2005

#2 Alert limit should be noted. OPT-207A-4 Page 1 of 2 R-11

#3 Initials in Valve Position Space

JPM: RO A3

System: Radiation Control JTA Task #: (New)

Task Title: Evaluate Radiological Condition for Task Performance

KSA Ref: 2.3.10 PEO: \_\_\_\_\_ RO: 2.9 SRO: 3.3

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
GAP# 2005-01  
STA-656  
RPI-606

Tools, Equipment, Job Aids, etc:  
Copy of the GAP and the applicable Survey Map for the task.

**JPM: RO A3**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

You are on tour in the Safeguards Building. The US directs you to isolate the air to HV-8152. You are to evaluate the radiological condition in the area and provide the requested information.

Terminating Conditions:

Answers to questions are provided to the evaluator.

## JPM: RO A3

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
1	Provide the candidate with the initiating cue, the GAP and the Survey Map.		<i>Note Start time.</i>	
*2	Candidate correctly answers two of the three questions.  <b><i>TASK COMPLETE.</i></b>	See Attached Key  <i>Note Completion time</i>		

**JPM: RO A3**

**INITIATING CUE:**

You are on tour in the Safeguards Building. The US directs you to isolate the air to HV-8152. You are to evaluate the radiological condition in the area and provide the requested information.

NOTE: Circle the correct answers to the following questions and provide the evaluator with your completed paperwork.

1. The area where the valve is located is a:
  - A) Locked High Radiation Area
  - B) Contaminated Area
  - C) Posted High Radiation Area
  - D) General Radiation Area
  
2. If the area where the air isolation valve is located is a 60 mr/hr field, how long before your dosimeter will alarm if it is at the lower setting allowed by the GAP.
  - A) 50 minutes
  - B) 5 minutes
  - C) 25 minutes
  - D) 2.5 minutes
  
3. Circle three areas on the Survey Map that require contact with RP prior to entry.

**JPM: RO A3**

**-KEY-**

**INITIATING CUE:**

You are on tour in the Safeguards Building. The US directs you to isolate the air to HV-8152. You are to evaluate the radiological condition in the area and provide the requested information.

NOTE: Circle the correct answers to the following questions and provide the evaluator with your completed paperwork.

1. The area where the valve is located is a:

- E) Locked High Radiation Area
- F) Contaminated Area
- G) Posted High Radiation Area
- H) General Radiation Area

2. If the area where the air isolation valve is located is a 60 mr/hr field, how long before your dosimeter will alarm if it is at the lower setting allowed by the GAP.

- E) 50 minutes
- F) 5 minutes
- G) 25 minutes
- H) 2.5 minutes

3. Circle three areas on the Survey Map that require contact with RP prior to entry.

- 1) The area where the valve to be operated is.
- 2) The CA I/S Pit
- 3) The contaminated area.

The RWP map was removed from this page of the exam by the chief examiner because it was considered potential SUNSI material due to the equipment locations on the map.

JPM: SRO/RO A1.a

**KEY**

System: Conduct of Operations JTA Task #: (New)

Task Title: Determine Pressurizer Heater Operability

KSA Ref: 2.1.33 PEO: \_\_\_\_\_ RO: 3.4 SRO: 4.0

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

**IPO-001A "Plant Heatup from Cold Shutdown to Hot Standby"**

Tools, Equipment, Job Aids, etc:

Selected parameters from the plant, captured on Attachment 1 of this JPM, and a calculator.

**JPM: SRO/RO A1.a**

***KEY***

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The plant is ready to enter Mode 3. The Unit Supervisor has directed you to determine the operability of the Pressurizer Heaters by performing step 5.3.1 of IPO-001A, "Plant Heatup from Cold Shutdown to Hot Standby". Plant data is provided.

Terminating Conditions:

Calculations are complete and an Operability determination has been made.

JPM: SRO/RO A1.a

**KEY**

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
1	Provide the candidate with the initiating cue, the plant data sheet, and a copy of IPO-001A step 5.3.1.		<i>Note Start time.</i>	
2	Candidate correctly transfers data to the procedure.	See Attached Key		
3	Candidate performs calculations.	See Attached Key		
*4	Candidate determines operability  <b>TASK COMPLETE.</b>	B/U Heater Groups A, B and Control Heater Group C are OPERABLE. B/U Heater Group D is INOPERABLE  <i>Note Completion time.</i>		

JPM: SRO/RO A1.a

**KEY****INITIATING CUE:**

The plant is ready to enter Mode 3. The Unit Supervisor has directed you to determine the operability of the Pressurizer Heaters by performing step 5.3.1 of IPO-001A, "Plant Heatup from Cold Shutdown to Hot Standby". Plant data is provided.

## Plant Data

Parameter	Value from Last Reading Sheets (OPT-XXX)	Current Value
1/1-PCPR1 Amps	580	580
1/1-PCPR Amps	0	200
1/1-PCPR2 Amps	565	565
1/1P-CPR3 Amps	0	176
1B1 Volts	474	468
1B2 Volts	483	476
1B3 Volts	476	470
1B4 Volts	485	480
PC point V6303A	487.2	486.9
PC point V6302A	488.1	487.1
PC point V6301A	487.2	486.9
PC point V6304A	488.3	487.1
PC point A6801A	571.2	570.1
PC point A6802A	0	193
PC point A6803A	559.8	560
PC point A6804A	0	176
1EA1 Amps	282.7	261.4
1EA2 Amps	358.5	423.7

NOTE: The candidate can use either the MCB meter amperages or the plant computer values for heater amperages. The IPO allows both and there is no significant difference.

NOTE: The shaded parameters should NOT be used. The following problems exist with the shaded data:

1. The pressurizer heaters are supplied by 1EB1-4, NOT 1B1-4
2. 1EA1/2 amperage is not necessary to complete the calculations.
3. Data from the last set of logs should NOT be used for the Operability determination. Plant conditions could have changed significantly since the readings were taken. The IPO wants current plant data to determine Operability.

JPM: SRO/RO A1.a

**KEY**

Circle the correct status for each Bank of Pressurizer Heaters

Heater Bank	Status	Status
B/U Heater Grp. A	Operable	Inoperable
B/U Heater Grp. B	Operable	Inoperable
Control Grp. C	Operable	Inoperable
B/U Heater Grp. D	Operable	Inoperable

Example of the completed procedure:

**5.3 Heatup And Pressurization For MODE 3 Entry**

[C]

This section describes steps for heatup and pressurization to enter MODE 3.

5.3.1 Verify at least two groups of pressurizer heaters have a capacity of at least 150KW each.(TS SR 3.4.9.2)

A. Energize each group of heaters, as required, to measure current. \_\_\_\_\_

B. Record voltage and current AND calculate power for each group of heaters.  
(Voltage x current x 0.001732 = power)

- Backup Heater Group A

$$\begin{array}{l}
 1EB3 \quad 1-II-PCPR1 \text{ or} \\
 \text{Or } \underline{486.9} \text{ x } \text{ or } \underline{570.1} \text{ x} \quad 0.001732 = \quad \underline{480.77} \text{ KW} \\
 V6303A \quad A6801A
 \end{array}$$

- Backup Heater Group B

$$\begin{array}{l}
 1EB2- \quad 1-II-PCPR2 \\
 \text{or } \underline{487.1} \text{ x } \text{ or } \underline{193} \text{ x} \quad 0.001732 = \quad \underline{162.8} \text{ KW} \\
 V6302A \quad A6803A
 \end{array}$$

- ! Control Heater Group C

$$\begin{array}{l}
 1EB1 \quad 1-II-PCPR \\
 \text{or } \underline{486.9} \text{ x } \text{ or } \underline{560} \text{ x} \quad 0.001732 = \quad \underline{472.54} \text{ KW} \\
 V6301A \quad A6803A
 \end{array}$$

- ! Backup Heater Group D

$$\begin{array}{l}
 1EB4 \quad 1-II-PCPR3 \\
 \text{or } \underline{487.1} \text{ x } \text{ or } \underline{176} \text{ x} \quad 0.001732 = \quad \underline{148.5} \text{ KW} \\
 V6304A \quad A6804A
 \end{array}$$

C. Operate pressurizer heaters as needed for plant conditions. \_\_\_\_\_

D. IF any group(s) of pressurizer heaters does NOT have a capacity of > 150KW, THEN initiate a LCOAR per ODA-308. \_\_\_\_\_

JPM: SRO A1.b

System: Administrative Procedures JTA Task #: (Bank 2001)

Task Title: Determine Staff Working Hours

KSA Ref: 2.1.5 PEO: \_\_\_\_\_ RO: 2.3 SRO: 3.4

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 10 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

Technical Specifications  
STA-615, "Staff Work Hours"

Tools, Equipment, Job Aids, etc:

Technical Specifications  
STA-615, "Staff Work Hours"

**JPM: SRO A1.b**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:Instructions:

You may use any approved reference materials, including logs with the exception of the Plant Computer. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

You are the Unit Supervisor and one of the assigned ROs called in sick. You need to find a replacement RO. Assuming today is March 23 (0630), based on the work hour history, determine which of the following 5 ROs could perform safety-related functions until 1830 without advanced approval.

1. RO1 has been on-shift since 0200 (March 23).
2. On March 22, RO2 worked from 0630 until 1900 (includes a 1/2 hour shift turnover).
3. RO3 worked from 1430 on March 22 to 0030 on March 23.
4. RO4 has been on vacation for the past two days (March 21 and 22), but worked 12 hours on March 17, 16 hours on March 18, 16 hours on March 19, and 14 hours on March 20.
5. On March 22, RO5 worked from 0630 until 1930 (includes a 1/2 hour shift turnover).

Terminating Conditions:

Determine that 2 out of the 5 ROs available meet the work hour requirement to relieve the shift.



**JPM: SRO A1.b****INITIATING CUE:**

You are the Unit Supervisor and one of the assigned ROs called in sick. You need to find a replacement RO. Assuming today is March 23 (0630), based on the work hour history, determine which of the following 5 ROs could perform safety-related functions until 1830 without advanced approval.

1. RO1 has been on-shift since 0200 (March 23).
2. On March 22, RO2 worked from 0630 until 1900 (includes a 1/2 hour shift turnover).
3. RO3 worked from 1430 on March 22 to 0030 on March 23.
4. RO4 has been on vacation for the past two days (March 21 and 22), but worked 12 hours on March 17, 16 hours on March 18, 16 hours on March 19, and 14 hours on March 20.
5. On March 22, RO5 worked from 0630 until 1930 (includes a 1/2 hour shift turnover).

JPM: SRO A2

KEY

System: Equipment Control JTA Task #: (New)  
 Task Title: Complete Technical Specification Paperwork for INOP PZR Heaters (Tracking LOCAR)  
 KSA Ref: 2.2.23 PEO: \_\_\_\_\_ RO: 2.6 SRO: 3.8

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

ODA-308  
Technical Specification 3.4.9

Tools, Equipment, Job Aids, etc:

Blank LOCAR Form.

**JPM: SRO A2**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

Bank D of the Pressurizer Heaters was declared INOPERABLE today at 0831 due to KW output less than minimum. You have been directed to fill out the Tracking LOCAR. Because of a server problem, the electronic LOCAR system is unavailable. The SM has called the Prompt team and they will call with the LOCAR number when it is generated.

Terminating Conditions:

Completed Tracking LOCAR provided to the evaluator.

## JPM: SRO A2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Provide the candidate with the initiating cue, the applicable Technical specification and the blank LOCAR form..		<i>Note Start time.</i>	
*2	Candidate correctly fills out the form. The KEY indicates the required minimum fields. Three of the four minimum fields must be correct to pass the JPM.  <b>TASK COMPLETE.</b>	See Attached Key  <i>Note Completion time</i>		

**JPM: SRO A2**

**INITIATING CUE:**

Bank D of the Pressurizer Heaters was declared INOPERABLE today at 0831 due to KW output less than minimum. You have been directed to fill out the Tracking LOCAR. Because of a server problem, the electronic LOCAR system is unavailable. The SM has called the Prompt team and they will call with the LOCAR number when it is generated.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required group of pressurizer heaters inoperable.	B.1 Restore required group of pressurizer heaters to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.9.1 Verify pressurizer water level is $\leq$ 92%.	12 hours
SR 3.4.9.2 Verify capacity of each required group of pressurizer heaters is $\geq$ 150 kW.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

- a. Pressurizer water level  $\leq 92\%$ ; and
- b. Two groups of pressurizer heaters OPERABLE with the capacity of each group  $\geq 150$  kW.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit.	A.1 Be in MODE 3. <u>AND</u>	6 hours
	A.2 Fully insert all rods. <u>AND</u>	6 hours
	A.3 Place Rod Control System in a condition incapable of rod withdrawal. <u>AND</u>	6 hours
	A.4 Be in MODE 4.	12 hours

(continued)

KEY

Train A		Train B		LCOAR Number: 71-05-XXXX	
Completion Time	Entry Date / Time:	Recurring Time	Required Date / Time	Completed Date / Time	Initial
Standard LCOAR for 3.4.9 Pressurizer					
3.4.9 Pressurizer					
LCO 3.4.9 The pressurizer shall be OPERABLE with:					
a. Pressurizer water level $\leq$ 92%; and					
b. Two groups of pressurizer heaters OPERABLE with the capacity of each group $>$ 150 kW.					
APPLICABILITY: MODES 1, 2, and 3					
A. Pressurizer water level not within limit.					
Required Action	Completion Time	Recurring Time	Required Date / Time	Completed Date / Time	Initial
A.1 Be in MODE 3.	6 hours	NA	NA	NA	NA
AND	6 hours				
A.2 Fully insert all rods.	6 hours				
AND	12 hours				
A.3 Place Rod Control System in a condition incapable of rod withdrawal.					
AND					
A.4 Be in MODE 4.					
B. One required group of pressurizer heaters inoperable.					
Required Action	Completion Time	Recurring Time	Required Date / Time	Completed Date / Time	Initial
B.1 Restore required group of pressurizer heaters to OPERABLE status.	72 hours	NSA	NA	NA	NA
C. Required Action and associated Completion Time of Condition B not met.					
Required Action	Completion Time	Recurring Time	Required Date / Time	Completed Date / Time	Initial
C.1 Be in MODE 3.	6 hours	NSA	NA	NA	NA
AND	12 hours				
C.2 Be in MODE 4.					
General Notes					
Entered to track Bank heater operability					

**Unit 1 Standard Termination Requirements**

No Standard Termination Requirements

**Unit 2 Standard Termination Requirements**

No Standard Termination Requirements

**Unit Common Standard Termination Requirements**

No Standard Termination Requirements

Reason for Entry: Track Bank D heater Mode When Entered: Unit 1 | Unit 2

operability. SFDP: Complete Instrumentation N/A ✓

Affected Equipment/Equipment Number(s): Bank D. PRR Hrs SmartForm Numbers(s):

LCO Initiation: Reactor Operator Notified: Yes  No

LCO Initiation Date / Time 2/28/05 / 2005 By: [Signature] Opposite Unit Supervisor Notified: Yes  No

Second SRO/SM Review Date / Time \_\_\_\_\_ By: \_\_\_\_\_ SSI Manually Actuated: Yes  No

**LCO Termination:**

Termination Requirements

Restore Bank D heaters to operability Completion Date / Time \_\_\_\_\_ Signature \_\_\_\_\_

Repair Bank D heaters per ID # \_\_\_\_\_

Perform step 5.3.1 of IAD-001A \_\_\_\_\_

LCO Termination Date / Time \_\_\_\_\_ By: \_\_\_\_\_ Reactor Operator Notified: Yes  No

Second SRO/SM Review Date / Time \_\_\_\_\_ By: \_\_\_\_\_ Opposite Unit Supervisor Notified: Yes  No

Supported Systems Restored OPERABLE: Yes  No  Max Completion Time Assigned Yes  N/A  SSI Manually Cleared: Yes  No

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LCOAR for Reactor coolant / Pressurizer system Train: A  B  X LCOAR Number T1-05

(Circle Affected)  
 LCO Number: B.4.9 Applicability: 1, 2, 3  
 Affected Unit(s): 1 Reactor Power: 1007  
 Unit 1 MODE: NA Reactor Power: N/A  
 Unit 2 MODE: 2-6-05 / 1530  
 Affected Equipment / Equipment Number: 1 PCPR 3

Reason for Required Action Entry: power < 150 kw  
 SFDP:  Completed  N/A Other LCOs Affected:  Yes (LCO#/Title/Status (e.g. Tracking))  No  
 Continuation Sheet Attached:  Yes (ODA-308-7)  No

LCO / SPECIAL CONDITION ACTION Continuation Sheet Attached:  Yes (ODA-308-7)  No  
 Condition B - One required group of heaters inoperable  
 Date / Time Condition entered: 2-6-05 / 1530

REQUIRED ACTION *	COMPLETION TIME	Required Date / Time	Completed Date / Time	SM / US Initials
<u>Restore required group of pressurizer heaters to operable status</u>	<u>(72 hrs)</u>	<u>N/A / N/A</u>	/ /	/ /
<del>_____</del>	/ /	/ /	/ /	/ /
<del>_____</del>	/ /	/ /	/ /	/ /
<del>_____</del>	/ /	/ /	/ /	/ /
<del>_____</del>	/ /	/ /	/ /	/ /
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<del>_____</del>	/ /	/ /	/ /	/ /
<del>_____</del>	/ /	/ /	/ /	/ /
<del>_____</del>	/ /	/ /	/ /	/ /

\*Comp. Actions NOI part of Procedure/TS require Compensatory Action Review.  
 O N/A Trackings Only

LCOAR

LCOAR Number T1 - 05 -

INITIATION REVIEW

NOTE: Interdepartment Notifications require clear and detailed information to ensure a request is performed correctly. Be specific as to who is contacted, what is requested and reason the request is being made. If necessary, include requirements on how task is to be performed, time or sequence restrictions and locations or equipment numbers.

Work Document No.: \_\_\_\_\_ SmartForm No.: \_\_\_\_\_ Lead Organization: \_\_\_\_\_

Applicable Unit(s) Reactor Operator Notified:  Unit 1  Unit 2 Dept / Name: \_\_\_\_\_ Date / Time: \_\_\_\_\_ / \_\_\_\_\_

SSII Manually Actuated:  Yes  No Reason: \_\_\_\_\_

Special Condition Surveillance Board(s) Updated: Unit 1 -  Yes  N/A Dept / Name: \_\_\_\_\_ Date / Time: \_\_\_\_\_ / \_\_\_\_\_

Unit 2 -  Yes  N/A Reason: \_\_\_\_\_

Affected Unit Supervisor(s):  
 Unit 1: \_\_\_\_\_ Date: \_\_\_\_\_ Dept / Name: \_\_\_\_\_ Date / Time: \_\_\_\_\_ / \_\_\_\_\_  
 Unit 2: \_\_\_\_\_ Date: \_\_\_\_\_ Dept / Name: \_\_\_\_\_ Date / Time: \_\_\_\_\_ / \_\_\_\_\_

Shift Manager: \_\_\_\_\_ Reason: \_\_\_\_\_

Interdepartment Notification Not Required. Reason: \_\_\_\_\_

TERMINATION REQUIREMENTS

Continuation Sheet Attached:  Yes (ODA-308-7)  No Completed Date / Time SM/US Initials

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

LCO Termination Date / Time: \_\_\_\_\_ / \_\_\_\_\_ Affected Unit Supervisor(s):

Applicable Unit(s) Reactor Operator Notified:  Unit 1  Unit 2  Unit 1: \_\_\_\_\_ Date: \_\_\_\_\_

Special Condition Surveillance Board(s) Updated: Unit 1 -  Yes  N/A  Unit 2: \_\_\_\_\_ Date: \_\_\_\_\_

Unit 2 -  Yes  N/A Shift Manager: \_\_\_\_\_ Date: \_\_\_\_\_

SSII Manual Actuation Cleared:  Yes  N/A

Supported Systems:  Restored OPERABLE  Max Completion Time assigned  N/A

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

JPM: SRO A3

System: Radiation Control JTA Task #: (New)

Task Title: Evaluate Radiological Condition for Task Performance

KSA Ref: 2.3.10 PEO: \_\_\_\_\_ RO: 2.9 SRO: 3.3

Operator's Name: \_\_\_\_\_

Performance Environment:  CLASSROOM  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 15 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

GAP# 2005-01  
STA-656  
RPI-606

Tools, Equipment, Job Aids, etc:

Copy of the GAP and the applicable Survey Map for the task.

**JPM: SRO A3**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

You are on tour in the Safeguards Building. The US directs you to isolate the air to HV-8152. You are to evaluate the radiological condition in the area and provide the requested information.

Terminating Conditions:

Answers to questions are provided to the evaluator.

**JPM: SRO A3**

<b>STEP#</b> <b>*Critical</b>	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
1	Provide the candidate with the initiating cue, the GAP and the Survey Map.		<i>Note Start time.</i>	
*2	Candidate correctly answers two of the three questions.  <b><i>TASK COMPLETE.</i></b>	See Attached Key  <i>Note Completion time</i>		

**JPM: SRO A3**

**INITIATING CUE:**

You are on tour in the Safeguards Building. The US directs you to isolate the air to HV-8152. You are to evaluate the radiological condition in the area and provide the requested information.

NOTE: Circle the correct answers to the following questions and provide the evaluator with your completed paperwork.

1. The area where the valve is located is a:
  - A) Locked High Radiation Area
  - B) Contaminated Area
  - C) Posted High Radiation Area
  - D) General Radiation Area
  
2. If the area where the air isolation valve is located is a 60 mr/hr field, how long before your dosimeter will alarm if it is at the lower setting allowed by the GAP.
  - A) 50 minutes
  - B) 5 minutes
  - C) 25 minutes
  - D) 2.5 minutes
  
3. Circle three areas on the Survey Map that require contact with RP prior to entry.

**JPM: SRO A3**

**-KEY-**

**INITIATING CUE:**

You are on tour in the Safeguards Building. The US directs you to isolate the air to HV-8152. You are to evaluate the radiological condition in the area and provide the requested information.

NOTE: Circle the correct answers to the following questions and provide the evaluator with your completed paperwork.

1. The area where the valve is located is a:

- E) Locked High Radiation Area
- F) Contaminated Area
- G) Posted High Radiation Area
- H) General Radiation Area

2. If the area where the air isolation valve is located is a 60 mr/hr field, how long before your dosimeter will alarm if it is at the lower setting allowed by the GAP.

- E) 50 minutes
- F) 5 minutes
- G) 25 minutes
- H) 2.5 minutes

3. Circle three areas on the Survey Map that require contact with RP prior to entry.

- 1) The area where the valve to be operated is.
- 2) The CA I/S Pit
- 3) The contaminated area.

The RWP map was removed from this page of the exam by the chief examiner because it was considered potential SUNSI material due to the equipment locations on the map.

JPM: A4.1

System: Emergency Plan JTA Task #: SRO A4.1  
 Task Title: Event Classification  
 KSA Ref: 2.4.41 EAL Classification PEO: \_\_\_\_\_ RO: 2.3 SRO: 4.1

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 10 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

**EPP-201 "Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation"**

Tools, Equipment, Job Aids, etc:

Static simulator at the completion of Scenario #1.

**JPM: A4.1**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The simulator is in freeze. Based on current plant conditions and events during the scenario, determine the emergency classification.

Terminating Conditions:

Event is classified as a Site Area Emergency.

JPM: A4.1

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Candidate diagnoses plant conditions and determines the emergency classification for Safety System Malfunction or Failure	Referencing Chart 6 of EPP-201, the candidate determines that 6A is TRUE, 6B is TRUE, 6C is FALSE, 6F is False	<i>Note Start time.</i>	
*2	Candidate declares Site Area Emergency based on Chart 6  <b><i>TASK COMPLETE</i></b>	Site Area Emergency declared IAW Chart 6	<i>Note Completion time.</i>	

**JPM: A4.1**

**INITIATING CUE:**

The simulator is in freeze. Based on current plant conditions and events during the scenario, determine the emergency classification.

JPM: A4.2

System: Emergency Plan JTA Task #: SRO A4.2  
 Task Title: Event Classification  
 KSA Ref: 2.4.41 EAL Classification PEO: \_\_\_\_\_ RO: 2.3 SRO: 4.1

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 10 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

**EPP-201 "Assessment of Emergency Action Levels, Emergency Classification, and Plan Activation"**

Tools, Equipment, Job Aids, etc:

Static simulator at the completion of Scenario #1.

**JPM: A4.2**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The simulator is in freeze. Based on current plant conditions and events during the scenario, determine the emergency classification.

Terminating Conditions:

Event is classified as a Site Area Emergency.

## JPM: A4.2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Candidate diagnoses plant conditions and determines the emergency classification for Loss of Reactor or Secondary Coolant	Referencing Chart 2 of EPP-201, the candidate determines that 2A is TRUE, 2B is FALSE	<i>Note Start time.</i>	
2	Candidate declares Notification of Unusual Event based on Chart 2.  NOTE: Depending on the actual scenario times, this classification may not be necessary. If the 12 gpm leak was not present for > 15 min, it is not reasonable to expect the candidate to recognize this initial classification.	Notification of Unusual Event declared IAW Chart 2		
3	Candidate diagnoses plant conditions and determines the emergency classification for Loss of Reactor or Secondary Coolant	Referencing Chart 2 of EPP-201, the candidate determines that 2A is TRUE, 2B is TRUE, 2C is TRUE, 2D is FALSE, 2G is FALSE.		
*4	Candidate declares Site Area Emergency based on Chart 2.  <b>TASK COMPLETE</b>	Site Area Emergency declared IAW Chart 2.	<i>Note Completion time.</i>	

**JPM: A4.2**

**INITIATING CUE:**

The simulator is in freeze. Based on current plant conditions and events during the scenario, determine the emergency classification.

JPM: P1

System: 118 AC Distribution System & Inverters JTA Task #: (NEW)

Task Title: Bypass Inverter

KSA Ref: APE.057.EA1.01 PEO: RO: 3.7 SRO: 3.7

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 5 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
SOP-607A, "118 VAC Distribution System and Inverters"

Tools, Equipment, Job Aids, etc:  
Working copy of SOP-607A, Section 5.5.5 (1 page)

**JPM: P1**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The Unit Supervisor has directed you to transfer distribution panel 1PC1 to its alternate power supply using SOP-607A, Section 5.5.5. A crew brief has been held and the Reactor Operator is ready to assist you. Proceed directly to the Inverter and make the transfer.

Terminating Conditions:

Distribution panel 1PC1 is energized from the alternate power supply.

JPM: P1

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Ensure 1EC3/2/BKR, 118 VAC INSTRUMENT DISTR PANEL 1PC1 FEEDER BREAKER is ON  CUE: Breaker position is ON.	The breaker operator is pointing to the ON position.  <b>CSR 807' South Wall</b>	<i>Note Start time.</i>	
*2	Perform the following SIMULTANEOUSLY to transfer Panel 1PC1 to the alternate source:  Turn OFF 1PC1/00/BKR-1, IV1PC1 TO 118 VAC INSTRUMENT DISTR PANEL 1PC1 PREFERRED FEEDER BREAKER.  Turn ON 1PC1/00/BKR-2, 1EC3 TO 118 VAC INSTRUMENT DISTR PANEL 1PC1 ALTERNATE FEEDER BREAKER.  CUE : Breaker 1 indicates OFF and Breaker 2 indicates ON  <b>TASK COMPLETE</b>	At Panel 1PC1:  1PC1/00/BKR-1 is moved to the OFF position.  1PC1/00/BKR-2 is moved to the ON position.  <i>Note Completion time.</i>	<i>NOTE: Breakers are interlocked via a slide bar such when BKR 1 is opened, BKR 2 closes.</i>	

**JPM: P1**

**INITIATING CUE:**

The Unit Supervisor has directed you to transfer distribution panel 1PC1 to its alternate power supply using SOP-607A, Section 5.5.5. A crew brief has been held and the Reactor Operator is ready to assist you. Proceed directly to the Inverter and make the transfer.

JPM: P2

System: Control Room Evacuation JTA Task #: (Direct)AO5412C

Task Title: Transfer Charging Pump Suction and Isolate Dilution Paths (Alternate Path)

KSA Ref: APE.068.AA1.22 PEO: \_\_\_\_\_ RO: 4.0 SRO: 4.3

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 20 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

ABN-905A/B, "Loss of Control Room Habitability", Attachment 4.

Tools, Equipment, Job Aids, etc:

Attachment 4 of ABN-905A/B (working copy)

**JPM: P2**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

**NOTE TO EXAMINER:** Review note at step 8 of JPM to ensure candidate is notified by RSP. This JPM is designed to work on either Unit for ease of scheduling. Note which Unit is used in the comment section.

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The control room has been evacuated per ABN-905A (B). You are requested to align the charging pump suction to the RWST and isolate RCS dilution paths per Attachment 4.

**NOTE:** The Control Room has been evacuated and is inaccessible

Terminating Conditions:

Charging pump suction has been transferred to the RWST and the RCS dilution paths have been isolated. Attachment 4 is complete.

## JPM: P2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Open RWST <u>u</u> -01 to CHRG PMP SUCT VLV <u>u</u> -LCV-112D MOT BKR.  <b>CUE:</b> Breaker indicates in the OFF position.	<u>u</u> -EB3-1/8C/BKR, switch rotated to LEFT (OFF position).	<i>Note Start time.</i>  SFGD 790'-South (North for U2) Hallway West Side. U1-Room 1-070 U2-Room 2-070	
2	Open VCT CTRL <u>u</u> -01 to CHRG PMP SUCT VLV <u>u</u> -LCV-112B MOT BKR  <b>CUE:</b> Breaker indicates in the OFF position.	<u>u</u> -EB3-1/5F/BKR switch rotated to LEFT (OFF position).		
3	Open RWST <u>u</u> -01 to CHRG PMP SUCT VLV 112E MOT BKR  <b>CUE:</b> Breaker indicates in the OFF position.	1EB4-1/8F/BKR (2EB4-1/9F/BKR) switch rotated to LEFT (OFF position).	AB 790'-By FDT #3 Door for U1. U2-810'Room X-207.	
4	Open VCT <u>u</u> -01 to CHRG PMP SUCT VLV 0112C MOT BKR.  <b>CUE:</b> Breaker indicates in the OFF position.	1EB4-1/8C/BKR (2EB4-1/9C/BKR) switch rotated to LEFT (OFF position).		
*5	Manually open valve <u>u</u> -LCV-0112D RWST 1-01 TO CHRG PMP SUCT VLV.  <b>CUE:</b> <u>u</u> -LCV-112D has stopped moving and indicates in the OPEN position.	<u>u</u> -LCV-112D clutch lever depressed while hand wheel is turned counter clockwise and position indication is checked.	NOTE: Either step 5 or 6 is critical, not both.  AB 810' Southside Corridor about halfway down the corridor outside room.	
*6	Manually open valve <u>u</u> -LCV-0112E RWST 1-01 TO CHRG PMP SUCT VLV.  <b>CUE:</b> <u>u</u> -LCV-112E has stopped moving and indicates in the OPEN position.	<u>u</u> -LCV-112E clutch lever depressed while hand wheel is turned counter clockwise and position indication is checked.	LCV-112E is Southeast of LCV-112D. Unit 2 next to Room X-207.	

## JPM: P2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
*7	Manually close valve <u>LCV-0112B VCT</u> <u>01</u> to CHRG PMP UPSTRM LVL CTRL VLV.  <b>CUE:</b> <u>LCV-112B</u> has stopped moving and indicates in the CLOSED position.	<u>LCV-112B</u> clutch lever depressed while hand wheel is turned clockwise and position indication is checked	NOTE: Either step 7 or 8 is critical, not both.  AB 810' charging pump valve room South end, inside the Contaminated area for Unit 1. Unit 2 – Room X-207.	
	<i>CUE: Remote Shutdown Panel reports ZL-8220 and ZL-8221 were verified closed.</i>			
*8	Manually close valve <u>LCV-112C VCT</u> <u>01</u> to CHRG PMP DNSTRM LVL CTRL VLV.  <b>CUE:</b> <u>LCV-112C</u> has stopped moving and indicates in the CLOSED position.	<u>LCV-112C</u> clutch lever depressed while hand wheel is turned clockwise and position indication is checked.	Next to LCV-112B.	
9	Isolate dilution paths by closing <u>CS-8455 RMUW</u> to CVCS BA BLNDR <u>01</u> UPSTRM ISOL VLV.  <b>CUE:</b> <u>CS-8455</u> hand wheel turns but the stem does not move.	<u>CS-8455</u> hand wheel rotated clockwise	AUX 822' blender room SE corner ≈1' above floor	
*10	Closes <u>CS-8560-RO</u> , <u>CVCS</u> CHRG PMP SUCT MU ISOL VLV RMT OPER  <b>CUE:</b> <u>CS-8560</u> remote operator has stopped moving and indicates CLOSED	<u>CS-8560</u> remote operator rotated clockwise.	AUX 822' blender room.  Order of valve operation in following steps not critical.	

## JPM: P2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
*11	Closes <u>FCV-0111B</u> (fail air), RCS MU TO VCT <u>01 ISOL VLV</u> by closing <u>FCV-0111B-AS1</u> and depressurizing air regulator.  <b>CUE:</b> <u>0111B-AS1</u> closed and no air is escaping.	<u>0111B-AS1</u> is rotated clockwise and vent on bottom of regulator is rotated counterclockwise.	SFGD 832, RM <u>090</u> , VCT VLV RM	
*12	Closes <u>CS-8439-RO</u> , <u>U CVCS CHRG PMP EMER BORATE MAN VLV RMT OPER</u> .  <b>CUE:</b> <u>CS-8439-RO</u> has stopped moving and indicates closed.	<u>CS-8439-RO</u> rotated clockwise.	AUX 822' blender room.	
*13	Closes <u>CS-8441</u> , <u>U RMUW TO EMER BORATE FLSH VLV</u> .  <b>CUE:</b> <u>CS-8441</u> has stopped moving and indicates CLOSED	<u>CS-8441</u> rotated clockwise.	AUX 822' blender room.	
*14	Closes <u>CS-8453</u> , CVCS CHEM MIX TK <u>01 IN VLV</u>  <b>CUE:</b> <u>CS-8453</u> has stopped moving and indicates CLOSED	<u>CS-8453</u> rotated clockwise.	AUX 822' blender room.	
15	Notify the Reactor Operator that charging pump suction has been transferred to the RWST and dilution paths have been isolated.  <b>TASK COMPLETE</b>	RO at the RSP notified that charging pump suction has been transferred to the RWST and dilution paths have been isolated.	<i>Note Completion time.</i>	

**JPM: P2**

**INITIATING CUE:**

The Control Room has been evacuated per ABN-905A (B). You are requested to align the charging pump suction to the RWST and isolate RCS dilution paths per Attachment 4.

**NOTE:** The Control Room has been evacuated and is inaccessible.

JPM: P3

System: Auxiliary Feedwater System JTA Task #: AO 6415  
 Task Title: Fill the CST from the Fire Protection Header  
 KSA Ref: EPE.074.EA1.107 PEO: \_\_\_\_\_ RO: 4.2 SRO: 4.3

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 20 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
 ABN-305 Auxiliary Feedwater System  
 Malfunction

Tools, Equipment, Job Aids, etc:  
 None

**JPM: P3**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

While responding to an Inadequate Core Cooling problem CST level dropped below 10%. The US has directed you to align the Fire Protection Header to the CST by completing the first 4 steps of Attachment 4 of ABN-305. In addition, the US has directed you that 1FP-0627 SFGD BLDG EL 800 DG FP HOSE STA 1-22 is the preferred source of water, and it should be connected to the CT pump discharge vent valve.

Terminating Conditions:

One fire protection hose is simulated run from the fire protection header to the effected AFW pump.

## JPM: P3

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Ensure the following valves are closed.  <i>NOTE: All AF valves are located in the Condensate Storage Tank Room.</i>		<i>Note Start time.</i>	
1.a	1AF-0108, CNDS TO CT PMP 1-01 SUCT UPSTRM ISOL VLV  <b>CUE: The handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.		
1.b	1AF-0109, CNDS TO CT 1-01 SUCT DNSTRM ISOL VLV  <b>CUE: The handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.		
1.c	1AF-0200, 1-01 CT PMP DISCH ISOL VLV  <b>CUE: The handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.		

## JPM: P3

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1.d	1AF-0110 CST TO CT PMP 1-01 SUCT UPSTRM ISOL VLV  <b>CUE: The handwheel will turn clockwise, and the valve stem is all the way up.</b>  <b>2<sup>nd</sup> CUE: the handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.  <i>NOTE: After the operator starts to close the valve, give the 2<sup>nd</sup> CUE.</i>		
1.e	1AF-0111 CST TO CT PMP 1-01 SUCT DNSTRM ISOL VLV  <b>CUE: The handwheel will turn clockwise, and the valve stem is all the way up.</b>  <b>2<sup>nd</sup> CUE: the handwheel will not turn any further, and the valve stem is all the way down.</b>	The Locking device is verified installed. The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.  <i>NOTE: After the operator starts to close the valve, give the 2<sup>nd</sup> CUE.</i>		
1.f	1AF-0156, CT PMP 1-01 DISCH VNT VLV  <b>CUE: The handwheel will turn clockwise, and the valve stem is all the way up.</b>  <b>2<sup>nd</sup> CUE: the handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.  <i>NOTE: After the operator starts to close the valve, give the 2<sup>nd</sup> CUE.</i>		

## JPM: P3

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1.g	1AF-0113, CT PMP 1-01 DISCH TD DRN VLV  <b>CUE: The handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.		
1.h	1AF-0112, CT PMP 1-01 DISCH TD DRN VLV  <b>CUE: The handwheel will not turn any further, and the valve stem is all the way down.</b>	The handwheel is rotated in the clockwise direction until handwheel will not turn and valve stem is in the closed position.		
2	Connect selected fire protection supply lines from Page 2 or 3 of the attachment to one or more of the following AFW valves.			
*2.a	1AF-0156, CT PMP 1-01 DISCH VNT VLV  CUE: The hose is flaked out and the connection to the vent valve is made. Continue with step 3.	The operator correctly identifies the preferred Hose Station (1FP-0627 SFGD BLDG EL 800 DG FP HOSE STA 1-22) and simulates running the hose from the station to the CT pump. The operator will need to procure a ¾" NPT connection for the AF connection.		

## JPM: P3

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
3	<u>OPEN</u> the following valves:			
*3.a	1AF-0110 CST TO CT PMP 1-01 SUCT UPSTRM ISOL VLV  <b>CUE: The handwheel will not turn any further and the stem is in the open position.</b>	The handwheel is rotated in the counter clockwise direction until handwheel will not turn and valve stem is in the open position.		
*3.b	1AF-0111 CST TO CT PMP 1-01 SUCT DNSTRM ISOL VLV  <b>CUE: The handwheel will not turn any further and the stem is in the open position.</b>	The handwheel is rotated in the counter clockwise direction until handwheel will not turn and valve stem is in the open position.		
4	<u>OPEN</u> the selected AF fill valves:			
*4.a	1AF-0156, CT PMP 1-01 DISCH VNT VLV  <b>CUE: The handwheel will not turn any further and the stem is in the open position.</b>	The handwheel is rotated in the counter clockwise direction until handwheel will not turn and valve stem is in the open position.		
5	Informs the Control Room that steps 1-4 of attachment 4 of ABN-305 is complete.  <b>TASK COMPLETE</b>		<i>Note Completion time.</i>	

**JPM: P3**

**INITIATING CUE:**

While responding to an Inadequate Core Cooling problem CST level dropped below 10%. The US has directed you to align the Fire Protection Header to the CST by completing the first 4 steps of Attachment 4 of ABN-305. In addition, the US has directed you that 1FP-0627 SFGD BLDG EL 800 DG FP HOSE STA 1-22 is the preferred source of water, and it should be connected to the CT pump discharge vent valve.

JPM: S-1

System: Reactor Coolant System JTA Task #: RO\*1111  
 Task Title: Verify Natural Circulation (Alternate Path)  
 KSA Ref: EPE.011.EA2.09 PEO: \_\_\_\_\_ RO: 4.2 SRO: 4.3

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 10 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

**EOS-0.1A Reactor Trip Response (Rev 7)**

Tools, Equipment, Job Aids, etc:

Reset to IC 20 and then:  
 Trip the Reactor, Enter Malfunction ED01, Start Emergency boration, Stop the TDAFWP when SG levels are @ 25%, Throttle remaining AFW to ≈ 120 per SG, manually control ARV's until Auct. CET start to increase. Ensure the simulator remains in FREEZE until right before the candidate starts the task. Ensure Steam Tables are available.

**JPM: S-1**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Evaluator should ensure the simulator remains in FREEZE until right before the candidates starts the task.

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The crew is responding to a loss of offsite power. Safety Injection is not actuated or required. The RCP's cannot be restarted. The US directs you to verify Natural Circulation per EOS 0.1A step 8 and Attachment 3 of the same procedure. *(Provide candidate a copy of EOS-0.1A)*

Terminating Conditions:

Attachment 3 is complete and the candidate has increased steam flow rate from the ARV's.

## JPM: S-1

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Verify RCS subcooling > 25°F.  <b>CUE:</b> Subcooling is 35°F.	Operator verifies subcooling using 1-TI-3611/3612-1 on CB-05.	<i>Note Start time.</i>	
2	Check Steam Generator Pressures-STABLE OR DECREASING  <b>CUE:</b> All SG pressures are INCREASING.	Operator checks SG pressures using 1-PI-514/524/534/544A on CB-08		
3	Check RCS Hot Leg Temperatures- STABLE OR DECREASING  <b>CUE:</b> All Hot Leg Temperatures are stable.	Operator checks hot leg temperatures using 1-TR-433/434A on CB-06.		
4	Check core exit TC's-STABLE OR DECREASING  <b>CUE:</b> Core Exit TC's are 605° and slowly increasing.	Operator checks core exit TC's on plant computer,  OR  1-TI-3611/3612-2 on CB-05	Note: Candidate may immediately increase steam flow from ARV's.	
5	Check RCS cold leg temperatures-AT SATURATION TEMPERATURE FOR SG PRESSURE  <b>CUE:</b> Cold leg temperatures are 551° F and SG pressures are 1050 psig.	Operator checks RCS cold leg temperatures using 1-TR-413B/23B and 433B/43B on CB05 and compares to SG pressures using 1-PI-514/524/534/544A on CB-08		

**JPM: S-1**

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
*6	Natural Circulation is NOT verified, Increase Steam Flow from SG ARV's.  <b>CUE:</b> Core Exit TC are trending lower.  <b>TASK COMPLETE</b>	Operator opens SG ARV's using 1-PK-2325/26/27/28 on CB08.	          <i>Note Completion time.</i>	

**JPM: S-1**

**INITIATING CUE:**

The crew is responding to a loss of offsite power. Safety Injection is not actuated or required. The RCP's cannot be restarted. The US directs you to verify Natural Circulation per EOS 0.1A step 8 and Attachment 3 of the same procedure.

JPM: S2

System: Pressurizer Pressure Control System JTA Task #: (Modified) RO\*1209  
 Task Title: Control Pressurizer Pressure  
 KSA Ref: SF3.010.A1.07 PEO: \_\_\_\_\_ RO: 3.7 SRO: 3.7

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 30 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

IPO-005A, Step 5.1.5

Tools, Equipment, Job Aids, etc:

Reset to IC 5 with Tave appx. 557 <sup>B</sup>F, RCS Pressure appx. 2235 psig, and a small cooldown in progress.

**JPM: S2**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

A plant shutdown and cooldown for **REFUELING** is in progress. The RCS is currently at appx. 557<sup>B</sup>F and 2235 psig. You are currently in IPO-005A, at step 5.1.5 with a 50<sup>B</sup>F/Hr cooldown in progress. The BOP is controlling the cooldown. **The US has instructed you to initiate a reduction of RCS Pressure per step 5.1.5 and 5.1.6 and stabilize pressure at 1925 psig (+ or - 25 psig), and then BLOCK SI, while the RCS Cooldown is continuing.** The Extra RO will perform OPT-407 and RCP data monitoring.

Terminating Conditions:

Przr Spray Valve Controllers in MANUAL (AMBER & GREEN) Lights with zero (0) output, ZL Lights GREEN, and RCS Pressure at 1925 + or - 25 psig

JPM: S2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
*1	Place Pressurizer Spray Valve Controller(s) in MANUAL  <b>CUE:</b> Przr Spray Valve Controllers <u>u</u> -PK-455B and <u>u</u> -PK-455C indicate zero (0) output with AMBER and GREEN Lights ON.	Depress "AMBER" P/B on PK-455B and PK-455C and verify controllers are in MANUAL by observing the AMBER Light ON and the WHITE (Auto) Light OFF.	<i>Note Start time</i>  PK-455B and PK-455C are located on CB-05 (VERTICAL BOARD)  Controller output should be zero (0) with GREEN Light ON.	
*2	THROTTLE OPEN one or both pressurizer spray valve to begin a slow RCS Pressure reduction.  <b>CUE:</b> The Przr Spray Valve(s) ZL lights are RED and GREEN for the Spray Valve operated.	Depress the RED P/B on <u>either</u> PK-455B <u>and/or</u> PK-455C and verify controller response by observing the controller output and indicating lights (ZL-455B or ZL-455C) on Control Board (Vertical Board Section).	When the RED P/B is depressed the GREEN P/B Light should go OUT and the output meter should begin to increase (from 9% toward 100%). As the valve begins to throttle the ZL LIGHTS (ZL-455A or ZL-455B) will indicate THROTTLED by having both RED and GREEN LIGHTS <u>ON</u>	

## JPM: S2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
3	Monitor RCS Pressure for DECREASE  <b>CUE:</b> RCS pressure is decreasing and ALARMS 1.6 and 2.6 on ALB-5B have annunciated.	Verify RCS Pressure decrease using Narrow Range Pressure Instruments or Recorder. <ul style="list-style-type: none"> <li>• <u>PI-455A</u></li> <li>• <u>PI-456</u></li> <li>• <u>PI-457</u></li> <li>• <u>PI-458</u></li> <li>• <u>PI-455</u></li> </ul>	RCS Press (NR) instruments <u>PI-455A</u> , <u>PI-456</u> , <u>PI-457</u> , and/or <u>PI-458</u> located on CB-05 <u>OR</u> RCS Press Recorder <u>PR-455</u> located on CB-05  NOTE: ALB-5B 1.6 & 2.6 annunciate at 2185 psig	
4	ACKNOWLEDGE Annunciators 1.6 and 2.6 on ALB-5B.	Depress the ACKNOWLEDGE P/B at the Annunciator Controls on CB-05		
*5	As PRZR PRESS channels approach 1925 psig, adjust pressurizer heaters and spray valves as necessary to maintain RCS pressure between 1900 psig and 1950 psig.  <b>CUE:</b> RCS Pressure indicates 1925 psig on <u>PI-455A</u> , <u>PI-456</u> , <u>PI-457</u> , <u>PI-458</u> , and recorder <u>PR-455</u> .	Verify RCS Pressure decrease using Narrow Range Pressure Instruments or Recorder. <ul style="list-style-type: none"> <li>• <u>PI-455A</u></li> <li>• <u>PI-456</u></li> <li>• <u>PI-457</u></li> <li>• <u>PI-458</u></li> <li>• <u>PI-455</u></li> </ul> Manually controls pressurizer sprays and heaters to stabilize RCS pressure at $\approx$ 1925 psig.  <i>* If RCS pressure decreases to below 1820 psig, SI will actuate and will result in a failure of the JPM.</i>	The US DIRECTS you to stabilize RCS pressure and Block SI per the IPO step in effect.	

## JPM: S2

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
6	<p>WHEN RCS pressure is below 1960 psig, THEN perform the following:</p> <p>A. Ensure RCS has been borated to a Shutdown Margin for RCS #350°F(reference Step 5.2.3 A).</p> <p>CUE: The US informs the RO that the RCS is borated for SDM for 350°F</p>	The RCS is borated for SDM for 350°F		
7	<p>Verify 1-PCIP, 2.6, PRZR PRESS SI BLK PERM P-11 is ON.</p> <p>CUE: CB-07, PCIP alarm window 2.6 is lit.</p>	CB-07, PCIP alarm window 2.6 is lit (blue).		
8	<p>Verify the following status lights are OFF:</p> <p>1-TSLB-9, 1.3, PRZR PRESS SI PERM PB-455B</p> <p>1-TSLB-9, 2.3, PRZR PRESS SI PERM PB-456B</p> <p>1-TSLB-9, 3.3, PRZR PRESS SI PERM PB-457B</p> <p>CUE: Windows 1.3, 2.3, and 3.3 on TSLB 9 are dark.</p>	<p>On CB-04, 1-TSLB-9, windows:</p> <p>1.3 is dark</p> <p>2.3 is dark</p> <p>3.3 is dark</p>		

**JPM: S2**

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
*9	Turn BOTH MSL ISOL SI RESET/BLOCK switches to BLOCK and release:  1/1-SLSIRBA, MSL ISOL SI RESET/BLOCK  1/1-SLSIRBB, MSL ISOL SI RESET/BLOCK  CUE: The handswitch moved counterclockwise and stopped.	On CB-08, in the MSL Isolation section:  Turns handswitch 1/1-SLSIRBA counter clockwise to block  Turns handswitch 1/1-SLSIRBA counter clockwise to block		
10	Verify the following are ON:  1-PCIP, 3.8, MSL PRESS LO TRN A SI BLK  1-PCIP, 4.8, MSL PRESS LO TRN B SI BLK  CUE: PCIP windows 3.8 and 4.8 are LIT.	CB-07, PCIP alarm window:  3.8 is ON.  4.8 is ON.		
*11	Turn BOTH PRZR PRESS SI RESET/BLOCK switches to BLOCK and release:  1/1-PPSIRBA, PRZR PRESS SI RESET/BLOCK  1/1-PPSIRBB, PRZR PRESS SI RESET/BLOCK  CUE: The handswitch moved counterclockwise and stopped.	On CB-08, in the SI BLOCK section:  Turns handswitch 1/1-PPSIRBA counter clockwise to block  Turns handswitch 1/1-PPSIRBB counter clockwise to block		

**JPM: S2**

<b>STEP#</b> <b>*Critical</b>	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
12	Verify the following are ON:  1-PCIP, 3.7, PRZR PRESS LO TRN A SI BLK  1-PCIP, 4.7, PRZR PRESS LO TRN B SI BLK	CB-07, PCIP alarm window:  3.7 is ON.  4.7 is ON.		
13	Report that RCS pressure is stable at $\approx$ 1925 psig and that SI has been blocked. IPO-005A step 5.1.5 has been completed.  <b>TASK COMPLETE</b>	RCS pressure is stable or slightly decreasing at less than 1950 psig.  <i>Note completion time.</i>		

**JPM: S2**

**INITIATING CUE:**

A plant shutdown and cooldown for **REFUELING** is in progress. The RCS is currently at appx. 557<sup>B</sup> F and 2235 psig. You are currently in IPO-005A, at step 5.1.5 with a 50<sup>B</sup>F/Hr cooldown in progress. The BOP is controlling the cooldown.

**The US has instructed you to initiate a reduction of RCS Pressure per step 5.1.5 and 5.1.6 and stabilize pressure at 1925 psig (+ or- 20 psig), and then BLOCK SI, while the RCS Cooldown is continuing.** The Extra RO will perform OPT-407 and RCP data monitoring.

JPM: S3

System: CVCS JTA Task #: (NEW)  
 Task Title: Emergency Borate Using Chemical And Volume Control System (Alternate Path)  
 KSA Ref: SF1.004.A4.18 PEO: \_\_\_\_\_ RO: 4.3 SRO: 4.1

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 10 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

ABN-107, "Emergency Boration",

Tools, Equipment, Job Aids, etc:

Initialize into any shutdown IC above 550°F Tave.  
 Insert Malf. CV19A(Boric Acid Transfer Pump 1 Trip)  
 Insert Override LOCVAPBA1 to ON. (Boric Acid Transfer Pump 1 Green Light)  
 ABN-107, Attachment 2

JPM: S3

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Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

You have been directed by the Unit Supervisor to commence Emergency Boration using Attachment 2 of ABN-107, "Emergency Boration". Inform the Unit Supervisor when the attachment is complete.

Terminating Conditions:

Emergency boration established through the Normal Boration valves.

JPM: S3

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Place 1/u-MU, RCS MU MAN ACT switch in - STOP.  CUE: 1/u-MU is in the STOP position	1/u-MU rotated in the counterclockwise direction until it is in the STOP position.	<i>Note Start time.</i>	
*2	Open 1/u-FCV-110B, RCS MU TO CHR G PMP SUCT ISOL VLV.  CUE: 1/u-FCV-110B is in the OPEN position and the red light is LIT.	1/u-FCV-110B rotated in the clockwise position from AUTO to OPEN.		
*3	Start a boric acid transfer pump:  1/u-APBA1, BA XFER PMP 1 - AUTO (AFTER START)  CUE: The green light is ON and the red light is OFF.  1/u-APBA2, BA XFER PMP 2 - AUTO (AFTER START)  CUE: The green light is OFF and the red light is ON.	Rotates handswitch 1/u-APBA1 in the clockwise direction to the START position.  Rotates handswitch 1/u-APBA1 from the Pull Out position in the clockwise direction to the START position.	<i>The green light is ON (normal) but the pump will not start. The candidate must take the pump 02 out of Pull Out and start it.</i>	
*4	Open 1/u-FCV-110A, BA BLNDR FLO CTRL VLV.  CUE: 1/u-FCV-110B is in the OPEN position and the red light is ON.	1/u-FCV-110A rotated in the clockwise position from AUTO to OPEN.		

## JPM: S3

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
5	Verify flow on u-FR-110 (RED PEN), BA FLOW TO BLNDR  CUE: Boric acid flow is 38 gpm.	Using the RED pen on u-FR-110, verify that flow is between 35 and 40 gpm.		
6	Verify flow on u-FI-121A, CHRGR FLOW  CUE: Charging flow indicates 130 gpm.  <b>TASK COMPLETE</b>	Using u-FI-121A, verifies that Charging flow is going to the RCS.	<i>Note Completion time.</i>	

**JPM: S3**

**INITIATING CUE:**

You have been directed by the Unit Supervisor to commence Emergency Boration using Attachment 2 of ABN-107, "Emergency Boration". Inform the Unit Supervisor when the attachment is complete.

JPM: S4

System: Small Break LOCA JTA Task #: (NEW)  
 Task Title: Perform Attachment 2 of EOP-0.0A (Alternate Path)  
 KSA Ref: EPE.009.EA1.08 PEO: \_\_\_\_\_ RO: 4.0 SRO: 4.1

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 20 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:

EOP-0.0A "Reactor Trip or Safety Injection"

Tools, Equipment, Job Aids, etc:

Initialize into IC-15. Enter the following Malfunctions: RP09A and RP09B, RH01B. (*Make trigger file to remove Malf when H/S to start*) Insert Overrides LOCHHS 5729 2, and LOCCHS 6202 5 to ON. Use Malf. RC08A1 to cause a Reactor Trip and SI. After the Seq has timed out FREEZE.

Attachment 2 of EOP-0.0A, Safety Injection Actuation Alignment.

JPM: S4

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

NOTE TO EXAMINER: This JPM is constructed to list the failures that the candidate will encounter while performing Attachment 2. It will only list the critical steps. To follow along as the candidate performs the attachment, utilize an INFO ONLY copy of Attachment 2.

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

Automatic Reactor Trip and Safety Injection have occurred The crew is at step 5 of EOP-0.0A. The Unit Supervisor has directed you to perform Attachment 2 of EOP-0.0A. Inform the Unit Supervisor when the attachment is complete.

Terminating Conditions: Attachment 2 is complete with the following exceptions:

- Phase A was manually actuated.
- The B RHR pump did not auto start and was manually started.
- The Primary Plant Supply Fan 20 is running.
- The Spent Fuel Pool Exhaust fan 36 is running.

JPM: S4

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Provide the candidate with a working copy of EOP-0.0A, attachment 2.	The candidates are expected to complete Attachment 2 independently and without error.	<i>Note Start time.  It is managements expectation that the candidate will place keep the procedure by marking completed steps and indicating any exceptions.</i>	
*2	Step 3. Verify Containment Isolation Phase A-Appropriate MLB LIGHT INDICATION (RED WINDOWS)  CUE: The RED LIGHTS on the MLB's 1A1, 1A2, 1B1, and 1B2 are dark. All others are LIT.	The RED LIGHTS will be dark. The candidate must manually initiate Phase using HS 1/1-CIPAA1 on CB-02 in the SFGD MAN ACT/RESET section, by rotating the switch in the clockwise direction to ACT.		
*3	Step 6. Verify RHR pumps-RUNNING.  CUE: The red light is lit and the green light is dark.	For RHR Pump 1-02 the red light will be off and green light will be on. The candidate must attempt a manual start by rotating 1/1-APRH2 in the clockwise direction to the START position.		

## JPM: S4

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
*4	Step 13, Attachment 1. X-HS-6202 on CV-01, STOPPED.	On Ventilation Panel CV-01 Primary Plant Supply Fan 20 will indicate RUNNING. The candidate must attempt to stop the fan by rotating X-HS-6202 counterclockwise direction to the STOP position.	NOTE: It is not critical that the candidate rotate the switch, but the exception MUST be documented, either by oral report or place keeping the procedure.	
*5	Step 13, Attachment 1. X-HS-5729 on CV-03, STOPPED.	On Ventilation Panel CV-03 Spent Fuel Pool Exhaust fan will indicate RUNNING. The candidate must attempt to stop the fan by rotating X-HS-5729 counterclockwise direction to the STOP position.	NOTE: It is not critical that the candidate rotate the switch, but the exception MUST be documented, either by oral report or place keeping the procedure.	
6	Report the completion of Attachment 2 to the Unit Supervisor and note exceptions to the requirements of the Attachment.  <b>TASK COMPLETE</b>	Candidate must indicate the above exceptions.	<i>Note Completion time.</i>	

**JPM: S4**

**INITIATING CUE:**

Automatic Reactor Trip and Safety Injection have occurred. The crew is at step 5 of EOP-0.0A. The Unit Supervisor has directed you to perform Attachment 2 of EOP-0.0A. Inform the Unit Supervisor when the attachment is complete.

JPM: S5

System: Containment Spray JTA Task #: (Modified) RO2003

Task Title: Operate the Containment Spray System (Alternate Path)

KSA Ref: SF6.026.A4.01 PEO: \_\_\_\_\_ RO: 4.5 SRO: 4.3

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 5 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
SOP-204A/B, "Containment Spray System", u-ALB-2B, "ALM-0022A/B"

Tools, Equipment, Job Aids, etc:  
Simulator Setup: OVERRIDE 1TI-4793 (RWST Temperature) to 45°F, activate HS-4776 override after CSP's have been started.

**JPM: S5**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

Temperature is 45°F in the RWST, the Unit Supervisor directs you to recirc the RWST with Train "A" Containment Spray Pumps. Containment Spray is in Standby per SOP-204A/B Section 5.1.1. Crew briefing is completed and PCS trends are initiated.

Terminating Conditions:

Containment Spray Pumps have been stopped.

JPM: S5

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Place CS HX1 Outlet Vlv to Pull-Out	Pull-outs 1-HS-4776, acknowledges SSII Train A	<i>Note Start time.</i> SSII alarms	
2	Verify chemical additive tanks discharge valve is closed  CUE: <u>HS-4754</u> green light lit	Checks <u>HS-4754</u> closed.		
3	Contact PEO to Unlock and Open <u>CT-0050</u>  CUE: PEO reports <u>CT-0050</u> open		Reverse Operated Valve	
4	Initiate a trend of selected pump parameters on the plant computer.  CUE: The extra RO has initiated the trend of the pump parameters	This has already been done by extra RO		
*5	Start Containment Spray Pump 1-01  CUE: "RED" light lit on <u>HS-4764</u> , <u>FI-4772-1</u> (0 gpm), <u>PI-4774-1</u> (300 psig)	Places <u>HS-4764</u> 1-01 Containment Spray Pump in "START" on and checks flow and pressure	Steps 5 and 6 can be done in either order	
*6	Start Containment Spray Pump 1-03  CUE: "RED" light lit on <u>HS-4765</u> , <u>FI-4772-2</u> (0 gpm), <u>PI-4774-2</u> (300 psig)  CUE: Alarm window 3.5 CS HX 1 OUT VLV NOT CLOSE HV-4776 on ALB 2B	Places <u>HS-4765</u> 1-03 Containment Spray in "START" and checks flow and pressure	Override HS-4776 to OPEN, via the handswitch on mimic display CB02	

## JPM: S5

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
7	Monitor CSP discharge flow  <b>CUE:</b> <u>FI-4772-1</u> indicates 3000 gpm, <u>FI-4772-2</u> indicates 3100 gpm	Monitors <u>FI-4772-1</u> , <u>FI-4772-2</u> flow indicators		
8	Ensure CS HX OUT VLV is closed  <b>CUE:</b> <u>HS-4776</u> red light LIT  <b>CUE:</b> “CNTMT SMP 1, 2 FILL RATE INCREASE” and “ANY CNTMT SMP PMP RUN” alarm ON MCB	Checks position of <u>HS-4776</u>		
*9	Stop CNMT Spray Pumps  <b>CUE:</b> <u>HS-4764</u> and <u>HS-4765</u> red and green lights are dark  <b>TASK COMPLETE</b>	Go to stop (or PULL OUT) on <u>HS-4764</u> and <u>HS-4765</u>	<i>Note Completion time.</i>	

**JPM: S5**

**INITIATING CUE:**

Temperature is 45°F in the RWST, the Unit Supervisor directs you to recirc the RWST with Train "A" Containment Spray Pumps. Containment Spray is in Standby per SOP-204A/B Section 5.1.1. Crew briefing is completed and PCS trends are initiated.

JPM: S6

System: Emergency Diesel Generator JTA Task #: (Modified)RO4032  
 Task Title: Load Diesel Generator (Alternate Path)  
 KSA Ref: SF6.064.A4.06 PEO: \_\_\_\_\_ RO: 3.9 SRO: 3.9

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 20 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
 SOP-609A  
 OPT-214A  
 ABN-501

Tools, Equipment, Job Aids, etc:  
 OPT-214A (Working Copy)  
 Simulator set-up: Any at power IC, go to RUN, START DG 1. Set up trigger file to insert malfunction SW01A when EDG load is 2.7 MW.

**JPM: S6**

Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

OPT-214A, Diesel Generator Operability Test is being performed on DG 1 for a normal 30 day test. You are on step 8.1.S, the DG is running at 60 Hz and 6.9 kV. The PEO at the DG has reported that the DG is running properly. Continue with the test.

Terminating Conditions:

The Emergency Diesel Generator has been placed in "Pull Out".

## JPM: S6

<b>STEP#</b> *Critical	<b>ELEMENT</b>	<b>STANDARD</b>	<b>NOTES</b>	<b>SAT/ UNSAT</b>
1	Refer to OPT-214A, Step 8.1.S.	OPT-214A entered at step 8.1.S	<i>Note Start time.</i>	
*2	Turn the Synchroscope for DG1 to the "ON" position.  <b>CUE:</b> The synchroscope switch is in the ON position.	Synchroscope Switch (SS-1EG1) in the ON position.	The operating handle is STAR-shaped. The Synchroscope Switch (SS-1EG1) is located above DG1 output breaker on CB-11 (Beveled Section). The switch is 2-Position MAINTAIN SWITCH. The ON position is to the right.	
3	Compare incoming voltage to running voltage.  <b>CUE:</b> V-1EG1 reads 6900 volts and V-1EA1 reads 7000 volts.	V-1EG1 and V-1EA1 checked.	V-IN and V-RUN are preferred, any indications listed in OPT-214A are acceptable for use.	
4	Adjust the DG voltage to slightly greater than that on the BUS.  <b>CUE:</b> DG voltage slightly greater than BUS voltage (50-100v)	Voltage control switch (90-1EG1) taken to RAISE or LOWER until DG 1 volts (V-1DG1) is 50 – 100 volts greater than BUS 1EA1 volts (V-1EA1).	The DG output voltage ( $\approx$ 6900 Volts) is to agree with 1EA1-1 BUS Voltage ( $\approx$ 6900 Volts). These meters are located on CB-11 (Vertical Section). The DG Voltage Control Handswitch (90-1EG1) is a 3-POSITION SRING RETURN to OFF type switch. Located on CB-11 (A SEC)	

## JPM: S6

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
5	<p>Check DG speed</p> <p>CUE: Synchroscope is rotating in counter-clockwise direction.</p>	Synchroscope checked (On CB-11)	Lights are a backup to the sync scope (OFF when in phase, ON when out of phase).	
6	<p>Adjust the speed so the Synchroscope is moving slowly in the fast direction.</p> <p>CUE: Synchroscope is rotating 2-4 RPM in the fast direction.</p>	Speed Control Handswitch (65-1EG1) taken to RAISE and synchroscope checked until rotating SLOWLY in FAST direction (2-4 RPM_ (65- <u>u</u> EG1 taken to LOWER if speed too fast.)	Handswitch (65-1EG1) is a 3-POSITION SPRING RETURN TO OFF type switch located on CB-11 (Apron Section). The INCREASE position is to the RIGHT. The FAST Direction is CLOCKWISE.	
*7	<p>Close the DG breaker when the Synchroscope is slightly before the 12 O'CLOCK position and moving slowly in the FAST Direction.</p> <p>CUE: ALB-10B 3.5 alarm has annunciated and the breaker red light lit and green light off.</p>	DG Breaker (CS- <u>u</u> EG1) is closed and position is checked. (Indicated by Annunciator Alarm (ALB-10B 3.5), Handswitch FLAG (RED FLAG) and indication Lights.	Handswitch (65-1EG1) is a 3 POSITION, SPRING RETURN TO AUTO type switch. Located on CB-11 (Apron Section). Indicating lights on Handswitch should be RED (Green Light out) with RED FLAG indication. Annunciator ALB-10B 3.5 (6.9KV BUS 1EA1/1EA2 PARALELLED) ON (energized).	

## JPM: S6

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
*8	<p>Immediately pick-up at least 2.2-2.5 MW for stability</p> <p><b>CUE:</b> When load is first checked, DG1 MW Meter (W-1EG1) indicates ZERO MW; when load is checked after going to RAISE, W-1EG1 indicates 2.1 MW.</p>	<p>SPEED CONTROL HANDSWITCH 65-1EG1, taken to RAISE to pick up sufficient load to prevent a reverse power trip of DG 1.</p>	<p>DG1 MW Meter (W-1EG1) located on CB-11 (Vertical Section). Handswitch (65-1EG1) is a 3-Position Spring Return to OFF type switch. Located on CB-11 (Apron Section). The RAISE position is to the RIGHT.</p>	
9	<p>Turn the Synchroscope to the "OFF" position.</p> <p><b>CUE:</b> The Synchroscope switch is in the OFF position.</p>	<p>Synchroscope Switch (SS-1EG1) in the <u>OFF</u> position.</p>	<p>The Synchroscope Switch (SS-1EG1) is located above DG1 output breaker on CB-11 (Beveled Section). The switch is a 2-Position MAINTAIN Switch. The <u>OFF</u> position is to the LEFT.</p>	
10	<p>Maintain 0-500 KVAR <u>OUT</u>,</p> <p><b>CUE:</b> When KVARs first checked, meter indicate 500 KVARs (to left of ∅). When switch is taken to RAISE and KVARs checked, give readings indicating KVAR increasing or for LOWER &lt; KVAR decreasing.</p>	<p>Reactive load maintained 0-500 KVAR <u>OUT</u>; DG1 Voltage Control Handswitch (90-1EG1) taken to RAISE to increase KVARs or LOWER to decrease KVARs as on DG1 KILOVAR Meter (VAR-1EG1) checked.</p> <p>(This step should be repeated as the DG is loaded.)</p>		

## JPM: S6

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
11	<p>Load the selected DG to <math>\approx</math> 6.0 MW over a 20 minute period.</p> <p><b>CUE:</b> Us informs you to load DG to 6 MW immediately.</p> <p><b>CUE:</b> When switch is taken to RAISE and W-<u>EG</u>2 is observed, give reading indication increasing MW or for Lower, decreasing MW.</p>	<p>DG1 loaded to 6.0 MW over a 20 minute period (<math>\approx</math> .3 MW/min) by moving the Speed Control Handswitch (65-1EG1) to <u>RAISE</u> direction and observing the DG1 MW Meter (W-1EG1).</p>	<p>Speed Control Handswitch (65-<u>EG</u>1) located on CB-11 (Apron Section) DG1 MW Meter (W-1EG1) located on CB-11 (Vertical Section). As LOAD is increased the KILOVARS will decrease toward 0 (zero).</p>	
12	<p>Acknowledge and respond to 1-ALB-01 window 1.8 "SSWP 1/2 OVRLOAD/TRIP</p>	<p>Refer to ALM-01-1.8 and/or ABN-501.</p>		
*13	<p>Determines that EDG 1-01 should be in "Pull Out" . ALM -01 (1.8) and Initial Operator Action from ABN-501, Service Water Malfunction.</p> <p><b>TASK COMPLETE</b></p>	<p>Places EDG 1-01 in "Pull Out" using CS-1EG1.</p>	<p><i>Note Completion time.</i></p>	

**JPM: S6**

**INITIATING CUE:**

OPT-214A, Diesel Generator Operability Test is being performed on DG 1 for a normal 30 day test. You are on step 8.1.S, the DG is running at 60 Hz and 6.9 kV. The PEO at the DG has reported that the DG is running properly. Continue with the test.

JPM: S7

System: Nuclear Instrumentation System JTA Task #: NEW  
 Task Title: Respond To Source Range Instrumentation Malfunction (Alternate Path)  
 KSA Ref: APE.032.AK3.01 PEO: \_\_\_\_\_ RO: 3.2 SRO: 3.6

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 8 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
 IPO-002A, "Plant Startup from Hot Standby to Minimum Load", ABN-701, ALM-0064A

Tools, Equipment, Job Aids, etc:  
 IPO-002A, ABN-701, Simulator: Load IC 7, actuate malfunction RP01. Following initiating CUE, go to run. Actuate Malf N101A @ severity 1E6 when the candidate start to dilute or when referencing the SOP.

**JPM: S7**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

Preparations are underway for RX startup. You are at step 5.2.1 of IPO-002. You have been directed to dilute 200 gallons to reach critical boron concentration.

Terminating Conditions:

The Reactor has been tripped by de energizing the Rod Drive MG's.

JPM: S7

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Prepare for Dilution.	Refers to SOP-104A step 5.1.3.	<i>Note Start Time</i>	
2	Recognize First Out alarm is LIT Red and the need for a Reactor Trip.  CUE: SR FLUX HI RX TRIP Alarm 6C (1.5) is in Alarm and lit RED.	Respond to SR FLUX HI RX TRIP Alarm 6C (1.5)		
3	Manually trips Reactor.  CUE: 1/1-RTC rotated but the Trip Breakers did not open.	On CB07 turns 1/1-RTC "Rx Trip Bkr" in the counter clockwise direction		
4	Manually trips Reactor.  CUE: 1/1-RTC rotated but the Trip Breakers did not open.	On CB010 turns 1/1-RT "Rx Trip" in the counter clockwise direction		
*5	Momentarily deenergizes the Rod Drive MG sets by opening 480 VAC MCC supply breakers 1B3 and 1B4.  CUE: All DRPI rod bottom lights are LIT.  <b>TASK COMPLETE</b>	Rotates CS-1B3-1 counterclockwise to open and then clockwise back to close.  Rotates CS-1B4-1 counterclockwise to open and then clockwise back to close.  <i>Note Completion Time</i>		

**JPM: S7**

**INITIATING CUE:**

Preparations are underway for RX startup. You are at step 5.2.1 of IPO-002. You have been directed to dilute 200 gallons to reach critical boron concentration.

JPM: S-8

System: Component Cooling Water System JTA Task #: (Bank NRC 2002)  
 Task Title: Shift CCW Pumps with CCW Pump Trip (ALTERNATE PATH)  
 KSA Ref: APE.026.AK3.04 PEO: \_\_\_\_\_ RO: 3.5 SRO: 3.7

Operator's Name: \_\_\_\_\_

Performance Environment:  PLANT  CONTROL ROOM  SIMULATOR

Performance Method:  PERFORMED  SIMULATED  DISCUSSED

Time to complete JPM: Estimated 9 minutes Actual \_\_\_\_\_

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

SATISFACTORY

UNSATISFACTORY

Reason, if unsatisfactory:

Evaluator's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments (list all steps not satisfactorily completed): \_\_\_\_\_

References:  
 SOP-502A, "CCW System"  
 ABN-502, "Component Cooling Water System Malfunction"

Tools, Equipment, Job Aids, etc:  
 Simulator:  
 1) Any IC above Mode 4.  
 2) Insert and activate MALF-CC03B  
 3) Insert MALF-CC02B on a key. When CCW pump 1-01 is stopped, activate malfunction.

**JPM: S-8**Safety Considerations:

If this JPM is to be performed in the plant/control room, the candidate is NOT to manipulate any plant components unless he/she has permission from the Shift/Unit Supervisor.

Human Performance Measures:

During this Job Performance Measure, **MONITOR** for demonstrations of the following as outlined in Operations department guidance:

- Peer checking
- Three-way communications
- Phonetic alphabet
- Self checking
- ALM use
- Unit designators
- Conservative decision making
- Procedure place keeping
- Procedure rules of usage

Comments:

**NOTE to EXAMINER: during the CCWP shift, CCWP2 will trip off after CCWP1 has been secured. CCWP1 fails to autostart when CCWP2 trips, so the operator will have to manually restart CCWP1. The operator may attempt to trip the reactor based on loss of CCW instead of attempting to restart CCWP1; if he attempts a reactor trip, stop him and end the JPM (failure). The Reactor must not be tripped because it would interfere with another JPM being conducting concurrently.**

Instructions:

You may use any approved reference materials, including logs. Make or simulate all written/oral reports as if the evolution is actually being performed. You are expected to discuss all steps you would take, including identifying what switches/indications you would use

Initiating Cue:

The Unit Supervisor directs you to shift CCW pumps (start CCWP1-02, and secure CCWP1-01 per SOP-502) in preparation for maintenance.

Terminating Conditions:

CCWP1 Running again (after CCWP2 trips off)

## JPM: S-8

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
1	Ensure SSWP2 is running  CUE: SSWP2 indication is RED.	Operator visually verifies SSWP2 is running by verifying handswitch indication is RED.	<i>Note Start time.</i>  <b>Give applicant a copy of SOP-502A</b>	
2	Ensure oil level in bearing housings for CCWP2 are normal.  CUE: bearing housing oil levels are normal.	Operator directs PEO to verify oil level for CCWP2.		
*3	Start CCWP2  CUE: <u>u</u> -HS-4519A handswitch light indication is RED.	Take handswitch <u>u</u> -HS-4519A to the start position and verify red light indication on the handswitch.		
4	Ensure the following equipment are removed from service before securing CCWP1: RHR Pumps 1-01, CS Pumps 1-01/03/  CUE: Listed Pumps are removed from service.	Same as Element.	RHR and CS pumps that are loads supplied from the CCWP1 should be secured before securing the CCWP1.	

## JPM: S-8

STEP# *Critical	ELEMENT	STANDARD	NOTES	SAT/ UNSAT
5	Stop CCWP1  CUE: <u>u</u> -HS-4518A handswitch light indication is green. <b>(CCWP2 trips):</b> <u>u</u> -HS-4519A green light and white trip light lit.  <b>Annunciator Alarms:</b> CCWP 1/2 OVRLOAD/TRIP, CCW TRN A/B SFGD LOOP PRESS LO, CCW HX 1/2 OUT & RECIRC FLO LO, CCW HX ½ SPLY FLO LO	Operator holds the <u>u</u> -HS-4518A handswitch in STOP until flow and pressure stabilize and then releases handswitch.	WARNING: Operator MAY attempt to trip RX (per section 6.0 of ABN-502A “Loss of all CCW Flow”) when CCWP2 trips; BUT, operator SHOULD go to section 2.0 of ABN-502A “CCW Pump Trip” and attempt to start CCWP1;  <u>DO NOT allow operator to trip RX</u> (it would interfere with JPMS3 running concurrently).	
6	Verify unaffected train CCW Pump – RUNNING. NOTE: CCWP1 fails to auto start, and must be manually restarted.  CUE: <u>u</u> -HS-4518A handswitch light indication is green.	Operator recognizes that CCWP 1 is not running by noting <u>u</u> -HS-4518A handswitch indication is GREEN on CB-3	<b>If operator attempts to trip the RX, DO NOT allow RX trip, and terminate the JPM.</b>	
*7	Manually Start <u>u</u> -HS-4518A CCWP 1  CUE: <u>u</u> -HS-4518A RED light lit and flow restored.  <b>TASK COMPLETE</b>	Take handswitch <u>u</u> -HS-4518A to the start position and verify red light indication on the handswitch and flow restored.	<b>Give applicant a copy of ABN-502 if he/she wishes to refer to it.</b>  <i>Note Completion time.</i>	

**JPM: S-8**

**INITIATING CUE:**

The Unit Supervisor directs you to shift CCW pumps (start CCWP1-02, and secure CCWP1-01 per SOP-502) in preparation for maintenance.

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Appendix D

Scenario Outline

Form ES-D-1

Facility:	<b>CPSES</b>	Scenario No.:	<b>1</b>	Op-Test No.:	<b>1</b>
Examiners:	_____	Operators:	_____	_____	_____
	_____		_____	_____	_____
	_____		_____	_____	_____

Note: (NEW) **Do SRO Admin A.4.1, Emerg. Class. with this Scenario (SAE).**

Initial Conditions: BOL, 100% power Eq. Xenon. Unit 2 is at 100% power. The A MDAFWP is OOS for oil contamination. ( 6 hours into LCO)  
*IC-15, REMF FWR20 in Rackout with H/S in P.O and Red Tagged.*

Turnover: Unit 1 and Unit 2 are at 100% power. U1 has been at 100% for the last 15 days following refueling. The "A" MDAFWP is OOS due to contamination in the oil. Maintenance is in the process of changing the oil and the pump should be ready for test in the next 6 hours. The Generation Controller has declared an ALERT due to the loss of several peaking plants and all of the Big Brown units due to a common mode failure. There are no surveillances planned for this shift and the orders are to maintain current load and unit availability.

Event No.	Malf. No.	Event Type*	Event Description
1 T=1	MS13D	I (RO) I (BOP) I (SRO)	SG Pressure channel for ARV #4 fails high. (ARV fails full open)
2 T=7	RX15A @ 100%	C (RO) C (SRO)	PZR Spray valve fails open. ( <i>Set up trigger to remove Malf when the Manual PB is selected</i> )
3 T=13	ED05F	M (ALL)	Loss of 1EA2 (86-2)
4 T=13	FW09A	C (BOP) C (SRO)	TDAFWP Overspeed. (will not come in until pump starts)
5 T=28		N (BOP) R (RO) N (SRO)	Perform Plant Shutdown due to loss of 2 AFWP's. (Directed by SM)
6 T=43	FW25C @ 4e6	M (ALL)	Feedline Break ORC
7 T=43	ED05I	C (ALL)	Loss of 1EA2 (86-1)
8 T=43	SI04A	C (BOP) C (SRO)	SI pump fails to start on Safety Injection. ( <i>Must be manually started. Set up trigger file to remove Malf when HS is turned.</i> )

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

Op-Test No:	1	Scenario No:	1	Event No:		Page	2	of	16
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The objective of this scenario is to evaluate the operators ability to change Reactor power in a controlled manner when required by plant conditions, respond to various instrument and component failures, and to carry out the requisite emergency procedures to mitigate the consequences of a Loss of Heat Sink event.

**Event One.**

A failure high of the Main Steam Line Pressure channel that feeds the #4 SG ARV occurs. This failure will cause the ARV to open. Operator feedback for this event is an unexpected increase in Reactor Power that can exceed licensed limits and a decrease in RCS temperature with constant Turbine Load. It is expected that the operators will:

- Recognize that Reactor Power is increasing
- Take steps to reduce Reactor Power in accordance with Management Expectations and Pre Shift Briefings
- Diagnose plant conditions and determine that the ARV should **NOT** be open
- Enter the correct ABN procedure
- Place the controller in manual and close the valve
- Make the necessary notifications and refer to Technical Specifications.

**Event Two.**

One of the two Pressurizer Spray valves fails fully open. This is a failure of the valve in automatic and manual control remains available. Feedback to the operators is evidenced by a decrease in Reactor Coolant system pressure that is not explained by plant conditions and can lead to a Reactor Protection System actuation. It is expected that the operators will:

- Recognize that RCS pressure is decreasing
- Diagnose plant conditions and determine that RCS pressure should **NOT** be decreasing.
- Determine that the cause of the decrease is the Spray valve failure.
- Take manual control of the spray valve and close it
- Enter the correct ABN procedure
- Make the necessary notifications and refer to Technical Specifications

**Event Three and Four.**

Safeguards bus 1EA2 deenergizes due to an 86-2 lockout relay. An 86-2 lockout is caused by a phase to ground fault on the bus. The bus normal supply breaker will open, the EDG will start, and the bus will be re-energized from the EDG. The bus will remain powered by the EDG for the remainder of the scenario. Operator feedback is provided by alarm annunciation and equipment started by the Blackout Sequencer. It is expected that the operators will:

- Respond to Alarms and determine the loss of bus 1EA2.
- Determine that the BOS has actuated.
- Evaluate plant conditions and determine if the start of the TDAFWP has caused Reactor Power to increase above license limits and meet management expectations to reduce power
- Enter the correct ABN procedure
- Stop unnecessary equipment started by the BOS
- Make the necessary notifications and refer to Technical Specifications
- Determine that the TDAFWP oversped on the BOS start signal
- It is expected that the SRO will recognize the loss of 2 AFW pumps and determine the need to shutdown the plant per the Limiting Conditions for Operations.

Op-Test No:	1	Scenario No:	1	Event No:		Page	3	of	16
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**Event Five.**

Inoperable equipment requires a forced down power maneuver to meet license requirements. *In order to preclude unnecessary delay while the SRO communicates with plant management about plant conditions and make recommendations, the lead evaluator may direct the staff to act as SM and instruct the SRO to commence an immediate plant shutdown.* Operator feedback for the need to shutdown the plant will be Technical Specification LCO's or plant management direction. It is expected that the crew will:

- Refer to the appropriate plant procedure
- Complete a reactivity brief.
- Commence boration and reduce power using the Turbine Digital Control System

**Event Six, and Seven and Eight.**

When power has been reduced enough to meet the requirements of NUREG 1021 and at the lead examiners discretion, a Main Feed System leak will occur outside the Reactor Containment Building. Operator feedback for this event is decreasing steam generator levels and increasing Main Feed Pump Speed. Annunciation will occur at the designed parameters. Concurrent with the Main Feedline Break, bus IEA2, (earlier energized by the EDG) will fault in such a manner that it cannot be re-energized.

**Note:**

- *Noteworthy is that at this point there are NO AFW pumps available, the Main Feed and Condensate systems are unavailable due to the feed break, and that heat removal by the secondary system is not possible.*
- *It is inevitable that the crew will have to initiate feed and bleed of the RCS to remove decay heat. When FRH-0.1A is entered, step 2 asks if BOTH CCP's are available. Due to the loss of 1EA2, the CCP 1-02 is unavailable. The crew should trip the RCP's and immediately go to step 11 and initiate feed and bleed. The crew will note at step 12 of FRH-0.1A that no SIP's are operating and take action to start at least one SIP.*

It is expected that the crew will:

- Recognize the need to trip the Reactor and initiate Safety Injection or respond to the automatic actuations.
- Enter the correct EOP and carry out the Immediate Actions
- Verify automatic actions have occurred, or take actions to compensate for the lack of automatic actions
- Initiate monitoring of the Critical Safety Function Status Trees
- Transition to the correct FRG when conditions are met.
- Initiate Feed and Bleed to remove decay heat from the core.
- Start SIP per step 12 of the FRG.

*Note: In the CPSES Probabilistic Risk Analysis, important operator actions are evaluated in Table 9 of the PRA Summary Document. Operator action to establish feed and bleed is the most important action listed with a normalized value of 100.*

**The scenario may be terminated when safety injection is providing cooling to the core and the Pressurizer PORV's are open to remove decay heat.**

**Recommended Critical Tasks:**

- **Fails to control Pressurizer Pressure resulting in a Reactor Trip or Safety Injection.**
- **Fails to start a Safety Injection Pump prior to the initiation of Feed and Bleed.**
- **Fails to establish core cooling through initiation of Feed and Bleed when plant conditions are met.**

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**Appendix D**

Op-Test No: 1 Scenario No: 1 Event No: 1 Page 5 of 16				
Event Description: SG Pressure channel for ARV #4 fails high. (ARV fails full open)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Recognizes that plant conditions are not normal by observation of <ul style="list-style-type: none"> <li>• Nuclear power increasing</li> <li>• RCS temperature decreasing</li> <li>• ALB-6D, window 1.10 "AVE TAVE-TREF DEV" Lit</li> <li>• Turbine Load is constant.</li> </ul>
				Diagnose plant conditions and determines that SG #4 ARV is open by its RED light, LIT and green light OFF.
				Determine that the ARV should be closed. MSL pressure is normal, and one channel indicates failure HIGH. (1-PI-2328, MSL 4 PRESS)
				Enter ABN-709, section 2. STEAM LINE PRESSURE INSTRUMENT MALFUNCTION
				Step 1. Check ONE Main Steamline Pressure Channel indicating - GREATER THAN 60 psig difference between remaining channels.  NOTE: 1-PI-2328, MSL 4 PRESS is failed high.
				Step 2. Verify Steam Generator Atmospheric Relief Valves - CLOSED:  NO  Step 2, RNO. Perform following:
				a. IF pressure is less than 1125 psig, THEN manually close affected atmospheric relief valve.
				b. Notify Chemistry that a release has occurred and for Chemistry to determine if a release permit is required per STA-603.
				c. GO TO Step 11.
				Step 11. Refer to Technical Specifications per Attachment 6.
				Attachment 6 indicates TS are NA.

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: <u>1</u> Scenario No: <u>1</u> Event No: <u>2</u> Page <u>6</u> of <u>16</u>				
Event Description: PZR Spray valve fails open.				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>3.1 Symptoms</p> <p>a. Annunciator Alarms</p> <ul style="list-style-type: none"> <li>• PRZR 1 OF 4 PRESS LO (5B-3.4)</li> <li>• PRZR 1 OF 4 SI PRESS LO (5B-4.4)</li> <li>• PRZR LO PRESS PORV 456 BLK (5B-1.6)</li> <li>• PRZR LO PRESS PORV 455A BLK (5B-2.6)</li> </ul> <p>b. Plant Indication</p> <ul style="list-style-type: none"> <li>• Spray valve indicated open when not called for by master controller.</li> </ul>
				<p>3.2 Automatic Actions</p> <p>a. Control response for failed open spray valve(s)</p> <p>1) Control and backup heaters come on.</p> <ul style="list-style-type: none"> <li>• 1/u-PCPR, PRZR CTRL HTR GROUP C</li> <li>• 1/u-PCPR1, PRZR BACKUP HTR GROUP A</li> <li>• 1/u-PCPR2, PRZR BACKUP HTR GROUP B</li> <li>• 1/u-PCPR3, PRZR BACKUP HTR GROUP D</li> </ul> <p>2) Reactor trip at 1880 psig.</p> <p>3) Safety Injection at 1820 psig.</p>
				Enter section ABN-705, section 3, Pressurizer Spray Valve Failure
				<p><b>Step 1. CLOSE Pressurizer Spray Valve(s)</b></p> <ul style="list-style-type: none"> <li>• <b>u-PK-455B, RC LOOP 1 PRZR SPR VLV CTRL</b></li> <li>• <b>u-PK-455C, RC LOOP 4 PRZR SPR VLV CTRL</b></li> </ul>
				Step 2. Check RCS pressure stable or increasing.
				Sep 3. Verify RCS pressure returning to 2235 psig.
				<p>Step 4. Refer to the following Technical Specifications:</p> <ul style="list-style-type: none"> <li>• 3.3.1, Reactor Trip System (RTS) Instrumentation</li> <li>• 3.3.2, Engineered Safety Features Actuation System (ESFAS) Instrumentation</li> <li>• 3.3.3, Post Accident Monitoring (PAM) Instrumentation 3.3.4, Remote Shutdown Instrumentation</li> <li>• 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB)</li> <li>• Limits</li> <li>• 3.4.14, RCS Pressure Isolation Valves (PIV) Leakage</li> <li>• 13.4.14, Reactor Coolant System Pressure Isolation Valves</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: <u>1</u> Scenario No: <u>1</u> Event No: <u>3</u> Page <u>7</u> of <u>16</u>				
Event Description: 86-2 LOR on Bus 1EA2 (Bus will be powered by the EDG)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>2.1 Symptoms</p> <p>a. Annunciator Alarms:</p> <ul style="list-style-type: none"> <li>• 6.9 KV BUS uEA1 LOR TRIP (10B-1.5)</li> <li>• 6.9 KV ANY BUS LOR LOSS OF CONTINUITY (10B-1.7)</li> <li>• 6.9 KV ANY 1E XFMR BKR OPEN (10B-1.11)</li> <li>• 6.9 KV BUS uEA2 LOR TRIP (10B-2.5)</li> <li>• 6.9 KV BUS uEA1/uEA2 VOLTLOSS (10B-2.6)</li> <li>• 6.9 KV BUS uEA1/uEA2 NOT PWRD FROM PREF OFFSITE PWR (10B-3.6)</li> <li>• 6.9 KV/480V ANY 1E SECOND LVL UNDRVOLT (10B-4.5)</li> </ul>
				<p>b. Plant Indications</p> <ul style="list-style-type: none"> <li>• 345 KV supply outside of 340-361 KV</li> <li>• 138 KV supply outside of 135-144 KV</li> <li>• 6.9 KV or 480 V buses outside normal voltage limits 6.9 KV Voltage Limits = 6480 V to 7150 V 480 V Voltage Limits = 455 V to 508 V</li> <li>• Slow transfer of a 6.9 KV safeguard bus</li> <li>• Diesel generator supplying power to the bus</li> <li>• Loss of transformer XST1, XST2, or XST1/2</li> <li>• 6.9 KV bus uEA1 or uEA2 de-energized</li> <li>• Lockout relay (LOR) trip of any 6.9 KV safeguard bus</li> <li>• A 6.9 KV bus de-energized with no apparent causes.</li> </ul>
				<p>2.2 Automatic Actions</p> <ul style="list-style-type: none"> <li>• Second level undervoltage at 6192 V (6.9 KV bus) or 442.4 V (480 V bus) will trip 6.9 KV safeguard bus preferred and alternate feeds. Attachment 3 lists specific undervoltage response.</li> <li>• Diesel generators auto-start and energize affected safeguard bus, loading via blackout sequencer. Attachment 2 lists specific sequence.</li> <li>• Transformer XST2 or XST1/2 faults isolate 1EA1 and 1EA2 preferred source, causing slow transfer.</li> <li>• Transformer 1ST fault momentarily de-energizes XST2, causing a slow transfer.</li> <li>• Transformer XST1 fault isolates 2EA1 and 2EA2 preferred source, causing slow transfer.</li> <li>• Both affected 6.9 KV safeguard bus offsite feeder breakers open.</li> <li>• Associated diesel generator starts</li> <li>• Equipment powered from affected bus de-energizes.</li> </ul>

Op-Test No: <u>1</u> Scenario No: <u>1</u> Event No: <u>3</u> Page <u>8</u> of <u>16</u>				
Event Description: LOR on 1EA2 (Bus will be de-energized resulting in loss of all AFW)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>CAUTION:</p> <ul style="list-style-type: none"> <li>• Only ONE attempt to close a tripped breaker should be allowed; provided NO obvious</li> <li>• equipment damage or fault is indicated. Further attempts should NOT be made until checked by Electrical Maintenance.</li> <li>• When a 6.9 KV safeguard bus fault prevents running a SSWP, DG run time should be limited to approximately 15 minutes unloaded, 1 minute loaded to prevent damage due to loss of cooling.</li> <li>• Following overcurrent or instantaneous overcurrent relay operations, the CTs should be checked by Meter &amp; Relay for proper operation. (ONE 97-806)</li> <li>• After approximately 120 seconds BOS Operator Lockout (OL) signal automatically resets, as indicated by associated BOS OL light OFF and RMUW pump restart when BOS has timed out. Should an OL not automatically reset, resetting the sequencer may correct the condition.</li> </ul>
				<p>NOTE: <i>It is probable that the crew will decrease Turbine Load approx. 50 MW in response the AFW pump start.</i></p>
				<p>Step 1 Check Unit MODE - 1, 2, 3 OR 4</p>
				<p>Step 2 Check 6.9 KV safeguard bus - AT LEAST ONE ENERGIZED</p>
				<p>CAUTION:</p> <ul style="list-style-type: none"> <li>• If power is greater than 10%. MDAFW should be allowed to run until the sequencer times out. The pumps will be stopped in Section 8.0, if not required. DO NOT throttle AFW above 10% power.</li> <li>• The AFWP flow control and isolation valves are required to be fully open when above 10% power per TS 3.7.5.</li> </ul>
				<p>NOTE:</p> <ul style="list-style-type: none"> <li>• An emergency start will allow DG breaker to automatically close on a phase to ground bus</li> <li>• DG breaker will not automatically or manually close when a phase to phase bus fault (LOR</li> <li>• An Operator Lockout signal from Blackout Sequencer (BOS) opens TDAFWP steam supply valves. The BOS also starts associated train MDAFWP. It may be necessary to limit AFW flow to prevent excessive RCS cooldown, or other adverse condition. Placing the TDAFW Pump in PULL-OUT with one safeguards bus de-energized will result in two inoperable AFW</li> <li>• Pumps per TS 3.7.5. Throttling any train of AFW above 10% power renders the train</li> <li>• Attachment 4 contains steps to deenergize the sequencer if the bus will not be needed. This would restore common equipment available to the other unit (e.g CRACs, UPS).</li> </ul>

\*BOLD INDICATES CRITICAL STEP



Op-Test No: <u>1</u> Scenario No: <u>1</u> <u>4</u> Page <u>10</u> of <u>16</u>				
Event Description: TDAWP Overspeeds on Auto Start				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				4.1 Symptoms a. Annunciator Alarms  <ul style="list-style-type: none"> <li>TD AFWP OVRSPD TRIP (8B-4.6)</li> </ul>
				b. Plant Indications  <ul style="list-style-type: none"> <li>Rapidly fluctuating AFWPT speed u-SI-2452A, AFWPT SPD</li> </ul>
				4.2 Automatic Action  None
				Enter ABN-305 Aux Feedwater Malfunction
				Step1 Verify Turbine Driven Auxiliary Feedwater Pump malfunctioning by one or more of the following indications:  <ul style="list-style-type: none"> <li>AFWPT TRIP light on u-HS-2452F - LIT</li> </ul>
				Step 2 Verify Turbine Driven Auxiliary Feedwater Pump - NOT TRIPPED
				Step 2 RNO. Perform the following: a. Ensure at least one steam supply valve open: <ul style="list-style-type: none"> <li>u-HS-2452-1, AFWPT STM SPLYVLV-MSL 4</li> <li>u-HS-2452-2, AFWPT STM SPLYVLV-MSL 1</li> </ul> b. Lower u-SK-2452A, AFWPT SPD CTRL to 0% output. c. Direct Plant Equipment Operator to perform the following per Attachment 1 <ol style="list-style-type: none"> <li>Reset overspeed trip linkage.</li> <li>Slowly open u-HV-2452, AFWPT u-01 TRIP AND THROT VLV</li> </ol> d. Verify u-HS-2452 G/H, AFWPT TRIP & THROTTLE VALVE open AND valve red lights are lit. e. Adjust u-SK-2452A, AFWPT SPD CTRL to desired output. f. Return to procedure and step in effect.

\*BOLD INDICATES CRITICAL STEP

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Appendix D

Op-Test No: 1 Scenario No: 1 Event No: 5 Page 11 of 16				
Event Description: Power Reduction (Directed by the Shift Manager)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Review IPO-003A, Power Operations
				Notifies Generation Controller prior to reducing load.
				Notifies Chemistry and Radiation Protection if power will be reduction will be > 15% in one hour
				Notifies Reactor Engineering of power reduction > 25%.
				Calculates the amount of boration required
				Calculates the rate of boration
				Reviews AFD guidance
				Initiates boration
				Sets in the desired unloading rate and amount using the Digital Control System
				Maintains AFD in the target band
				Maintains rods above the Rod Insertion Limit
				Maintains Tave with 1 degree of Tref

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: 1 Scenario No: 1 Event No: 6&7 Page 12 of 16				
Event Description: Feedline Break Outside Containment/LOR on 1EA2				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Annunciators <ul style="list-style-type: none"> <li>ALB-08A, SG3 FW NZL FLO HI</li> <li>ALB-08A, SG3 STM &amp; FW FLO MISMATCH</li> <li>ALB-08A, SG3 LLVL DEV</li> <li>ALB-08A, SG3 LVL LO</li> </ul>
				Plant Indications <ul style="list-style-type: none"> <li>Tave decreasing</li> <li>Bank D rods moving out</li> <li>Nuclear Power increasing</li> <li>MFP speed increasing</li> </ul>
				Diagnose plant conditions and determines that a Feedwater Leak is occurring outside the Reactor Containment Building.
				Orders a reactor trip and enters EOP-0.0A.
				Step 1. Verify Reactor Trip <p>a. Verify the following:</p> <ul style="list-style-type: none"> <li>Reactor Trip and bypass breakers- OPEN, AND</li> <li>Neutron Flux- DECREASING</li> </ul> <p>b. All control position rod bottom lights-ON</p>
				Step 2. Verify Turbine Trip: <p>a. All turbine stop valves - CLOSED</p>
				Step 3. Verify Power to AC Safeguards Busses: <p>a. AC safeguards busses – AT LEAST ONE ENERGIXED</p> <ul style="list-style-type: none"> <li>AC safeguards bus voltage _ 6900 Volts (6500-7100 volts)</li> </ul> <p>b. AC safeguards busses – BOTH ENERGIZED</p> <p>Step b. RNO</p> <p>Restore power to de-energized AC Safeguards bus per ABN-601 or 602, when time permits.</p>
				<i>NOTE: It is probable that the crew will place the B EDG in Pull Out.</i>

**\*BOLD INDICATES CRITICAL STEP**



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**Appendix D**

Op-Test No: 1 Scenario No: 1 Event No: 6&7 Page 14 of 16				
Event Description: Feedline Break Outside Containment/LOR on 1EA2				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Transitions to EOS-0.1A, Reactor Trip Response
				Step 1. Check RcCS Average Temperature – STABLE AT OR TRENDING TO 557° F.
				Step 2. Check FW Status:  a. Verify reactor trip and bypass breaker - OPEN b. Check RCS average temperatures – LESS THAN 564° F. c. Verify Feedwater Isolation – ISOLATION COMPLETE d. Verify total AFW to SGs – GREATER THAN 460 GPM.
				Step 3. Check PRZR Level Control: a. Level – GREATER THAN 17% b. Verify charging – IN SERVICE c. Verify letdown – IN SERVICE  step c RNO. Perform the following to place letdown in service  <i>NOTE: There was previously a leak in the letdown line. The crew should NOT establish letdown flow at this point.</i>  d. Level – TRENDING TO 25%
				Step 4. Check PRZR Pressure Control:  a. Pressure – GREATER THAN 1820 PSIG b. Pressure – STABLE AT OR TRENDING TO 2235
				Step 5. Check SG Levels:  a. Narrow Range Level – GREATER THAN 5% b. Control Feed flow to maintain narrow range level between 5% and 50%.  <i>NOTE: The crew may get to this point or even further before the Heat Sink Red Path come in.</i>
<b>*BOLD INDICATES CRITICAL STEP</b>				

Time	RO	BOP	SRO	Applicant's Actions or Behavior
Op-Test No: 1 Scenario No: 1 Event No: 8 Page 15 of 16				
Event Description: Loss of Heat Sink ( with SI Pump Failure)				
				<p><i>Steam Generator Levels will continue to decrease. There is no AFW flow and the plant condition continues to degrade. As it becomes clear to the crew that the location of the feed break precludes the establishment of normal feed to the Steam Generators the crew will enter FRH-0.1A, Response to a Loss of Secondary Heat Sink.</i></p> <p><i>At approximately 8 minutes after the Feed break, AFW flow to the SG's will still be 0 and the narrow range level will be &lt;5%.</i></p>
				Enter FRH-0.1A Loss of Heat Sink
				<p>Step 1 Check If Secondary Heat Sink is Required:</p> <p>a. RCS pressure – GREATER THAN ANY NON_FAULTED SG PRESSURE</p> <p>b. RCS temperature – GREATER THAN 320°F</p> <p>Yes, continue to step 2.</p>
				<p>Step 2. Check CCP Status – BOTH AVAILABLE</p> <p>Step 2, RNO. Immediately perform the following:</p> <p>a. <u>STOP</u> ALL RCP's</p> <p>b. Got to Step 11. OBSERVE CAUTION PRIOR TO STEP 11.</p>
				CAUTION: Steps 11 through 20 must be performed quickly in order to establish RCS removal by RCS bleed and feed.
				<b>Step 11. Actuate SI.</b>
				<p>Step 12. Verify RCS Feed Path:</p> <p>a. Check Pump Status:</p> <ul style="list-style-type: none"> <li>• CCP's BOTH RUNNING</li> <li>OR</li> <li>• AT LEAST ON CCP AND AT LEAST ONE SI PUMP-RUNNING</li> </ul> <p>B. Check valve alignment for operating pumps – PROPER EMERGENCY ALIGNMENT PER ATTACHMENT 3.</p> <p><b>Step 12, RNO. Manually start pumps and align valves as necessary to establish feed path.</b></p>
				Step 13. IF the Diesels are Running, THEN place Both DG EMERG STOP/START Handswitches in START.

\*BOLD INDICATES CRITICAL STEP

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Appendix D

Operator Actions

Op-Test No: 1 Scenario No: 1 Event No: 8 Page 16 of 16				
Event Description: Loss of Heat Sink ( with SI Pump Failure)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Step 14. Reset SI
				Step 15. Reset SI Sequencers
				Step 16. Reset Containment Isolation Phase A and B.
				Step 17. Reset Containment Spray Signal
				Step 18. Establish Instrument Air And Nitrogen to Containment. a. Establish instrument air: 1) Verify air compressor running and establish instrument air to containment. b. Establish nitrogen 1) Verify ACCUM 1-4 VENT CTRL, 1-HC-943 – CLOSED 2) Open SI/PORV ACCUM N2 ISOL VLV, 1/1-8880.
				<b>Step 19. Establish RCS Bleed Path:</b> a. Verify power to PRZR PORV block valves - AVAILABLE b. Verify PRZR PORV block valves – BOTH OPEN <b>c. Open both - PRZR PORV's.</b>
				Step 20. Verify Adequate RCS Bleed Path: • PRZR PORV's – BOTH OPEN • PRZR PORV block valves – BOTH OPEN
				The Scenario may be terminated at the Lead Examiners discretion.

**\*BOLD INDICATES CRITICAL STEP**

## ***SHIFT TURNOVER INFORMATION***

### **1.0 INITIAL CONDITIONS:**

Time in Core Life: BOL	Tavg: 589°F
Reactor Power: 100%	RCS Pressure: 2235 psig
Turbine Load: 1200 Mwe	Xenon: Equil
Boron Concentration: 1263 ppm	Rod Control: AUTO
Rod Height: CB D @ 215 steps	

### **2.0 LCOAR/TECHNICAL SPECIFICATION ACTIONS IN EFFECT:**

<u>TS#</u>	<u>Description</u>	<u>Reason</u>
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3.7.5	AFW	AFW Pump 1-01 OOS for Oil Sample
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### **3.0 CLEARANCES IN EFFECT:**

AFW Pump 1-01 OOS for Oil Sample

### **4.0 SAFETY SYSTEM SETTING BYPASS/MALFUNCTIONS**

None

### **5.0 DEGRADED EQUIPMENT**

### **6.0 PLANNED EVOLUTIONS:**

Return AFW Pump 1-01 to service when the oil sample is complete.

### **7.0 TURNOVER INFORMATION:**

Unit 1 and Unit 2 are at 100% power. U1 has been at 100% for the last 15 days following refueling. The "A" MDAFWP is OOS due to contamination in the oil. Maintenance is in the process of changing the oil and the pump should be ready for test in the next 6 hours. The Generation Controller has declared an ALERT due to the loss of several peaking plants and all of the Big Brown units due to a common mode failure. There are no surveillances planned for this shift and the orders are to maintain current load and unit availability.

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Appendix D

Scenario Outline

Form ES-D-1

Facility:	<b>CPSES</b>	Scenario No.:	<b>2</b>	Op-Test No.:	<b>1</b>
Examiners:	_____	Operators:	_____	_____	_____
	_____		_____	_____	_____
	_____		_____	_____	_____

Note: (NEW) Do **SRO Admin A.4.2, Emerg. Class. With this Scenario (SAE)**.

Initial Conditions: 40% power, Xenon building in, plant start-up in progress. Unit 2 is at 100%. (IC-13. Preload malfunctions RP07A, and RP07B Train A/B Auto SI failure.)

Turnover: Unit 1 is at 40% power and increasing per IPO-003A, step 5.4.19. Shift orders are to increase reactor power during the shift. The "A" MDAFWP is OOS due to contamination in the oil. Maintenance is in the process of changing the oil and the pump should be ready for test in the next 6 hours. The Generation Controller has declared an ALERT due to the loss of several peaking plants and all of the Big Brown units due to a common mode failure. The expectation is that the ALERT will last until midnight. There are no surveillances planned for this shift.

Event No.	Malf. No.	Event Type*	Event Description
1 T=0		N (SRO) R (RO) N (BOP)	Increase Reactor Power
2 T=13	RX04B @ 100%	I (SRO) I (BOP)	SG level transmitter LT-552 fails high.
3 T=23	CV01B	C (RO) C (SRO)	Trip of Running CCP
4 T=33	CV13A @12gpm	C (SRO) C (RO)	Letdown Leak inside containment
5 T=40	RC15A	C (ALL)	RCP Seized Shaft
6 T=45	RC09A2	M (ALL)	LBLOCA
7 T=45	RH01B	C(ALL)	RHRP1-2 Trip
			NOTE: Make new IC that has second MFP running and equil xenon.

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

Op-Test No:	1	Scenario No:	2	Event No:		Page	2	of	24
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The objective of this scenario is to evaluate the operator's ability to change Reactor power in a controlled manner, respond to various instrument and component failures, and to carry out the requisite emergency procedures to mitigate the consequences of a Loss of Coolant Accident.

**Event One.**

The operators are directed to continue the plant startup. *In order to preclude unnecessary delay, the shift turnover will direct the crew to start the power increase immediately upon taking the watch. The customary reactivity brief will be allowed, but due to the ALERT for grid conditions, an extensive pre job brief will not be held.* Operator feedback for the need to increase power will be the ALERT condition or plant management direction. It is expected that the crew will:

- Refer to the appropriate plant procedure
- Complete a reactivity brief.
- Commence dilution and increase power using the Turbine Digital Control System

**Event Two.**

When power has been increased enough to meet the requirements of NUREG 1021 and at the lead examiners discretion, the controlling level channel on SG 1-02 will fail high. This will cause the feed regulating valve to go closed more than normal due to the high indicated SG level. Operator feedback for this event is SG level alarms, steam flow/feed flow mismatch alarms and increasing Reactor Coolant Average temperature due to lower than normal SG level. It is expected that the crew will:

- Evaluate plant conditions and determine that SG 1-02 level is NOT normal
- Recognize that the feed flow does not match steam flow
- Determine that the level indicator LI-552 is reading higher than the other channels
- Take manual control of the FRV and match steam and feed flow
- Refer to the correct ABN procedure
- Make the necessary notifications and refer to Technical Specifications. It is expected that the SRO will stop the power increase during this event.

**Event Three.**

The running CCP (CCP 1-01) trips. All charging and seal injection flow is lost. Without charging flow to cool the regenerative heat exchanger, letdown will flash and cause the letdown relief to lift. Operator feedback for this event is provided by annunciation for the CCP trip and various annunciators due to loss of letdown. It is expected that the operator will:

- Verify that CCW is at least 35 gpm to the RCP Thermal Barrier Heat Exchangers (Initial Operator Action)
- Isolate letdown (Initial Operator Action)
- Refer to the correct ABN procedure.
- Start the CCP 1-02
- Establish charging flow to support letdown flow
- Establish letdown
- Make the necessary notifications and refer to Technical Specifications

Op-Test No:	1	Scenario No:	2	Event No:		Page	3	of	24
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**Event Four.**

Due to the previous valve, temperature and pressure cycles on the letdown system, a small leak occurs on the Letdown Isolation Valve LCV-460. The leak size is 12 gpm and is evidenced by, increasing charging flow, decreasing VCT level, increased make up to the VCT, and increasing radioactive gas levels inside the Containment. Due to the plant startup in progress, which results in large dilutions and RCS tave leading turbine load, a decrease in PZR level may not be the first indication of the loss of inventory. It is expected that the crew will:

- Respond to alarms and determine that pressurizer level is decreasing.
- Verify that charging flow has increased to maintain pressurizer level
- Refer to the correct ABN procedure
- Increase charging and/or decrease letdown to maintain pressurizer level.
- Evaluate plant conditions and determine that the leak is greater than allowed by Technical Specifications and comply with the Limiting Condition for Operation.

**Event Five**

Failure of the seal package caused by the cycling of seal injection lead to the RCP 1-01 experiencing a seized shaft. If reactor power is <48%, then the operator feedback will be MCB alarms for low flow and RCP trip. The operators should trip the Reactor to meet the requirements of the ABN procedures. If reactor power is > 48%, then a Reactor Trip will occur. Automatic Reactor Trips were blocked in the scenario setup.

*NOTE: The evaluator should also note the crew's response to the SG level in the 1-01 SG. RCS flow will be reversed and SG level will be abnormally high. It is not uncommon for a crew to believe that a SGTR has occurred due to this thermo hydraulic behavior.*

It is expected that the operator will:

- Respond to alarms and determine that the RCP has tripped.
- Trip the reactor (Initial Operator Action)
- Refer to the correct ABN procedure
- Enter the correct EOP and continue with the ABN procedure.
- Perform the Immediate Operator Actions from memory.
- Evaluate plant conditions and determine what Technical Specification Limiting Condition for Operations apply.
- Evaluate the level change in the 1-01 SG and determine that the level increase is due to reverse RCS flow through the SG.

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Op-Test No:	1	Scenario No:	2	Event No:		Page	4	of	24
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**Event Six and Seven.**

On the loop with the tripped RCP, a Large Break LOCA occurs. Safety Injection first out alarms will come in. The pressurizer will rapidly empty and containment pressure will rapidly increase to the HI-3 setpoint and containment spray will actuate. It is expected that the crew will:

- Recognize that a Safety Injection is required and initiate a Manual SI.
- Enter the correct EOP.
- Perform the Immediate Operator Actions from memory.
- Verify automatic actions, and determine that the RHR pump 1-02 has tripped.
- Trip RCP's when plant conditions meet those listed on the Fold Out page.
- Transition to the correct EOP
- Transition to the correct EOS Procedure when conditions are met
- Establishes at least one train of cold leg recirculation

*NOTE: In the CPSES Probabilistic Risk Analysis, important operator actions are evaluated in Table 9 of the PRA Summary Document. For this scenario, it is important that the Operators establish cold leg recirculation when required. Failure to establish long term cooling for the LBLOCA are major contributors to both the CDF and LERF considerations*

**The scenario may be terminated when one train of cold leg recirculation has been established or at the discretion of the Lead Evlauator.**

**Recommended Critical Tasks**

- Fails to manually control SG level, resulting in a Reactor Trip on SG Level.
- Fails to manually initiate Safety Injection when required by plant conditions.
- Fails to trip RCP's when required by plant conditions.

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Appendix D

Operator Actions

Op-Test No: 1      Scenario No: 2      Event No: 1      Page 5 of 24				
Event Description: Increase Reactor Power				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Review IPO-003A, Power Operations
				Notifies Generation Controller prior to increasing load.
				Calculates the amount of dilution required
				Calculates the rate of dilution
				Reviews AFD guidance
				Initiates boration
				Sets in the desired loading rate and amount using the Digital Control System
				Maintains AFD in the target band
				Maintains rods above the Rod Insertion Limit
				Maintains Tave with 1 degree of Tref

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: 1      Scenario No: 2      Event No: 2      Page 6 of 24				
Event Description: SG Level Transmitter LT-552 Fails High				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				2.1 Symptoms a. Annunciator Alarms <ul style="list-style-type: none"> <li>• SG 2 LVL LO (8A-2.6)</li> <li>• SG 2 LVL DEV (8A-2.12)</li> <li>• SG 2 STEM &amp; FW FLO MISMATCH</li> </ul>
				b. Plant Indications 1) One steam generator level instrument indicating higher or lower than the other steamgenerators level instruments. <ul style="list-style-type: none"> <li>• u-LI-552, SG 2 LVL (NR) CHAN II</li> </ul>
				2.2 Automatic Actions NOTE: Control responses will occur only if the failed channel is selected for control. <ul style="list-style-type: none"> <li>• Steam Generator Level Channel failing HIGH will cause the feedwater control valve to CLOSE, thereby decreasing steam generator level.</li> </ul> (Unit 1 LO LEVEL REACTOR TRIP at 25%) (Unit 2 LO LEVEL REACTOR TRIP at 35.4%)
				Diagnose Failed SG Level Controller and Enter ABN-710.
				Step 1 Verify controlling level channel -FAILED.
				<b>Step 2 Manually control the following, as necessary to maintain SG – 2 AT PROGRAMMED LEVEL.</b> <ul style="list-style-type: none"> <li>• u-FK-520, SG 2 FW FLO CTRL</li> <li>• u-SK-509A, FWPT MASTERSPD CTRL</li> </ul>
				Step 3 Verify instruments on common instrument line – NORMAL (See Attachment 1)
				CAUTION: <ul style="list-style-type: none"> <li>• Turbine Trip AND Feedwater Isolation will occur if 2 or more of the 3 HI-HI level bistables for the SAME steam generator are TRIPPED.</li> <li>• IF preferred level control channel has failed (551, 552, 553, or 554) AND automatic steam generator water level control is restored using alternate levelcontrol channel, THEN Step 9 must be completed within SIX hours for requiredchannel protection coincidence.</li> </ul>
				Step 4 Verify ALL other HI-HI level bistable windows on TSLB-3 for affected SG- DARK <ul style="list-style-type: none"> <li>• SG 2(Channels 527, 528, and 529)windows 1.3, 3.3, and 4.3</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

Appendix D

Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>2</u> Page <u>7</u> of <u>24</u>				
Event Description: SG Level Transmitter LT-552 Fails High (cont)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 5 Verify automatic SG level control - DESIRED</p> <p>a. Alternate level control channel responding normally.                      b. Automatic level control desired, as determined by Unit Supervisor.</p>
				<p>Step 6 Select alternate channel:</p> <ul style="list-style-type: none"> <li>u-LS-529C, SG 2 LVL CHAN SELECT</li> </ul>
				<p>Step 7 Verify affected SG conditions for auto level control.</p> <ul style="list-style-type: none"> <li>Feedwater and steam flows matched.</li> <li>SG level stable at program.</li> </ul>
				<p>Step 8 Place Feedwater Flow OR Feedwater Bypass Control Valve in automatic AND ensure proper control.</p>
				<p>Step 9 Within 6 hours, have an I&amp;C Technician place bistable test switches for failed level channel in CLOSE utilizing Attachments 2 and 3.</p>
				<p>Step 10 Verify appropriate Alarms AND Trip Status Lights LIT per Attachment 3 AND note this verification in the Unit Log.</p>
				<p>Step 11 Refer to Technical Specifications, per Attachment 4.</p> <p>RX trip Inst. Table 3.3.1-1                      item #14                      ESF Inst Table 3.3.2-1                      item 6C                      Accidnet Monitoring Table 3.3.3-1                      item # 13</p>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>3</u> Page <u>8</u> of <u>24</u>				
Event Description: Trip of Running CCP				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>3.1 Symptoms</p> <p>a. Annunciator Alarms</p> <ul style="list-style-type: none"> <li>• ANY RCP SEAL WTR INJ FLO LO (5A-1.6)</li> <li>• PRZR LVL DEV LO (5C-1.2)</li> <li>• ANY CHRГ PMP OVRLOAD/TRIP (6A-1.7)</li> <li>• REGEN HX LTДN OUT TEMP HI (6A-1.4)</li> <li>• CHRГ FLO HI/LO (6A-3.4)</li> </ul>
				<p>b. Plant Indications</p> <p>1. Amber MISMATCH or trip light(s) ON at the charging pump control switch.</p> <ul style="list-style-type: none"> <li>• 1/u-APPD, PDP</li> <li>• 1/u-APCH1, CCP 1</li> <li>• 1/u-APCH2, CCP 2</li> <li>•</li> </ul> <p>2. Pressurizer level indicating lower than program level during steady state conditions.</p> <ul style="list-style-type: none"> <li>• u-LR-459, PRZR LVL/PRZR LVL SET PT</li> <li>• u-LI-459A, PRZR LVL CHAN I</li> <li>• u-LI-460A, PRZR LVL CHAN II</li> <li>• u-LI-461, PRZR LVL CHAN III</li> <li>•</li> </ul> <p>3. Charging Flow will indicate 0 gpm</p> <ul style="list-style-type: none"> <li>• u-FI-121A, CHRГ FLO</li> </ul>
				<p>3.2 Automatic Actions</p> <p>a. Letdown line isolation occurs at 17% pressurizer level AND pressurizer heaters will deenergize.</p>
				<p>Diagnose CCP Trip and Enter ABN-105</p> <p><i>NOTE: Step 1 and 2 may be performed concurrently.</i></p>
				<p>Step 1. (Initial Operator Action ) Verify Component Cooling Water flow to RCP Thermal Barrier HX(s)-GREATER THAN 35 GPM:</p> <ul style="list-style-type: none"> <li>• u-FI-4678, RCP 1 THBR CLR CCW RET FLO</li> <li>• u-FI-4682, RCP 2 THBR CLR CCW RET FLO</li> <li>• u-FI-4686, RCP 3 THBR CLR CCW RET FLO</li> <li>• u-FI-4690, RCP 4 THBR CLR CCW RET FLO</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> <u>3</u> Page <u>9</u> of <u>24</u>				
Event Description: Trip of Running CCP				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 2. (Initial Operator Action ) Verify Letdown Flow - ISOLATED</p> <ul style="list-style-type: none"> <li>• 1/u-8149A, LTDN ORIFICE ISOL VLV (45 GPM) - CLOSED</li> <li>• 1/u-8149B, LTDN ORIFICE ISOL VLV (75 GPM) - CLOSED</li> <li>• 1/u-8149C, LTDN ORIFICE ISOLVLV (75 GPM) -CLOSED</li> <li>• 1/u-LCV-459, LTDN ISOL VLV -CLOSED</li> <li>• 1/u-LCV-460, LTDN ISOL VLV -CLOSED</li> </ul>
				<p>Step 3. Verify at least one Charging Pump – RUNNING</p> <p>Step 3. (RNO)</p> <p>Start a Charging Pump.</p>
				<p>Step 4 Verify Seal Injection Flow to each RCP - BETWEEN 6 GPM AND 13 GPM</p>
				<p>Step 5 Verify RCP Parameters in – NORMAL OPERATING RANGE:</p>
				<p>6 Verify PRZR level-GREATER THAN 17% AND INCREASING</p>
				<p>Step 7 Establish normal Letdown:</p> <p>a. OPEN Letdown Isolation Valves:</p> <ul style="list-style-type: none"> <li>• 1/u-LCV-460, LTDN ISOL VLV</li> <li>• 1/u-LCV-459, LTDN ISOL VLV</li> <li>• 1/u-8152, LTDN CNTMT ISOL VLV ORC</li> <li>• 1/u-8160, LTDN CNTMT ISOL VLV IRC</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> <u>3</u> Page <u>10</u> of <u>24</u>				
Event Description: Trip of Running CCP				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				b. Manually OPEN u-PK-131, LTDN HX OUT PRESS CTRL to 30% DEMAND (50% if restoring two orifice valves).  c. Manually OPEN u-TK-130, LTDN HX OUT TEMP CTRL to 50% DEMAND.  d. Adjust charging to desired flow WHILE maintaining seal injection flow between 6 and 13 gpm.  e OPEN selected Letdown Orifice Isolation Valve(s).  f Adjust u-PK-131, LTDN HX OUT PRESS CTRL to maintain approximately 310 psig AND place in AUTO.  g Adjust u-TK-130, LTDN HX OUT TEMP CTRL to maintain approximately 95°F AND place in AUTO.
				Step 8 Verify RCS leakage – NORMAL  a. PRZR level stable at OR trending to program. b. Charging flow less than 15 GPM above letdown flow.
				Step 9 Refer to Technical Specifications listed in Section 9.1, this procedure.
				9.1 Technical Specifications/Requirements <ul style="list-style-type: none"> <li>• 3.4.13, RCS Operational Leakage</li> <li>• 3.4.14, RCS Pressure Isolation Valve (PIV) Leakage</li> <li>• 3.4.15, RCS Leakage Detection Instrumentation</li> <li>• 3.5.2, ECCS - Operating</li> <li>• 3.5.3, ECCS - Shutdown</li> <li>• 13.1.31, Boration Injection System - Operating</li> <li>• 13.1.32, Boration Injection System - Shutdown</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> <u>4</u> Page <u>11</u> of <u>24</u>				
Event Description: <b>Letdown Leak Inside Containment</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				2.1 Symptoms a. Annunciator Alarms <ul style="list-style-type: none"> <li>• CNTMT SMP 1 FILL RATE INCREASE (2A-1.6)</li> <li>• CNTMT SMP 1 LVL HI-HI (2A-1.7)</li> <li>• CNTMT SMP 2 LVL HI-HI (2A-1.8)</li> <li>• CNTMT SMP 2 FILL RATE INCREASE (2A-2.6)</li> <li>• RX CAV SMP LVL HI-HI (2A-2.7)</li> <li>• CNTNT FAN CLR 3 &amp; 4 CNDS FILL RATE HI (2B-3.12)</li> <li>• CNTNT FAN CLR 1 &amp; 2 CNDS FILL RATE HI (2B-4.12)</li> <li>• PRZR LVL DEV LO (5C-1.2)</li> <li>• CHRG FLO HI/LO (6A-3.4)</li> </ul>
				2.1 b. Plant Indications <ul style="list-style-type: none"> <li>• Containment humidity high or increasing</li> <li>• Containment radiation levels high or increasing</li> <li>• Incore instrument leakage alarm</li> <li>• Containment temperature high or increasing</li> <li>• Containment pressure high or increasing</li> <li>• Containment dew point increasing</li> <li>• Increased reactor coolant make-up frequency</li> <li>• VCT level decreasing</li> <li>• Charging flow increasing</li> <li>• Pressurizer relief and safety valve temperature high</li> <li>• Pressurizer level decreasing</li> <li>• Condenser off gas radiation level increasing</li> </ul>
				2.2 Automatic Actions a. IF pressurizer level decreases to the low level alarm (5B-3.6), THEN letdown will isolate and pressurizer heaters will be blocked.  b. IF VCT level decreases to the lo-lo level alarm (6A-4.5), THEN charging pump suction will transfer to the RWST.
				Enters ABN-103 RCS Leak
				Step 1 Verify charging pump - AT LEAST ONE RUNNING <ul style="list-style-type: none"> <li>• 1/u-APPD, PDP</li> <li>• 1/u-APCH1, CCP 1</li> <li>• 1/u-APCH2, CCP 2</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>4</u> Page <u>12</u> of <u>24</u>				
Event Description: <b>Letdown Leak Inside Containment</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 2 Ensure Pressurizer level - AT OR TRENDING TO PROGRAM LEVEL SETPOINT</p> <p>a. Verify running charging pump controller automatically maintaining Pressurizer level at program setpoint</p> <ul style="list-style-type: none"> <li>• u-FK-121, CCP CHRГ FLOCTRL</li> <li>• u-SK-459A, PDP SPD CTRL</li> </ul> <p>Step 2 (RNO). Place the running charging pump controller in MANUAL AND adjust charging flow to maintain pressurizer level at program level setpoint</p>
				<p>Step 3 Check PRZR Status</p> <p>a. PRZR PORVs - CLOSED</p> <ul style="list-style-type: none"> <li>• 1/u-PCV-455A, PRZR PORV</li> <li>• 1/u-PCV-456, PRZR PORV</li> </ul> <p>b. PRZR Safety Valves - CLOSED</p> <ul style="list-style-type: none"> <li>• u-ZL-8010A, PRZR SFTY VLV A</li> <li>• u-ZL-8010B, PRZR SFTY VLV B</li> <li>• u-ZL-8010C, PRZR SFTY VLV C</li> </ul> <p>c. PRZR Spray Valves - RESPONDING NORMALLY TO CONTROL PRESSURE</p> <ul style="list-style-type: none"> <li>• u-ZL-455B, RC LOOP 1 PRZRSPR VLV</li> <li>• u-ZL-455C, RC LOOP 4 PRZR SPR VLV</li> </ul> <p>d. Pressurizer Relief Tank level AND temperature - NO SIGNIFICANT INCREASE</p> <ul style="list-style-type: none"> <li>• u-TI-468, PRT TEMP</li> <li>• u-LI-470, PRT LVL</li> <li>• u-PI-469, PRT PRESS</li> </ul> <p>d. Check PRZR PORV AND Safety Valves for indication of leakage:</p> <ul style="list-style-type: none"> <li>• u-TI-463, PRZR PORV OUT TEMP</li> <li>• u-TI-464, PRZR SFTY VLV C OUT TEMP</li> <li>• u-TI-465, PRZR SFTY VLV B OUT TEMP</li> </ul>
				<p>Step 4 Verify AUTO makeup in service</p> <ul style="list-style-type: none"> <li>• 1/u-MU, RCS MU MAN ACT -START</li> <li>• 43/u-MU, RCS MU MODE SELECT- AUTO</li> </ul>
				<p>Step 5 Verify 1/u-LCV-112A, VCT LVL CTRL VLV - ALIGNED TO VCT.</p>
				<p>Step 6 Check Steam Generator status:</p> <p>a. All Steam Generator levels - NORMAL</p> <p>b. Verify SG feedwater/steam flow - NO SIGNIFICANT MISMATCH</p> <p>c. Monitor PC-11 trends on affected Steam Generators for increased radioactivity.</p>

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>4</u> Page <u>13</u> of <u>24</u>				
Event Description: <u>Letdown Leak Inside Containment</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 7 Verify primary sampling valves closed - u-MLB-1A2- LIGHTS DARK</p> <ul style="list-style-type: none"> <li>• 1.1 u-HV-4165, PRZR STM SMPL ISOL VLV OPEN</li> <li>• 2.1 u-HV-4166, PRZR LIQ SMPL ISOL OPEN</li> <li>• 3.1 u-HV-4168, HL 1 SMPL ISOL OPEN</li> <li>• 4.1 u-HV-4169, HL 4 SMPL ISOL OPEN</li> </ul>
				<p>Step 8 Announce over plant page:</p> <p>"ATTENTION ALL PERSONNEL. WE HAVE INDICATION OF A LEAK FROM THE UNIT RCS. BE AWARE OF POSSIBLE INCREASED RADIATION LEVELS OUTSIDE CONTAINMENT BUILDING. REPORT ANY WATER SPILLAGE, OBSERVED LEAKS, OR UNEXPECTED TANK OR SUMP LEVEL INCREASES TO UNIT <u>u</u> CONTROL ROOM".</p>
				<p>Step 9 Dispatch personnel to search for leak while continuing with this procedure:</p> <p>a. Check the following:</p> <ol style="list-style-type: none"> <li>1) Residual Heat Removal <ul style="list-style-type: none"> <li>• Line pressure – NORMAL FOR CONDITIONS</li> <li>• Piping temperature - AMBIENT</li> <li>• NO piping leaks</li> </ul> </li> <li>2) Safety Injection <ul style="list-style-type: none"> <li>• NO piping leaks</li> <li>• Piping temperature - AMBIENT</li> </ul> </li> <li>3) RCS Letdown and Makeup <ul style="list-style-type: none"> <li>• NO piping leaks</li> <li>• Filter Drains - CLOSED</li> <li>• NO pump leakage</li> <li>• NO BTRS drain valve or diaphragm valve leakage.</li> </ul> </li> <li>4) Auxiliary Building AND SFGD building sump levels – NO UNEXPECTED INCREASE</li> </ol>

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>4</u> Page <u>14</u> of <u>24</u>				
Event Description: <b>Letdown Leak Inside Containment</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 10. Check areas AND systems for signs of leakage:</p> <p>a. Verify PC-11 Trends - NORMAL</p> <ul style="list-style-type: none"> <li>• Main Steam Line Monitors</li> <li>• SFGDs Building ARMs</li> <li>• Auxiliary Building ARMs</li> <li>• Containment Building ARMs AND PIG</li> <li>• Component Cooling Water Process Monitors</li> </ul> <p>b. Verify Accumulator Tank levels – NORMAL</p> <p>c. Verify Containment Building Sumps - NOT INCREASING:</p> <ul style="list-style-type: none"> <li>• u-LI-5160, CNTMT SMP 1 LVL</li> <li>• u-LI-5161, CNTMT SMP 2 LVL</li> <li>• u-LI-5164, RX CAV SMP LVL</li> <li>•</li> </ul> <p>d. Verify Reactor Coolant Drain Tank level AND discharge flow - NORMAL</p>
				<p>Step 11 Check letdown and normal charging for leakage.</p> <p>a. Area Radiation Monitor in vicinity of letdown and charging - NORMAL</p> <ul style="list-style-type: none"> <li>• PPAu21, HRAM PIPE PENET N(S). 810 (u-RE-6259B)</li> </ul> <p>b. Check FFLu60, FAILED FUEL (u-RE-0406) for loss of flow.</p> <p>c. Verify VCT level – NORMAL</p> <p>d. Verify RCS Makeup Flow and makeup intervals – NORMAL</p> <p>e. Verify NO reports of leakage observed.</p> <p>f. Letdown flow - LESS THAN 140 gpm</p>
				<p>2) Isolate Letdown and normal charging as follows:</p> <p>A) Close Orifice Isolation Valves:</p> <ul style="list-style-type: none"> <li>• 1/u-8149A, LTDN ORIFICE ISOL VLV (45 GPM)</li> <li>• 1/u-8149B, LTDN ORIFICE ISOL VLV (75 GPM)</li> <li>• 1/u-8149C, LTDN ORIFICE ISOL VLV (75 GPM)</li> <li>•</li> </ul> <p>B) Close Letdown Isolation Valves:</p> <ul style="list-style-type: none"> <li>• 1/u-LCV-460, LTDN ISOL VLV</li> <li>• 1/u-LCV-459, LTDN ISOL VLV</li> </ul>
				<p><i>Note: The crew may not get to this point. The next event will happen at the discretion of the lead evaluator.</i></p>

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>5</u> Page <u>15</u> of <u>24</u>				
Event Description: <b>RCP Seized Shaft</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>2.1 Symptoms</p> <p>a. Annunciators Alarm</p> <ul style="list-style-type: none"> <li>• ANY RCP TRIP (5B-1.1)</li> <li>• 1 OF 4 RCP UNDRVOLT (5B-1.2)</li> <li>• RC LOOP 1 1 OF 3 FLO LO (5A-1.3)</li> <li>• 1 OF 4 RCP UNDRFREQ (5B-2.2)</li> <li>• RC LOOP 2 1 OF 3 FLO LO (5A-2.3)</li> <li>• RC LOOP 3 1 OF 3 FLO LO (5A-3.3)</li> <li>• RC LOOP 4 1 OF 3 FLO LO (5A-4.3)</li> </ul>
				<p>b. Plant Indications</p> <ul style="list-style-type: none"> <li>• Low flow indication on any reactor coolant loop.</li> <li>• Breaker TRIP or MISMATCH light illuminated on any RCP handswitch.</li> <li>• Motor amps on any RCP motor reading zero.</li> </ul>
				<p>2.2 Automatic Actions</p> <ul style="list-style-type: none"> <li>• Reactor trip occurs in the event of one reactor coolant pump trip with reactor power greater than 48% (P-8 permissive annunciator NOT LIT).</li> <li>• Reactor trip occurs in the event of two reactor coolant pumps trip with reactor power orturbine power greater than 10% (P-7 permissive annunciator NOT LIT).</li> </ul>
				<p>If the crew enters ABN-101 the first step is:</p>
				<p>Step 1. (Initial Operator Action) Check Plant status</p> <p>a. Verify Reactor – Tripped</p> <p>b. GO TO EOP-0.0A/B while other qualified operators continue with this procedure.</p>

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>5</u> Page <u>16</u> of <u>24</u>				
Event Description: <b>RCP Seized Shaft</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				2.1 Symptoms
				a. Annunciators Alarm <ul style="list-style-type: none"> <li>• RX&gt; 48% PWR 1 OF 4 RC LOOP FLO LO (6C-4.2)</li> <li>• RX&gt; 10% PWR PRZR PRSS LO (6C-1.3)</li> <li>• SG2 LVL LO (6C-2.6)</li> </ul>
				Plant Indications
				Various First Out Annunciator alarms and changing plant conditions
				Automatic Actions
				Reactor Trip breakers open and the turbine trips
				Orders a reactor trip and enters EOP-0.0A.
				Step 1. Verify Reactor Trip
				a. Verfiy the following: <ul style="list-style-type: none"> <li>• Reactor Trip and bypass breakers- OPEN, AND</li> <li>• Neutron Flux- DECREASING</li> </ul>
				b. All control position rod bottom lights-ON
				Step 2. Verify Turbine Trip:
				a. All turbine stop valves - CLOSED
				Step 3. Verify Power to AC Safeguards Busses:
				a. AC safeguards busses – AT LEAST ONE ENERGIXED <ul style="list-style-type: none"> <li>• AC safeguards bus voltage _ 6900 Volts (6500-7100 volts)</li> </ul>
				b. AC safeguards busses – BOTH ENERGIZED
				Step 4. Check SI Status:
				a. Check If SI is Actuated: <ul style="list-style-type: none"> <li>• SI actuation as indicated on the First Out Ann 1-ALB-6C</li> <li>• SI Actuated blue status light – ON</li> </ul>
				b. Verify Both Trains DI Actuated: <ul style="list-style-type: none"> <li>• SI Actuated blue status light – ON <b>NOT FLASHING</b></li> </ul>
				Step 4, RNO. IF SI is <b>NOT</b> required, THEN go to EOS-0.1 A, REACTOR TRIP RESPONSE

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>5</u> Page <u>17</u> of <u>24</u>				
Event Description: <b>Reactor Trip Response</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Transitions to EOS-0.1A, Reactor Trip Response
				Step 1. Check RCS Average Temperature – STABLE AT OR TRENDING TO 557° F.
				Step 2. Check FW Status: a. Verify reactor trip and bypass breaker - OPEN b. Check RCS average temperatures – LESS THAN 564° F. c. Verify Feedwater Isolation – ISOLATION COMPLETE d. Verify total AFW to SGs – GREATER THAN 460 GPM.
				Step 3. Check PRZR Level Control: a. Level – GREATER THAN 17% b. Verify charging – IN SERVICE c. Verify letdown – IN SERVICE d. Level – TRENDING TO 25%
				Step 4. Check PRZR Pressure Control: a. Pressure – GREATER THAN 1820 PSIG b. Pressure – STABLE AT OR TRENDING TO 2235
				Step 5. Check SG Levels: a. Narrow Range Level – GREATER THAN 5% b. Control Feed flow to maintain narrow range level between 5% and 50%.  NOTE: Because of the RCP Trip, the level in the #1 SG will be higher than in the other SGs. The crew should NOT believe that this is indication of a SGTR. If they do, however, it will not effect the outcome of the scenario

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>6 &amp; 7</u> Page <u>18</u> of <u>24</u>				
Event Description: <b>LB LOCA (Auto SI Fails)</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				2.1 Symptoms a. Annunciators Alarm <ul style="list-style-type: none"> <li>• PRZR PRESS LO SI ACT (6C-2.7)</li> <li>• CNTMT PRESS HI SI ACT (6C-4.7)</li> </ul>
				Plant Indications  RCS pressure and temperature rapidly dropping, Pressurizer level and pressure dropping and Containment Temperature and Pressure increasing rapidly.
				Automatic Actions  Automatic SI will not function and RHR Pump 1-02 fails to start.
				<i>NOTE: It is expected that the operator will initiate Manual SI prior to procedure entry.</i>
				Transitions to EOP-0.0A.
				Step 1. Verify Reactor Trip  a. Verify the following: <ul style="list-style-type: none"> <li>• Reactor Trip and bypass breakers- OPEN, AND</li> <li>• Neutron Flux- DECREASING</li> </ul> b. All control position rod bottom lights-ON
				Step 2. Verify Turbine Trip:  a. All turbine stop valves - CLOSED
				Step 3. Verify Power to AC Safeguards Busses:  a. AC safeguards busses – AT LEAST ONE ENERGIXED <ul style="list-style-type: none"> <li>• AC safeguards bus voltage _ 6900 Volts (6500-7100 volts)</li> </ul> b. AC safeguards busses – BOTH ENERGIZED
				Step 4. Check SI Status:  a. Check If SI is Actuated: <ul style="list-style-type: none"> <li>• SI actuation as indicated on the First Out Ann 1-ALB-6C</li> <li>• SI Actuated blue status light – ON</li> </ul> b. Verify Both Trains DI Actuated: <ul style="list-style-type: none"> <li>• SI Actuated blue status light – ON <u>NOT</u> FLASHING</li> </ul>
				<b>Step 4 RNO. Check if SI required (YES) Manually Initiate SI.</b>

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Op-Test No: 1      Scenario No: 2      Event No: 6 & 7      Page 19 of 24				
Event Description: LB LOCA (Auto SI Fails)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 5. Ensure Proper Safeguards Equipment Operation Per Attachment 2.</p> <p><i>NOTE: It is expected that the RHR pump trip will be noticed and documented during the performance of Attachment 2.</i></p>
				<p>Step 6. Verify AFW Alignment</p> <p>a. MDAFWP - RUNNING            b. Turbine Driven AFW Pump – RUNNING IF NECESSARY            c. AFW total flow – GREATER THAN 460 GPM            d. AFW Valves alignment – PROPER ALIGNMENT</p>
				<p>Step 7. Verify Containment Spray Not Required :</p> <p>a. Containment Pressure – HAS REMAINED LESS THAN 18 PSIG (NO)</p> <p>Step a RNO. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Verify Containment Spray initiated.</li> <li>2) Verify appropriated MLB indication for CNTMT SPRAY (BLUE WINDOWS) <u>AND</u> PHASE B (ORANGE WINDOWS)</li> <li>3) Verify containment spray flow</li> <li>4) Eensure CHEM ADD TK DISCH VLVs – OPEN</li> <li>5) <b>Stop all RCPs.</b> (NOTE: The crew will stop RCPs at this point instead of waiting until step 11. They may also have stopped the RCPs per the fold out page for this procedure.)</li> <li>6) Go to step 8.</li> </ol>
				<p>Step 8. Check if Main Steamlines should be Isolated:</p> <p>a. Verify the following:</p> <ul style="list-style-type: none"> <li>• Containment Pressure – GREATER THAN 6 PSIG (YES)</li> </ul> <p>b. Verify main steam isolation complete.</p>
				<p>Step 9. Check RCS Average Temperature – STABLE AT OR TRENDING TO 557°F.</p> <p>Step 9 RNO. Throttle AFW and stop dumping steam.</p>
				<p>Step 10. Check PRZR Valve Status:</p> <p>a. PRZR Safeties - CLOSED            b. Normal PRZR Spray valves – CLOSED            c. PORVs – CLOSED            d. Power to at least one block valve – AVAILABLE            e. Block valves – AT LEAST ONE OPEN</p>

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>6 &amp; 7</u> Page <u>20</u> of <u>24</u>				
Event Description: <u>LB LOCA (Auto SI Fails)</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p><b>Step 11. Check if RCPs should be stopped:</b></p> <p>a. ECCS pumps – AT LEAST ONE RUNNING</p> <ul style="list-style-type: none"> <li>• CCP</li> <li style="text-align: center;">-OR-</li> <li>• SI pump</li> </ul> <p>b. RCS subcooling – LESS THAN 25° F (55° F FOR ADVERSE CONTAINMENT)</p> <p><b>c. Stop all RCPs.</b></p>
				<p>Step 12. Check if any SG is Faulted:</p> <p>a. Check pressures in all SGs:</p> <ul style="list-style-type: none"> <li>• ANY SG DECREASING IN AN UNCONTROLLED MANNER</li> <li style="text-align: center;">-OR-</li> <li>• ANY SG COMPLETELY DEPRESSURIZED</li> </ul> <p>Step a RNO, Go to Step 13.</p> <p>b. Go to EOP-2.0A, FAULTED STEAM GENERATOR ISOLATION, Step 1.</p>
				<p>Step 13. Check if SG Tubes Are Not Ruptured:</p> <ul style="list-style-type: none"> <li>• Condenser off gas radiation – NORMAL (COG-182, 1RE-2959)</li> <li>• Main steamline radiation – NORMAL (MSL-178-181, 1RE-2325 – 2328)</li> <li>• SG blowdown and sample radiation monitor – NORMAL (SGS-164, 1RE-4200)</li> <li>• No Steam Generator level increasing in an uncontrolled manner</li> </ul> <p><i>NOTE: See previous note about SG level response to a tripped RCP</i></p>
				<p>Step 14. Check If RCS Is Intact:</p> <ul style="list-style-type: none"> <li>• Containment pressure – LESS THAN 1.3 PSIG</li> <li>• Containment recirculation sump levels – NORMAL</li> <li>• Containment radiation – NORMAL (GRID 4)</li> </ul> <p><i>Step 14 RNO, Got to EOP-1.0A, LOSS OF REACTOR OR SECONDARY COOLANT</i></p>

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>6 &amp; 7</u> Page <u>21</u> of <u>24</u>				
Event Description: <u>LB LOCA (Auto SI Fails) EOP 1.0A Loss of Reactor or Secondary Coolant</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<i>NOTE: It is expected that the RWST level will be at 45% within 17 minutes of the LBLOCA. The progress through EOP-1.0A will vary with each crew dependent upon how fast they proceed. Actual progress is not important, but the transition to EOS-1.3 A, Transfer to Cold Leg Recirculation, when plant conditions require, is.</i>
				Transitions to EOP-1.0A, Loss of Reactor or Secondary Coolant
				Step 1. Check if RCPs should be stopped: a. ECCS pumps – AT LEAST ONE RUNNING <ul style="list-style-type: none"> <li>• CCP</li> <li style="text-align: center;">-OR-</li> <li>• SI pump</li> </ul> b. RCS subcooling – LESS THAN 25° F (55° F FOR ADVERSE CONTAINMENT) c. Stop all RCPs.  <i>NOTE: ALL RCPs SHOULD BE STOPPED AT THIS POINT.</i>
				Step 2. Check if any SG is Faulted: a. Check pressures in all SGs: <ul style="list-style-type: none"> <li>• ANY SG DECREASING IN AN UNCONTROLLED MANNER</li> <li style="text-align: center;">-OR-</li> <li>• ANY SG COMPLETELY DEPRESSURIZED</li> </ul> Step a RNO, Go to Step 3. b. Go to EOP-2.0A, FAULTED STEAM GENERATOR ISOLATION, Step 1.
				Step 3. Check SG Levels: a. Narrow Range Level – GREATER THAN 5% b. Control Feed flow to maintain narrow range level between 5% and 50%.
				Step 4. Check Secondary Radiation - NORMAL <ul style="list-style-type: none"> <li>• Condenser off gas radiation – NORMAL (COG-182, 1RE-2959)</li> <li>• Main steamline radiation – NORMAL (MSL-178-181, 1RE-2325 – 2328)</li> <li>• SG blowdown and sample radiation monitor – NORMAL (SGS-164, 1RE-4200)</li> </ul>
				<i>When RWST LVL LO-LO Alarm comes in, transition to EOS-1.3A, Transfer to Cold Leg Recirculation. (Reference EOP-1.0A fold out page and ALM 1-ALB-4B, 3.7)</i>

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Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>6 &amp; 7</u> Page <u>22</u> of <u>24</u>				
Event Description: <u>LB LOCA (Auto SI Fails) EO2 1.3A Transfer to Cold Leg Recirculation</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Caution: Steps 1 through 3 should be performed without delay. FRGs should not be implemented prior to completion of these steps.
				Step 1. Reset SI
				Step 2. Verify CCW Flow From RHR And Containment Spray Heat Exchangers.
				Caution: Any ECCS pump taking suction from RWST should be stopped upon RWST EMPTY alarm at 12% level. Any Containment Spray pump taking suction from RWST should be stopped when RWST level reaches 6%.
				Caution: Any ECCS or Containment Spray pump that loses suction or shows indication of cavitation should be stopped.
				Caution: SI pumps should be stopped if RCS pressure is greater than their shutoff head pressure.
				<p>Step 3. Align ECCS For Cold Leg Recirculation</p> <p>a. Check open CNTMT SMP TO RHRP 1 AND 2 SUCT ISOL VLVS:</p> <ul style="list-style-type: none"> <li>• 1/1-8811A</li> <li>• 1/1-8811B</li> </ul> <p>b. Close RWST TO RHRP 1 AND RHRP 2 SUCT VLVS</p> <ul style="list-style-type: none"> <li>• 1/1-8812A</li> <li>• 1/1-8812B</li> </ul> <p>c. Close SIP 1 AND SIP 2 MINIFLO VLVS:</p> <ul style="list-style-type: none"> <li>• 1/1-8814A</li> <li>• 1/1-8814B</li> <li>• 1/1-8813</li> </ul> <p>d. Close RHRP 1 AND RHRP 2 XTIE VLVS:</p> <ul style="list-style-type: none"> <li>• 1/1-8716A</li> <li>• 1/1-8716B</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>6 &amp; 7</u> Page <u>23</u> of <u>24</u>				
Event Description: LB LOCA (Auto SI Fails) EO2 1.3A Transfer to Cold Leg Recirculation				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>e. Close the CCP ALT MINIFLO ISOL VLVS:</p> <ul style="list-style-type: none"> <li>• 1/1-8511A</li> <li>• 1/1-8512B</li> <li>• 1/1-8511B</li> <li>• 1/1-8512A</li> </ul> <p>f. Open SI &lt; -- &gt; CHRGR SUCT HDR XTIE VLVS:</p> <ul style="list-style-type: none"> <li>• 1/1-8807A</li> <li>• 1/1-8807B</li> </ul> <p>g. Open RHRPs TO CCP/SIP SUCT VLVS:</p> <ul style="list-style-type: none"> <li>• 1/1-8804A</li> <li>• 1/1-8804B</li> </ul> <p><i>NOTE: Due to the RHR pump trip, only one train will be lined up for Cold Leg Recirculation.</i></p>
				<p>Step 4. Align Containment Spray System for Recirculation:</p> <p>a. Check RWST level – LESS THAN 24%.</p> <p>Step a RNO. If Containment Spray ACTUATED, then continue with step 5.</p> <p>b. Realign Containment Spray System as follows:</p> <p>1) Open CNTMT SMP TO CSP 1 &amp; 3 <u>AND</u> 2 &amp; 4 SUCT ISOL VLVS:</p> <ul style="list-style-type: none"> <li>• 1-HS-4782</li> <li>• 1-HS-4783</li> </ul> <p>2) Close RWST TO CSP 1 &amp; 3 <u>AND</u> 2 &amp; 4 SUCT VLVS</p> <ul style="list-style-type: none"> <li>• 1-HS-4758</li> <li>• 1-HS-4759</li> </ul> <p>3) IF the containment spray pumps have been stopped due to RWST level, THEN perform the following:</p>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>2</u> Event No: <u>6 &amp; 7</u> Page <u>24</u> of <u>24</u>				
Event Description: <u>LB LOCA (Auto SI Fails) EO2 1.3A Transfer to Cold Leg Recirculation</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>A) Ensure CS HX 1 AND 2 OUT VLVs closed, and handswitches in PULL-OUT:</p> <ul style="list-style-type: none"> <li>• 1-HS-4776</li> <li>• 1-HS-4777</li> </ul> <p>B) Perform steps C) and D) simultaneously.</p> <p>C) Open CS HS 1 AND 2 OUT VLVS:</p> <ul style="list-style-type: none"> <li>• 1-HS-4776</li> <li>• 1-HS-4777</li> </ul> <p>D) <u>WHEN</u> CS HX OUT VLVs begin to open, <u>THEN</u> start CS PUMPS:</p> <ul style="list-style-type: none"> <li>• 1-HS-4764 <u>AND</u> 1-HS-4765</li> <li>• 1-HS-4766 <u>AND</u> 1-HS-4767</li> </ul> <p>4) Verify containment spray flow.</p>
				<i>The scenario may be terminated at the discretion of the Lead Examiner.</i>

**\*BOLD INDICATES CRITICAL STEP**

## **SHIFT TURNOVER INFORMATION**

### **1.0 INITIAL CONDITIONS:**

Time in Core Life: BOL	Tavg: 572.6°F		
Reactor Power: 40%	RCS Pressure: 2251 psig		
Turbine Load: 425 Mwe	Xenon: Equil		
Boron Concentration: 2251 ppm		Rod Control:	MAN
Rod Height: CB D @ 189 steps			

### **2.0 LCOAR/TECHNICAL SPECIFICATION ACTIONS IN EFFECT:**

### **3.0 CLEARANCES IN EFFECT:**

<u>TS#</u>	<u>Description</u>	<u>Reason</u>
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3.7.5	AFW	AFW Pump 1-01 OOS for Oil Sample
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### **3.0 CLEARANCES IN EFFECT:**

### **4.0 SAFETY SYSTEM SETTING BYPASS/MALFUNCTIONS**

None

### **5.0 DEGRADED EQUIPMENT**

### **6.0 PLANNED EVOLUTIONS:**

Return AFW Pump 1-01 to service when the oil sample is complete.

### **7.0 TURNOVER INFORMATION:**

Unit 1 is at 40% power and increasing per IPO-003A, step 5.4.19. Shift orders are to increase reactor power during the shift. The "A" MDAFWP is OOS due to contamination in the oil. Maintenance is in the process of changing the oil and the pump should be ready for test in the next 6 hours. The Generation Controller has declared an ALERT due to the loss of several peaking plants and all of the Big Brown units due to a common mode failure. The expectation is that the ALERT will last until midnight. There are no surveillance's planned for this shift.

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Appendix D

Scenario Outline

Form ES-D-1

Facility:	<b>CPSES</b>	Scenario No.:	<b>3</b>	Op-Test No.:	<b>1</b>
Examiners:	_____	Operators:	_____	_____	_____
	_____		_____	_____	_____
	_____		_____	_____	_____

Note: (NEW)

Initial Conditions: BOL, 100% power Eq Xenon. The A MDAFWP is OOS for oil contamination. ( 6 hours into LCO)  
*IC-15, REMF FWR20 in Rackout with H/S in P.O and Red Tagged.*

Turnover: Unit 1 and Unit 2 are at 100% power. U1 has been at 100% for the last 15 days following refueling. The "A" MDAFWP is OOS due to contamination in the oil. Maintenance is in the process of changing the oil and the pump should be ready for test in the next 6 hours. The Generation Controller has declared an ALERT due to the loss of several peaking plants and all of the Big Brown units due to a common mode failure. There are no surveillances planned for this shift and the orders are to maintain current load and unit availability.

Event No.	Malf. No.	Event Type*	Event Description
1 T=0	SG01C @ 8 gpm	C (SRO) C (RO)	SGTL on #3 Steam Generator
2 T= 7	RP06D@ 150%	I (SRO) I (RO)	Loop 4 N-16 Instrument fails high.
3 T=7	RD08	C (SRO) C (RO)	Rods move in the opposite direction (Auto only)
4 T=20		N (SRO) R (RO) N (BOP)	Plant Shutdown Required by Steam Generator Tube Leak > 150 gpd. (May be directed by Duty Manager)
5 T=34	RD13B8 @ 6 RD03F8	C (SRO) C (RO)	Two rods misaligned by more than 12 steps (Manual Rx trip required). CBC Rod B8 slips to 6 steps and CBA rod F-8 drops to the bottom.
6 T=38	SG01C @ 675gpm	M (ALL)	SGTL increases to SGTR at 675 gpm
7 T=38	RP09A & B	C (SRO) C (BOP)	Phase A fails to actuate on SIS
8 T=46*	MS13C @ 100%	I (SRO) I (BOP)	The ARV on the ruptured SG fails open due to Main Steam line pressure xmtr failure. May be manually closed.

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

Op-Test No:	1	Scenario No:	3	Event No:		Page	2	of	19
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The objective of this scenario is to evaluate the operator's ability to change Reactor power in a controlled manner, respond to various instrument and component failures, and to carry out the requisite emergency procedures to mitigate the consequences of a Steam Generator Tube Rupture Accident.

#### Event One.

The 1-03 Steam Generator develops a tube leak at 8 gpm. This small leak will not be able to be diagnosed by comparing steam flow and feed flow for a mismatch. Operator feedback for the SGTL will be the Radiation Monitoring system and further investigation by the crew will reveal a small mismatch between charging flow and letdown flows that is larger than usual. The first indication will be a Radiation Monitor alarm from the Main Steam line N-16 monitors. Subsequent to the N-16 alarms, the Condenser Off Gas monitor will alarm followed by the less sensitive MSL radiation monitors. It is expected that the operators will:

- Respond to the Radiation Monitor alarms
- Determine the SG 1-03 has a tube leak
- Refer to the correct ABN procedure
- Evaluate plant conditions and determine that conditions require a plant shutdown to less than 50% in one hour and Mode 3 in two hours
- Make the necessary notifications and refer to Technical Specifications.

*NOTE: The SRO will find that two ABN procedures apply. ABN-106, "High Secondary Activity" and ABN-103, "Excessive RCS Leakage" are both applicable to this event. ABN-106 is constructed to evaluate SGTL size and then directs the crew to take actions based on leak size. ABN-103 is a diagnostic tool used to locate and isolate the leak. ABN-106 will not DIRECT the operator to ABN-103 because the leak is < 15gpm. It is expected that the crew will recognize the leak is in a steam generator and cannot be isolated, determine the need to shutdown the plant and proceed to IPO-003A for guidance to shutdown the plant.*

#### Event Two and Three.

Prior to the crew commencing a plant shutdown, the Loop 4 N-16 Reactor Protection channel fails high. This failure will cause the Control Banks for the Rod Control System to demand an inward sequence. This failure is further compounded by a problem in the Rod Control system that causes the rods to move out when inward direction is required. Operator feedback for these events will be various alarms generated by the N-16 failure, turbine load and reactor stable, and rods moving in the outward direction with power matched and no significant RCS temperature indication. It is expected that the operators will:

- Evaluate plant conditions and determine that Rod Motion is not warranted.
- Determine that Rod Control has malfunctioned and that rods are moving in the WRONG direction
- Place Rod Control in MANUAL
- Refer to the correct ABN procedure
- Select out the failed channel
- Make the necessary notifications and refer to Technical Specifications.
- Determine that Rod Control should remain in MANUAL.

*NOTE: Rod Control will remain in Manual for the rest of the scenario. It is not expected that the Operators will initiate a Reactor Trip for these events. For the case of an unexpected RX trip, the scenario has been evaluated against the requirement and still exceeds minimum requirements if the next event is NOT completed, (misaligned rods) but may need to be evaluated to ensure Normal and Reactivity requirements for the candidates are met with respect to the plant shutdown.*

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**Revision 0****Appendix D****Narrative Description**

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Op-Test No:	1	Scenario No:	3	Event No:		Page	3	of	19
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**Event Four.**

The SGTL requires a forced down power maneuver to meet management expectations and license requirements. *In order to preclude unnecessary delay while the SRO communicates with plant management about plant conditions and make recommendations, the lead evaluator may direct the staff to act as SM and instruct the SRO to commence an immediate plant shutdown.* Operator feedback for the need to shutdown the plant will be ABN procedure requirements, Technical Specification LCO's, or plant management direction. It is expected that the crew will:

- Refer to the appropriate plant procedure
- Complete a reactivity brief.
- Commence boration and reduce power using the Turbine Digital Control System

**Event Five**

When power has been reduced enough to meet the requirements of NUREG 1021 and at the lead examiners discretion, a continuation of the previous problem with Rod Control will be encountered. One Control Rod, CBA, Rod F-8, drops to the bottom and Control Rod CBC, Rod B8 slips to 6 steps. Feedback to the operators for this event will be alarms that indicate rods are misaligned by more than 12 steps and one control rod is at the bottom of the core. It is expected that the operators will:

- Evaluate plant conditions and determine that more than one control rod is misaligned by more than 12 steps
- Recognize that ABN procedures require a Manual Reactor Trip or enter the correct ABN and comply with direction to trip the reactor.
- Manually trip the reactor
- Enter the appropriate Emergency Procedure
- Complete the required Immediate Actions from memory.
- Determine that Safety Injection is NOT required.
- Transition to the appropriate Optimal Recovery procedure.

**Event Six and Seven.**

Shortly after the reactor trip, due to stresses caused by the trip, the tube that started to leak finally severs completely. The failure results in a Steam Generator Tube Rupture event at 675 gpm. Concurrent with the SGTR, both trains of Containment Isolation Phase A system fail to respond in auto. Manual operation is available and it is expected that the operator manually initiate the Phase A using the manual handswitches. Operator feedback for this event is rapidly decreasing pressurizer pressure and level, and increasing level in SG 1-03. The Phase A failure will be evidenced by numerous components indicated on the Monitor Light Boxes not being in the positions called for in Attachment 2 of EOP-0.0A. It is expected that the operators will:

- Evaluate pressurizer and SG parameters and determine the need for Safety Injection or respond to the automatic SI
- Refer to correct Emergency procedure
- Complete Immediate Operator actions from memory
- Verify automatic actions have occurred.
- Take actions to compensate for lack of automatic actions if required.
- Diagnose Plant conditions and transition to the correct Optimal Recovery Procedure
- Identify the ruptured Steam Generator
- Isolate the ruptured Steam Generator
- Cool down and depressurize the RCS to minimize RCS leakage.

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### Appendix D

### Narrative Description

Op-Test No: 1 Scenario No: 3 Event No: Page 4 of 19

#### Event Eight.

After the SGTR has been diagnosed, and at the Lead Examiners discretion, the Main Steam Line pressure transmitter for the Ruptured Steam Generator fails high. This will cause the ARV to go fully open. The valve will go open regardless of whether or not the operator has adjusted the setpoint to 1160 psig as required by EOP-3.0A. Operator feedback will be decreasing pressure in the ruptured steam generator, valve position indicating lights on the MCB, and RCS temperature decrease. It is expected that the operators will:

- Evaluate plant conditions and determine that an uncontrolled RCS cooldown is in progress.
- Recognize that SG 1-03 pressure is not high enough for the ARV to be fully open.
- Recognize that the ruptured SG is no longer ISOLATED.
- Take manual control of the ARV and close it.
- Make the necessary notifications

*NOTE: The Lead Evaluator should carefully consider when to insert the ARV malfunction. If it is entered after the operator controlled cool down has been started, an important aspect of the feedback consideration will be lost.*

*NOTE: The CPSES PRA Assessment Summary document contains the following paragraph:*

*A SGTR event represents a unique challenge to the RCS safety systems. The SGTR combines a very small LOCA and an interfacing system LOCA. A rupture of the SG tubes results in leakage from the RCS to the secondary-side which allows RCS inventory to bypass the containment. Thus, SGTR are important to both the CDF and LERF considerations. The operator must reduce RCS pressure and isolate the affected steam generator in order to re-establish adequate RCS integrity. One difference between the SGTR and the very small LOCA is that any water lost through the break to the SG will be lost from the containment and will become unavailable for recirculation. Therefore, it is important that the leakage from the RCS be minimized as soon as possible to preclude long term inventory problems. The loss of a steam generator reduces the number of steam generators available for decay heat removal and can lead to a loss of the auxiliary feedwater steam driven pump if the faulted steam generator is not isolated from the steam supply line .*

**The scenario may be terminated when the RCS has been cooled down and depressurized to less than ruptured SG pressure or at the discretion of the Lead Evaluator.**

#### Recommended Critical Tasks

- **Fails to identify and isolate the ruptured Steam Generator when required by plant conditions.**
- **Fails to manually initiate Phase A when required by plant conditions.**
- **Fails to manually close the failed open ARV on the ruptured Steam Generator.**

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**Appendix D**

**Operator Actions**

Op-Test No: 1      Scenario No: 3      Event No: 1      Page 5 of 19				
Event Description: Steam Generator Tube Leak on #3 SG				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>2.1 Symptoms</p> <p>a. Annunciator Alarms None</p>
				<p>b. Plant Indications</p> <ul style="list-style-type: none"> <li>• An abnormal increase in steam generator specific activity as reported by Chemistry.</li> <li>• An abnormal increase in steam generator sampling radiation as indicated by u-RE-4200 (SGS-u64).</li> <li>• An abnormal increase in condenser off-gas radiation as indicated by u-RE-2959(COG-u82).</li> <li>• An abnormal increase in main steamline leak rate as indicated on u-RE-2325A (N16-u74), u-RE-2326A (N16-u75), u-RE-2327A (N16-u76), and u-RE-2328A (N16-u77). Computer points R7749A(R7753A) thru R7752A(R7756A).</li> </ul>
				<p>2.2 Automatic Actions</p> <p>Steam Generator Blowdown will isolate on high radiation as indicated on u-RE-4200 (SGS-u64).</p> <ul style="list-style-type: none"> <li>• u-HS-2397, SG 1 BLDN ISOL VLV</li> <li>• u-HS-2398, SG 2 BLDN ISOL VLV</li> <li>• u-HS-2399, SG 3 BLDN ISOL VLV</li> <li>• u-HS-2400, SG 4 BLDN ISOL VLV</li> </ul>
				<p>2.3 Operator Actions</p> <p>Step 1. Verify main steamline radiation alarms - CLEAR</p> <ul style="list-style-type: none"> <li>• u-RE-2325 (MSL-u78)</li> <li>• u-RE-2326 (MSL-u79)</li> <li>• u-RE-2327 (MSL-u80)</li> <li>• u-RE-2328 (MSL-u81)</li> </ul> <p><i>NOTE: u-RE-2327 (MSL-u80) will be in alarm on the PC-11</i></p> <p>Step 1 RNO. Go to Section 3 of this procedure.</p>
				<p>Section 3 Step 1. Verify main steamline radiation alarms - CLEAR</p> <ul style="list-style-type: none"> <li>• u-RE-2325 (MSL-u78)</li> <li>• u-RE-2326 (MSL-u79)</li> <li>• u-RE-2327 (MSL-u80)</li> <li>• u-RE-2328 (MSL-u81)</li> </ul> <p>Step 1 RNO.</p> <p>a. Reduce power to 50% in 1 hour AND Be in MODE 3 in the next 2 hours.</p> <p>b. GO TO Step 5.</p>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>1</u> Page <u>6</u> of <u>19</u>				
Event Description: <u>Steam Generator Tube Leak on #3 SG</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 5 Check plant conditions:</p> <p>a. Turbine-Generator load – STEADY AT DESIRED POWER</p> <p>b. Verify charging flow within 15 gpm of letdown flow AND both flows STABLE</p> <ul style="list-style-type: none"> <li>• u-FI-121A, CHRGR FLO</li> <li>• u-FI-132, LTDN FLO</li> <li>•</li> </ul> <p>c. Verify PRZR level - STABLE OR TRENDING TO NORMAL LEVEL</p> <ul style="list-style-type: none"> <li>• u-LI-459A, PRZR LVL CHAN I</li> <li>• u-LI-461, PRZR LVL CHAN III</li> <li>• u-LI-460A, PRZR LVL CHAN II</li> </ul>
				Step 6. Adjust affected Steam Generator Atmospheric Relief Controller setpoint to 1160 PSIG per TDM-501A/B.
				Step 7. Verify affected Steam Generator - NOT SG #1 or SG #4
				<p>Step 8. Isolate Auxiliary Steam supplied from the affected unit by closing the applicable valves:</p> <p><i>NOTE: The US will call the PEO to isolate the appropriate valves.</i></p>
				<p>Step 9 Verify NO significant increase exists, as indicated on PC-11, from system(s) drains that discharge to the LVW:</p> <ul style="list-style-type: none"> <li>• u-RE-4200, (SGS-u64) BLOWDOWN SMPL</li> <li>• u-RE-2959, (COG-u82) CONDENSER OFF GAS</li> <li>• u-RE-2325, (MSL-u78) MAIN STEAM LINE #1</li> <li>• u-RE-2326, (MSL-u79) MAIN STEAM LINE #2</li> <li>• u-RE-2327, (MSL-u80) MAIN STEAM LINE #3</li> <li>• u-RE-2328, (MSL-u81) MAIN STEAM LINE #4</li> <li>• u-RE-2325A, (N16-u74) MAIN STEAM LINE #1 LEAK RATE</li> <li>• u-RE-2326A, (N16-u75) MAIN STEAM LINE #2 LEAK RATE</li> <li>• u-RE-2327A, (N16-u76) MAIN STEAM LINE #3 LEAK RATE</li> <li>• u-RE-2328A, (N16-u77) MAIN STEAM LINE #4 LEAK RATE</li> </ul>
				<p>Step 10 Monitor position of Steam Generator Atmospheric Relief AND Safety Valves during performance of this procedure:</p> <p>a. Verify relief AND safety valves remain - CLOSED</p>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>2 &amp; 3</u> Page <u>7</u> of <u>19</u>				
Event Description: <u>Loop 4 N-16 Instrument Fails High and Rods move the wrong way</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>2.1 Symptoms</p> <p>a. Annunciator Alarms</p> <ul style="list-style-type: none"> <li>• ANY N16 DEV HI/LO (5C-1.5)</li> <li>• 1 of 4 OT N16 HI (5C-2.5)</li> <li>• ANY Tave DEV HI/LO (5C-3.5)</li> <li>• 1 of 4 OP N16 HI (5C-2.6)</li> <li>• AVE Tave-Tref DEV (6D-1.10)</li> <li>• AVE Tave HI (6D-2.10)</li> <li>• 1 of 4 Tave LO-LO (6D-3.10)</li> <li>• Tref-AUCT LO TAVE MISMATCH (6D-3.13)</li> <li>• AUCT TAVE LO (6D-4.13)</li> <li>• 1 of 4 OT N16 ROD STOP &amp; TURB RUNBACK (6D-3.14)</li> <li>• 1 of 4 OP N16 ROD STOP &amp; TURB RUNBACK (6D-2.13)</li> </ul>
				<p>b. Plant Indications:</p> <p>3) One N-16 channel <i>higher</i> or lower than the other three.</p> <ul style="list-style-type: none"> <li>• u-JI-411A/B, RC LOOP 1 N16 PWR CHAN I</li> <li>• u-JI-421A/B, RC LOOP 2 N16 PWR CHAN II</li> <li>• u-JI-431A/B, RC LOOP 3 N16 PWR CHAN III</li> <li>• <i>u-JI-441A/B, RC LOOP 4 N16 PWR CHAN IV</i></li> </ul>
				<p>2.2 Automatic Actions</p> <p>a. Any failure that results in an increased Loop Tave will cause Average Tave to be higher with the following actions:</p> <ul style="list-style-type: none"> <li>• <i>Rapid control rod insertion due to Tave-Tref mismatch if in AUTO.</i></li> <li>• Steam dumps will open if armed with a C-7 (loss of load).</li> <li>• Pressurizer reference level increase (to a maximum of 60%) with charging flow increase when in auto.</li> </ul> <p><i>NOTE: This should alert the crew that rods moving OUT is a malfunction and action should be taken.</i></p>
				<p>NOTE:</p> <ul style="list-style-type: none"> <li>• Rod Control should remain in MANUAL until all channels are operable. This does not preclude placing rods in AUTO during rapidly changing transient conditions such as runbacks, etc. as long as rod control is returned to MANUAL when the plant is stabilized.</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>2 &amp; 3</u> Page <u>8</u> of <u>19</u>				
Event Description: <u>Loop 4 N-16 Instrument Fails High and Rods move the wrong way</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 1 Place Control Rods in – MANUAL</p> <p><i>NOTE: The RO should recognize that rods moved the wrong way, report this to the US, and recommend driving rods IN to match Tave to Tref.</i></p>
				<p>Step 2 Select the failed channel on:</p> <p>u-TS-412T, Tave CHAN DEFEAT</p>
				<p>Step 3 Verify Steam Dump System:</p> <ul style="list-style-type: none"> <li>• NOT actuated</li> <li>• NOT armed.</li> </ul>
				<p>Step 4 Restore Tave to within 1°F of Tref.</p>
				<p>Step 5 Select the failed channel on:</p> <p>1/u-JS-411E, N16 PWR CHAN DEFEAT</p>
				<p>Step 6 Ensure a valid N16 channel is supplying the recorder:</p> <p>1/u-TS-411E, u-TR-411 CHAN SELECT</p>
				<p>Step 7 Verify Steam Dumps not armed by observing the following light DARK:</p> <p>TURB LOAD REJ STM DMP ARMED C-7 (PCIP - 3.4)</p>
				<p>Step 8 IF Steam Dumps were blocked in Step 2, THEN restore to service by returning following switches to ON:</p> <ul style="list-style-type: none"> <li>• 43/u-SDA, STM DMP INTLK SELECT</li> <li>• 43/u-SDB, STM DMP INTLK SELECT</li> </ul>
				<p>Step 9 Within 6 hours, have I&amp;C place bistable test switches for failed channel in CLOSED position per Attachments 1 and 2.</p>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>2 &amp; 3</u> Page <u>9</u> of <u>19</u>				
Event Description: Loop 4 N-16 Instrument Fails High and Rods move the wrong way				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Step 10 Verify appropriate alarms and trip status lights ON per Attachment 3 AND note verification in Unit Log.
				Step 11 Refer to Technical Specifications listed in Section 3.1 of this procedure to determine applicable LCOAR conditions.
				3.1 Technical Specifications/Requirements <ul style="list-style-type: none"> <li>• 3.3.1, Reactor Trip System (RTS) Instrumentation</li> <li>• 13.1.38, Control Bank Insertion Limits</li> </ul>

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>4</u> Page <u>10</u> of <u>19</u>				
Event Description: <b>Power Reduction</b>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Review IPO-003A, Power Operations
				Notifies Generation Controller prior to reducing load.
				Notifies Chemistry and Radiation Protection if power reduction will be > 15% in one hour
				Notifies Reactor Engineering of power reduction > 25%.
				Calculates the amount of boration required
				Calculates the rate of boration
				Reviews AFD guidance
				Initiates boration
				Sets in the desired unloading rate and amount using the Digital Control System
				Maintains AFD in the target band
				Maintains rods above the Rod Insertion Limit
				Maintains Tave with 1 degree of Tref

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: 1      Scenario No: 3      Event No: 5      Page 11 of 19				
Event Description: Two dropped rods (Manual Reactor Trip Required)				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				3.1 Symptoms
				a. Annunciator Alarms <ul style="list-style-type: none"> <li>• PR CHAN DEV (6D-3.4)</li> <li>• DRPI ROD DEV (6D-3.5)</li> <li>• ANY ROD AT BOT (6D-3.7)</li> <li>• &gt; 2 ROD AT BOT (6D-4.7)</li> <li>• QUADRANT PWR TILT (6D-4.10)</li> </ul>
				b. Plant Indications <ul style="list-style-type: none"> <li>• Plant parameters changing abnormally during rod position changes</li> <li>• NIS Power Range instruments power or AFD indications disagree</li> <li>• DRPI Rod Bottom Light(s) lit for rods which should be withdrawn</li> <li>• DRPIs in a bank disagree by greater than 12 steps</li> <li>• DRPI disagrees with its group step counter by greater than 12 steps</li> </ul>
				3.2 Automatic Actions <ul style="list-style-type: none"> <li>• Possible Reactor trip</li> <li>• Automatic control rod motion</li> </ul>
				Ensure 1/u-RBSS, CONTROL ROD BANK SELECT - NOT IN AUTO.
				2 Check Reactor - CRITICAL.
				Verify Number of Rods Misaligned from Step Counter by >12 steps - < ONE
				Step 3 RNO: a) IF two or more rods <b>dropped</b> , THEN trip Reactor AND GO TO EOP-0.0A/B.
				b) Within 1 hour verify SDM OR initiate boration to restore SDM.
				c) Within 6 hours place unit in HOT STANDBY per IPO-003A/B (TS 3.1.4).
				NOTE: Crew should trip the Reactor and go to EOP-0.0A

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>5</u> Page <u>12</u> of <u>19</u>				
Event Description: <u>Two dropped rods (Manual Reactor Trip Required) EOP-0.0A</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				2.1 Symptoms a. Annunciators Alarm • MAN RX TRIP (6C-1.1)
				Plant Indications Various First Out Annunciator alarms and changing plant conditions
				Automatic Actions Reactor Trip breakers open and the turbine trips
				Orders a reactor trip and enters EOP-0.0A.
				Step 1. Verify Reactor Trip a. Verify the following: • Reactor Trip and bypass breakers- OPEN, AND • Neutron Flux- DECREASING b. All control position rod bottom lights-ON
				Step 2. Verify Turbine Trip: a. All turbine stop valves - CLOSED
				Step 3. Verify Power to AC Safeguards Busses: a. AC safeguards busses – AT LEAST ONE ENERGIXED • AC safeguards bus voltage _ 6900 Volts (6500-7100 volts) b. AC safeguards busses – BOTH ENERGIZED
				Step 4. Check SI Status: a. Check If SI is Actuated: • SI actuation as indicated on the First Out Ann 1-ALB-6C • SI Actuated blue status light – ON b. Verify Both Trains DI Actuated: • SI Actuated blue status light – ON <u>NOT FLASHING</u>
				Step 4, RNO. <u>IF</u> SI is <u>NOT</u> required, THEN go to EOS-0.1 A, REACTOR TRIP RESPONSE

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>5</u> Page <u>13</u> of <u>19</u>				
Event Description: EOS-0.1 A, REACTOR TRIP RESPONSE				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				Transitions to EOS-0.1A, Reactor Trip Response
				Step 1. Check RCS Average Temperature – STABLE AT OR TRENDING TO 557° F.
				Step 2. Check FW Status: a. Verify reactor trip and bypass breaker - OPEN b. Check RCS average temperatures – LESS THAN 564° F. c. Verify Feedwater Isolation – ISOLATION COMPLETE d. Verify total AFW to SGs – GREATER THAN 460 GPM.
				Step 3. Check PRZR Level Control: a. Level – GREATER THAN 17% b. Verify charging – IN SERVICE c. Verify letdown – IN SERVICE d. Level – TRENDING TO 25%
				Step 4. Check PRZR Pressure Control: a. Pressure – GREATER THAN 1820 PSIG b. Pressure – STABLE AT OR TRENDING TO 2235
				Step 5. Check SG Levels: a. Narrow Range Level – GREATER THAN 5% b. Control Feed flow to maintain narrow range level between 5% and 50%.
				<i>NOTE: 4 minutes after the manual RX Trip, the SGTR becomes active at 675 GPM. If not done automatically, the crew should Initiate a Safety Injection and transition to EOP-0.0A, step 1.</i>

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: 1				Scenario No: 3				Event No: 6 & 7				Page 14 of 19			
Event Description: SGTR with failure of Phase A to auto actuate															
Time	RO	BOP	SRO	Applicant's Actions or Behavior											
				2.1 Symptoms											
				a. Annunciators Alarm											
				<ul style="list-style-type: none"> <li>PRZR PRESS LO SI ACT (6C-2.7)</li> </ul>											
				Plant Indications											
				Various First Out Annunciator alarms and changing plant conditions											
				Automatic Actions											
				Safety Injection and ECCS actuations											
				Step 1. Verify Reactor Trip											
				a. Verify the following:											
				<ul style="list-style-type: none"> <li>Reactor Trip and bypass breakers- OPEN, AND</li> <li>Neutron Flux- DECREASING</li> </ul>											
				b. All control position rod bottom lights-ON											
				Step 2. Verify Turbine Trip:											
				a. All turbine stop valves - CLOSED											
				Step 3. Verify Power to AC Safeguards Busses:											
				a. AC safeguards busses – AT LEAST ONE ENERGIZED											
				<ul style="list-style-type: none"> <li>AC safeguards bus voltage _ 6900 Volts (6500-7100 volts)</li> </ul>											
				b. AC safeguards busses – BOTH ENERGIZED											
				Step 4. Check SI Status:											
				a. Check If SI is Actuated:											
				<ul style="list-style-type: none"> <li>SI actuation as indicated on the First Out Ann 1-ALB-6C</li> <li>SI Actuated blue status light – ON</li> </ul>											
				b. Verify Both Trains SI Actuated:											
				<ul style="list-style-type: none"> <li>SI Actuated blue status light – ON <b>NOT FLASHING</b></li> </ul>											

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

**Operator Actions**

Op-Test No: 1      Scenario No: 3      Event No: 6 & 7      Page 15 of 19				
Event Description: SGTR with failure of Phase A to auto actuate				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<b>Step 5. Ensure Proper Safeguards Equipment Operation Per Attachment 2.</b>
				<b>NOTE: It is expected that the failure of Phase A to actuate will be noted and a manual Phase A initiated while Attachment 2 is being performed.</b>
				Step 6. Verify AFW Alignment
				a. MDAFWP - RUNNING b. Turbine Driven AFW Pump – RUNNING IF NECESSARY c. AFW total flow – GREATER THAN 460 GPM d. AFW Valves alignment – PROPER ALIGNMENT
				Step 7. Verify Containment Spray Not Required :
				1) a. Containment Pressure – HAS REMAINED LESS THAN 18 PSIG
				Step 8. Check if Main Steamlines should be Isolated:
				a. verify the following: • Containment Pressure – GREATER THAN 6 PSIG (YES)
				b. Verify main steam isolation complete.
				Step 9. Check RCS Average Temperatue – STABLE AT OR TRENDING TO 557°F.
				Step 9 RNO. Throttle AFW and stop dumping steam.
				Step 10. Check PRZR Valve Status:
				a. PRZR Safeties - CLOSED b. Normal PRZR Spray valves – CLOSED c. PORVs – CLOSED d. Power to at least one block valve – AVAILABLE e. Block valves – AT LEAST ONE OPEN

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

**Operator Actions**

Op-Test No: <u>1</u> Scenario No: <u>3</u> Event No: <u>6 &amp; 7</u> Page <u>16</u> of <u>19</u>				
Event Description: <u>SGTR with failure of Phase A to auto actuate</u>				
Time	RO	BOP	SRO	Applicant's Actions or Behavior
				<p>Step 11. Check if RCPs should be stopped:</p> <p>a. ECCS pumps – AT LEAST ONE RUNNING</p> <ul style="list-style-type: none"> <li>• CCP</li> <li style="text-align: center;">-OR-</li> <li>• SI pump</li> </ul> <p>b. RCS subcooling – LESS THAN 25° F (55° F FOR ADVERSE CONTAINMENT)</p> <p>c. Stop all RCPs.</p>
				<p>Step 12. Check if any SG is Faulted:</p> <p>a. Check pressures in all SGs:</p> <ul style="list-style-type: none"> <li>• ANY SG DECREASING IN AN UNCONTROLLED MANNER</li> <li style="text-align: center;">-OR-</li> <li>• ANY SG COMPLETELY DEPRESSURIZED</li> </ul> <p>Step a RNO, Go to Step 13.</p> <p>b. Go to EOP-2.0A, FAULTED STEAM GENERATOR ISOLATION, Step 1.</p>
				<p>Step 13. Check if SG Tubes Are Not Ruptured:</p> <ul style="list-style-type: none"> <li>• Condenser off gas radiation – NORMAL (COG-182, 1RE-2959)</li> <li>• Main steamline radiation – NORMAL (MSL-178-181, 1RE-2325 – 2328)</li> <li>• SG blowdown and sample radiation monitor – NORMAL (SGS-164, 1RE-4200)</li> <li>• No Steam Generator level increasing in an uncontrolled manner</li> </ul> <p><i>Note: Steam Generator #3 is ruptured at 675 GPM. The crew should transistion to EOP-3.0A, Steam Generator Tube Rupture</i></p>

**\*BOLD INDICATES CRITICAL STEP**

Op-Test No: 1				Scenario No: 3				Event No: 6 & 7				Page 17 of 19			
Event Description: SGTR EOP-3.0A Steam Generator Tube Rupture															
Time	RO	BOP	SRO	Applicant's Actions or Behavior											
				<p>Step 1. Check if RCPs should be stopped:</p> <p>a. ECCS pumps – AT LEAST ONE RUNNING</p> <ul style="list-style-type: none"> <li>• CCP</li> <li style="text-align: center;">-OR-</li> <li>• SI pump</li> </ul> <p>b. RCS subcooling – LESS THAN 25° F (55° F FOR ADVERSE CONTAINMENT)</p> <p>c. Stop all RCPs.</p>											
				<p>Step 2. Identify Ruptured SG (s):</p> <ul style="list-style-type: none"> <li>• Unexpected increase in any SG narrow range level</li> <li style="text-align: center;">-OR-</li> <li>• High Radiation form any SG blowdown sample line (SGS-164, 1 RE-4200)</li> <li style="text-align: center;">-OR-</li> <li>• High Radiaiton from any Main steamline. (MSL-178-181, 1 RE-2325-2328)</li> </ul>											
				<p>Step 3 Isolate Flow From Ruptured SG(s):</p> <p>a. Adjust ruptured SG(s) atmospheric controller setpoint to 1160 PSIG.</p> <p>b. Check ruptured SG(s) atmospheric – CLOSED</p> <p>c. Close ruptured SG(s) main steamline isolation and ensure bypass valve closed.</p> <p>d. Pull-Out steam supply valve handswitch from ruptured SG(s) to Turbine Driven AFW pump.</p> <p>e. Close ruptured SG drippot isolation valve.</p> <p>f. Verify blowdown isolation valves from ruptured SG(s) - CLOSED</p>											
				<p>Step 4 Check Ruptured SG(s) Level:</p> <p>a. Narrow range level – GREATER THAN 5% (26% FOR ADVERSE CONTAINMENT)</p> <p>b. Stop AFW flow to ruptured SG(s).</p>											
				<p>Notes that the #3 ARV is open. Verify the SG pressure is less than 1160, places the controller in manual, and closes the ARV.</p>											

**\*BOLD INDICATES CRITICAL STEP**

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**Appendix D**

**Operator Actions**

Op-Test No: 1				Scenario No: 3				Event No: 6 & 7				Page 18 of 19			
Event Description:															
Time	RO	BOP	SRO	Applicant's Actions or Behavior											
				Step 5 Check Ruptured SG(s) Pressure – GREATER THAN 420 PSIG.											
				Step 6 Initiate RCS Cooldown: <ul style="list-style-type: none"> <li>a. When PRZR pressure decreases to less than 1960 psig, block the low steamline pressure SI signal.</li> <li>b. Determine required core exit temperature from Table 1.</li> </ul> <p><i>NOTE: It is probable that the temperature selected from the Table will be 485°F.</i></p> <ul style="list-style-type: none"> <li>c. Dump steam to condenser from intact SG(s) at maximum rate and avoid main steam isolation.                             <ul style="list-style-type: none"> <li>1) Transfer Steam Dump to steam pressure mode.</li> <li>2) Place the steam pressure controller in manual increase demand.</li> <li>3) When P-12 (553°F TAVG is reached, select bypass interlock on Steam Dumps and continue cooldown.</li> </ul> </li> <li>d. Core exit TCs – LESS THAN REQUIRED TEMPERATURE</li> </ul> Step 6d RNO Continue with step 7. <u>WHEN</u> core exit TCs less than required temperature, <u>THEN</u> do step 6e and 6f.											
				Step 7. Check Intact SG Levels: <ul style="list-style-type: none"> <li>a. Narrow Range Level – GREATER THAN 5%(26% FOR ADVERSE CONTAINMENT)</li> <li>b. Control Feed flow to maintain narrow range level between 5% and 50%.</li> </ul>											
				Step 8. Check PRZR PORVs and Block Valves: <ul style="list-style-type: none"> <li>a. Power to block valves - AVAILABLE</li> <li>b. PORVs – CLOSED</li> <li>c. Block valves – AT LEAST ONE OPEN</li> </ul>											
				Step 9. IF the Diesels Are Running, THEN Place Bothe DG EMER STOP/START Handswitches in START.											
				Step 10. Reset SI.											
				Step 11. Reset SI sequencers.											
				Step 12. Reset Containment Isolation Phase A and B.											
				Step 13. Reset Containment Spray Signal.											

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**Appendix D**

**Operator Actions**

Op-Test No: <u>1</u>				Scenario No: <u>3</u>		Event No: <u>6 &amp; 7</u>		Page <u>19</u> of <u>19</u>	
Event Description: _____									
Time	RO	BOP	SRO	Applicant's Actions or Behavior					
				<p>Step 14. Establish Instrument Air And Nitrogen to Containment.</p> <p>a. Establish instrument air:</p> <p>    1) Verify air compressor running and establish instrument air to containment.</p> <p>b. Establish nitrogen</p> <p>    1) Verify ACCUM 1-4 VENT CTRL, 1-HC-943 – CLOSED</p> <p>    2) Open SI/PORV ACCUM N2 ISOL VLV, 1/1-8880.</p>					
				<p>Step 15. Check if RHR Pumps Should be Stopped:</p> <p>a. RCS pressure – GREATER THAN 325 PSIG (425 PSIG FOR ADVERSE CONTAINMENT)</p> <p>b. Stop RHR Pumps and place in standby</p> <p>c. Reset RHR auto switchover.</p>					
				<p>Step 16. Check If RCS Cooldown Should Be Stopped:</p> <p>a. Core exit TC's - LESS THAN REQUIRED TEMPERATURE</p> <p>b. Verify Steps 6 e and 6 f are complete.</p>					
				<p>Step 17. Check Ruptured SG(s) Pressure - STABLE OR INCREASING</p>					
				<p>Step 18. Check RCS subcooling – GREATER THAN 45°F (75°F FOR ADVERSE CONTAINMENT)</p>					
				<p>Step 19. Depressurize the RCS to Minimize Break Flow and Refill PRZR:</p> <p>a. Normal Spray – AVAILABLE</p> <p>b. Place all PRZR heater switches in OFF position.</p> <p>c. Spray PRZR with maximum available spray until ANY of the the following conditions satisfied:</p> <p>    1) RCS pressure – LESS THAN RUPTURED SG(s) PRESSURE</p> <p>    2) PRZR level – GREATER THAN 6% (34% FOR ADVERSE CONTAINMENT</p> <p style="text-align: center;">-OR-</p> <p>    PRZR level GREATER THAN 74% (65% FOR ADVERSE CONTAINMENT)</p> <p style="text-align: center;">-OR-</p> <p>    RCS subcooling - At 25°F (55°F FOR ADVERSE CONTAINMENT)</p>					
				<p>The scenario may be terminated at the discretion of the lead examiner.</p>					

**SHIFT TURNOVER INFORMATION**

**1.0 INITIAL CONDTIONS:**

Time in Core Life: BOL	Tavg: 589°F
Reactor Power: 100%	RCS Pressure: 2235 psig
Turbine Load:1200 Mwe	Xenon: Equil
Boron Concentration:1263 ppm	Rod Control: AUTO
Rod Height: CB D @ 215steps	

**2.0 LCOAR/TECHNICAL SPECIFICATION ACTIONS IN EFFECT:**

TS#   Description   Reason

3.7.5   AFW                      AFW Pump 1-01 OOS for Oil Sample

**3.0 CLEARANCES IN EFFECT:**

AFW Pump 1-01 OOS for Oil Sample

**4.0 SAFETY SYSTEM SETTING BYPASS/MALFUNCTIONS**

None

**5.0 DEGRADED EQUIPMENT**

**6.0 PLANNED EVOLUTIONS:**

Return AFW Pump 1-01 to service when the oil sample is complete.

**7.0 TURNOVER INFORMATION:**

Unit 1 and Unit 2 are at 100% power. U1 has been at 100% for the last 15 days following refueling. The "A" MDAFWP is OOS due to contamination in the oil. Maintenance is in the process of changing the oil and the pump should be ready for test in the next 6 hours. The Generation Controller has declared an ALERT due to the loss of several peaking plants and all of the Big Brown units due to a common mode failure. There are no surveillances planned for this shift and the orders are to maintain current load and unit availability.