

ES-301 Control Room and Facility Walk-Through Test Outline Form ES-301-2

Facility: Calvert Cliffs Units 1 and 2 Date of Examination: July 15, 2002

Exam Level: **SRO(U)**

Operating Test No: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. 062 Parallel OC Diesel to 24 4KV Bus	D / S	6 A4.06 // 3.9
b. 071. Waste Gas Discharge RMS checks	S./ N / A	9 A3.03 // 3.8
c. 013 Respond to an inadvertent CIS	D / S	2 A2.06 // 4.0
d.		
e.		
f.		
g.		

B.2 Facility Walk-Through

a. 029 Align system for alternate containment purge per OI-36	N / R / L	8 A2.03 // 3.1
b. 014 Monitor CEA positions per AOP 7H, alternate method.	N / A	1 A2.02 // 3.1
c.		

*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrolroom, (S)imulator, (L)ow-Power, (R)CA

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

TASK: Parallel DG to a 4KV Bus

PURPOSE: Evaluate the Operator's ability to parallel OC DG to 24 4KV,
after an emergency start

JOB PERFORMANCE MEASURE

CALVERT CLIFFS NUCLEAR POWER PLANT

LICENSED OPERATOR

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

ELEMENT	STANDARD
(* = CRITICAL STEP)	

PERFORMER'S NAME: _____

APPLICABILITY:

RO and SRO

PREREQUISITES:

Completion of the knowledge requirement of the Initial License class training program for the Diesel Generator System.

EVALUATION LOCATION:

_____ PLANT _____ SIMULATOR _____ CONTROL ROOM

EVALUATION METHOD:

_____ ACTUAL PERFORMANCE _____ DEMONSTRATE PERFORMANCE

ESTIMATED TIME
TO COMPLETE JPM:

15 MINUTES

ACTUAL TIME
TO COMPLETE JPM:

_____ MINUTES

TIME CRITICAL TASK:

NO

TASK LEVEL:

LEVEL 1

TOOLS AND EQUIPMENT:

None

REFERENCE PROCEDURE(S):

OI-21C

TASK STANDARDS:

This JPM is complete when the 0C DG has been paralleled to 24 4KV bus and loaded to 1.000 MW.

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

ELEMENT	STANDARD
<hr/>	

(* = CRITICAL STEP)

Simulator Setup

1. IC-13 Unit 1 100% power.
2. Emergency start the OC DG.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

ELEMENT

STANDARD

(* = CRITICAL STEP)

TIME START _____

CUE:	Initial Conditions and General Precautions have been met.
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CAUTION: The 0C DG should not be paralleled with a 4KV Bus during periods when power is suspect (for example during a severe storm).

- | | | |
|----------|--|--------------------------------|
| _____ | Locate OI-21C, Step 6.7.B.1. | Same as element. |
| _____ 1. | IF 0C DG was paralleled to the 07 4KV Bus, | Determines step is N/A. |
| _____ 2. | IF 0C DG was <u>emergency started</u> ,
THEN PERFORM the following to select parallel mode: | Determines step is applicable. |

- | | | |
|---------|---|------------------------------|
| * _____ | a. DEPRESS 0C DG SLOW START, 0-HS-0708, pushbutton, to clear the emergency start signal. | Same as element |
| * _____ | b. PLACE 0C DG OUT BKR, 0-CS-152-0703, to TRIP. | |
| * _____ | c. INSERT the Sync Stick for 0C DG OUT BKR, 0-CS-152-0703, to place 0C DG in the parallel mode. | Same as element |
| * _____ | d. MOMENTARILY PLACE 0C DG SPEED CONTR, 0-CS-0705, to RAISE OR LOWER AND ADJUST 0C DG frequency to approximately 60 Hz. | Same as element |
| _____ | e. VERIFY 07 4KV Bus is de-energized by observing zero voltage on 07 4KV BUS VOLTS, 0-EI-0702. | Monitors 07 4KV bus voltage. |
| _____ | f. CHECK the Synchroscope pointer on 1C18B is NOT rotating. | Same as element |

Note to Evaluator: Frequency must be within .1 Hz of 60 to allow breaker to shut.

- | | | |
|---------|---|--|
| * _____ | g. PLACE 0C DG OUT BKR, 0-CS-152-0703, to CLOSE. | |
|---------|---|--|

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

ELEMENT	STANDARD
(* = CRITICAL STEP)	
_____ h. ADJUST 0C DG frequency to approximately 60 Hz using 0C DG SPEED CONTR, 0-CS-0705.	Monitors 0C DG frequency.
_____ i. REMOVE the Sync Stick from 0C DG OUT BKR, 0-CS-152-0703.	Same as element
CUE: After next step, when dispatched, PO reports all equipment running.	
_____ j. VERIFY the following equipment RUNNING by observing the associated red indicating light is illuminated on 0C188: . 0C1 HT RAD FAN SEL SW, 0-HS-10082 . 0C2 HT RAD FAN SEL SW, 0-HS-10102 . 0C1 FO B/U PP SEL SW, 0-HS-10051 . 0C2 FO B/U PP SEL SW, 0-HS-10061	Dispatches PO to check equipment.
_____ k. RESET the following bus U/V flags: . 07 4KV Bus . 07 480V Bus	Dispatches operator to reset flags
_____ l. PLACE the selected 0C DG 4KV Bus feeder breaker handswitch in PULL-TO-LOCK.	
* _____ 3. In the associated Unit SWGR Room, CLOSE the selected 0C DG 4KV Bus disconnect by performing the following:	Dispatches PO to shut Disc 189-2406.
Note to Evaluator: Simulator driver must shut disconnect 189-2406 as the PO.	
* _____ 4. PLACE 07 4KV BUS TIE, 0-CS-152-0701, to CLOSE .	

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

ELEMENT (* = CRITICAL STEP)	STANDARD
5. PLACE the selected 0C DG 4KV Bus feeder breaker handswitch to NORMAL :	
6. INSERT the Sync Stick for the selected 0C DG 4KV Bus feeder breaker.	Inserts into sync jack for 152-2406 0CDG 24 kv Bus fdr
7. ADJUST INCOMING VOLTS equal to RUNNING VOLTS using 0C DG AUTO VOLT CONTR, 0-CS-0704.	Monitors incoming and running volts. Lowers 0C DG Auto Volt Contr as necessary to match incoming and running vlts.
8. ADJUST 0C DG frequency so the Synchroscope pointer is rotating <u>slowly</u> in the FAST direction using 0C DG SPEED CONTR, 0-CS-0705.	Monitors synchroscope.
* 9. WHEN the Synchroscope pointer is approximately 5 degrees prior to the 12 o'clock position, THEN PLACE the selected 0C DG 4KV Bus feeder breaker handswitch to CLOSE .	Shuts 2-CS-152-2406 at approximately 5 degrees prior to the 12 o'clock position.
CUE: When checked, annunciator is in alarm. (Unit 2)	Raises 0C DG Speed Contr and monitors 0C DG MW load.
10. IMMEDIATELY ADJUST 0C DG load using 0C DG SPEED CONTR, 0-CS-0705, to obtain between 0.45 MW AND 1.0 MW load on 0C DG VAR/WATT, 0-JI-0701B.	
11. CHECK annunciator "SEQUENCER INITIATED" alarm is received.	Checks annunciator window in alarm.
4KV BUS : PANEL	
11/14 : 1C08	
21/24 : 2C08	
12. REMOVE the Sync Stick AND RETURN to Home Base.	Same as element

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

ELEMENT (* = CRITICAL STEP)	STANDARD
_____ 13. LOAD 0C DG as follows:	
_____ a. <u>REFER to FIGURE 1, 0C DIESEL GENERATOR ELECTRICAL LIMITS, AND PERFORM</u> the following:	Refers to FIGURE 1, 0C DIESEL GENERATOR ELECTRICAL LIMITS.
_____ (1) RAISE MW load by approximately 1.0 MW, using 0C DG SPEED CONTR, 0-CS-0705.	Raises load with 0C DG SPEED CONTR, 0-CS-0705.
_____ (2) MAINTAIN 0 to 500 KVARs using 0C DG AUTO VOLT CONTR, 0-CS-0704 and <u>FIGURE 1, 0C DIESEL GENERATOR ELECTRICAL LIMITS.</u>	
_____ (3) MONITOR the selected 4KV Bus voltage between 4.1 KV and 4.35 KV.	

TIME STOP _____

TERMINATING CUE:	This JPM is complete when the 0C DG has been paralleled to 24 4KV bus and loaded to 1.000 MW. No further actions are required.
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CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-21C-3 (MODIFIED)

TASK: Parallel DG to a 4KV Bus

Document below any instances of failure to comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE:** Violation of safety procedures will result in failure of the JPM.

NOTES:

DID A NEAR MISS OCCUR DUE TO INAPPROPRIATE PERSONNEL ACTIONS/INACTIONS OR PROCEDURAL QUALITY?
(If yes, provide comments below)

YES

NO

COMMENTS:

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

SATISFACTORY

UNSATISFACTORY

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE

DIRECTIONS TO TRAINEE:

1. To complete the task successfully, you must:
 - perform each critical element correctly. You must inform the evaluator of the indications you are monitoring. Where necessary, consider the evaluator to be the CRS.
 - comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**
2. Initial Conditions:
 - a. The OC DG has been started, from the Control Room, with an Emergency Start signal.
 - b. The OC DG is carrying 07 4KV bus and the FDR BKR (152-0704) is open.
 - c. You are performing the duties of an extra Licensed Operator.
3. Initiating Cue: The CRS directs you to parallel OC DG to 24 4KV bus per the appropriate procedure, and load it to 1.0 MW. Are there any questions? You may begin.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

TASK: Verify RMS Operability for a Waste Gas Release

PURPOSE: Evaluates an Operator's ability to align the Waste Gas System for a release per OI-17B

JOB PERFORMANCE MEASURE

CALVERT CLIFFS NUCLEAR POWER PLANT

LICENSED OPERATOR TRAINING

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

ELEMENT	STANDARD
(* = CRITICAL STEP)	

PERFORMER'S NAME: _____

APPLICABILITY:

RO and SRO

PREREQUISITES:

Completion of the Initial License class classroom and simulator training.

EVALUATION LOCATION:

_____ PLANT _____ SIMULATOR _____ CONTROL ROOM

EVALUATION METHOD:

_____ ACTUAL PERFORMANCE _____ DEMONSTRATE PERFORMANCE

ESTIMATED TIME
TO COMPLETE JPM:

15 MINUTES

ACTUAL TIME
TO COMPLETE JPM:

_____ MINUTES

TIME CRITICAL TASK:

NO

TASK LEVEL:

TRAIN

TOOLS AND EQUIPMENT:

None

REFERENCE PROCEDURE(S):

OI-17B

TASK STANDARDS:

This JPM is complete it has been determined what actions are required to perform a Waste Gas release with O-RI-2191 inoperable.

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

ELEMENT (* = CRITICAL STEP)	STANDARD
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1. **Simulator Setup**
 - a. IC-any
 - b. Enter Overrides
 1. Override 0-RI-2191 indication to 3.99, place arrow on indicator.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

ELEMENT	STANDARD
(* = CRITICAL STEP)	
TIME START _____	
____ Locate OI-17B Section 6.4.B Step 12	Without error
____ 12. OPEN the WF DISCH ISOL valves using 0-HS-2191 AND 0-HS-2192 (1C33): <ul style="list-style-type: none"> • 0-WGS-2191-CV • 0-WGS-2191-CV 	Same as element
____ 13. IF a rise in flow rate is indicated on 0-FI-2192 OR 0-FI-2193 (1C63) <u>THEN...</u>	Directs PO to monitor flow. When report received on zero flow, determines step is N/A
CUE: IF ABO contacted, no flow is indicated on O-FI-2193.	
____ 14. IF the Gaseous Waste Dishcharge Radiation Monitor 0-RI-2191 is out of service, <u>THEN...</u>	Checks 1-RI-2191 in service and determines step is N/A
15. PERFORM an RMS operability check on 0-RI 2191 by performing the following:	
* ____ a. POSITION the Operator Selector Switch to CHECK SOURCE .	Places switch to CHECKSOURCE
b. CHECK channel response as follows:	
* ____ (1) ENSURE a positive meter deflection above background on the radio gas channels. [B0060]	Determines no meter deflection occurred

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

ELEMENT (* = CRITICAL STEP)	STANDARD
<p>* _____ (2) <u>IF</u> a qualitative assessment of channel response can <u>NOT</u> be determined, <u>THEN CONSIDER</u> the monitor out of service.</p>	Considers the monitor out of service
<p><i>Note to Examiner: Steps 15.c,d and e are not required to be performed if the RMS is declared inoperable.</i></p>	
<p>16. <u>IF</u> the Gaseous Waste Discharge Radiation Monitor, 0-RI-2191 fails any part of its operability check in Step 15 <u>OR</u> is declared out of service in Step 14, <u>THEN COMPLETE</u> the following:</p>	
<p>* _____ a. CONSIDER 0-RI-2191 out of service.</p>	Same as element
<p>_____ b. ENSURE the Gaseous Waste Discharge Radiation Instrument Operate Selector Switch, 0-HS-2190 in the LEVEL CAL position.</p>	Places Operate Selector Switch in LEVEL CAL
<p>* _____ c. REFER to OI-35, Section titled <u>RADIATION MONITOR INOPERABILITY</u> for alternate monitoring requirements.</p>	Locates OI-35 Section 6.12
<p>* _____ 1. <u>WHEN</u> radiation monitoring equipment, required to be operable by Technical Specifications, TRM, ODCM or associated with primary to secondary leak detection, is declared out of service <u>OR</u> is to be taken out of service for maintenance or testing, <u>THEN PERFORM</u> the following:</p>	

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

ELEMENT (* = CRITICAL STEP)	STANDARD
* _____ a. CHECK Table (1) for applicability.	Determines ODCM requirement 3.3.3.9 Action 35 is required.
_____ b. CHECK Technical Specifications for applicability.	Determines no Technical Specifications apply
_____ c. CHECK TRM for applicability.	Determines no Technical Requirements apply
* _____ d. CHECK ODCM for applicability.	Checks ODCM Section 3.3.3.9 page 16
<u>ODCM</u>	
* _____ (1) Refers to Table 3.3.12	Locates table and determines Action 35 is applicable
* _____ (2) Locates Action 35	Notifies CRS or Shift Manager that discharge may continue if requirements of Action 35 are met.

TERMINATING CUE:	This JPM is complete when the trainee states that the Waste Gas release can continue as long as Action 35 is completed. No further actions are required.
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TIME STOP _____

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-17B-1 (NEW)

TASK: Verify the operability for a Waste Gas release

Document below any instances of failure to comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE:** Violation of safety procedures will result in failure of the JPM.

NOTES:

DID A NEAR MISS OCCUR DUE TO INAPPROPRIATE PERSONNEL ACTIONS/INACTIONS OR PROCEDURAL QUALITY?
(If yes, provide comments below)

YES

NO

COMMENTS:

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

SATISFACTORY

UNSATISFACTORY

EVALUATOR'S SIGNATURE: _____ DATE: _____

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE

DIRECTIONS TO TRAINEE:

1. To complete the task successfully, you must:
 - perform each critical element correctly. You must inform the evaluator of the indications you are monitoring. Where necessary, consider the evaluator to be the CRS.
 - comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**
2. Initial Conditions:
 - a. A Waste Gas discharge permit has been approved for releasing a WGDT.
 - b. You are performing the duties of a Unit 1 CRO.
3. Initiating Cue: 13 WGDT is being aligned for discharge per OI-17B Section 6.4. Steps 6.4.B, 1 through 11 are complete. Begin on Step 12. Are there any questions? You may begin.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE AM-1C08-3G (UPGRADE)

TASK: Verify Validity of CIS Actuation

PURPOSE: Evaluates an Operator's Ability to Determine the Validity of a CIS Actuation

JOB PERFORMANCE MEASURE

CALVERT CLIFFS NUCLEAR POWER PLANT

LICENSED OPERATOR TRAINING

CCNPP LICENSED OPERATOR**JOB PERFORMANCE MEASURE AM-1C08-3G (UPGRADE)**

TASK: Verify Validity of CIS Actuation

PERFORMER'S NAME: _____

APPLICABILITY:

RO and SRO

PREREQUISITES:

Completion of the knowledge requirement of the Initial License class training program for the Engineered Safety Features Actuation System.

EVALUATION LOCATION:

_____ PLANT _____ SIMULATOR _____ CONTROL ROOM

EVALUATION METHOD:

_____ ACTUAL PERFORMANCE _____ DEMONSTRATE PERFORMANCE

**ESTIMATED TIME
TO COMPLETE JPM:**

10 MINUTES

**ACTUAL TIME
TO COMPLETE JPM:**

_____ MINUTES

TIME CRITICAL TASK:

NO

TASK LEVEL:

TRAIN

TOOLS AND EQUIPMENT:

None

REFERENCE PROCEDURE(S):

Alarm Manual 1C08, G-06

TASK STANDARDS:

This JPM is complete when CIS has been reset, Instrument Air and Component Cooling have been restored to Containment.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE AM-1C08-3G (UPGRADE)

TASK: Verify Validity of CIS Actuation

Simulator Setup

- a. Reset simulator to IC-13, 100% power
- b. Initiate malfunctions ESFA009_01 and then delete the malfunction after components reposition.
- c. Place simulator in "freeze".
- d. **IF** contacted to reset CIS from ESFAS, acknowledge request, but do **NOT** reset CIS.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE AM-1C08-3G (UPGRADE)

ELEMENT

(* = CRITICAL STEP)

STANDARD

TIME START _____

_____ Locate and reference Alarm Manual for 1C08, G-06.

Same as element.

_____ 1. **PERFORM** the following:

* _____ a. **DETERMINE** the validity of the CIS by observing alternate channels of indication for the same parameter.

Checks pressure indications for pressure > 2.8 psig on 1C09.

Determines that CIS actuation is not valid.

_____ b. **IF** the CIS is valid,

No action taken - CIS invalid.

_____ c. **IF** the CIS is invalid **THEN MONITOR** the RCPs Controlled Bleed-off and bearing temperatures while performing the following:

Checks temperatures on 1C06 and the plant computer.

_____ (1) **IF** the RCP Controlled Bleed-off temperature(s) exceed 200°F or bearing temperature(s) exceed 195°F, **THEN**:

Determines that Controlled Bleed Off temperature(s) are **NOT** exceeding 200°F AND bearing temperature(s) are **NOT** exceeding 195°F.

_____ d. Informs CRS that CIS is invalid, requests resetting CIS.

* _____ e. Reset CIS using Attachment for of EOP's as guidance.

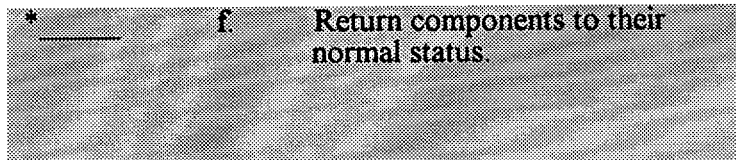
Places 1-HS-3832 & 1-HS-2080 in SHUT per Attachment 4 of EOPs and reports handswitches are matched per the attachment. Depresses Channel A CIS reset pushbutton on 1C10 and verifies ACTUATION SYS CIS TRIP alarm on CO8 clears.

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE AM-1C08-3G (UPGRADE)

ELEMENT

STANDARD

(* = CRITICAL STEP)



* _____ f. Return components to their normal status.

Places 1-HS-2080 and 1-HS 3832 in OPEN and verifies each valve opens. Verifies RCP temperatures are lowering.

TIME STOP _____

TERMINATING CUE:

This JPM is complete when Component Cooling and Instrument Air are restored to Containment. No further actions are required.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE AM-1C08-3G (UPGRADE)

TASK: Verify Validity of CIS Actuation

Document below any instances of failure to comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE:** Violation of safety procedures will result in failure of the JPM.

NOTES:

DID A NEAR MISS OCCUR DUE TO INAPPROPRIATE PERSONNEL ACTIONS/INACTIONS OR PROCEDURAL QUALITY?
(If yes, provide comments below)

YES

NO

COMMENTS:

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

SATISFACTORY

UNSATISFACTORY

EVALUATOR'S SIGNATURE: _____ DATE: _____

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE

DIRECTIONS TO TRAINEE:

1. To complete the task successfully, you must:
 - perform each critical element correctly. You must inform the evaluator of the indications you are monitoring. Where necessary, consider the evaluator to be the CRS.
 - comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**
2. Initial Conditions:
 - a. Unit 1 is in Mode 1 at 100% power.
 - b. Annunciator 1C08 G-06 "Actuation Sys CIS Tripped" in alarm.
 - c. You are performing the duties of the Unit 1 RO and CRO.
3. Initiating Cue: The CRS directs you to respond to the alarm per the Alarm Manual for 1C08. Do you have any questions? You may begin.

CCNPP LICENSED OPERATOR

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JOB PERFORMANCE MEASURE OI-36-1 (NEW)

TASK: Starting an Alternate Purge of Containment

PURPOSE: Evaluates an Operator's ability to operate Containment purge hand switches locally.

**JOB PERFORMANCE MEASURE
CALVERT CLIFFS NUCLEAR POWER PLANT
LICENSED OPERATOR TRAINING**

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE OI-36-1 (NEW)

ELEMENT	STANDARD
(* = CRITICAL STEP)	

PERFORMER'S NAME: _____

APPLICABILITY:

ABO

PREREQUISITES:

Completion of the Initial License classroom and simulator training.

EVALUATION LOCATION:

___x___ PLANT ___ SIMULATOR ___ CONTROL ROOM

EVALUATION METHOD:

___ ACTUAL PERFORMANCE ___x___ DEMONSTRATE PERFORMANCE

ESTIMATED TIME
TO COMPLETE JPM:

15 MINUTES

ACTUAL TIME
TO COMPLETE JPM:

___ MINUTES

TIME CRITICAL TASK:

NO

TASK LEVEL:

TRAIN

TOOLS AND EQUIPMENT:

None

REFERENCE PROCEDURE(S):

OI-36

TASK STANDARDS:

This JPM is complete when key switches on breakers 52-20231 and 52-20311 are in
TEST/ALT PURGE.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-36-1 (NEW)

ELEMENT

STANDARD

(* = CRITICAL STEP)

CUE: Initial conditions are met, begin at Step 6.7.B.1.

____ Locate OI-36 Section 6.7, Step B.1

Without error

NOTE:

- All steps in this subsection apply only to controls and equipment on the unit to be vented.
- The key will be captured in the Test/Alt Purge position.
- The Purge Supp Fan Test/Alt Purge handswitch is located on breaker 52-10231 (52-20231).

* ____ 1. PLACE Purge Supp Fan TEST/ALT PURGE handswitch, 1(2)-HS-5290A, in TEST/ALT PURGE.

Simulates inserting key, places 2-HS-5290A in TEST/ALT PURGE.

NOTE:

- The key will be captured in the Test/Alt Purge position.
- The Purge Exh Fan Test/Alt Purge handswitch is located on breaker 52-10311 (52-20311).

* ____ 2. PLACE Purge Exh Fan TEST/ALT PURGE handswitch, 1(2)-HS-5289A, in TEST/ALT PURGE.
--

Simulates inserting key, places 2-HS-5289A in TEST/ALT PURGE.

TIME STOP ____

TERMINATING CUE:

This JPM is complete when the CRO is informed that HS-5289A and 5290A are in TEST/ALT PURGE. No further actions required.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE OI-36-1 (NEW)

TASK: Starting an Alternate Purge of Containment

Document below any instances of failure to comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**

NOTES:

**DID A NEAR MISS OCCUR DUE TO INAPPROPRIATE PERSONNEL
ACTIONS/INACTIONS OR PROCEDURAL QUALITY?**
(If yes, provide comments below)

YES

NO

COMMENTS:

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

SATISFACTORY

UNSATISFACTORY

EVALUATOR'S SIGNATURE: _____

DATE: _____

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE

DIRECTIONS TO TRAINEE:

1. To complete the task successfully, you must:
 - perform each critical element correctly. You must inform the evaluator of the indications you are monitoring. Where necessary, consider the evaluator to be the CRS.
 - comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**
2. Initial Conditions:
 - a. Unit 2 is in a refueling outage.
 - b. An approved Containment purge permit is held by the CRO.
 - c. You have been given the required keys.
 - d. You are performing the duties of Unit 2 ABO.
3. Initiating Cue: You are directed by the CRO to perform OI-36 Section 6.7, Steps B.1 and B.2. Are there any questions? You may begin.

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE AOP-7H-2 (NEW)

TASK: Monitor CEA Position

PURPOSE: Evaluates an Operator's Ability to Verify CEA Position by Alternate Methods

JOB PERFORMANCE MEASURE
CALVERT CLIFFS NUCLEAR POWER PLANT
LICENSED OPERATOR TRAINING

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE AOP-7H-2 (NEW)

ELEMENT	STANDARD
(* = CRITICAL STEP)	

PERFORMER'S NAME: _____

APPLICABILITY:

RO and SRO

PREREQUISITES:

Completion of the knowledge requirement of the Initial License class training program for Nuclear Engineering Operating Procedures.

EVALUATION LOCATION:

_____ PLANT _____ SIMULATOR _____ CONTROL ROOM

EVALUATION METHOD:

_____ ACTUAL PERFORMANCE _____ DEMONSTRATE PERFORMANCE

ESTIMATED TIME
TO COMPLETE JPM:

ACTUAL TIME
TO COMPLETE JPM:

TIME CRITICAL TASK:

15 MINUTES

_____ MINUTES

NO

TASK LEVEL:

TRAIN

TOOLS AND EQUIPMENT:

AOP-7H Attachment 7

REFERENCE PROCEDURE(S):

AOP-7H

TASK STANDARDS:

This JPM is complete when "full out" position indication is selected as the operable position indication system to replace pulse counting.

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE AOP-7H-2 (NEW)

ELEMENT (* = CRITICAL STEP)	STANDARD
--------------------------------	----------

TIME START _____ _____ Identify and locate AOP-7H Section IV.H.1.b.	Same as element.
---	------------------

CUE: Hand candidate filled out Attachment 7, explain using “part length” pulse counter readings for Group 5 CEAs as indicated. Secondary position indication is 132.5 for each CEA listed.

1.b Perform verification of the two position indications at least once per 4 hours to comply with TRM TVR 15.1.4.1:	Same as element
--	-----------------

ATTACHMENT (7)

1. Record the following...	N/A, data given
---------------------------------	-----------------

CUE: Provide blank copy of Computer Outage Log page for Coil Power Programmer.

* _____ 2. Once every four hours compare the Pulse Counter Readings on this attachment to ensure NO CEAs have moved.	Take Pulse Counter Readings, in CSR, and compares readings to Attachment (7) readings.
* _____ 3. IF any CEAs have moved, THEN discontinue using this method of CEA position monitoring.	Determines CEAs have moved and discontinues method. Refers to AOP-7H Section IV.H.

AOP-7H Alternate Action

* _____ 1.1 IF two means of CEA position indication are NOT established, THEN refer to TRM 15.1.4 for applicable actions.	Refers to TRM 15.1.4.
--	-----------------------

TRM Normal Condition

Reviews TRM and determines a Non-Conformance condition exists

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE AOP-7H-2 (NEW)

ELEMENT

(* = CRITICAL STEP)

STANDARD

Non-Conformance

B. One or more CEA(s) per group having its CEA pulse counting position indicator channel inoperable and either the "Full Out" or "Full In" reed switch position indicator or the voltage divider reed switch position indicator channel inoperable.

N/A

Determines that CEAs shall be fully withdrawn or non-conformance condition B applied.

TIME STOP _____

TERMINATING CUE:

This JPM is complete when it is determined that the CEAs should be fully withdrawn to comply with the TRM. No further actions are required.

CCNPP LICENSED OPERATOR

JOB PERFORMANCE MEASURE AOP-7H-2 (NEW)

TASK: Monitor CEA Position

Document below any instances of failure to comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**

NOTES:

DID A NEAR MISS OCCUR DUE TO INAPPROPRIATE PERSONNEL ACTIONS/INACTIONS OR PROCEDURAL QUALITY? YES NO
(If yes, provide comments below)

COMMENTS:

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

SATISFACTORY

UNSATISFACTORY

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

CCNPP LICENSED OPERATOR
JOB PERFORMANCE MEASURE

DIRECTIONS TO TRAINEE:

1. To complete the task successfully, you must:
 - perform each critical element correctly. You must inform the evaluator of the indications you are monitoring. Where necessary, consider the evaluator to be the CRS.
 - comply with industrial safety practices, radiation safety practices and use of event free tools. **NOTE: Violation of safety procedures will result in failure of the JPM.**
2. Initial Conditions:
 - a. Unit 1 is at 100% power and has been operating at full power for seven weeks.
 - b. The plant computer has "crashed" and is inoperable.
 - c. You are performing the duties of the Unit-1 RO.
3. Initiating Cue: AOP-7H was implemented 4 hours ago. The CRS directs you to verify CEA position per Section IV.H.1.b, Attachment 7, Step 2, using CEA pulse counter readings. For the purpose of this JPM, use the part length (retired in place) pulse counters instead of the actual Group 5 pulse counters. Are there any questions? You may begin.

Simulation Facility	<u>Calvert Cliffs</u>	Scenario No.: 2	Op Test No.: 1
Examiners:	_____	Operators:	<u>SRO</u>
	_____		<u>RO</u>
	_____		<u>CRO</u>
Objectives:	<p>To evaluate the applicant's ability to conduct a unit power reduction and to implement the ARMs, OIs, AOPs, as appropriate, for malfunctioning systems and/or controls including a failure of the Hotwell Level Controller, 11 Circulating Water Pp, and a VCT Level Transmitter with a failure of CVC-501-MOV to reopen, preventing realignment to the VCT. This scenario also evaluates the applicant's ability to respond to a leaking PORV and a condenser waterbox tube rupture requiring a rapid downpower to a target value of 300 MWe. Multiple CEA drops will require a reactor trip but an ATWS condition exists. In EOP-0, a SGTR begins in 12 SG. The crew will cooldown and isolate 12 SG.</p>		
Initial Conditions:	<p>The plant is at 100% Power, MOC</p> <p>13 HPSI Pp is OOS.</p> <p>13 CCW Pp is OOS</p> <p>11 CCW Head Tank Makeup CV is isolated due to leakby.</p> <p>INSTR AIR COMPR(S) alarm (K-25) hanging.</p>		
Turnover:	<p>Present plant conditions: 100% power, MOC; Unit 2 is in MODE 5 – no CW Pps and 23 AFW Pp unavailable.</p> <p>Power history: 100% power for previous 68 days.</p> <p>Equipment out of service:</p> <ol style="list-style-type: none"> 1) 13 HPSI Pp motor bearing failure during STP. It is disassembled, expected to be returned to service in 2 days. T.S. 3.5.2 Action Statement entered 6 hours ago. 2) 13 CCW Pp has a broken shaft, expected repair tomorrow-noon. 3) 11 CCW Head Tank Makeup CV is isolated due to leakby. 4) Alarm K-25 INSTR AIR COMPR(S) is hanging. No problems with the compressors, I & C is investigating, alarm card has been swapped out. 		
Surveillances due:	<p>None</p>		
Instructions for shift:	<p>Maintain 100% Power.</p>		

Event No.	Malf. No.	Event Type*	Event Description
Preload	SI002_03 CCW002_03 PNL OVR RPS005 RPS006 PNL OVR (K-25)		13 HPSI OOS. 13 CCW Pump OOS. HS for VCT remains in SHUT. ATWS. INSTR AIR COMPR(S) alarm hanging.
1	CD002 (high)	I CRO	Several minutes after the crew takes the watch, the Hotwell Level Cont. (4405) fails high, dumping fully to the CST. The CRO will receive the Hotwell Level Low alarm, will inform the CRS and refer to the ARM. The CRO should determine 4405 has failed high, take manual control and restore hotwell level. The OWC should be contacted for assistance.
2	CW001_01	C CRO	After hotwell level control has been reestablished, 11 CW Pp trips. The crew will notice this via computer alarm. The CRS should direct the CRO to investigate. They will implement AOP-7L. The crew should monitor condenser delta T. The OWC should be contacted for assistance.
3	CVCS009 (LO)	I RO	Next, VCT Level transmitter LT-227 fails low. This causes Chg. Pp suction to shift to the RWT. The RO should inform the CRS. The CRS should direct the RO to shift Chg. Pp suction back to the VCT. RO should note the failure of VCT outlet (501-MOV) to reopen. The CRS should direct the plant boration be stopped by placing all Charging Pumps in PTL. The ABO may be dispatched to open CVC-501 locally. The crew should isolate letdown and set up charging to cycle on the backup pump. The OWC should be contacted for assistance.
4	RCS021 (5% over 2 min)	C RO	Next, PORV-402 starts to leak. The RO should acknowledge the Quench Tank alarm and note on the acoustic monitor the indicated leakage. The ARM will be referenced and the CRS will direct the PORV Block Valve, RC-403-MOV be closed. The CRS will refer to T. S. 3.4.11. The OWC will be contacted for assistance.
5	CD009_04	R RO N CRO	After T.S. have been addressed, a condenser tube ruptures in 12B waterbox. This will first be noticed with a Turbine Plant Sample Alarm. Chemistry and the TBO should be dispatched. AOP-10 will be implemented. Once a tube rupture has been determined in 12B waterbox a rapid power reduction to 300MW should be started and water dropped in the box. Chemistry and other appropriate plant management notifications should be made.
6	CEDS012_35 CEDS012_37	M ALL	After power has been reduced at least 5%, CEA 35 drops into the core. The crew should reduce turbine load to maintain Tc on program then about a minute later a 2 nd CEA drops. The CRS should direct the unit be tripped and EOP-0 implemented. When the RO attempts to trip the reactor an ATWS condition exists and the RO must take ATWS actions.
7	MS002_02 (1 tube)	M ALL	During the performance of EOP-0 (after VA is Complete) a SGTR begins in 12 SG. The crew is expected to diagnose the SGTR and implement EOP-6. While in EOP-6 the crew will cooldown to less than 515°F Th and isolate 12 SG. The scenario can be terminated after 12 SG is isolated.

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

SCENARIO 2 OVERVIEW

The candidates will take the shift at 100% power, MOL.

After the crew takes the watch, the Hotwell Level Controller (4405) fails high, dumping fully to the CST. The CRO will receive the Hotwell Level Low alarm, will inform the CRS and refer to the ARM. The CRO should determine 4405 has failed high, take manual control and restore hotwell level. The OWC should be contacted for assistance.

After hotwell level control has been reestablished, 11 CW Pp trips. The crew will notice this via computer alarm. The CRS should direct the CRO to investigate. They will implement AOP-7L. The crew should monitor condenser delta T. The CRO will isolate the waterbox using guidance from OI-14. The OWC should be contacted for assistance.

Next, VCT Level transmitter LT-227 fails low. This causes Chg. Pp suction to shift to the RWT. The RO informs the CRS. The CRS directs the RO to shift Chg. Pp suction back to the VCT. RO should note the failure of VCT outlet (501-MOV) to reopen. The CRS should direct the plant boration be stopped by placing all Charging Pumps in PTL. The ABO may be dispatched to open CVC-501-MOV locally. The crew should isolate letdown and set up charging to cycle on the backup pump. The OWC should be contacted for assistance.

Next, PORV-402 starts to leak. The RO should acknowledge the Quench Tank alarm and note on the acoustic monitor the indicated leakage. The ARM will be referenced and the CRS will direct the PORV Block Valve, RC-403-MOV be closed. The CRS will refer to T. S. 3.4.11. The RO should monitor RCS pressure and Quench tank parameters to be returning to normal values. The OWC will be contacted for assistance.

After T.S. have been addressed, a condenser tube ruptures in 12B waterbox. This will first be noticed with a Turbine Plant Sample Alarm. Chemistry and the TBO should be dispatched. AOP-10 will be implemented. Once a tube rupture has been determined in 12B waterbox a rapid power reduction to a target value of 300MW should be started and water dropped in the box. Additionally the waterbox should be isolated using OI-14. Chemistry and other appropriate plant management notifications should be made.

After power has been reduced at least 5%, CEA 35 drops into the core. The crew should reduce turbine load to maintain Tc on program then about a minute later a 2nd CEA drops. The CRS should direct the unit be tripped and EOP-0 implemented. When the RO attempts to trip the reactor an ATWS condition exists and the RO must take ATWS actions to trip the reactor and meet the reactivity control safety function.

During the performance of EOP-0 (after VA is complete) a SGTR (1 tube) begins in 12 SG. The crew is expected to diagnose the SGTR and implement EOP-6. While in EOP-6 the crew will cooldown to less than 515°F Th and attempt to isolate 12 SG. The scenario can be terminated after 12 SG is isolated.

Scenario No:	2	Event No.	1	Page 4 of 13
Event Description:	Failure of Condenser Hotwell level controller (4405) high			
Time	Position	Applicant's Actions or Behavior		
	CUE:	Annunciator alarms 1C03 - C-16 CNDSR HOTWELL LEVEL		
	CRO	<ul style="list-style-type: none"> • Acknowledges alarm, identifies and reports 1-CD-4405-CV has failed high • Refers to the ARM 		
	SRO	<ul style="list-style-type: none"> • Acknowledges report and: <ul style="list-style-type: none"> • Directs CRO to take 4405-CV to manual and shut the dump CV • Implements AOP-3G • Verifies 11 CST level • Restores and Monitors hotwell level 		
	CRO	<ul style="list-style-type: none"> • Perform actions as directed by SRO 		
	SRO	<ul style="list-style-type: none"> • Contacts OWC/I&C to investigate failure of 1-LIC-4405. 		

Scenario No:	2	Event No.	2	Page <u>5</u> of <u>13</u>
Event Description:	Trip of 11 Circ. Water Pump			
Time	Position	Applicant's Actions or Behavior		
	CUE:	Plant computer alarm for trip of 11 CW Pp Annunciator C-16 – CNDSR HOTWELL LVL		
	CRO	<ul style="list-style-type: none"> Notes trip of 11 CW Pump and informs the SRO 		
	SRO	<ul style="list-style-type: none"> Acknowledges report and directs: <ul style="list-style-type: none"> CRO to monitor Main Condenser delta T, vacuum, screen D/P, etc. Dispatching the TBO and OSO to investigate pump, bkr. Implementation of AOP-7L Reduces power if necessary to maintain vacuum 		
	CRO	<ul style="list-style-type: none"> Perform actions as directed by SRO Secures 11A waterbox per OI-14A <ul style="list-style-type: none"> Closes CAR stop (1-CAR-101) 11A waterbox inlet MOV (5225) Secures amertaps May decide to drop water in the waterbox 		
	SRO	<ul style="list-style-type: none"> Contacts OWC to investigate trip of 11 Circ. Water Pp 		

Scenario No:	2	Event No.	3	Page 6 of 13
Event Description:	VCT Level Transmitter, 1-LT-227 fails low			
Time	Position	Applicant's Actions or Behavior		
	CUE:	Annunciator – F-46 CHG PP SUCT FROM RWT Charging Pump suction swaps to the RWT		
	RO	<ul style="list-style-type: none"> Acknowledges alarm, notes Charging Pump suction shifted to the RWT, and informs the SRO Checks VCT level (LT-226) and other parameters/lineup and determines suction shift is invalid 		
	SRO	<ul style="list-style-type: none"> Acknowledges report: Directs RO to shift Charging suction back to the VCT Directs RO to monitor primary parameters Directs CRO to reduce turbine load as necessary to maintain Tc on program 		
	RO	<ul style="list-style-type: none"> Shifts Charging suction back to the VCT <ul style="list-style-type: none"> Notes VCT suction valve (501) did not open, informs SRO Monitors primary parameters 		
	SRO	<ul style="list-style-type: none"> Directs all Charging Pumps put in PTL to stop the boration Directs letdown be isolated and charging set up to cycle on the backup pump May direct the ABO to open 1-CVC-501-MOV locally, (however, if opened locally should dedicate an operator to close in the event of a SIAS) 		
	RO	<ul style="list-style-type: none"> Places all Charging Pps in PTL Isolates letdown Aligns Charging to cycle on the backup pump If CVC-501 is opened locally, shifts suction to the RWT and restores charging and letdown 		
	CRO	<ul style="list-style-type: none"> Maintains Tc on program 		
	SRO	<ul style="list-style-type: none"> Contacts OWC for support for failure of 1-LT-227 		

Scenario No:	2	Event No.	4	Page 7 of 13
Event Description:	PORV 402 Leakage			
Time	Position	Applicant's Actions or Behavior		
	CUE:	Annunciator Alarm - E-1, QUENCH TK TEMP LVL PRESS Quench Tank computer alarm		
	RO	<ul style="list-style-type: none"> Notes alarms on 1C06 and informs SRO Refers to ARM Determines, based on acoustic monitor indications (or print) that PORV 402 or Safety RV-200 is leaking 		
	SRO	<ul style="list-style-type: none"> Acknowledges report and concurs with the ROs diagnosis. Directs RO to close PORV 402 block valve, 1-RC-403 (May direct RO to vent the Quench Tank per OI-1B) 		
	RO	<ul style="list-style-type: none"> Performs action as directed by the SRO When Block valve 403 is closed, informs the SRO PORV leakage to the Quench Tank has stopped 		
	SRO	<ul style="list-style-type: none"> Directs RO to return Quench Tank parameters to normal per OI-1B, <u>Quench Tank Operations</u> Refers to T.S. 3.4.11 		

Scenario No: 2		Event No. 5		Page 8 of 13
Event Description:		Tube rupture in 12B waterbox/downpower		
Time	Position	Applicant's Actions or Behavior		
	CUE:	Annunciator Alarm - C-52, 11 TURB PLANT SMPL SYS, 1T21 L-11, U-1 SG SMPL PANEL		
	CRO	<ul style="list-style-type: none"> • Informs SRO • Refers to ARM, directs TBO to 1T21 		
	SRO	<ul style="list-style-type: none"> • Directs Chemistry to investigate sample panel alarms • Determines a large leak exists in the condenser • Following report of affected waterbox directs: (may start downpower prior to knowing which waterbox) <ul style="list-style-type: none"> • 12B waterbox be taken off • Rapid downpower to a target value of 300 MWe (upper limit is 400MWe) 		
	RO	<ul style="list-style-type: none"> • Initiates PZR spray flow to equalize RCS Boron: <ul style="list-style-type: none"> • Energizes all PZR backup heater banks • Adjusts PZR Pressure Controller setpoint to maintain 2250 psia • If not inservice, may consider restoring letdown • Commences boration from the BASTs followed by shifting suction to the RWT: <ul style="list-style-type: none"> • Opens BA direct makeup valve • Verifies two charging pumps running • Runs a BA pump for 30 seconds • After BA Pump is secured, shuts BA direct makeup valve • Verifies open RWT outlet valve • Verifies Shut VCT outlet (may close locally) • Inserts CEAs if necessary and maintains ASI within the limits of the COLR • Requests Peer checks for reactivity manipulations 		
	CRO	<ul style="list-style-type: none"> • If power is reduced below 70%, opens the LP FW heater HI LVL Dumps • Reduces turbine load to maintain Tc within 5°F of program • Monitors turbine parameters not to exceed <ul style="list-style-type: none"> • 150°F/hr rate of change of 1st stage shell inner metal temperature (Point 6 on TR-4404) • 75°F 1st stage shell metal temperature differential (Diff between Points 6 & 7 on TR-4404) • Unloading rate of 10% step change or 5%/min 		
	SRO	<ul style="list-style-type: none"> • Coordinates power reduction between RO and CRO 		

Scenario No: 2		Event No. 6	Page 9 of 13
Event Description:		Dropped CEAs/Reactor Trip	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Annunciator alarms 1C05 - D-31 SECONDARY CEA POSITION DEVIATION +/- 4" D-32 CEA MOTION INHIBIT Dropping Rx power, RCS temp. and press.	
	RO	<ul style="list-style-type: none"> Acknowledges alarms, identifies CEA #34 has dropped and informs SRO Refers to the ARM 	
	SRO	<ul style="list-style-type: none"> Acknowledges report Directs CRO to reduce turbine load to restore Tc to program 	
	CRO	<ul style="list-style-type: none"> Coordinates with RO and reduces turbine load to restore Tc to program 	
	RO	<ul style="list-style-type: none"> Reports to SRO a second CEA has dropped (no additional alarms are received) 	
	SRO	<ul style="list-style-type: none"> Directs RO to manually trip the reactor Directs the RO and CRO to implement EOP-0, <u>POST-TRIP IMMEDIATE ACTIONS</u> 	
	RO	<ul style="list-style-type: none"> Depresses one set of manual reactor trip pushbuttons. <ul style="list-style-type: none"> Notes reactor failed to trip Informs SRO of ATWS condition Deenergizes CEDM Motor Generator sets: <ul style="list-style-type: none"> Opens 12A 480V Bus FDR (52-1201) Opens 13A 480V Bus FDR (52-1301) Opens 12A/12B 480V Bus TIE (52-1212) Opens 13A/13B 480V Bus Tie (52-1312) Verifies the reactor is tripped Reenergizes 12A and 13A 480V Buses by closing ANY breakers opened above Checks ALL CEAs fully inserted Verifies demin water makeup to RCS is secured <ul style="list-style-type: none"> 11 & 12 RCMU pumps secured VCT M/U valve 1-CVC-512-CV is shut If RCS M/U is in DIRECT LINEUP, RWT CHG PP SUCT valve 1-CVC-504-MOV is shut <p>Reports Reactivity Control Safety Function is complete</p>	
	CRO	<ul style="list-style-type: none"> Checks reactor has tripped Ensures Turbine has tripped: <ul style="list-style-type: none"> Depresses Turbine TRIP button Checks the Turbine MAIN STOP VALVES shut Checks Turbine SPEED drops Verifies turbine generator output breakers open: <ul style="list-style-type: none"> 11 GEN BUS BKR, 0-CS-552-22 11 GEN TIE BKR, 0-CS-552-23 	

Scenario No: 2		Event No. 6	Page 9 of 13
Event Description:		Dropped CEAs/Reactor Trip	
Time	Position	Applicant's Actions or Behavior	
		<p>Continued from Turbine Trip on previous page</p> <ul style="list-style-type: none"> • Verifies 11 GEN and EXCITER FIELD BKR's 1-CS-41 and 1-CS-41E are open • Ensure both MSR 2nd STG STM SOURCE MOVs are shut: <ul style="list-style-type: none"> • 1-MS-4025-MOV (11MSR) • 1-MS-4026-MOV (12 MSR) <p>Informs SRO the Turbine is Tripped</p>	
	CRO	<ul style="list-style-type: none"> • Checks 11 OR 14 4KV Vital Bus energized • Checks 125 VDC and 120 VAC busses energized • Verifies CCW flow to RCPs • Verifies Switchgear Ventilation in service per OI-22H <p>Informs SRO Vital Auxiliaries Safety Function is complete</p>	
	RO	<ul style="list-style-type: none"> • Determines PZR pressure is not stabilizing between 1850 psia and 2300 psia and is continuing to drop <ul style="list-style-type: none"> • Isolates letdown (if in service) • Manually operates heaters and sprays to attempt to restore pressure • When PZR pressure falls to 1725 psia, verifies SIAS actuation (may start 12 HPSI, but not required) • Performs RCP Trip Strategy: <ul style="list-style-type: none"> • When pressure drops to 1725 psia, trips either <ul style="list-style-type: none"> • 11A and 12B RCPs OR • 11B and 12A RCPs • Determines PZR level is not stabilizing between 80 and 180 inches or trending to 160 inches • Ensures RCS subcooling GREATER THAN 30°F <p>Informs SRO RCS Pressure and Inventory Safety Function cannot be met due to low PZR pressure and PZR level</p>	
	CRO	<ul style="list-style-type: none"> • Verifies Turbine Bypass Valves or ADVs operating to maintain: <ul style="list-style-type: none"> • SG pressures between 850 and 920 psia • Tc between 525°F and 535°F • Checks at least one SG available for controlled heat removal <ul style="list-style-type: none"> • SG level between -170 and +30 inches • Main or Aux. Feed operating to maintain level • Tc >525°F • Checks at least one RCP running • If any RCPs are running, checks loop delta T in a SG available for heat removal <10°F <p>Informs SRO Core and RCS Heat Removal Safety Function complete</p>	

Scenario No: 2		Event No. 6		Page 11 of 13
Event Description:		Dropped CEAs/Reactor Trip		
Time	Position	Applicant's Actions or Behavior		
	CREW	<ul style="list-style-type: none"> Checks Containment pressure is <0.7 psig Checks Containment temperature is <120°F. Checks containment radiation monitor alarms CLEAR with NO unexplained trends Checks RMS alarms CLEAR with NO unexplained trends: <ul style="list-style-type: none"> 1-RIC-5415 U-1 wide range noble gas 1-RI-1752 Condenser Offgas 1-RI-4014 Unit 1 SG Blowdown 1-RI-5415 Unit 1 Main Vent Gaseous Verifies SG B/D is isolated <p>Informs SRO CNMNT environment is complete and Rad Levels External to CNMNT cannot be met due to SG B/D and Condenser Offgas.</p>		
	SRO	<ul style="list-style-type: none"> Conducts EOP-0 mid-brief and directs operators to reverify Safety Function 		
	Crew	<ul style="list-style-type: none"> Reverifies Safety Functions 		
	SRO	<ul style="list-style-type: none"> Determines Recovery Procedure per Diagnostic Flowchart: All Safety Functions met – NO Single Event Diagnosis - EOP-6 Directs transition to EOP-6 		

Scenario No: 2		Event No. 7	Page 12 of 13
Event Description:		EOP-6, Steam Generator Tube Rupture	
Time	Position	Applicant's Actions or Behavior	
	SRO	<ul style="list-style-type: none"> Briefs crew prior to EOP-6 implementation Directs actions per EOP-6 	
	RO	<ul style="list-style-type: none"> Monitors RCS depressurization: <ul style="list-style-type: none"> Verifies SIAS (already done in EOP-0, but starts 12 HPSI if not done previously) Performs RCP Trip Strategy: (already done in EOP-0) Monitors RCS temp and pressure limits per ATTACHMENT 1 for minimum pump operating pressure for running RCPs Commences RCS Boration. 	
	CRO	<ul style="list-style-type: none"> Commences RCS Cooldown <ul style="list-style-type: none"> Commences a rapid cooldown to <515°F Th <ul style="list-style-type: none"> Uses TBVs until loss of vacuum (due to SIAS actuates) Uses ADVs and records time ADVs open When SGIS Block permitted alarms are received, blocks SGIS, Establishes AFW flow using 13 AFW pump to both S/Gs 	
	RO	<ul style="list-style-type: none"> Evaluates the need to throttle HPSI flow <ul style="list-style-type: none"> When the following conditions are met: <ul style="list-style-type: none"> At least 25°F subcooling based on CETs PZR level > 101 inches At least one S/G available for heat removal RVLMS indicates level is above the top of the hot leg Throttles HPSI flow by throttling HPSI HDR valves and/or stopping HPSI Pps to: <ul style="list-style-type: none"> Maintain subcooling between 25 and 140°F based on CETs PZR level between 101 and 180 inches With PZR pressure >200 PSIA and constant stops both LPSI pumps If the HPSI throttle criteria can not be maintained, reinitiates flow to restore subcooling or level 	

Scenario No: 2		Event No. 7	Page 13 of 13
Event Description:		EOP-6, Steam Generator Tube Rupture	
Time	Position	Applicant's Actions or Behavior	
	RO	<ul style="list-style-type: none"> Depressurizes the RCS to reduce subcooling and maintain PZR level <ul style="list-style-type: none"> Uses Aux. Spray to depressurize the RCS to maintain the following: <ul style="list-style-type: none"> Reduce RCS pressure to approximately affected S/G pressure at least 25°F RCS pressure as close to NPSH limit of Attachment 1 as possible Aux. Spray use: <ul style="list-style-type: none"> Opens Aux Spray valve Operates charging loop stop valves as necessary to adjust Aux. Spray flow Shifts PZR Spray control to manual Shuts normal PZR Spray valves Maintains PZR cooldown <200°F per hour Controls RCS subcooling by the following methods: <ul style="list-style-type: none"> Controlling Aux Spray flow Operating PZR heaters Raising or lowering RCS cooldown rate Throttling or raising HPSI flow Use of PZR vent valves When backflow is anticipated and HPSI throttle criteria are met and a bubble exists in the PZR maintains PZR level between 101 and 120 inches until backflow is initiated 	
	CRO	<ul style="list-style-type: none"> Identify, Isolate and Confirm the Affected S/G <ul style="list-style-type: none"> Identifies affected S/G (12) by: <ul style="list-style-type: none"> Mismatch in feed flow prior to trip Unexplained S/G level rise pre or post trip Main Steam Line and N-16 RMS S/G chemistry samples When Th is less than 515°F, reduces cooldown rate and isolates the affected S/G by: <ul style="list-style-type: none"> Verifying 12 MSIV shut Verifying the MSIV bypass is shut Shifting 12 ADV to 1C43 and verifying shut Shutting 12 S/G FW Isolation valve Shutting 12 AFW Block valves Verifying 12 S/G B/D valves shut Shutting the Main Steam Upstream Drain valves Dispatches a plant operator to observe locally from the Aux. Bldg. Roof the S/G Safeties are shut 	
		<p>When 12 SG is isolated, the cooldown is established at <100°F/hr and PZR level and subcooling are being maintained the scenario can be terminated.</p> <p>Note the ERPIP classification for this event in an ALERT under category BA1 from RCS Barrier Table for EOP-6 is implemented for RCS leakage. (ATWS is not applicable since no automatic trip signal was received.)</p>	

SCENARIO #2 SETUP

OVERVIEW/OBJECTIVES

To evaluate the applicant's ability to conduct a unit power reduction and to implement the ARMs, OIs, AOPs, as appropriate, for malfunctioning systems and/or controls including a failure of the Hotwell Level Controller, 11 Circulating Water Pp, and a VCT Level Transmitter with a failure of CVC-501-MOV to reopen, preventing realignment to the VCT. This scenario also evaluates the applicant's ability to respond to a leaking PORV and a condenser waterbox tube rupture requiring a rapid downpower to a target value of 300 MWe. Multiple CEA drops will require a reactor trip but an ATWS condition exists. In EOP-0 a SGTR begins in 12 SG. The crew will cooldown and isolate 12 SG.

INSTRUCTOR SCENARIO INFORMATION

- | | | | |
|-------|----|--|-------------------|
| _____ | 1. | Reset to IC-13. | Draft Spin #0202 |
| _____ | 2. | Perform switch check. | Spin # Used _____ |
| _____ | 3. | Place simulator in CONTINUE, advance charts and clear alarm display. | |
| _____ | 4. | Place simulator in FREEZE. | |
| _____ | 5. | Enter Malfunctions | |
| _____ | a. | 13 HPSI Pp Trip
SI002_03 at time zero | |
| | b. | 13 CCW Pp Trip
CCW002_03 at time zero | |
| _____ | c. | Failure of Reactor to Trip (ATWS) automatically and manually
RPS005 & RPS006 at time zero | |
| | d. | Condenser Hotwell Level Controller Fails High
CD002 (High) on F1 | |
| _____ | e. | 11 CW Pp Trips
CW001_01 on F2 | |
| | f. | VCT Level Transmitter Fails Low
CVCS009 (Low) on F3 | |
| _____ | h. | PORV-402 leakage
RCS021 (0-5% over 2 minutes) on F4 | |
| _____ | i. | Condenser Tube Ruptures in 12B Waterbox
CD009_04 (1 tube) on F5 | |

SCENARIO #2 SETUP

- j. 2 Dropped CEAs (35 and 37)
CEDS012_35 and _37 on F6 and F7
- k. 12 SG Tube Rupture
MS002_02 (1 tube) on F8

6. Enter Panel Overrides

- a. 1C13 - INSTR AIR COMPR(S) Annunciator (K-25) to ON.
- b. 1C07 - VCT Outlet MOV Handswitch, CVC-501, in CLOSE on Event Trigger for MOV CVC-501 in close (≈ 21 on trigger index).
- c. 1C09 - Annunciators (2) for 13 HPSI Pp tagout- OFF.
- d. 1C13 - Annunciators (2) for 13 CCW Pp tagout - OFF.

7. Enter Remote Functions / Administrative

- a. Danger tag 13 CCW Pump.
- b. Danger tag 13 HPSI Pump.
- c. Place off-normal tags on the CCW Head Tank due to Makeup CV
- d. Remote Functions to rackout 13 HPSI Pp.
- e. Remote Functions to rackout 13 CCW Pp.

8. Set simulator time to real time, then place simulator in CONTINUE.

9. Give crew briefing.

- a. Present plant conditions: 100% power - MOC/10,200 MWD/MTU. Unit 2 is in Mode 5. RCS Boron - 900 PPM.
- b. Power history: 100% for previous 68 days.
- c. Equipment out of service: 13 CCW Pump out of service due to a broken shaft. Estimated return to service is tomorrow-noon.

13 HPSI Pump out of service due motor bearing failure during the STP 24 hours ago. Estimated return to service in 30 hours. IAS 3.5.2.

SCENARIO #2 SETUP

- d. Abnormal conditions: 11 CCW Head Tank Makeup CV is isolated due to leakby.
Alarm K-25 (INSTR AIR COMPR(S) is hanging, air compressors check out ok, alarm card swapped out but still in alarm. I&C is working up a troubleshooting plan.
- e. Surveillances due: STP-029 (CEA Movement Test) due by end of shift. SM will discuss with CRS shortly after turnover.
- f. Instructions for shift: Maintain 100% power.

____ 10. Allow crew 3-5 minutes to acclimate themselves with their positions.

____ 11. Instructions for the Booth Operator.

- a. Activate malfunctions F1-F5 when each is cued by the lead evaluator.
- b. Activate the next malfunction (F6) after about a 5% power move and with the Lead Examiner's concurrence, then about 30 seconds activate F7.
- c. When Vital Auxiliaries is complete activate F8.

SCENARIO #2 SETUP

RESPONSES TO CREW REQUEST

If a request and response is not listed, delay response until reviewed with the examiner. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

REQUEST	RESPONSE
1. OWC/E&C investigate failure of the Hotwell Level Controller (4405).	Acknowledge request.
2. OWC coordinate investigation of failure of 11 CW Pump.	Acknowledge request. After 5 minutes the electricians report the breaker is tripped on over current.
3. TBO close CAR-101 and Inlet MOV-5225 and secure 11A amertap.	Acknowledge each request. Three minutes after each request report the action complete.
4. OWC/E&C investigate failure of VCT Level Transmitter.	Acknowledge request.
5. OWC/GS-NPO contacted regarding PORV 402 leakage.	Acknowledge report.
6. TBO/Chemistry investigate Turbine Plant sample alarm and SG Sample Panel alarm	Acknowledge report. After 2 minutes report as Chemistry, there is a bad tube leak in 12B waterbox. 45 ppb Na and Conductivity of 18 micro seimens.
7. TBO close CAR-104 and 12B Inlet MOV and secure 12B amertap.	Acknowledge each request. Three minutes after each request report the action complete.
8. OSO ensure all demins ready to be placed in service.	Acknowledge report. After three minutes report all demins ready to be placed in service.
9. Chemistry contacted for additional info.	Report secondary chemistry is in Action Level 2.
10. Chemistry contacted to sample SGs.	After about 15 minutes report quantitative samples show significant activity in 12 SG.
11. Directs TBO to align 12 ADV to 1C43 with zero percent output.	After three minutes operate as directed.

SCENARIO #2 SETUP

SHIFT TURNOVER

- | | | |
|-------|------------------------------------|--|
| I. | Present Plant Conditions | 100% |
| II. | Burnup: | 10200 MWD/MTU (MOC) |
| III. | Power History | 100% for previous 68 days. |
| IV. | Equipment out of Service: | <p>13 CCW Pump out of service due to a broken shaft. Estimated return to service is tomorrow-noon.</p> <p>13 HPSI Pump out of service due motor bearing failure during the STP 24 hours ago. Estimated return to service in 30 hours. IAS 3.5.2.</p> |
| V. | Abnormal Conditions: | <p>11 CCW Head Tank Makeup CV is isolated due to leakby.</p> <p>Alarm K-25 (INSTR AIR COMPR(S) is hanging, air compressors check out ok, alarm card swapped out but still in alarm. I&C is working up a troubleshooting plan.</p> |
| VI. | Surveillances Due: | STP-029 (CEA Movement Test) due by end of shift. SM will discuss with CRS shortly after turnover. |
| VII. | Instructions for Shift | Maintain 100% power. |
| VIII. | U2 Status and Major Equipment OOS: | Mode 5 – no CW Pps and 23AFW Pp is OOS. |

Simulation Facility Calvert Cliffs Scenario No.: 3 Op Test No.: 1

Examiners: _____ Operators: _____ SRO

_____ RO
_____ CRO

Objectives: To evaluate the applicant's ability to conduct a unit power reduction, to implement the ARMs, OIs, AOPs, as appropriate, for malfunctioning systems and/or controls including a failure of PRZR level control channel (110X) which causes a broken shaft on 12 Charging Pp, a failed FRV Controller (1121) and a SGFP oil leak causing a rapid power reduction. A loss of 11 BA Pp occurs at the start of the downpower. The crew will be forced to trip the unit when the running SGFP trips. Two stuck CEAs require boration to meet reactivity but a loss of 11 4KV Bus will force the crew to EOP-8 for reactivity not being met. In EOP-8, boration will be restored via HPSI injection and 11 AFW Pp will trip resulting in a loss of feed. The crew can restore AFW by aligning 12 AFW Pp.

Initial Conditions: The plant is at 67% Power, MOC (IC-17)

11 Chg Pp is OOS

12 SGFP Pp is OOS.

11 CCW Head Tank Makeup CV is isolated due to leakby.

INSTR AIR COMPR(S) alarm (K-25) hanging.

Turnover: Present plant conditions: 67% power, MOC; Unit 2 is in MODE 5 – no CW Pps and 23 AFW Pp unavailable.

Power history: 67% power for previous 4 days.

Equipment out of service:

- 1) 11 Chg Pp packing replacement. Expected to be returned to service in 6 hours. All Chg. Pumps have been repacked, currently running in the packing on 13.
- 2) 12 SGFP Pp to repair steam leak on LP poppets. It is disassembled, expected to be returned to service tomorrow
- 3) 11 CCW Head Tank Makeup CV is isolated due to leakby.
- 4) Alarm K-25 INSTR AIR COMPR(S) is hanging. No problems with the compressors, I & C is investigating, alarm card has been swapped out.

Surveillances due: 1B DG STP-O-8 due today. SM will bring STP to CR when ready.

Instructions for shift:

- 1) Maintain current power level. Perform 1B DG STP-O-8 when directed by SM.

Event No.	Malf. No.	Event Type*		Event Description
Preload	FW004_02 CEDs010_28 CEDs010_42 Remote Func PNL OVR (K-25)			12 SGFP OOS. 2 stuck CEAs. 11 CHG Pp OOS. (bkr rackout) INSTR AIR COMPR(S) alarm hanging.
1	RCS026_01 (low)	I	RO	About 3 minutes after the crew has taken the watch, PRZR level contr. (110X) fails low. The RO should acknowledge the alarm, inform the CRS and refer to the ARM. Level control should be shifted to channel Y and the OWC notified. T.S. 3.3.10 should be entered.
2	CVCS003_02	C	RO	12 Chg. Pp shaft breaks on start following 110X failure, however, the pump stops again when channel Y is selected. It is unlikely the crew will notice the failure here, but probably later during the downpower or boration to meet reactivity control in EOP-0. When discovered the crew is expected to attempt to ensure boration via another means and to contact the OWC for assistance.
3	FW018_02 (LO)	I	CRO	Next, 12 SG FRV Controller (1121) fails. The CRO should acknowledge the alarm and inform the CRS. The CRS should direct the CRO to maintain SG level and implement AOP-3G. The CRS should direct the CRO to place the controller switch in the Main Fail position. The CRS should direct the OWC to contact the System Engineer for assistance.
4	PNL OVR (Conditioner level low alarm) CVCS014_01 FW004_01	C R C N	CRO RO RO CRO	The CRO acknowledges the SGFP Conditioner Level Low Alarm, informs the CRS and dispatches the TBO. Following the TBO report, a rapid downpower will be initiated to take 11 SGFP off. (The crew may notice the charging pump malfunction at this time.) The OWC should be contacted for assistance and notifications. As the power reduction to take 11 SGFP off is begun, 11 BA Pp trips off when started. The RO will either use 12 BA Pp or gravity feed from the BASTs. At ~50% power, 11 SGFP trips. The CRS should order the unit tripped due to loss of feed.
5		M	ALL	EOP-0 is implemented, the RO notes 2 stuck CEAs and commences boration. The CRO verifies Turbine Trip and commences Vital Auxiliaries. The RO commences Pressure and Inventory.
5a	4KV001_01	-----	-----	After the RO reports on Pressure and Inventory, a loss of 11 4KV Bus occurs (may refer to AOP-7I). The CRS orders a reassessment of safety functions. The RO should determine reactivity is no longer being met due to no charging and direct the TBO to align 13 Chg. Pp to 14 bus. With the TBO being unsuccessful the CRS will enter EOP-8 for failure to meet reactivity.
6	AFW001_01	M	ALL	EOP-8 is entered and the selected Success Paths begun. Boration is restored via HPSI injection. While working to establish boration, 11 AFW Pp trips the CRS or CRO should direct the TBO to investigate and align 12 AFW Pp. After AFW has been restored and boration established, the scenario can be terminated.

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

SCENARIO 3 OVERVIEW

The candidates will take the shift at $\approx 67\%$ power.

About 3 minutes after the crew has taken the watch, PRZR level contr. (110X) fails low. The RO should acknowledge the alarm, inform the CRS and refer to the ARM. Level control should be shifted to channel Y and the OWC notified. T.S. 3.3.10 should be entered.

12 Chg. Pp shaft breaks on start following 110X failure, however, the pump stops again when channel Y is selected. It is unlikely the crew will notice the failure here, but probably later in the scenario during the downpower or boration to meet reactivity control in EOP-0. When discovered the crew is expected to attempt to ensure boration via another means and to contact the OWC for assistance.

Next, 12 SG FRV Controller (1121) fails. The CRO should acknowledge the alarm and inform the CRS. The CRS should direct the CRO to maintain SG level and implement AOP-3G. The CRS should direct the CRO to place the controller switch in the Main Fail position. The CRO will control level via the PDI. The CRS should direct the OWC to contact the System Engineer for assistance.

The CRO acknowledges the SGFP Status Panel alarm and determines the alarm to be a SGFP Conditioner Level Low Alarm, informs the CRS and dispatches the TBO. Following the TBO report of a bad oil leak on 11 SGFP pump, a rapid downpower will be initiated to take 11 SGFP off. (The crew may notice the charging pump malfunction at this time.) The OWC should be contacted for assistance and notifications. As the power reduction to take 11 SGFP off is begun, 11 BA Pp trips off when started for the initial boration. The RO will either use 12 BA Pp or gravity feed from the BASTs to borate. At $\approx 50\%$ power, 11 SGFP trips. The CRS should order the unit tripped due to loss of feed.

EOP-0 is implemented, the RO notes 2 stuck CEAs and commences boration. The CRO verifies Turbine Trip and commences Vital Auxiliaries. The RO commences Pressure and Inventory.

After the RO reports on Pressure and Inventory, a loss of 11 4KV Bus occurs (may refer to AOP-7I). The CRS orders a reassessment of safety functions. The RO should determine reactivity is no longer being met due to no charging and direct the TBO to align 13 Chg. Pp to 14 bus. With the TBO being unsuccessful the CRS will enter EOP-8 for failure to meet reactivity.

EOP-8 is entered and the selected Success Paths begun. Boration is restored via HPSI injection. While working to establish boration, 11 AFW Pp trips the CRS or CRO should direct the TBO to investigate and align 12 AFW Pp. After AFW has been restored and boration established, the scenario can be terminated.

Scenario No: 3		Event No. 1	Page 4 of 12
Event Description:		PZR level Control channel 110X fails Low	
Time	Position	Applicant's Actions or Behavior	
	CUE	Annunciator E-33 - PZR CH. X LVL alarms. E-35 - PZR HTR CUTOUT All Charging pumps start.	
	RO	<ul style="list-style-type: none"> • Acknowledges alarm, identifies and reports LT-110X has failed low. • Refers to the ARM 	
	SRO	<ul style="list-style-type: none"> • Acknowledges report and directs RO to: <ul style="list-style-type: none"> • Shift PZR level control to channel Y • Shift PZR heater cutout to channel Y • Resets Proportional Heaters 	
	RO	<ul style="list-style-type: none"> • Perform actions as directed by SRO 	
	SRO	<ul style="list-style-type: none"> • Refers to T.S. 3.3.10 	
	SRO	<ul style="list-style-type: none"> • Contacts OWC/I&C to investigate failure of 1-LT-110X. 	

Scenario No: 3		Event No. 2		Page 5 of 12
Event Description:		12 Chg. Pp Shaft Failure		
Time	Position	Applicant's Actions or Behavior		
	CUE:	Low amps on 12 Chg. Pp Low charging flow for running pump combination (Note it is unlikely this failure will be noticed here, it is expected that it will be picked up either on the rapid downpower or the fast boration for 2 stuck CEAs)		
	RO	<ul style="list-style-type: none"> Identifies and reports 12 Chg. Pp appears to be degraded 		
	SRO	<ul style="list-style-type: none"> Acknowledges report and directs RO to: <ul style="list-style-type: none"> Ensure charging flow via 13 Chg. Pp Align 13 Chg. Pp to 14 Bus, (if necessary) 		
	RO	<ul style="list-style-type: none"> Perform actions as directed by SRO <ul style="list-style-type: none"> Directs TBO to shift 13 Chg. Pp to 14 Bus (in EOP-0) Dispatches ABO to investigate 12 Chg. Pp 		
	SRO	<ul style="list-style-type: none"> Contacts OWC/I&C to investigate failure of 12 Chg. Pp and assist in getting 13 Chg. Pp aligned to 14 Bus 		

Scenario No: 3		Event No. 3		Page 6 of 12
Event Description:		Failure of FRV Controller (1121)		
Time	Position	Applicant's Actions or Behavior		
	CUE:	SG level deviation alarm (computer alarm) Big "F" on face of FRV Controller 1121		
	CRO	<ul style="list-style-type: none"> Acknowledges alarm, checks SG levels, notes FRV control has shifted to the PDI Informs SRO 		
	SRO	<ul style="list-style-type: none"> Acknowledges report Implements AOP-3G Directs CRO to: <ul style="list-style-type: none"> Place the 1121 FRV Controller in MAIN FAIL Adjust the PDI CONTR to maintain zero inches SG level Determines BYP OVERRIDE is not available 		
	CRO	<ul style="list-style-type: none"> Performs actions as directed by the CRS. 		
	SRO	<ul style="list-style-type: none"> Directs OWC to investigate FIC-1121 and to contact the system engineer. 		

Scenario No: 3		Event No. 4	Page 7 of 12
Event Description:		Oil Leak on 11 SGFP (Rapid Downpower)	
Time	Position	Applicant's Actions or Behavior	
	CUE:	SGFP Conditioner Level Low Alarm on SGFP Status Panel	
	CRO	<ul style="list-style-type: none"> Acknowledges Alarm, informs SRO and Dispatches TBO to 11 SGFP to investigate Refers to ARM 	
	SRO	<ul style="list-style-type: none"> Acknowledges report from CRO When TBO reports control oil leak on 11 SGFP, directs the crew to commence a rapid downpower to take the unit offline per OP-3: <ul style="list-style-type: none"> Directs RO to initiate equalizing boron and commence downpower Directs CRO reduce turbine load to maintain Tc on program Directs the CRO to maintain SG level due to failed FRV Controller May direct TBO to fill 11 SGFP oil reservoir 	
	RO	<ul style="list-style-type: none"> Initiates PZR spray flow to equalize RCS Boron: <ul style="list-style-type: none"> Energizes all PZR backup heater banks Adjusts PZR Pressure Controller setpoint to maintain 2250 psia Commences boration from the BASTs followed by shifting suction to the RWT: <ul style="list-style-type: none"> Opens BA direct makeup valve Verifies two charging pumps running (may notice 12 Chg. Pp failure here (Event 2)) Notes 11 BA Pp trips on start, informs SRO and uses 12 BA Pp Runs 12 BA Pp for 30 seconds (BAST gravity feed may be used instead) After 12 BA Pp is secured, shuts BA direct makeup valve Verifies open RWT outlet valve Verifies Shut VCT outlet Inserts CEAs, if necessary, and maintains ASI within the limits of the COLR Requests Peer checks for reactivity manipulations 	
	CRO	<ul style="list-style-type: none"> Reduces turbine load to maintain Tc within 5°F of program Monitors turbine parameters not to exceed <ul style="list-style-type: none"> 150°F/hr rate of change of 1st stage shell inner metal temperature (Point 6 on TR-4404) 75°F 1st stage shell metal temperature differential (Diff between Points 6 & 7 on TR-4404) Unloading rate of 10% step change or 5%/min 	
	SRO	<ul style="list-style-type: none"> Coordinates power reduction between RO and CRO 	
	SRO	<ul style="list-style-type: none"> Contacts OWC for support for oil leak for 11 SGFP 	
	CRO	<ul style="list-style-type: none"> Recognizes 11 SGFP has tripped, informs the SRO 	
	SRO	<ul style="list-style-type: none"> Recognizes a total loss of feed has occurred: Directs RO to trip the reactor and for RO and CRO to implement EOP-0, <u>POST-TRIP IMMEDIATE ACTIONS</u> 	

Scenario No: 3		Event No. 5	Page 8 of 12
Event Description:		11 SGFP Trip/Reactor Trip	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Manual Reactor Trip initiated	
	RO	<p>Perform Post-Trip Immediate Actions:</p> <ul style="list-style-type: none"> Depresses ONE set of Manual RX TRIP buttons Checks reactor tripped <ul style="list-style-type: none"> Prompt drop in NI power Negative SUR Determines 2 CEAs are stuck out and commences boration to 2300 PPM <ul style="list-style-type: none"> Shuts CVC-512, VCT M/U Valve Opens BA DIRECT M/U valve, CVC-514 Opens BAST Gravity Feed Valves, CVC-508 and 509 Verifies M/U MODE SEL SW is in manual Starts a BA Pump Shuts VCT OUT valve, CVC-501 Starts all available Charging Pumps (may notice 12 Chg. Pp failure, EVENT 2) Verifies demin water makeup to RCS is secured <ul style="list-style-type: none"> 11 & 12 RCMU pumps secured VCT M/U valve 1-CVC-512-CV is shut If RCS M/U is in DIRECT LINEUP, RWT CHG PP SUCT Valve 1-CVC-504-MOV is shut <p>Informs SRO Reactivity Safety Function is complete</p>	
	CRO	<ul style="list-style-type: none"> Checks reactor has tripped Ensures turbine has tripped: <ul style="list-style-type: none"> Depresses Turbine TRIP button Checks the Turbine MAIN STOP VALVES shut Checks Turbine SPEED drops Verifies turbine generator output breakers open: <ul style="list-style-type: none"> 11 GEN BUS BKR, 0-CS-552-22 11 GEN TIE BKR, 0-CS-552-23 Verifies 11 GEN and EXCITER FIELD BKR 1-CS-41 and 1-CS-41E are open Ensure both MSR 2nd STG STM SOURCE MOVs are shut: <ul style="list-style-type: none"> 1-MS-4025-MOV (11MSR) 1-MS-4026-MOV (12 MSR) <p>Informs SRO the Turbine is Tripped</p>	
	CRO	<ul style="list-style-type: none"> Checks 11 OR 14 4KV Vital Bus energized Checks 125 VDC and 120 VAC busses energized Verifies CCW flow to RCPs <p>Informs SRO Vital Auxiliaries Safety Function is complete.</p>	

Scenario No: 3		Event No. 5	Page 9 of 12
Event Description:		11 SGFP Trip/Reactor Trip	
Time	Position	Applicant's Actions or Behavior	
	RO	<ul style="list-style-type: none"> Ensures PZR pressure stabilizes between 1850 psia and 2300 psia and is trending to 2250 psia Determines PZR level is stabilizing between 80 and 180 inches or trending to 160 inches Ensures RCS subcooling GREATER THAN 30°F <p>Informs SRO RCS Pressure and Inventory Safety Function can is complete</p>	
	CREW	<ul style="list-style-type: none"> Notes loss of 11 4KV Bus (refer to sheet 5a [page 10]for operator actions for loss of bus) SRO directs reverification of Safety Functions 	
	RO	<ul style="list-style-type: none"> Notes boration is no longer in progress, informs the SRO Directs TBO to shift 13 Chg. Pp to 14 Bus <p>Reports Reactivity cannot be met due to two stuck CEAs and no boration in progress</p>	
	CRO	Reverifies and reports Turbine is Tripped	
	CRO	<p>Reverifies Vital Auxiliaries</p> <p>Reports Vital Auxiliaries are complete</p>	
	RO	Reverifies RCS Pressure and Inventory and reports is complete (may report not met due to lowering PZR level with no Chg. Pps running)	
	CRO	<ul style="list-style-type: none"> Verifies Turbine Bypass Valves or ADVs operating to maintain: <ul style="list-style-type: none"> SG pressures between 850 and 920 psia Tcold between 525° and 535°F <ul style="list-style-type: none"> Directs ABO to operate ADVs locally to maintain RCS temperature Checks at least one SG available for controlled heat removal <ul style="list-style-type: none"> SG level between -170 and +30 inches Initiates Aux Feedwater to maintain S/G level Tc >525°F Checks at least one RCP operating in a loop with a SG available for heat removal Checks loop delta T is <10°F <p>Informs SRO Core and RCS Heat Removal Safety Function is complete</p>	

Scenario No: 3		Event No. 5a	Page 10 of 12
Event Description:		LOSS 11 4KV BUS	
Time	Position	Applicant's Actions or Behavior	
	CREW	<ul style="list-style-type: none"> Notes loss of 11 4KV Bus SRO directs reverification of Safety Functions 	
	RO	<ul style="list-style-type: none"> Notes boration is no longer in progress, informs the SRO Directs TBO to shift 13 Chg. Pp to 14 Bus <p>Reports Reactivity cannot be met due to two stuck CEAs and no boration in progress</p>	
	CRO	<ul style="list-style-type: none"> Reverifies Vital Auxiliaries <ul style="list-style-type: none"> Starts OC DG Verifies Switchgear Ventilation in service per OI-22H Establishes CCW flow to RCPs <p>Reports Vital Auxiliaries are complete</p>	
	SRO	<ul style="list-style-type: none"> May refer to AOP-7I Directs OWC/TBO to tie 1Y09 and 1Y10 with 1Y10 supplying 	

Scenario No: 3		Event No. 5	Page 11 of 12
Event Description:		11 SGFP Trip/Reactor Trip	
Time	Position	Applicant's Actions or Behavior	
	CREW	<ul style="list-style-type: none"> • Checks Containment pressure is <0.7 psig • Checks Containment temperature is <120°F. • Checks containment radiation monitor alarms CLEAR with NO unexplained trends • Checks RMS alarms CLEAR with NO unexplained trends: <ul style="list-style-type: none"> • 1-RIC-5415 U-1 wide range noble gas • 1-RI-1752 Condenser Offgas • 1-RI-4014 Unit 1 SG Blowdown • 1-RI-5415 Unit 1 Main Vent Gaseous <p>Informs SRO CNMNT Environment and Rad Levels External to CNMNT are complete</p>	
	SRO	<ul style="list-style-type: none"> • Conducts EOP-0 mid-brief and directs operators to reverify Safety Function 	
	Crew	<ul style="list-style-type: none"> • Reverifies Safety Functions 	
	SRO	<ul style="list-style-type: none"> • Determines Recovery Procedure per Diagnostic Flowchart: • All Safety Functions met - NO • Event Diagnosis – Reactivity NOT MET • Directs transition to EOP-8 	

Scenario No: 3		Event No. 6	Page 12 of 12
Event Description:		EOP-8, Functional Recovery Procedure/Loss of Feed	
Time	Position	Applicant's Actions or Behavior	
	SRO	<ul style="list-style-type: none"> Briefs crew prior to EOP-8 implementation Directs actions per EOP-8 	
	RO	<ul style="list-style-type: none"> Performs RCP Trip strategy (determines RCPs not required to be tripped at this time) 	
	SRO	<ul style="list-style-type: none"> Contacts Chemistry for SG samples and to place the Hydrogen analyzers in service 	
	SRO	<ul style="list-style-type: none"> Directs operators to select success paths for all safety functions. Verifies selected success paths [RC-3(or 1), VA-1, PIC-4, HR-1, CE-1, RLEC-1] Determines sequence of success path performance [PIC, RC, VA, HR, CE, RLEC] (all met except PIC-4) Directs operators to implement success paths (PIC and RC) 	
	RO	<ul style="list-style-type: none"> Commences RC-3 <ul style="list-style-type: none"> Verifies power $<10^{-4}\%$ Verifies SUR is negative 	
	CRO	<ul style="list-style-type: none"> Commences PIC-4 <ul style="list-style-type: none"> Coordinates with RO to Establish RCS Pressure and Inventory Control using SIS 	
	RO	<ul style="list-style-type: none"> Establishes boration using HPSI injection <ul style="list-style-type: none"> Aligns SI system for HPSI injection Commences RCS depressurization to allow SI flow <ul style="list-style-type: none"> Depressurizes using main spray Continues to monitor RCS temperature and reactor power Informs SRO boration has been established 	
	SRO	<ul style="list-style-type: none"> With Reactivity Control established, directs RO to Commence next Success Path (VA-1) or RO to take over PIC from CRO and assign VA-1, HR-1 to CRO 	
	CREW	<ul style="list-style-type: none"> Notes loss of 11 AFW Pp <ul style="list-style-type: none"> Directs TBO to investigate 11 AFW Pp and attempt to reset Directs TBO to align 12 AFW Pp Informs SRO 11 AFW Pp has tripped and all feed has been lost Upon report of 12 AFW pump aligned, establishes AFW flow using 12 AFW Pp 	
		<p>When boration is established and secondary heat sink restored, the scenario may be terminated.</p> <p>Note: The ERPIP classification for this event is an ALERT under OA1 for EOP-8 Implemented.</p>	

SCENARIO #3 SETUP

OVERVIEW/OBJECTIVES

To evaluate the applicant's ability to conduct a unit power reduction, to implement the ARMs, OIs, AOPs, as appropriate, for malfunctioning systems and/or controls including a failure of PRZR level control channel (110X) which causes a broken shaft on 12 Charging Pp, a failed FRV Controller (1121) and a SGFP oil leak causing a rapid power reduction. A loss of 11 BA Pp occurs at the start of the downpower. The crew will be forced to trip the unit when the running SGFP trips. Two stuck CEAs require boration to meet reactivity but a loss of 11 4KV Bus will force the crew to EOP-8 for reactivity not being met. In EOP-8, boration will be restored via HPSI injection and 11 AFW Pp will trip resulting in a loss of feed. The crew can restore AFW by aligning 12 AFW Pp.

INSTRUCTOR SCENARIO INFORMATION

- | | | | |
|-------|----|--|-------------------|
| _____ | 1. | Reset to IC-17. | Draft Spin #0202 |
| _____ | 2. | Perform switch check. | Spin # Used _____ |
| _____ | 3. | Place simulator in CONTINUE, advance charts and clear alarm display. | |
| _____ | 4. | Place simulator in FREEZE. | |
| _____ | 5. | Enter Malfunctions | |
| _____ | a. | 12 SGFP Trip
FW004_02 at time zero | |
| | b. | 2 Stuck CEAs (Untrippable)
CEDS010_28 and _42 at time zero | |
| | c. | PZR Level Controller (110X) Fails Low
RCS026_01 (Low) on F1 | |
| _____ | d. | 12 Chg. PP Shaft Breaks
CVCS003_02 on F2 | |
| | e. | 12 SG FRV Controller Fails Low
FW018_02 (Low) on F3 | |
| _____ | f. | 11 BA Pp Trips
CVCS014_01 on F4 | |
| _____ | g. | 11 SGFP Trips
FW004_01 on F5 | |
| | h. | Loss of 11 4KV Bus
4KV001_01 F6 | |
| | i. | Trip of 11 AFW Pp
AFW001_01 on F7 | |

SCENARIO #3 SETUP

- _____ 6. Enter Panel Overrides
- a. 1C13 - INSTR AIR COMPR(S) Annunciator (K-25) to ON.
 - b. 1C09 – Annunciators (2) for 11 Chg. Pp tagout- OFF.
- _____ 7. Enter Remote Functions / Administrative
- a. Danger tag 11 Chg. Pp
 - b. Danger tag 12 SGFP Pp.
 - c. Place off-normal tags on the CCW Head Tank due to Makeup CV
 - d. Remote Functions to rackout 11 Chg. Pp.
- _____ 8. Set simulator time to real time, then place simulator in CONTINUE.
- _____ 9. Give crew briefing.
- a. Present plant conditions: 67% power - MOC/10,200 MWD/MTU. Unit 2 is in Mode 5. RCS Boron - 980 PPM.
 - b. Power history: 67% for previous 4 days.
 - c. Equipment out of service: 11 Chg. Pp out of service for packing replacement. Expected to be returned to service in 6 hours. All Chg. Pps have been repacked, currently running in packing in 13.

12 SGFP out of service to repair steam leak on LP poppets. It is disassembled, expected to be returned to service tomorrow.
 - d. Abnormal conditions: 11 CCW Head Tank Makeup CV is isolated due to leakby.

Alarm K-25 (INSTR AIR COMPR(S)) is hanging, air compressors check out ok, alarm card swapped out but still in alarm. I&C is working up a troubleshooting plan.
 - e. Surveillances due: 1B DG STP-O-8 due today. SM will bring to CR when ready.
 - f. Instructions for shift: Maintain current power level. Perform 1B DG STP-O-8 when directed by SM.
- _____ 10. Allow crew 3-5 minutes to acclimate themselves with their positions.

SCENARIO #3 SETUP

11. Instructions for the Booth Operator.

- a. Activate malfunction **F1** when cued by the lead examiner then immediately activate **F2**.
- b. Activate the next malfunction (**F3**) when cued by the lead examiner.
- c. When cued by the lead examiner, insert SGFP Status Panel "**Conditioner Level Low**" alarm and immediately after Panel Override Annunciator **C-69 ON** (SGFP Status Panel).
- d. As the rapid downpower is commenced, when the RO starts 11 BA Pp, immediately activate **F4**.
- e. After power has been reduced at least 5%, and with the lead examiner's concurrence activate **F5**.
- f. After the unit is tripped, **remove** Panel override for annunciator **C-69**.
- g. After the RO reports RCS Pressure and Inventory status, activate **F6**.
- h. In EOP-8, while the RO is working to establish boration, activate **F7**.

SCENARIO #3 SETUP

RESPONSES TO CREW REQUEST

If a request and response is not listed, delay response until reviewed with the examiner. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

REQUEST	RESPONSE
1. OWC/E&C investigate failure of the PRZR Level Controller, 1-LT-110X.	Acknowledge request.
2. OWC/E&C investigate failure of the 12 SG FRV Controller, 1121.	Acknowledge request.
3. TBO investigate SGFP Conditioner Level Low alarm.	Acknowledge request. After Two minutes, report a large control oil leak on 11 SGFP and recommend the SGFP be removed from service as soon as possible.
4. ABO investigate trip of 11 BA Pp.	Acknowledge request. After 3 minutes, report 11 BA Pp tripped on overcurrent.
5. ABO investigate 12 Chg. Pp low flow.	Acknowledge report. After three minutes, report 12 Chg. Pp has a broken shaft.
6. TBO/OWC/Electricians shift 13 CHG. Pp to 14 Bus.	Acknowledge report. After 2 minutes report as TBO unable to get it to shift, seems to be hung up. As additional assistance is rendered continue to give report of unable to get it shifted to 14 Bus.
7. TBO investigate trip of 11 AFW Pp and align 12 AFW Pp for service.	Acknowledge request. After three minutes, align 12 AFW Pp for operation.

SCENARIO #3 SETUP

SHIFT TURNOVER

- | | | |
|-------|------------------------------------|--|
| I. | Present Plant Conditions | 67% |
| II. | Burnup: | 10200 MWD/MTU (MOC) |
| III. | Power History | 67% for previous 4 days. |
| IV. | Equipment out of Service: | <p>11 Chg. Pp out of service for packing replacement. Expected to be returned to service in 6 hours. All Chg. Pps have been repacked, currently running in packing in 13.</p> <p>12 SGFP out of service to repair steam leak on LP poppets. It is disassembled, expected to be returned to service tomorrow.</p> |
| V. | Abnormal Conditions: | <p>11 CCW Head Tank Makeup CV is isolated due to leakby.</p> <p>Alarm K-25 (INSTR AIR COMPR(S)) is hanging, air compressors check out ok, alarm card swapped out but still in alarm. I&C is working up a troubleshooting plan.</p> |
| VI. | Surveillances Due: | 1B DG STP-O-8 due today. SM will bring to CR when ready. |
| VII. | Instructions for Shift | Maintain current power level. Perform 1B DG STP-O-8 when directed by SM. |
| VIII. | U2 Status and Major Equipment OOS: | Mode 5 – no CW Pps and 23AFW Pp is OOS. |

Simulation Facility Calvert Cliffs Scenario No.: 1 (Spare) Op Test No.: 1

Examiners: _____ Operators: _____ SRO

_____ RO
_____ CRO

Objectives: To evaluate the applicant's ability to conduct a unit power increase, to implement the ARMs, OIs, AOPs, as appropriate, for malfunctioning systems and/or controls including failure of 11 CCW Pp, the PZR pressure control channel and selector switch, an RCP seal and the ADV controller. After the ADV controller fails the remaining seals fail on the affected RCP resulting in an RCS leak. After EOP-0 is entered, the RCS leak causes a SIAS actuation. SIAS 'A' fails to actuate requiring 11 or 12 HPSI Pump to be started manually to establish HPSI flow. As EOP-0 progresses, a steam leak begins in CNMNT from 12 SG requiring EOP-8 be implemented. The ADV Controller will not operate from the Control Room, the crew will have to operate the ADVs locally.

Initial Conditions: The plant is at 100% Power, EOC

12 Main CPU is failed for 12 SG DFWCS

11 CCW Head Tank Makeup CV is isolated due to leakby.

13 HPSI Pp is OOS.

13 CCW Pp is OOS

INSTR AIR COMPR(S) alarm (K-25) hanging.

Turnover: Present plant conditions: 100% power, MOC; Unit 2 is in MODE 5 – no CW Pps and 23 AFW Pp unavailable.

Power history: 100% power for previous 68 days.

Equipment out of service:

- 1) 12 Main CPU is failed for 12 SG DFWCS. System engineer is investigating.
- 2) 13 HPSI Pp motor bearing failure during STP. It is disassembled, expected to be returned to service in 2 days. T.S. 3.5.2 Action Statement entered 6 hours ago.
- 3) 11 CCW Head Tank Makeup CV is isolated due to leakby.
- 4) 13 CCW Pp has a broken shaft, expected repair tomorrow-noon.
- 5) Alarm K-25 INSTR AIR COMPR(S) is hanging. No problems with the compressors, I & C is investigating, alarm card has been swapped out.

Surveillances due: STP-0-29 (CEA Movement Test) due by end of shift. SM will discuss with CRS shortly after turnover.

Instructions for shift:

- 1) Maintain 100% power.

Event No.	Malf. No.	Event Type*	Event Description
Preload	FW001_03 ESFA002_01 ESFA001_01 SI 002_03 CCW002_03 PNL OVD PNL OVR K-25		12 Main CPU on 12 SG DFWCS OOS. SIAS 'A' fails to actuate automatically and manually. 13 HPSI Pp OOS. 13 CCW Pp OOS. Pressurizer Press Controller Selector Switch in channel X. INSTR AIR COMPR(S) alarm hanging.
1	CCW002_01	C CRO	About 3 minutes after the crew takes the watch, 11 CCW Pp trips. The CRO will acknowledge the alarms, inform the CRS and refer to the ARM. The crew will check for common mode failure and the CRS will direct the CRO to start 12 CCW Pp. The CRS should refer to AOP-7C and T.S. 3.7.5. The CRS contacts the OWC for assistance.
2	RCS023_01 (high)	I RO	PRZR Press Channel 100X fails high. The RO should acknowledge the alarms, inform the CRS and refer to the ARM. The RO should note the lowering RCS pressure and the open spray valves. Pressure control should be shifted to channel Y and the spray valves verified shut. The RO should note the spray valves did not shut. The CRS should direct the spray controller be taken to manual and the spray valves closed. The CRS should contact the OWC for assistance.
3	RCS011_01 (0-100% over 3 min)	C RO	Next, the lower seal (first stage) fails on 11A RCP. The RO should note the alarm, inform the CRS and refer to the ARM. The crew should determine the lower seal on 11A RCP has failed. The OWC and system engineer should be contacted.
4	MS015 (high)	I CRO	Two minutes after the notifications have been made the ADV controller fails high causing the ADVs to open. The CRO will inform the CRS. The CRS should direct the CRO to take manual control of the ADVs and shut them. The RO should maintain reactor power less than 100%. The CRS should refer to AOP-7K. The CRS should contact the OWC for assistance.
5	RCS012_01 (0-100% over 2 min)	R N CRO	After the CRS has referenced AOP-7K, the 11A RCP middle seal fails. The crew should implement ARM guidance and begin an expeditious shutdown. The CRS should refer to OP-3 for guidance on for the shutdown.
6	RCS013_01 (over 2 min) RCS003 (50 gpm over 5 min) RCS014_01 (over 4 min)	M All	After power has been reduced at least 5%, the 11A upper seal begins to fail followed shortly thereafter by the failure of the vapor seal. With all the seals failed RCS leakage begins via the seals. The CRS will trip the unit based on high RCP seal temperature and EOP-0 implemented. When SIAS actuates, train A fails to automatically and manually initiate. To establish HPSI flow 11 or 12 HPSI must be started manually.
7	MS010_02 (0-25% over 3 min) Panel Override ADV's closed	M All	After the first pass through the safety functions is complete, a steam break in CNMNT begins. When the crew attempts to operate the ADVs, they will not operate from the Control Room. To establish heat removal via 11 SG, the ADV will have to be operated locally. The CRS should recognize two events are taking place and implement EOP-8. After the Success Paths have been selected and 12 SG isolated, the scenario can be terminated.

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

SCENARIO 1 OVERVIEW

The candidates will take the shift at 100% power with instructions to maintain power.

After the crew has taken the shift, 11 CCW Pp trips. The CRO will acknowledge the alarms, inform the CRS and refer to the ARM. The crew will check for common mode failure and the CRS will direct the CRO to start 12 CCW Pp. The CRS should refer to AOP-7C and T.S. 3.7.5. The CRS contacts the OWC for assistance.

Several minutes later, PRZR Press Channel 100X fails high. The RO should acknowledge the alarms, inform the CRS and refer to the ARM. The RO should note the lowering RCS pressure and the open spray valves. Pressure control should be shifted to channel Y and the spray valves verified shut. The RO should note the spray valves did not shut. The CRS should direct the spray controller be taken to manual and the spray valves closed. Once the spray valves are closed, the RO should stabilize RCS pressure. The CRS should contact the OWC for assistance.

About 3 minutes after the crew has regained RCS pressure control, the lower seal (first stage) fails on 11A RCP. The RO should note the alarm, inform the CRS and refer to the ARM. The crew should determine the lower seal on 11A RCP has failed and monitor RCP parameters. The OWC and system engineer should be contacted.

Two minutes after the notifications have been made the ADV controller fails high causing the ADVs to open. The CRO diagnoses the open ADVs and inform the CRS. The CRS should direct the CRO to take manual control of the ADVs and shut them. The RO should maintain reactor power less than 100%. The CRS should refer to AOP-7K. The CRS contacts the OWC for assistance.

After the CRS has referenced AOP-7K, the 11A RCP middle seal fails. The crew should implement ARM guidance and begin an expeditious shutdown in accordance with OP-3. The CRS should refer to OP-3 and direct the unit shutdown at a rate less than 30%/hour. The appropriate notifications should be made.

After power has been reduced at least 5%, the 11A RCP upper seal begins to fail followed shortly thereafter by the failure of the vapor seal. With all the seals failed RCS leakage begins via the seals. The CRS will trip the unit based on high RCP Controlled Bleed Off temperature and EOP-0 implemented. When SIAS actuates, train 'A' fails to initiate automatically and manually. To establish HPSI flow 11 or 12 HPSI must be started manually.

After the first pass through the safety functions is complete, a steam break in CNMNT begins. When the crew attempts to operate the ADVs, they will not operate from the Control Room. To establish heat removal via 11 SG, the ADV will have to be operated locally. The CRS should recognize two events are taking place and implement EOP-8. After the Success Paths have been selected and 12 SG isolated, the scenario can be terminated.

Scenario No: 1		Event No. 1	Page 4 of 13
Event Description:		11 CCW Pp Trips.	
Time	Position	Applicant's Actions or Behavior	
	CUE	After the crew takes the watch, the following alarms occur: Annunciator Alarm - 1C13 - K-09 - CC PP DISCH PRESS LO RCP Status Panel Alarms CCW pressure indicates zero	
	CRO	<ul style="list-style-type: none"> Acknowledges alarms, notes 11 CCW Pp has tripped, informs the SRO Refers to the ARM 	
	SRO	<ul style="list-style-type: none"> Acknowledges report and directs CRO to check for common mode failure (head tank level, motor overload alarm) Directs CRO to start 12 CCW Pp Implements AOP-7C, <u>LOSS OF COMPONENT COOLING WATER</u> 	
	RO	<ul style="list-style-type: none"> Monitors RCP temperatures 	
	CRO	<ul style="list-style-type: none"> Performs actions as directed by the SRO Verifies 12 CCW Pp is running normally with normal system parameters 	
	SRO	<ul style="list-style-type: none"> Refers to T.S. 3.7.5. and exits AOP-7C Contacts OWC for assistance 	

Scenario No: 1		Event No. 2	Page 5 of 13
Event Description:		PZR Press. Control Channel 100X Fails High	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Annunciator alarm 1C06 - E-29 PZR CH 100 PRESS Both PZR Spray valves come full open Lowering RCS pressure	
	RO	<ul style="list-style-type: none"> Acknowledges alarm, identifies and reports PT-100X has failed high Refers to the ARM Notes both PZR spray valves are open 	
	SRO	<ul style="list-style-type: none"> Acknowledges report and directs RO to: <ul style="list-style-type: none"> Shift PZR pressure control to channel Y Verify the PZR spray valves go closed Restore RCS pressure to normal 	
	RO	<ul style="list-style-type: none"> Perform actions as directed by SRO Notes the spray valves failed to go closed, RCS pressure is continuing to lower and informs the SRO Informs SRO in T.S. action for DNB if RCS pressure goes less than 2200 psia 	
	SRO	<ul style="list-style-type: none"> Directs RO to take 1-HIC-100 to manual and close the spray valves 	
	RO	<ul style="list-style-type: none"> Takes HIC 100 to manual and demand to minimum Verifies Spray Valves go closed and RCS pressure restoring to normal Informs SRO 	
	SRO	<ul style="list-style-type: none"> Contacts OWC/I&C to investigate failure of 1-PT-100X and failure of spray valves to close 	

Scenario No: 1		Event No. 3	Page 6 of 13
Event Description:		1st Stage (Lower) Seal Fails on 11A RCP	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Annunciator E-55 – 11A RCP SEAL - TEMP HI - PRESS	
	RO	<ul style="list-style-type: none"> • Acknowledges alarm, checks RCP parameters, reports suspected seal failure on 11A RCP • Refers to the ARM 	
	SRO	<ul style="list-style-type: none"> • Identifies/acknowledges report of 11A RCP seal failure • Determines along with RO 11A RCP the lower seal has failed • Directs RO to monitor parameters • Contacts System Engineer • Notes if a second seal fails on 11A RCP the unit will have to be shutdown 	
	RO	<ul style="list-style-type: none"> • Monitors RCP parameters (bleedoff flow, pressures, temperatures) 	
	SRO	<ul style="list-style-type: none"> • Contacts OWC/GS and System Engineer regarding 11A RCP seal failure 	

Scenario No: 1		Event No. 4	Page 7 of 13
Event Description:		Atmospheric Dump Valves Fail Open	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Audible steam dump to atmosphere occurring Open indication of both ADVs Changing RCS parameters, temperature and pressure lowering	
	CRO	<ul style="list-style-type: none"> Identify and report both ADVs have gone full open, recommends taking to manual and closing 	
	SRO	<ul style="list-style-type: none"> Identifies/acknowledges report of open ADVs Directs CRO to take ADV controller to manual and shut ADVs Implements AOP-7K, <u>OVER COOLING EVENT IN MODE ONE OR TWO</u> <ul style="list-style-type: none"> Determines a reactor trip is not required Monitors reactor power: <ul style="list-style-type: none"> Directs RO to insert CEAs or borates (if necessary) Directs CRO to reduce/adjust turbine load as necessary to restore/maintain Tc on program (if necessary) 	
	RO	<ul style="list-style-type: none"> Monitors reactor power and borates or inserts CEAs if necessary to maintain power 	
	CRO	<ul style="list-style-type: none"> Takes ADV controller to manual and verifies both ADVs go closed Adjusts turbine load as necessary to maintain Tc on program 	
	SRO	<ul style="list-style-type: none"> Contacts OWC to investigate failure of ADV Controller 	

Scenario No: 1		Event No. 5	Page 8 of 13
Event Description:		2nd Stage (Middle) Seal Fails on 11A RCP/Power Reduction	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Degrading parameters on 11A RCP seals. (Lowering middle seal d/p and increased pressure drop across the upper seal)	
	RO	<ul style="list-style-type: none"> • Reports suspected 2nd seal failure on 11A RCP • Refers to the ARM 	
	SRO	<ul style="list-style-type: none"> • Identifies/acknowledges report of 11A RCP middle seal failure • Determines along with RO that two stages of 11A RCP seals have failed • Notes with if a second seal failure on 11A RCP an expeditious shutdown is required 	
	RO	<ul style="list-style-type: none"> • Monitors RCP parameters (bleed-off flow, pressures, temperatures) 	
	SRO	<ul style="list-style-type: none"> • Contacts OWC/GS and System Engineer regarding 11A RCP seal failures 	
	SRO	<ul style="list-style-type: none"> • Performs brief of expeditious power reduction per OP-3 • Notifies the System Operator a power reduction is being commenced to take the unit offline • Directs crew to begin a power reduction (at specified rate) per OP-3, Section 6.4 • Instructs crew to: <ul style="list-style-type: none"> • Use RPS Delta T power as primary power indication • Energize all PRZR backup heaters • Adjusts the PRZR pressure spray controller to maintain PRZR pressure at 2250 • Reduce power by use of boration (and CEAs if necessary) • Maintain Tc within 2°F of program by reducing turbine load • Informs chemistry if power reduction is greater than 15% in one hour and requests a boron sample for a power change >5% 	
	RO	<ul style="list-style-type: none"> • Initiates PZR spray flow to equalize RCS Boron: <ul style="list-style-type: none"> • Energize all PZR backup heater banks • Adjusts PZR Pressure Spray Controller to maintain 2250 psia • Commences boration – cycles charging pump suction between the RWT and the VCT to achieve desired rate of power reduction per OP-3 • Inserts CEAs if necessary and maintains ASI within the limits of the COLR • Requests Peer checks for reactivity manipulations 	
	CRO	<ul style="list-style-type: none"> • Reduces turbine load to maintain Tc within 2°F of program • Monitors feedstation to verify S/G levels are being maintained approximately 0 inches 	
	SRO	<ul style="list-style-type: none"> • Coordinates power reduction between RO and CRO 	

Scenario No: 1		Event No. 6	Page 9 of 13
Event Description:		Failure of 11A RCP Seals/RCS leak	
Time	Position	Applicant's Actions or Behavior	
	CUE:	Degrading parameters on 11A RCP seals. (Rising RCP temperatures, bleedoff flow) Possibly PZR Level Deviation alarm	
	RO	<ul style="list-style-type: none"> • Reports: <ul style="list-style-type: none"> • Suspected failure of all RCP seals • Indications of loss of RCS inventory • High 11A RCP seal temperature 	
	SRO	<ul style="list-style-type: none"> • Acknowledges report. • Directs the unit be tripped and EOP-0 implemented <ul style="list-style-type: none"> • Directs RO to trip Unit 1 • Perform reactivity • Trip 11A RCP 	
	RO	<p>Perform Post-Trip Immediate Actions:</p> <ul style="list-style-type: none"> • Depresses ONE set of Manual RX TRIP buttons • Checks reactor tripped <ul style="list-style-type: none"> • Prompt drop in NI power • Negative SUR • Checks ALL CEAs fully inserted • Verifies demin water makeup to RCS is secured <ul style="list-style-type: none"> • 11 & 12 RCMU pumps secured • VCT M/U valve 1-CVC-512-CV is shut • If RCS M/U is in DIRECT LINEUP, RWT CHG PP SUCT valve 1-CVC-504-MOV is shut (1-CVC-501-MOV must be opened first) <p>Informs SRO Reactivity Safety Function is complete</p>	
	RO	Trips 11A RCP and informs SRO	
	CRO	<ul style="list-style-type: none"> • Checks reactor has tripped • Ensures Turbine has tripped: <ul style="list-style-type: none"> • Depresses Turbine TRIP button • Checks the Turbine MAIN STOP VALVES shut • Checks Turbine SPEED drops • Verifies turbine generator output breakers open: <ul style="list-style-type: none"> • 11 GEN BUS BKR, 0-CS-552-22 • 11 GEN TIE BKR, 0-CS-552-23 • Verifies 11 GEN and EXCITER FIELD BKR's 1-CS-41 and 1-CS-41E are open • Ensures both MSR 2nd STG STM SOURCE MOVs are shut: <ul style="list-style-type: none"> • 1-MS-4025-MOV (11MSR) • 1-MS-4026-MOV (12 MSR) <p>Informs SRO the Turbine is Tripped</p>	

Scenario No: 1		Event No: 6	Page 10 of 13
Event Description:		Failure of 11A RCP Seals/RCS leak	
Time	Position	Applicant's Actions or Behavior	
	CRO	<ul style="list-style-type: none"> Checks 11 OR 14 4KV Vital Bus energized Checks 125 VDC and 120 VAC busses energized Verifies CCW flow to RCPs Verifies Switchgear Ventilation in service <p>Informs SRO Vital Auxiliaries Safety Function is complete</p>	
	RO	<ul style="list-style-type: none"> Determines PZR pressure is not stable between 1850 psia and 2300 psia and is trending lower <ul style="list-style-type: none"> Closes PZR Spray Valves Determines PZR level is not stabilizing between 80 and 180 inches or trending to 160 inches Ensures RCS subcooling GREATER THAN 30°F Verifies SIAS, notes SIAS A should have occurred and did not. (Not required until 1725#) Manually actuates SIAS if RCS pressure is <1725 Notes SIAS A did not actuate manually and manually starts 11 HPSI (or 12) 11 LPSI and 11 CS Pps and opens HPSI header valves Trips 12B RCP <p>Informs SRO RCS Pressure and Inventory Safety Function can NOT be met due to low PZR pressure and PZR level</p>	
	CRO	<ul style="list-style-type: none"> Verifies Turbine Bypass Valves or ADVs operating to maintain: (ADV's are in manual) <ul style="list-style-type: none"> SG pressures between 850 and 920 psia Tcold between 525° and 535°F Checks at least one SG available for controlled heat removal <ul style="list-style-type: none"> SG level between -170 and +30 inches <p>Informs SRO Core and RCS Heat Removal Safety Function is met</p>	
	CREW	<ul style="list-style-type: none"> Checks Containment pressure less than 0.7 psig Checks Containment temperature less than 120°F Checks containment radiation monitor alarms CLEAR with NO unexplained trends Checks RMS alarms CLEAR with NO unexplained trends: <ul style="list-style-type: none"> 1-RIC-5415 U-1 wide range noble gas 1-RI-1752 Condenser Offgas 1-RI-4014 Unit 1 SG Blowdown 1-RI-5415 Unit 1 Main Vent Gaseous Determines CNMNT parameters cannot be met due to rising press. and temp (negative trends) <p>Informs SRO CNMNT environment cannot be met and Rad Levels External to CNMNT is met</p>	
	SRO	<ul style="list-style-type: none"> Conducts EOP-0 mid-brief and directs operators to reverify Safety Function 	

Scenario No: 1		Event No. 7	Page 11 of 13
Event Description:		LOCA with steam line break/EOP-8	
Time	Position	Applicant's Actions or Behavior	
	Crew	<ul style="list-style-type: none"> Reverifies safety functions. Report Reactivity, and Vital Auxiliaries still complete and Pressure and Inventory still out. 	
	CRO	<ul style="list-style-type: none"> Verifies Turbine Bypass Valves or ADVs operating to maintain RCS temperature: <ul style="list-style-type: none"> Notes SG pressure is <850 psia and lowering Notes Tcold is <525°F and lowering MSIVs will be shut when SG pressure decreases to 800# or on SGIS B Checks at least one SG available for controlled heat removal <ul style="list-style-type: none"> SG level between -170 and +30 inches Verifies SGIS actuation when SGIS signal received Initiates Aux Feedwater to maintain S/G level <p>Informs SRO Core and RCS Heat Removal Safety Function cannot be met due to low Tc, low SG pressure in 12 SG and no RCPs (if secured due to CIS actuation)</p>	
	CREW	<ul style="list-style-type: none"> Checks Containment pressure less than 0.7 psig (notes rapidly rising CNMNT pressure) <ul style="list-style-type: none"> Notes CIS and CSAS actuations have occurred Verifies CIS and CSAS Trips all RCPs Checks Containment temperature less than 120°F (notes rapidly rising CNMNT temperature) Checks containment radiation monitor alarms CLEAR with NO unexplained trends (notes rising CNMNT Rad. Levels on CNMNT Hi Range) Checks RMS alarms CLEAR with NO unexplained trends: <ul style="list-style-type: none"> 1-RIC-5415 U-1 wide range noble gas 1-RI-1752 Condenser Offgas 1-RI-4014 Unit 1 SG Blowdown 1-RI-5415 Unit 1 Main Vent Gaseous <p>Informs SRO CNMNT Environment cannot be met due to high CNMNT pressure, temp and rad. levels and Rad Levels External to CNMNT is complete</p>	
	SRO	<ul style="list-style-type: none"> Determines Recovery Procedure per Diagnostic Flowchart: All Safety Functions met - NO Single Event Diagnosis – NO - EOP-8 (EOP flowchart may recommend EOP-4 however SRO should recognize an RCS leak exists due to 11A RCP seals and implement EOP-8) Directs transition to EOP-8 	
	SRO	<ul style="list-style-type: none"> Briefs crew prior to EOP-8 implementation Directs actions per EOP-8 	

Scenario No: 1		Event No. 7	Page 12 of 13
Event Description:		LOCA with steam line break/EOP-8	
Time	Position	Applicant's Actions or Behavior	
	SRO	<ul style="list-style-type: none"> • Directs Chemistry to sample SGs and to place the H2 monitors in service • Directs operators to select success paths for all safety functions • Verifies selected success paths • Determines sequence of success path performance (PIC-4, HR-2, CE-3, RC-1, VA-1, RLEC-2) • Directs operators to implement success paths (PIC and HR first) 	
	RO	<ul style="list-style-type: none"> • Establishes Pressure and Inventory Control: <ul style="list-style-type: none"> • Verifies SIAS actuation • Verifies SI flow • Maintains subcooling • Throttles SI flow when criteria are met: <ul style="list-style-type: none"> • Subcooling of >25°F based on CETs • PZR level > 101" • At least one SG available for heat removal: <ul style="list-style-type: none"> • SG level > -170" • Capable of being supplied with feedwater • Capable of being steamed • RLVMS indicates level above the top of the hot leg • Reactivity Control Safety Acceptance Criteria are met 	
	RO	<ul style="list-style-type: none"> • Attempts RCS leak isolation: (realizes an RCS leak exists via 11A RCP seals) <ul style="list-style-type: none"> • Verifies letdown isolation • Verifies no PORV leakage • Verifies head and PZR vent valves are shut • Checks for leakage into the CC system 	
	CRO	<ul style="list-style-type: none"> • Establishes Core and RCS heat removal (SG heat sink with SIS operation) • Determines if a SGTR exists <ul style="list-style-type: none"> • SG samples • RMS trends • SG level trends • Determines a SGTR does not exist 	

Scenario No: 1		Event No. 7	Page 13 of 13
Event Description:		LOCA with steam line break/EOP-8	
Time	Position	Applicant's Actions or Behavior	
	CRO	<ul style="list-style-type: none"> Determine if an ESDE exists: <ul style="list-style-type: none"> Determines an ESDE does exist and 12 SG is the affected SG: Isolates 12 SG: <ul style="list-style-type: none"> Shifts 12 ADV to 1C43 and verifies controller at minimum output Shuts 12 MSIV Verifies the MSIV bypass is shut Shuts 12 S/G FW Isolation valve Shuts 12 AFW Block valves Verifies 12 S/G B/D valves shut Shuts the Main Steam Upstream Drain valves Dispatches a plant operator to observe locally from the Aux. Bldg. Roof the S/G Safeties are shut Verifies 12 SG is isolated Maintains the unaffected SG within 25°F of the affected SG <ul style="list-style-type: none"> Notes ADVs do not operate from the Control Room Inform SRO Directs ABO to open 11 ADV locally Maintains RCS temperature after B/D 	
	RO	<ul style="list-style-type: none"> Verifies boration in progress Evaluates the need for HPSI throttling/termination Throttles SI flow to maintain PZR level Maintains RCS subcooling between 30 and 140°F Maintains PZR level between 141" and 190" 	
		<p>When 12 SG is isolated and RCS pressure and inventory are being controlled per PIC-4, then the scenario can be terminated.</p> <p>Note: The ERPIP classification for this event is an ALERT based on BA1 for Loss of RCS barrier or OA1 for EOP-8 implementation.</p>	

SCENARIO #1 SETUP

OVERVIEW/OBJECTIVES

To evaluate the applicant's ability to conduct a unit power increase, to implement the ARMs, OIs, AOPs, as appropriate, for malfunctioning systems and/or controls including failure of 11 CCW Pp, the PZR pressure control channel and selector switch, an RCP seal and the ADV controller. After the ADV controller fails the remaining seals fail on the affected RCP resulting in an RCS leak. After EOP-0 is entered, the RCS leak causes a SIAS actuation. SIAS 'A' fails to actuate requiring 11 or 12 HPSI Pump to be started manually to establish HPSI flow. As EOP-0 progresses, a steam leak begins in CNMNT from 12 SG requiring EOP-8 be implemented. The ADV Controller will not operate from the Control Room, the crew will have to operate the ADVs locally.

INSTRUCTOR SCENARIO INFORMATION

- | | | | |
|-------|----|--|-------------------|
| _____ | 1. | Reset to IC-13. | Draft Spin #0202 |
| _____ | 2. | Perform switch check. | Spin # Used _____ |
| _____ | 3. | Place simulator in CONTINUE, advance charts and clear alarm display. | |
| _____ | 4. | Place simulator in FREEZE. | |
| | 5. | Enter Malfunctions | |
| _____ | a. | 13 HPSI Pp Trip
SI002_03 at time zero | |
| _____ | b. | 12 Main CPU on 12 SG DFWCS OOS.
FW001_03 at time zero | |
| _____ | c. | Failure of SIAS Channels A to Actuate automatically and manually
ESFA001_01 & ESFA002_01 at time zero | |
| | d. | 13 CCW Pp Trip
CCW002_03 at time zero | |
| | e. | 11 CCW Pp Trip
CCW002_01 on F1 | |
| _____ | f. | PZR Pressure Channel 100X Fails High
RCS023_01 (High) on F2 | |
| | g. | 11A RCP Lower Seal Failure
RCS011_01 (0-100% over 3 min) on F3 | |
| _____ | h. | ADV Controller Fails High
MS015 (High) on F4 | |
| _____ | i. | 11A RCP Middle Seal failure
RCS012_01 (0-100% over 2 min) on F5 | |
-

SCENARIO #1 SETUP

j. 11A RCP Upper Seal Failure
RCS013_01 (0-100% over 2 min) on F6

k. 11A RCP Vapor Seal Failure
RCS014_01 (0-100% over 4 min) on F7

l. RCS Leak
RCS003 (5 to 50 GPM over 3 minutes) on F8

m. Steam Break in CNMNT
MS010_02 (0-25% over 3 min) on F9

6. Enter Panel Overrides

a. 1C06 - PZR Press. Controller Selector Switch to Channel X.

b. 1C13 - INSTR AIR COMPR(S) Annunciator (K-25) to ON.

c. 1C09 – Annunciators (2) for 13 HPSI Pp tagout- OFF.

d. 1C13 – Annunciators (2) for 13 CCW Pp tagout - OFF.

e. 1C03 – ADV Manual Setpoint to Zero. (Insert in EOP-0 per setup instructions)

7. Enter Remote Functions / Administrative

a. Danger tag 13 CCW Pump.

b. Danger tag 13 HPSI Pump.

c. Place off-normal tags on 12 FRV controller for 12 Main CPU Failure.

d. Place off-normal tags on the CCW Head Tank due to Makeup CV

e. Remote Functions to rackout 13 HPSI Pp.

f. Remote Functions to rackout 13 CCW Pp.

8. Set simulator time to real time, then place simulator in CONTINUE.

9. Give crew briefing.

a. Present plant conditions: 100% power - MOC/10,200 MWD/MTU. Unit 2 is in Mode 5. RCS Boron - 900 PPM.

b. Power history: 100% for previous 68 days.

c. Equipment out of service: 13 CCW Pump out of service due to a broken shaft. Estimated return to service is tomorrow-noon.

13 HPSI Pump out of service due motor bearing failure during the STP 24 hours ago. Estimated return to service in 30 hours. IAS 3.5.2.

SCENARIO #1 SETUP

12 Main CPU failed for 12 SG DFWCS. System Engineering is investigating.

d. Abnormal conditions:

11 CCW Head Tank Makeup CV is isolated due to leakby.

Alarm K-25 (INSTR AIR COMPR(S) is hanging, air compressors check out ok, alarm card swapped out but still in alarm. I&C is working up a troubleshooting plan.

e. Surveillances due:

STP-029 (CEA Movement Test) due by end of shift. SM will discuss with CRS shortly after turnover.

f. Instructions for shift:

Maintain 100% power.

____ 10. Allow crew 3-5 minutes to acclimate themselves with their positions.

____ 11. Instructions for the Booth Operator.

- a. Activate malfunctions **F1-F5** when each is cued by the lead evaluator.
- b. Activate the next malfunction (**F6**) after about a 5% power move and with the Lead Examiner's concurrence, then activate **F7 and F8**.
- c. When the SRO begins the EOP-0 mid-brief activate **F9**.
- d. When the crew exits EOP-0, **panel override** the ADV controller manual setpoint to Zero.

SCENARIO #1 SETUP

RESPONSES TO CREW REQUEST

If a request and response is not listed, delay response until reviewed with the examiner. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

REQUEST	RESPONSE
1. OWC coordinate investigation of failure of 11 CCW Pump.	Acknowledge request. After 5 minutes the electricians report the breaker is tripped on over current.
2. OWC/E&C investigate failure of the PRZR Press Controller, 1-PT-100X.	Acknowledge request.
3. OWC/System Engineer contacted regarding 11A RCP lower seal failure.	Acknowledge request.
4. OWC/E&C investigate failure of the ADV Controller in Auto.	Acknowledge request.
5. OWC/System Engineer contacted regarding 11A RCP regarding middle seal failure and GS-NPO and ESO of expeditious power reduction	Acknowledge request.
6. Directs ABO to manually open 11 ADV or TBO to operate from 1C43.	After three minutes operate as directed.

SCENARIO #1 SETUP

SHIFT TURNOVER

- | | | |
|-------|------------------------------------|--|
| I. | Present Plant Conditions | 100% |
| II. | Burnup: | 10200 MWD/MTU (MOC) |
| III. | Power History | 100% for previous 68 days. |
| IV. | Equipment out of Service: | <p>13 CCW Pump out of service due to a broken shaft. Estimated return to service is tomorrow-noon.</p> <p>13 HPSI Pump out of service due motor bearing failure during the STP 24 hours ago. Estimated return to service in 30 hours. IAS 3.5.2.</p> <p>12 Main CPU failed for 12 SG DFWCS. System Engineering is investigating.</p> |
| V. | Abnormal Conditions: | <p>11 CCW Head Tank Makeup CV is isolated due to leakby.</p> <p>Alarm K-25 (INSTR AIR COMPR(S) is hanging, air compressors check out ok, alarm card swapped out but still in alarm. I&C is working up a troubleshooting plan.</p> |
| VI. | Surveillances Due: | STP-029 (CEA Movement Test) due by end of shift. SM will discuss with CRS shortly after turnover. |
| VII. | Instructions for Shift | Maintain 100% power. |
| VIII. | U2 Status and Major Equipment OOS: | Mode 5 – no CW Pps and 23AFW Pp is OOS. |