

Facility: South Texas Project Date of Examination: 11/14/ 2005

Examination Level: RO

Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed:
Conduct of Operations	N	(A1) Determine Reactor Vessel Water Level K/A 2.1.20 (4.3) Ability to execute procedure steps.
Conduct of Operations	D	(A2) Perform a SDM Calculation K/A 2.1.12 (2.9), Ability to apply Technical Specifications for a system
Equipment Control	N	(A3) Determine H2 Recombiner Power Settings K/A 2.1.23 (3.9) Ability to perform specific and integrated plant procedures during all modes of operation.
Radiation Control	N	(A4) Terminating an unmonitored/unplanned release K/A 2.3.10 (2.9) Ability to control radiation releases
Emergency Plan	NA	NA

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

***Type Codes and Criteria:** (C)ontrol Room
(D)irect from bank (≤ 3 for ROs; (≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1 ; randomly selected)
(S)imulator

Approved: _____ Date _____
Facility Representative

Facility: South Texas Project Date of Examination: 11/14/ 2005

Examination Level: SRO

Operating Test Number: 1

Administrative Topic (see Note)	Type Code*	Describe activity to be performed:
Conduct of Operations	N	(A5) Review a SDM Calculation K/A 2.1.12 (4.0), Ability to apply Technical Specifications for a system
Conduct of Operations	N	(A6) Comply with AFD Tech Spec requirements for raising power. K/A 2.1.12 (4.0), Ability to apply Technical Specifications for a system
Equipment Control	D	(A7) Review a faulted ECO for ECW Pump K/A 2.2.13 (3.8), Knowledge of tagging and clearance procedures
Radiation Control	N	(A4) Terminating an unmonitored/unplanned release K/A 2.3.10 (3.2) Ability to control radiation releases
Emergency Plan	C, N, S	(A8) Declare an Emergency Action Level K/A 2.4.4.41 (4.1) Knowledge of the emergency action level and thresholds and classification.

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

***Type Codes and Criteria:** (C)ontrol Room
(D)irect from bank (≤ 3 for ROs; (≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1 ; randomly selected)
(S)imulator

Approved: _____ Date _____
Facility Representative

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: DETERMINE REACTOR VESSEL LEVEL

JPM NO.: A1

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: DETERMINE REACTOR VESSEL LEVEL

JPM No.: A1

Rev. No.: 1

STP Task: 91008, Knowledge of the purpose and principle of operation of the Reactor Vessel Water Level (RVWL) System

STP Objective: 91008, Explain the purpose and principle of operation of the Reactor Vessel Water Level (RVWL) System

**Related
K/A Reference:** 2.1.20 (4.3) Ability to execute procedure steps

References: OPOP02-II-0002, Rev. 6, RVWL Monitoring System

**Task Normally
Completed By:** RO

**Method
of Testing:** Performance

**Location
of Testing:** NTF

**Time
Critical Task:** NO

**Validation
Time:** 30 min

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 has experienced a Loss of Offsite Power. The crew has implemented the Emergency Operating Procedures (EOP's) and is currently in OPOP05-EO-ES03, Cooldown with Steam Void in Vessel.

QDPS indication for RVWL Channel 'C' has been lost. QDPS indication is available for RVWL Channel 'A' and Channel 'A' is operable.

A determination has been made from local panel readings for Channel 'C' that Reactor Vessel water level is 48% ("Hot Leg Centerline"). Channel 'C' data was obtained in accordance with OPOP02-II-0002, RVWL Monitoring System, Section 6.2, RVWL Test Mode, and an evaluation of the data was performed per Section 7.1, 7.2, Addendum 1 and Data Sheet 2.

INITIATING CUE:

The Unit Supervisor asks you to peer-check the RVWL determination by verifying Sections 7.1, 7.2 and Data Sheet 2 were performed correctly.

TWO errors exist for this JPM, one (1) Critical and one (1) Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

1. There are **NO** intended errors in the "Error Codes" or "Delta T" information on Data Sheet 2.
2. Carryover errors count as only one error (e.g., a single error that carries over from calculation to calculation, multiple line items with the same incorrect information, an erroneous result based on an erroneous value).
3. Only the Delta T information is given on Data Sheet 2. This is **NOT** an error, as the Delta T information is automatically calculated by the RVWL Monitoring System and is the only information needed to complete the evaluations required

JOB PERFORMANCE MEASURE INFORMATION SHEET

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines RVWL determination is incorrect. Sensor # 4 was marked 'dry', but should be 'wet' because it reads <200 °F and has no error codes. With this change the RVWL should be listed as 66%..

HANDOUTS:

Hand out copy of procedure OPOP02-II-0002, RVWL Monitoring System with completed Data Sheet.

NOTES:

A completed Answer KEY is provided for the Evaluator. The Key contains the same errors as the handout. The location of the errors will be highlighted and described on the evaluator copy.
Do Not Hand to the Applicant.

VERIFICATION OF COMPLETION

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1 (C)*

Review Section 7.1 and Channel 'C' RVWL System Data Sheet (Data Sheet 2 of 0POP02-II-0002, RVWL Monitoring System)

Standard:

Determines the following errors exist:

- 1) **RVWL determination is incorrect. Correct determination is that RVWL is 66% ("Top of Hot Leg Nozzle") based on sensors 4-8 being wet and the guidance in procedure Addendum 1, RVWL Sensor Elevations.*
- 2) *Sensor #7 is inoperable based on error codes and value of Delta T, however it's sensor #8 that was marked inoperable.*

Comment:

- 1) **Denotes a critical error. Error #1 is an incorrect determination of RVWL that could lead to improper EOP implementation.*
- 2) *Error #2 constitutes miss-marking the Data Sheet by switching information for two adjacent sensors. Both Tech Spec operability and RVWL determination are unaffected by this error.*

STEP CONTINUED ON NEXT PAGE

VERIFICATION OF COMPLETION

Cue:

Notes:

-
- **TERMINATE THE JPM –**
JPM STOP TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure: DETERMINE REACTOR VESSEL LEVEL

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 has experienced a Loss of Offsite Power. The crew has implemented the Emergency Operating Procedures (EOP's) and is currently in OPOP05-EO-ES03, Cooldown with Steam Void in Vessel.

QDPS indication for RVWL Channel 'C' has been lost. QDPS indication is available for RVWL Channel 'A' and Channel 'A' is operable.

A determination has been made from local panel readings for Channel 'C' that Reactor Vessel water level is 48% ("Hot Leg Centerline"). Channel 'C' data was obtained in accordance with OPOP02-II-0002, RVWL Monitoring System, Section 6.2, RVWL Test Mode, and an evaluation of the data was performed per Section 7.1, 7.2, Addendum 1 and Data Sheet 2.

INITIATING CUE:

The Unit Supervisor asks you to peer-check the RVWL determination by verifying Sections 7.1, 7.2 and Data Sheet 2 were performed correctly.

TWO errors exist for this JPM, one (1) Critical and one (1) Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

1. There are **NO** intended errors in the "Error Codes" or "Delta T" information on Data Sheet 2.
2. Carryover errors count as only one error (e.g., a single error that carries over from calculation to calculation, multiple line items with the same incorrect information, an erroneous result based on an erroneous value).
3. Only the Delta T information is given on Data Sheet 2. This is NOT an error, as the Delta T information is automatically calculated by the RVWL Monitoring System and is the only information needed to complete the evaluations required

	0POP02-II-0002	Rev. 6	Page 1 of 2
RVWL Monitoring System			
Addendum 1	RVWL Sensor Elevations		Page 1 of 1

NOTE

- Top of Core is elevation 28 ft 2 inches.
- SG spillover is elevation 34 ft. 3.8 inches.
- IF the Delta T is between 25°F and 200°F, THEN RECORD the sensor is "wet" (covered with water) in the Wet/Dry column of the table on **Error! Reference source not found.** or 2.
- IF the Delta T is greater than 200°F, THEN RECORD the sensor is "dry" (NOT covered with water) in the Wet/Dry column of the table on **Error! Reference source not found.** or 2.
- Example: IF SENSOR No. 2 DRY is circled AND SENSOR No. 3 WET is circled, THEN the RVWL PLENUM INDICATED LEVEL (%) would be 85%, SENSOR Location 34' 10.1" and the LEVEL DESCRIPTION would be Plenum Not Full.

SENSOR No. WET/DRY (circle one)	UPPER HEAD INDICATED LEVEL (%)	PLENUM INDICATED LEVEL (%)	SENSOR	LEVEL DESCRIPTION
All Wet	100	100	46' 4.75"	Upper Head Full
SENSOR No. 1 WET/DRY	64	100	45' 3.4"	Upper Head Partially Drained
SENSOR No. 2 WET/DRY	0	100	39' 4.9"	Plenum Full
SENSOR No. 3 WET/DRY	0	85	34' 10.1"	Plenum Not Full
SENSOR No. 4 WET/DRY	0	66	33' 5.5"	Top of Hot Leg Nozzle
SENSOR No. 5 WET/DRY	0	48	32' 3"	Hot Leg Centerline
SENSOR No. 6 WET/DRY	0	33	31' 0.5"	Bottom of Hot Leg Nozzle
SENSOR No. 7 WET/DRY	0	20	30' 1.6"	Midway between Hot Leg Nozzle and Upper Core Plate
SENSOR No. 8 WET/DRY	0	0	29' 2.7"	Upper Core Plate

Determination of RV level should be at 66% based on correct interpretation of Sensor #4 data. See Data Sheet 2 (next pg.)

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RVWL Monitoring System			
Data Sheet 2	Channel C RVWL System Data Sheet	Page 1 of 1	

UNIT 1

(circle one)

UNIT 2

1.0 HEAD Level 0% PLENUM Level 48%

2.0 Error Codes E06, E19

3.0 Test Mode Data Table

TEST I.D. No.	SENSOR No.	PARAMETER	VALUE	WET/DRY	LEVEL	SEN OPER	
1	1	Delta T	215 °F	dry	HEAD	yes	1
2	1	T Heated					
3	1	T Unheated					
4	2	Delta T	2310 °F	dry	0%	no	PLENUM
5	2	T Heated					
6	2	T Unheated					
7	3	Delta T	630 °F	dry	PLENUM	yes	5
8	3	T Heated					
9	3	T Unheated					
10	4	Delta T	190 °F	dry		yes	5
11	4	T Heated					
12	4	T Unheated					
13	5	Delta T	70 °F	wet		yes	5
14	5	T Heated					
15	5	T Unheated					
16	6	Delta T	90 °F	wet		yes	5
17	6	T Heated					
18	6	T Unheated					
19	7	Delta T	15 °F	wet		yes	5
20	7	T Heated					
21	7	T Unheated					
22	8	Delta T	100 °F	wet		yes	5
23	8	T Heated					
24	8	T Unheated					

Critical Error (#1):
Incorrect RVWL determination. Based on sensor 4 being valid and wet, RVWL should be recorded as 66%

Should be marked as 'wet'.
With this location 'wet' RV level would be 66%, not 48%

4.0 Technical Specification 3.3.3.6 [ITS 3.3.3] is SATISFIED: YES ___ NO ___

Error #2: (Non-critical) Sensor status and operability information is switched for Sensors #7 and #8. Sensor #7 should be inoperable due to the low Delta T and Error Code E19.

Day now
Date _____ Time _____

This procedure, when complete, SHALL be retained for five years

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: **PERFORM A SHUTDOWN MARGIN CALCULATION**

JPM NO.: **A2**

REVISION: **1**

JPM Title: PERFORM A SHUTDOWN MARGIN CALCULATION

JPM No.: A2

Rev. No: 1

STP Task: 76950 Perform a Shutdown Margin Verification

STP Objective: 76950 Perform a Shutdown Margin Verification in accordance with 0PSP10-ZG-0003

Related K/A Reference: K/A 2.1.12 (2.9), Ability to apply Technical Specifications for a system.

References: Unit 1 Plant Curve Book.
Nuclear Design Report, Unit 1, Cycle 13.
0PSP10-ZG-0005, Shutdown Margin Verification Modes 1 & 2, Rev. 1

Task Normally Completed By: RO/SRO

Method of Testing: Actual

Location of Testing: N/A

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 40 minutes

Required Materials (Tools/Equipment):

- Unit 1 Plant Curve Book for Cycle 13
- Unit 1 Cycle 13 NDR
- Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is operating at 100% power. During performance of 0PSP03-RS-0001, Monthly Control Rod Operability, a problem was noted with two rods. I&C has determined that control rods J-10 and F-6 in control bank C are stuck. Rod F-6 is known to be trippable and is stuck due to electrical control logic problems. Rod J-10 is known to be untrippable (mechanically stuck). Current plant status is:

- Highest NI channel: 100%
- RCS Tavg - 592 °F
- RCS Boron concentration - 1500 ppm
- RCCA Bank Position: All at 250 steps, except Control Bank D at 230 steps
- Current Cycle 13 burnup - 150 MWD/MTU - from Power History Database (PHDB). This is the current value and was determined early this morning (i.e. no additional EFPD have been attained) The related steps have been completed on Form 2 to reflect this.

INITIATING CUE:

The Shift Supervisor has requested you to perform a shutdown margin calculation per 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to verify compliance with Technical Specifications. You are to begin at step 5.3.

For the purposes of this JPM use the following instructions:

- 1. Core Burnup is given as 150 MWD/MTU. Consider this to be '0' MWD/MTU on those Figures and/or Tables that don't have data for 150 MWD/MTU (i.e. no interpolation required to obtain 150 MWD/MTU data).**
- 2. You are to use table data where possible instead of curve data to minimize interpolation errors from reading the curve data.**
- 3. 'most conservative' values can be used as allowed by the procedure.**

JOB PERFORMANCE MEASURE INFORMATION SHEET

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Performs a Shutdown Margin Calculation and determines that the existing shutdown margin meets the requirement of Technical Specification 3.1.1.1.

HANDOUTS:

Student copy of 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2. This handout copy has some information filled in to match conditions given in the ‘Initial Conditions’.

NOTES:

The procedure used to perform the Shutdown Margin calculation allows interpretation of data as well as a ‘most conservative’ approach. Because of this, there will be a range of numerical results, however the end result should be the same (i.e. numbers within this range should all indicate that Tech Spec Shutdown Margin requirements are met).

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Record the following information on Form 2 (step 5.3)

Unit number, Cycle number, date and time
Reactor Power level (%) and source
RCCA bank positions from CP-005 step counters or DRPI
RCS Boron concentration

Standard:

Records required information on Form 2

Comment:

This information is given in the Initial Conditions. If asked by candidate, information provided as the initial conditions are current.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Calculate Cycle Burnup for the date and time recorded in step 5.3.1. (step 5.4)

Standard:

Determines the Cycle Burnup is 150 MWD/MTU

Comment:

This step updates the cycle power history that is periodically calculated to the current date/time. The initial conditions indicate that no update is required (value for cycle burnup is current for present date/time). Form 2 of the surveillance has been updated to reflect this. No further action is required of the candidate for this step.

Notes:

SAT/UNSAT Performance Step: 3

Obtain the All Rods Inserted Less Most Reactive Stuck Rod Worth from the NDR. Record on Form 2 as a positive value in units of pcm. (step 5.5)

Standard:

- *Locates in the NDR, on Table 6-3, page 6-9, the inserted RCCA worth (5.9 % Δp)*
- *Converts this value to 5900 pcm*
- *Records worth on Form 2.*

Comment:

The value in the NDR is given in % Δp and must be converted to pcm. There's a note in the procedure to this effect.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Obtain the Most Reactive Stuck Rod Worth from the NDR. Record on Form 2 as a positive value in units of pcm. (step 5.6)

Standard:

- *Locates in the NDR, on Table 6-3, page 6-9, the most reactive stuck rod worth (0.75 – 0.94 % $\Delta\rho$),*
- *Converts value to 750 or 940 pcm*
- *Records worth on Form 2.*

Comment:

The procedure allows taking the most conservative value, thus the student could use either 0.75 % $\Delta\rho$ for BOL or 0.94 % $\Delta\rho$ for EOL. The EOL value is most conservative.

Notes:

SAT/UNSAT Performance Step: 5

Obtain the Inserted RCCA Bank Worth at the RCCA positions recorded in step 5.3.3 from the NDR. Record the Inserted RCCA Bank Worth on Form 2 as a positive value with units of pcm. (step 5.7)

Standard:

- *Locates Tables A-10, A-11, and A-12 in the NDR (pages A-20 through A-22).*
- *Determines Inserted RCCA Bank worth is 71 pcm (BOL) from Table A-10*
- *Records worth on Form 2.*

Comment:

An EOL value of 114 pcm could be used for conservatism, however it will not materially affect the result of the SDM determination.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6

Record on Form 2 the number of Inoperable RCCA's which are inoperable due to being immovable as a result of excessive friction or mechanical interference, or known to be untrippable. (step 5.8)

Determine the Inoperable RCCA Worth by multiplying the Most Reactive Stuck Rod Worth (step 5.6) by the number of Inoperable RCCA's (step 5.8). Record the Inoperable RCCA Worth on Form 2. (step 5.9)

Standard:

Records 1 RCCA as being inoperable (because only one is known to be untrippable) on Form 2

Records Inoperable RCCA Worth as 750 pcm or 940 pcm on Form 2*

Comment:

The initial conditions stipulate that 1 RCCA is untrippable

* There are two possible values based on whether a 'most conservative' calculation is being used.

Notes:

SAT/UNSAT Performance Step: 7

Determine the Available RCCA Worth by subtracting the Inserted RCCA Bank Worth (step 5.7) and the Inoperable RCCA Worth (step 5.9) from the All Rods Inserted Less Most Reactive Stuck Rod Worth (step 5.5.). Record the Available RCCA Worth on Form 2. (step 5.10)

Standard:

- *Determines Available RCCA Worth is 4889 or 5079 pcm**
- *Records value on Form 2*

Comment:

*There are two possible values based on whether a 'most conservative' calculation is being used.

Notes:

SAT/UNSAT Performance Step: 8

JOB PERFORMANCE MEASURE CHECK SHEET

Obtain the Total Power Defect from the NDR. Record the Total Power Defect on Form 2 as a negative value with units of pcm. (step5.11)

Standard:

- *Determines Power Defect from NDR Table 5-7 on page 5-29 to be -1593.6 pcm*
- *Records value on Form 2*

Comment:

The values of Reactor power, time in life and boron will exactly match the table data.

Notes:

SAT/UNSAT Performance Step: 9

Determine the Actual Shutdown Margin by adding the Total Power Defect (step 5.11) to the Available RCCA Worth (step 5.10). record the Actual Shutdwon Margin on Form 2. (step5.12)

Standard:

- *Determines the Actual Shutdown Margin to be 3295.4 pcm or 3485.4 pcm*
- *Records value on Form 2*

Comment:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Obtain the Required Shutdown Margin from the Plant Curve Book Figure 5.4. Record the Required Shutdown Margin on Form 2. (step5.13)

Standard:

- *Determines the Required Shutdown Margin to be 2653.9 pcm*
- *Records on Form 2*

Comment:

The actual value for 150 MWD/MTU is slightly less, however the JPM instructs the students to use '0' MWD/MTU if a specific value for 150 MWD/MTU is not available on the chart or figure.

Notes:

SAT/UNSAT Performance Step: 11 (C)

Compare the Actual Shutdown Margin recored on Form 2 to the Required Shutdown Margin recored on Form 2. (step5.14)

If the Acceptance Criteria isn not met, immediatley notify the Shift Supervisor(step5.15)

Standard:

Compares the Acutual Shutdown Margin to the Required Shutdown Margin and determines the Acceptance Criteria is met. Informs the Shift Supervisor (Examiner)of the result.

Comment:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET



- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A2 PERFORM A SHUTDOWN MARGIN CALCULATION

Applicant's Name:

SSN:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is operating at 100% power. During performance of 0PSP03-RS-0001, Monthly Control Rod Operability, a problem was noted with two rods. I&C has determined that control rods J-10 and F-6 in control bank C are stuck. Rod F-6 is known to be trippable and is stuck due to electrical control logic problems. Rod J-10 is known to be untrippable (mechanically stuck). Current plant status is:

- Highest NI channel: 100%
- RCS Tavg - 592 °F
- RCS Boron concentration - 1500 ppm
- RCCA Bank Position: All at 250 steps, except Control Bank D at 230 steps
- Current Cycle 13 burnup - 150 MWD/MTU - from Power History Database (PHDB). This is the current value and was determined early this morning (i.e. no additional EFPD have been attained) The related steps have been completed on Form 2 to reflect this.

INITIATING CUE:

The Shift Supervisor has requested you to perform a shutdown margin calculation per 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to verify compliance with Technical Specifications. You are to begin at step 5.3.

For the purposes of this JPM use the following instructions:

- 4. Core Burnup is given as 150 MWD/MTU. Consider this to be '0' MWD/MTU on those Figures and/or Tables that don't have data for 150 MWD/MTU (i.e. no interpolation required to obtain 150 MWD/MTU data).**
- 5. You are to use table data where possible instead of curve data to minimize interpolation errors from reading the curve data.**
- 6. 'most conservative' values can be used as allowed by the procedure.**

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Shutdown Margin Verification - Modes 1 and 2			
Quality	Non Safety-Related	Usage: Referenced	Effective Date: 12/12/01
J. E. Eichenlaub	Rory Warren	J. C. Garza	NF&A
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

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Shutdown Margin Verification - Modes 1 and 2			

1.0 Purpose and Scope

- 1.1 To verify that the SHUTDOWN MARGIN satisfies the requirements of Technical Specification 4.1.1.1.a when in Modes 1 or 2 with an inoperable control rod(s).

2.0 Responsibilities

- 2.1 The procedure performer SHALL perform the procedure and complete the data package.
- 2.2 The procedure verifier SHALL verify all items in the data package as specified in the procedure.
- 2.3 The Shift Supervisor or designee SHALL complete the Second Review of Test Results on Form 1.
- 2.4 The Shift Supervisor SHALL complete the Plant Operations Review of Test Results on Form 1 if acceptance criteria are NOT met.

3.0 Precautions and Notes

- 3.1 Asterisk (*) on the checkoff denotes a step within the procedure that SHALL be signed off in the data package.
- 3.2 This procedure for calculating Shutdown Margin allows the performer to use conservative values. The use of conservative values can simplify the procedure performance by eliminating some of the interpolations. However, too many conservatisms may cause unsatisfactory results. IF unsatisfactory results are obtained using conservatisms, THEN calculations should be re-performed with conservative assumptions removed as required.
- 3.3 Reactivity and Shutdown Margin values presented in the Nuclear Design Report, Technical Specifications and the Core Operating Limit Report may be provided in units of % $\Delta\rho$. These values may be converted to units of pcm by multiplying by 1000 pcm/% $\Delta\rho$ (i.e. 0.85 % $\Delta\rho$ = 850 pcm).
- 3.4 IF test results do NOT satisfy the acceptance criteria, THEN immediately notify the Shift Supervisor who SHALL complete the applicable portion of Form 1.

4.0 Prerequisites

- 4.1 The plant is in Mode 1 or Mode 2. BH
- 4.2 Reactor power is stable, drifting at a rate of no more than 2% per hour. BH
- 4.3 The Nuclear Design Report (NDR) or NDR Startup Package is available. BH

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Shutdown Margin Verification - Modes 1 and 2			

4.4 Notify the Shift Supervisor to review Technical Specifications 3.1.1.1 and 3.1.3.1. BH

4.5 Obtain permission from the Shift Supervisor to commence testing and sign Form 1. BH

5.0 Procedure

5.1 Verify applicable Prerequisites have been met and Precautions and Notes have been read AND sign Form 1. BH

5.2 Ensure the test start is logged into the control room log book. BH

5.3 Record the following information on Form 2. _____

5.3.1 Unit number, Cycle number, date and time. _____

5.3.2 Reactor power level (%) and source. _____

5.3.3 RCCA bank positions from CP-005 step counters or DRPI. _____

5.3.4 RCS Boron Concentration (ppm). A known conservative RCS Boron Concentration (lower value of RCS Boron Concentration) may be used if a representative RCS Boron Concentration is not available. _____

NOTE

Since Reactor Engineering typically updates PHDB once a week, the latest Cycle Burnup in PHDB may be one to two weeks old. This procedure will provide instructions to calculate the current Cycle Burnup based on the latest Cycle Burnup in PHDB and the estimated burnup since the latest Cycle Burnup in PHDB.

5.4 Calculate Cycle Burnup (MWD/MTU) for the Date and Time recorded in Step 5.3.1. BH

5.4.1 Obtain the latest Cycle Burnup (MWD/MTU), Date and Time from Power History Data Base (PHDB) and record on Form 2. BH

5.4.2 Estimate the number of Effective Full Power Days (EFPD) from the Date and Time of the latest Cycle Burnup in PHDB to the Date and Time recorded in Step 5.3.1. Record the Estimated EFPD on Form 2. BH

5.4.3 Record Rated Thermal Power (MWt) on Form 2. Rated Thermal Power is provided in Plant Curve Book Table 5.2. BH

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Shutdown Margin Verification - Modes 1 and 2			

5.4.4 Record the Core Loading (MTU) on Form 2. The Core Loading is typically located in NDR Table 2-1 or in PHDB.

BH

5.4.5 Calculate and Record on Form 2 the Cycle Burnup (MWD/MTU) using the formula provided on Form 2.

BH

NOTE

- Reactivity values presented in the Nuclear Design Report (NDR) Table 6-3 are typically provided in units of $\% \Delta \rho$. These values SHALL be converted to units of pcm by multiplying by 1000 pcm/ $\% \Delta \rho$ (i.e. $0.85 \% \Delta \rho = 850$ pcm).
- Reactivity values used for this procedure should be obtained from Hot Zero Power (HZP) data tables and curves in the NDR.

5.5 Obtain the All Rods Inserted Less Most Reactive Stuck Rod Worth from the NDR. Record the All Rods Inserted Less Most Reactive Stuck Rod Worth on Form 2 as a positive value with units of pcm.

- The All Rods Inserted Less Most Reactive Stuck Rod Worth is typically located in NDR Table 6-3 (Summary of Control Rod Reactivity Requirements and Shutdown Margin).
- The value should be interpolated between the BOL (assume 0 MWD/MTU) and EOL values provided.
- The LOWER conservative BOL or EOL value may be used.

5.6 Obtain the Most Reactive Stuck Rod Worth from the NDR. Record the Most Reactive Stuck Rod Worth on Form 2 as a positive value with units of pcm.

- The Most Reactive Stuck Rod Worth is typically located in NDR Table 6-3 (Summary of Control Rod Reactivity Requirements and Shutdown Margin).
- The value should be interpolated between the BOL (assume 0 MWD/MTU) and EOL values provided.
- A HIGHER conservative BOL or EOL value may be used.

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Shutdown Margin Verification - Modes 1 and 2			

5.7 Obtain the Inserted RCCA Bank Worth at the RCCA positions recorded in Step 5.3.3 from the NDR. Record the Inserted RCCA Bank Worth on Form 2 as a positive value with units of pcm. _____

- The Inserted RCCA Bank Worth should be obtained from the NDR at HZP, HFP Eq. Xenon conditions.
- The Inserted RCCA Bank Worths are typically located in NDR Appendix A Tables A-10, A-11, and A-12 (Differential and Integral Rod Worth vs. Steps Withdrawn, Banks D, C, and B Moving with Overlap at BOL/MOL/EOL, HZP, HFP Eq. Xenon).
- The value should be interpolated between the BOL, MOL and EOL values provided.
- A Conservative LARGER value may be used instead of interpolating.

5.8 Record on Form 2 the Number of Inoperable RCCA's which are inoperable due to being immovable as a result of excessive friction or mechanical interference, or known to be untrippable. _____

5.9 Determine the Inoperable RCCA Worth by multiplying the Most Reactive Stuck Rod Worth (Step 5.6) by the Number of Inoperable RCCA's (Step 5.8). Record the Inoperable RCCA Worth on Form 2. _____

5.10 Determine the Available RCCA Worth by subtracting the Inserted RCCA Bank Worth (Step 5.7) and the Inoperable RCCA Worth (Step 5.9) from the All Rods Inserted Less Most Reactive Stuck Rod Worth (Step 5.5). Record the Available RCCA Worth on Form 2. _____

5.11 Obtain the Total Power Defect from the NDR. Record the Total Power Defect on Form 2 as a negative value with units of pcm. _____

- The Total Power Defect is typically located in NDR Table 5-7 (Total Power Defect versus power Level at BOL, MOL, and EOL, FOP).
- The value should be interpolated to the Reactor Power, Burnup, and Boron Concentration recorded in Step 5.3 and Step 5.4.5.
- A Conservative MORE NEGATIVE value may be used instead of interpolating.

5.12 Determine the Actual Shutdown Margin by adding the Total Power Defect (Step 5.11) to the Available RCCA Worth (Step 5.10). Record the Actual Shutdown Margin on Form 2. _____

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Shutdown Margin Verification - Modes 1 and 2			

5.13 Obtain the Required Shutdown Margin from Plant Curve Book Figure 5.4. Record the Required Shutdown Margin on Form 2. _____

- The value should be interpolated for the Burnup recorded in Step 5.4.5.
- A Conservative LARGER value may be used instead of interpolating.

5.14 Compare the Actual Shutdown Margin recorded on Form 2 to the Required Shutdown Margin recorded on Form 2. _____

5.15 If the Acceptance Criteria is not met, immediately notify the Shift Supervisor. _____

5.16 Forward the test package to a verifier who SHALL perform the following: _____

5.16.1 Verify all data and calculations on completed forms. _____

5.16.2 Sign the "Verified By" line on completed forms containing calculations. _____ *

5.16.3 Forward the test package to the test performer. _____

5.17 Evaluate the test results against the acceptance criteria. _____

5.18 Indicate the test results, sign, and enter the date and time of test completion on Form 1. _____ *

5.19 IF test results did NOT satisfy the acceptance criteria, THEN perform the following: _____

5.19.1 Immediately notify the Shift Supervisor who SHALL complete the applicable portion of Form 1. _____

5.19.2 Initiate a Condition Report. _____

5.20 The test performer SHALL ensure all procedure performers and verifiers print their names, sign, and initial Form 1. _____

5.21 Indicate the reason for performing this test on Form 1. _____

5.22 Notify the Shift Supervisor that testing is complete AND sign Form 1. _____ *

5.23 Ensure this surveillance is logged as complete in the Control Room Log Book. _____

5.24 Mark sections of forms which were NOT completed with N/A or similar notation. _____

5.25 TRANSFER the Data Package to the Shift Supervisor. _____

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Shutdown Margin Verification - Modes 1 and 2			

5.26 The Shift Supervisor SHALL:

5.26.1 PERFORM a second review of the test data. _____

5.26.2 SIGN and RECORD the date and time on Form 1. _____ *

5.26.3 TRANSFER the Data Package in accordance with 0PGP03-ZA-0055,
Plant Surveillance Scheduling. _____

5.27 IF this procedure was performed for surveillance credit, THEN perform the following:

5.27.1 Complete a surveillance Test Completion Notification (TCN). _____

5.27.2 Place a copy of the TCN with the test package AND forward the original to the Surveillance Scheduler. _____

5.27.3 Record the applicable Work Activity Number (WAN) on Form 1. _____

6.0 Acceptance Criteria

The Actual Shutdown Margin shall be greater than or equal to the Required Shutdown Margin (Technical Specifications 3.1.1.1) when the plant is in Mode 1 and 2.

7.0 References

7.1 STPEGS Technical Specification 3/4.1.1.1

7.2 STPEGS Plant Curve Book, applicable unit.

7.3 Nuclear Design Report, applicable unit and cycle.

7.4 0PGP03-ZE-0004, Plant Surveillance Program.

8.0 Support Documents

8.1 Form 1 - Data Package Cover Sheet

8.2 Form 2 – Shutdown Margin Calculations - SAMPLE

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Shutdown Margin Verification - Modes 1 and 2			
Form 2	Shutdown Margin Calculations - SAMPLE		Page 1 of 2

Unit 1 Cycle 13

Operating Data

5.3.1 Date today Time now

5.3.2 Reactor Power Level 100 % % from NI's

5.3.3 RCCA Bank Positions (Steps) 250 250 250 230 250
CBA CBB CBC CBD S/D Banks

5.3.4 RCS Boron Concentration 1500 ppm

Cycle Burnup

5.4.1 Latest PHDB Burnup (PHDB B/U) 150 MWD/MTU today now
Date Time

5.4.2 EFPD from PHDB Update (EFPD) 0 EFPD

5.4.3 Rated Thermal Power (RTP) 3853 MWt

5.4.4 Core Loading (CL) 102.8 MTU

5.4.5 Cycle Burnup 150 MWD/MTU

$$= (\text{PHDB B/U}) + [(\text{EFPD}) \times (\text{RTP}) \div (\text{CL})]$$

$$= 5.4.1 + (5.4.2 \times 5.4.3 \div 5.4.4)$$

Completed By: _____ Date: _____

Verified By: _____ Date: _____

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Shutdown Margin Verification - Modes 1 and 2			
Form 2	Shutdown Margin Calculations - SAMPLE		Page 2 of 2

Unit 1 Cycle 13

Rod Worths

5.5 All Rods Inserted Less Most Reactive
Stuck Rod Worth (ARI LMRR) (+) 5900 pcm

5.6 Most Reactive Stuck Rod Worth (MRR) (+) 750/940 pcm

5.7 Inserted RCCA Bank Worth (IRW) (+) 71 pcm

5.8 Number of Inoperable RCCA 1

5.9 Inoperable RCCA Worth (INOP RW) (+) 750/940 pcm
= (MRR) × (Number of Inoperable RCCA)
= 5.6 × 5.8

5.10 Available RCCA Worth (+) 4889/5079 pcm
= (ARI LMRR) - (IRW) - (INOP RW)
= 5.5 - 5.7 - 5.9

Note: an EOL value of 114 may be used here for conservatism, however it will not materially affect the outcome.

Power Defect

5.11 Total Power Defect (-) 1593.6 pcm

These values will be 43 pcm less if a value of 114 pcm was used per the NOTE above. They will still meet SDM requirements.

Shutdown Margin Verification

5.12 Actual Shutdown Margin () 3295.4/3485.4 pcm
= (Available RCCA Worth) + (Total Power Defect)
= 5.10 + 5.11

5.13 Required Shutdown Margin (+) 2653.9 pcm

5.14 Actual Shutdown Margin ≥ Required Shutdown Margin?

☒ Yes (Acceptance Criteria Satisfied) ☐ No

Completed By: _____ Date: _____

Verified By: _____ Date: _____

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: DETERMINE H2 RECOMBINER POWER SETTINGS

JPM NO.: A3

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: DETERMINE H2 RECOMBINER POWER SETTINGS

JPM No.: A3

Rev. No.: 1

STP Task: T83738, Respond to a Containment High Pressure Condition

STP Objective: CRO84125, Determine H2 concentration/Turn on H2 Recombiners

**Related
K/A Reference:** K/A 2.1.23 (3.9) Ability to perform specific and integrated plant procedures during all modes of operation.

References: OPOP02-CG-0001, Electric Hydrogen Recombiners, Rev. 5

**Task Normally
Completed By:** RO

**Location
of Testing:** NTF

**Time
Critical Task:** NO

**Validation
Time:** 15 minutes

Required Materials (Tools/Equipment): Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 was operating at 100% power when it experienced a loss of coolant accident. The Control Room crew is currently in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant at the step to monitor Containment Hydrogen levels. Hydrogen concentration is reported to be at 0.7%.

Another operator has completed some initial steps to place the Hydrogen Recombiners in service in accordance with 0POP02-CG-0001, Electric Hydrogen Recombiners and has completed steps 5.1 through 5.7.

INITIATING CUE:

The Unit Supervisor directs you to continue in 0POP02-CG-0001, Electric Hydrogen Recombiners, and determine the appropriate Hydrogen Recombiner power setting for Recombiner 1A AND Recombiner 1B by performing steps 5.8 and 5.9.

NOTE: DO NOT use a 'most conservative' approach. Perform your determination as accurately as you can.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

*Determines Hydrogen Recombiner power setting as follows: Recombiner 1A: 71.4 – 72.42 kW
Recombiner 1B: 66.5 – 67.45 kW*

HANDOUTS:

Student Handout copy of 0POP02-CG-0001, Electric Hydrogen Recombiners

NOTES:

A completed Answer KEY is provided for the Evaluator. **Do Not Hand to the Applicant.**

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Determine Pressure Factor Cp from “Recombiner Power Correction Factor versus Containment Pressure Curve”. (Refer to Addendum 1)

Standard:

Determines Pressure Factor Cp is 1.41 based on post-LOCA containment pressure and pre-LOCA containment temperatures provided on the student handout copy of the procedure.

Comment:

The candidate may review the Prerequisites and/or the Notes and Precautions of the procedure

An acceptable range of Cp will be 1.40-1.42. These values will be used to calculate the range of correct power settings.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Calculate required power settings for the desired Recombiner by multiplying the Pressure Factor (Cp) times the reference power.

Standard:

Determines Recombiner 1A power setting should be 71.4 – 72.42 kW

Determines Recombiner 1B power setting should be 66.5 – 67.45 kW

Comment:

Refer to KEY provided with this JPM for details of calculations.

If the candidate gets only one of the two correct, consider asking him/her to perform a re-verification (to provide an opportunity to correct a math error).

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: Sat / Unsat

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 was operating at 100% power when it experienced a loss of coolant accident. The Control Room crew is currently in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant at the step to monitor Containment Hydrogen levels. Hydrogen concentration is reported to be at 0.7%.

Another operator has completed some initial steps to place the Hydrogen Recombiners in service in accordance with 0POP02-CG-0001, Electric Hydrogen Recombiners and has completed steps 5.1 through 5.7.

INITIATING CUE:

The Unit Supervisor directs you to continue in 0POP02-CG-0001, Electric Hydrogen Recombiners, and determine the appropriate Hydrogen Recombiner power setting for Recombiner 1A AND Recombiner 1B by performing steps 5.8 and 5.9.

NOTE: DO NOT use a 'most conservative' approach. Perform your determination as accurately as you can.

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Electric Hydrogen Recombiners			

<u>NOTE</u>

Electric Hydrogen Recombiners

Operation of the recombiners is done manually from the Main Control Room on CP002.

5.0 Post-LOCA Recombiner Start-up

- 5.1 VERIFY Recombiners 1A(2A) & 1B(2B) potentiometers labeled “PWR ADJ” are set at zero (000).

1A(2A) BH

1B(2B) BH

- 5.2 SELECT which of the Recombiners 1A(2A) or 1B(2B) is to be placed in service.

1A(2A) BH

1B(2B) BH

- 5.3 VERIFY white lamp labeled “PWR AVAIL” is lit.

1A(2A) BH

1B(2B) BH

- 5.4 TURN the switch labeled “PWR” to the ON position.

1A(2A) BH

1B(2B) BH

- 5.5 VERIFY red “PWR” indicator lamp is lit.

1A(2A) BH

1B(2B) BH

NOTE

The Post LOCA Containment Pressure and the Pre-LOCA Containment Temperature recorded in Steps 5.6 and 5.7 are the parameters used in Step 5.8 to

Information provided on the candidates' copy.

- 5.6 DETERMINE Containment pressure prior to and after a LOCA from Chart Recorder for “CONTAINMENT PRESS 1(2)-HC-PR-0934” **OR** “WR PRESS 1(2)-HC-PR-9759”. (CP018)

Containment Pressure Prior to LOCA

 0.2 psig

Post LOCA Containment Pressure

 8.5 psig

Electric Hydrogen Recombiners

Information provided on the candidates' copy.

- 5.7 DETERMINE the pre-LOCA Containment Temperature from one of the RCFC inlet temperatures recorded on the Operator Logs for a RCFC in operation prior to the LOCA.

1A(2A): (TI-9661, TI-9664 or TI-9670) Temp 100 °F

1B(2B): (TI-9667, TI-9673 or TI-9676) Temp NA °F

- 5.8 DETERMINE Pressure Factor Cp from "Recombiner Power Correction Factor versus Containment Pressure Curve". (Refer To **Error! Reference source not found.**)

Cp _____

- 5.9 (UNIT 1 ONLY) CALCULATE required power setting for the desired recombinder by multiplying the Pressure Factor (Cp) times the Reference Power:

Recombiner 1A Power Setting

$$\frac{1.40 - 1.42}{\text{Pressure Factor (Cp)}} \times \frac{51 \text{ KW}}{\text{Ref Pwr}} = \frac{71.4 - 72.42 \text{ KW}}{\text{(Required Recomb Pwr Setting)}}$$

Recombiner 1B Power Setting

$$\frac{1.40 - 1.42}{\text{Pressure Factor (Cp)}} \times \frac{47.5 \text{ KW}}{\text{Ref Pwr}} = \frac{66.5 - 67.45 \text{ kW}}{\text{(Required Recomb Pwr Setting)}}$$

This range of values is based on the given information of post-LOCA pressure of 8.5 psig and pre-LOCA temperature of 100 deg. F.

$$\frac{\text{KW}}{\text{Pressure Factor (Cp)}} \times \frac{43.5 \text{ KW}}{\text{Ref Pwr}} = \frac{\text{KW}}{\text{(Required Recomb Pwr Setting)}}$$

These are the correct ranges of power settings for the Recombiners. If the candidate gets only one of the two correct, consider asking him/her to perform a re-verification (to provide an opportunity to correct a math error).

Recombiner 2B Power Setting

$$\frac{\text{KW}}{\text{Pressure Factor (Cp)}} \times \frac{43.5 \text{ KW}}{\text{Ref Pwr}} = \frac{\text{KW}}{\text{(Required Recomb Pwr Setting)}}$$

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: **TERMINATING AN UNMONITORED/UNPLANNED
RELEASE**

JPM NO: **A4**

REVISION: **1**

LOCATION: **UNIT 1 or 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: TERMINATING AN UNMONITORED/UNPLANNED RELEASE

JPM No.: A4

Rev. No.: 1

STP Task: 030100, Operate the liquid waste processing sub system.

STP Objective: 030131, EXPLAIN the following LWPS system processing flowpaths including major equipment in the flowpath:

- A. WHT
 1. Processing to FDT or WMT via Purification Demin
 2. Processing to WMT via LWPS Aux/Waste Evaporator (WE) Condensate Demin
 3. Transferring to CPRWCT or FDT Bypassing Demins
 4. Processing to WMT via Evaporation
- B. CPRWCT
 1. Transferring to FDT or WST Bypassing Demins
 2. Transferring to WMT Bypassing Demins
 3. Processing to WMT via LWPS Aux/WE Cond Demins
 4. Processing to WMT via Mobile Filtration System (ALPS) and LWPS Aux/WE Cond Demins
- C. FDT
 1. Processing to WMT via Mobile Filtration System (ALPS)
 2. Processing to WMT via Mobile Filtration System (ALPS) and LWPS Aux/WE Cond Demins
 3. Processing to WMT via LWPS Aux/WE Cond Demins
 4. Transferring to WST
 5. Transferring to WMT Bypassing Demins
- D. WMT
 1. WMT Discharge (Release)
 2. WMT Reprocessing to WMT
- E. LHST
 1. Transfer to WMT Bypassing Demins

CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE WORKSHEET (cont'd)**F. WST**

1. Transfer to FDT/CPRWCT
2. Processing to WMT via LWPS Aux/WE Cond Demins

Related K/A

Reference: K/A 2.3.10 (2.9) Ability to control radiation releases

References: OPOP02-WL-0005, Rev 14, Waste Monitor Tank (WMT) Operations

Task Normally Completed By: PO

Method of Testing: Simulated

Location of Testing: Unit 1 or Unit 2

Time Critical Task: NO

Validation Time: 30 minutes

Required Materials

(Tools/Equipment): Student HO with applicable sections and steps of OPOP02-WL-0005 completed.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Chemistry has recommended moving the contents of WMT 1E to the CPRWCT for processing at a later date. Section 3.0, Prerequisites and Section 6.0, Recirculation of WMTs 1D(2D), 1E(2E), or 1F(2F) have been completed. Section 11.0 procedure steps 11.1 and 11.2 have been completed.

INITIATING CUE:

The Unit Supervisor requests you to transfer the contents of WMT 1E to the CPRWCT using Section 11 of OPOP02-WL-0005, Waste Monitor Tank (WMT) Operations. Procedure Steps 11.1 and 11.2 have been completed. You are directed to start at procedure step 11.3.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Satisfactorily stops the transfer of WMT 1E to the CPRWCT when the applicant realizes flow exists on 1(2)WL-FQI-4078.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)**HANDOUTS:**

Student HO of working copy of OPOP02-WL-0005, Waste Monitor Tank (WMT) Operations

NOTES:

- 1) The Condensate Polishing Regeneration Waste Collection Tank (CPRWCT) may be referred to as the “GEORGE” tank. This is a “slang term” or “nickname” that developed during the construction days of the plant. This “nickname” came about because of the long name for this tank. This tank is NOT referred to in this way in our procedures and documents and is not an “official” way in which to reference this tank. This information is provided to help the evaluator understand what is being referenced should an applicant mistakenly refer to the CPRWCT in this manner.
- 2) The Handout copy of the procedure has only the front section for Prerequisites and Notes/Precautions and the applicable sections for performance of the task.
- 3) **The NRC Evaluator will use the following for RCA access:**
Unit 1: RWP-2005-0-000X, Rev. X, and use XXXX for the WAN
Unit 2: RWP-2005-0-000X, Rev. X, and use XXXX for the WAN

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step:** 1(C)

Open 1(2)-WL-0994, "WASTE MONITOR TANK 1D, E & F (2D, E, & F) TO WMT PUMPS 1A, B, & C (2A, B & C) DISCH HEADER ISOLATION VALVE".

Standard:

Opens 1(2)-WL-0994, "WASTE MONITOR TANK 1D, E & F (2D, E, & F) TO WMT PUMPS 1A, B, & C (2A, B & C) DISCH HEADER ISOLATION VALVE".

Comment:

1(2)-WL-0994 is located in the WMT room (MAB 10' Room 061) SE of WMT 1C(2C). This valve is difficult to access and poses some safety hazards with trying to get behind WMT 1C(2C) to access the valve. When the applicant goes to the room, give the applicant Attachments 1, 2, and 3 and provide the cues.

Attachment 1, 2, and 3 show the valve in the CLOSED position. The KEYS for Attachments 1, 2, and 3 follow this JPM step and show the proper direction the valve must be manipulated to open the valve. These are provided for the evaluator to refer to. DO NOT GIVE THESE TO THE APPLICANT.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

Cue:

When the applicant goes to the WMT room, provide the applicant with Attachment 1, Attachment 2, and Attachment 3.

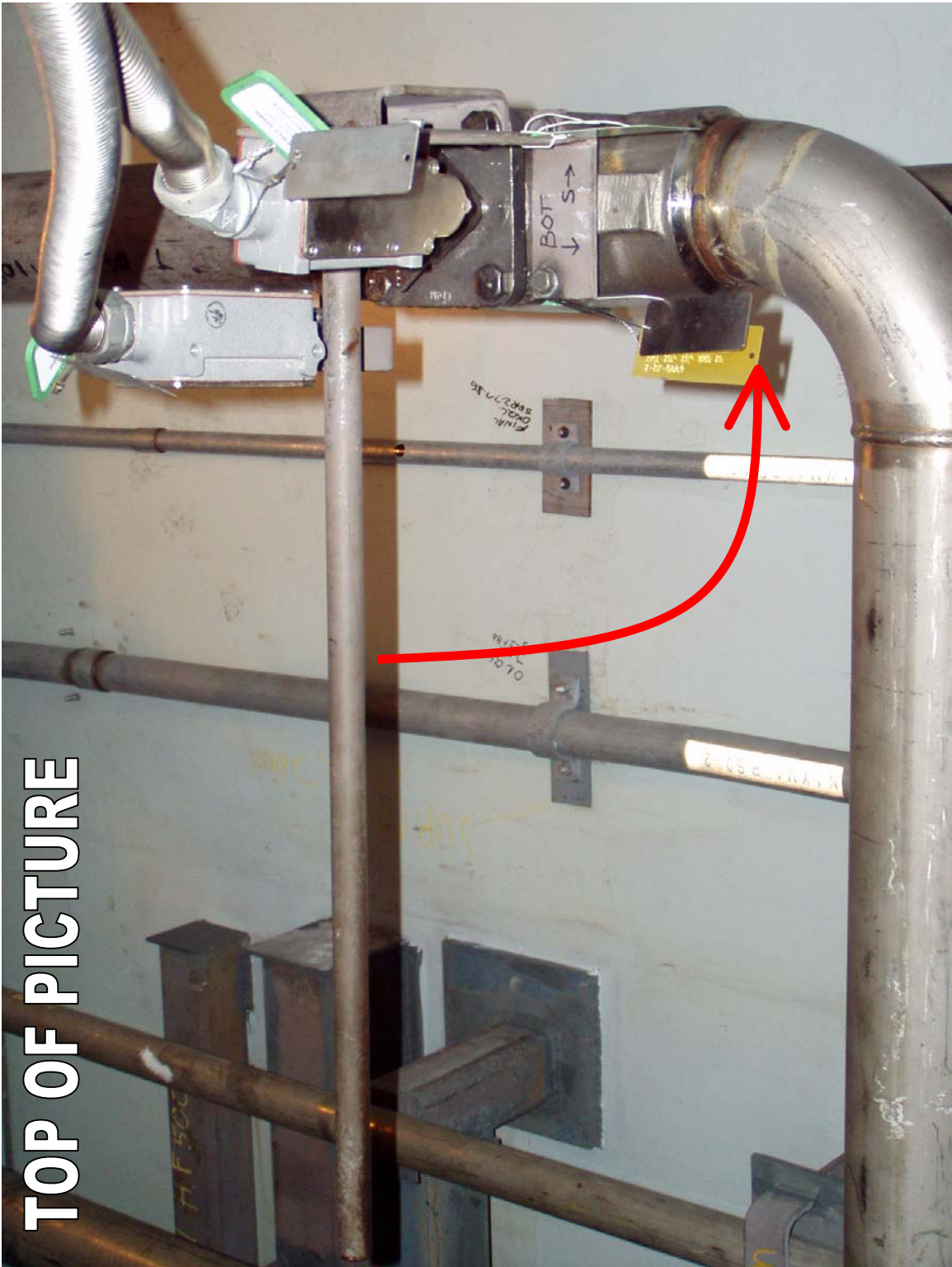
Initial Valve Position: CLOSED (as shown in Attachment 1, 2 and 3)

Final Valve Position: OPEN (valve handle down and in line with pipe)

Notes:

ATTACHMENT 1 KEY

KEY – DO NOT GIVE TO APPLICANT!



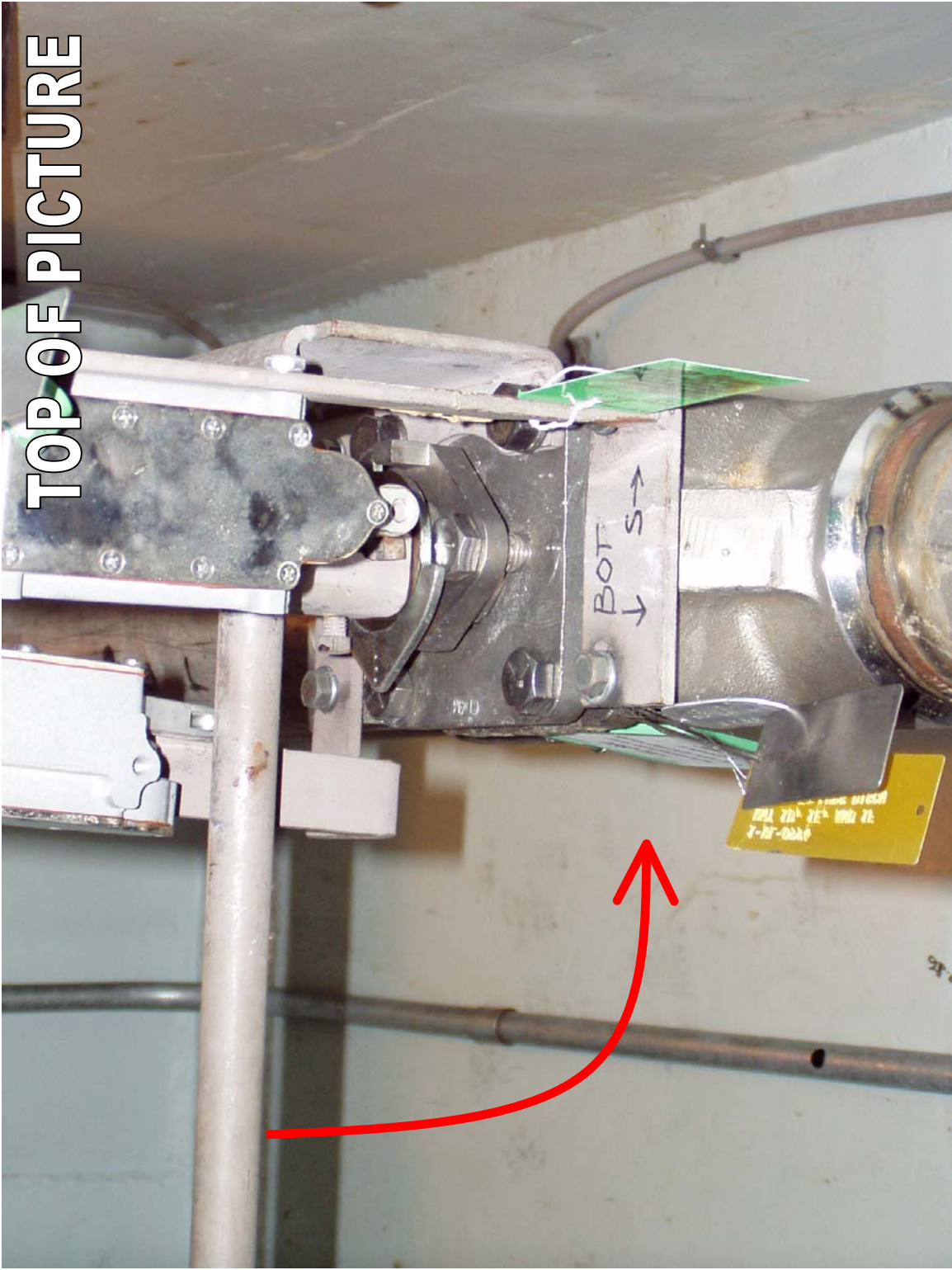
TOP OF PICTURE

KEY – DO NOT GIVE TO APPLICANT!

UP

ATTACHMENT 2 KEY

KEY – DO NOT GIVE TO APPLICANT!

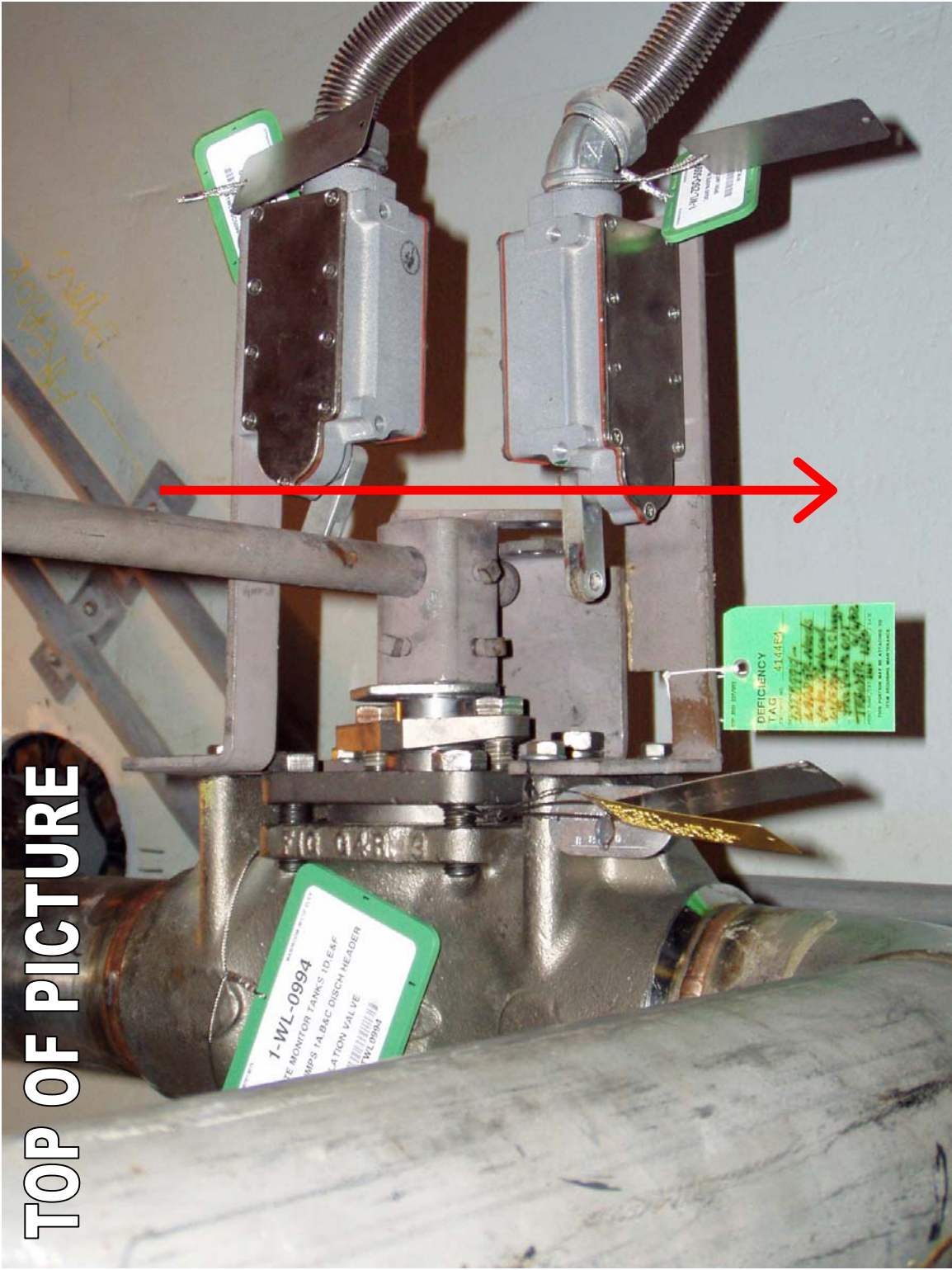


KEY – DO NOT GIVE TO APPLICANT!

UP

ATTACHMENT 3 KEY

KEY – DO NOT GIVE TO APPLICANT!



TOP OF PICTURE

KEY – DO NOT GIVE TO APPLICANT!

UP

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 2 (C)

Place 1(2)WL-FV-5044B "LWPS RETURN HEADER TO FDT/CPRWCT FLOW CONTROL VALVE" handswitch in the "REST" position.

Standard:

Places 1(2)WL-FV-5044B "LWPS RETURN HEADER TO FDT/CPRWCT FLOW CONTROL VALVE" handswitch in the "REST" position.

Comment:

- 1) The handswitch for 1(2)WL-FV-5044B is a two position switch with positions of "ISOL" and "REST". In "ISOL" the valve is closed (Green Light – LIT, Red Light – OFF) and in "REST" the valve is open (Green Light – OFF, Red Light – LIT).
- 2) This handswitch also operates 1(2)WL-FV-5044A, "CPRW TO LWPS DISCHARGE HEADER ISOLATION VALVE". With handswitch in the "ISOLATE" position both FV-5044B and FV-5044A are CLOSED. With the handswitch in the "RESTORE" position both FV-5044B and FV-5044A are OPEN.
- 3) The handswitch for FV-5044B and FV-5044A is located in the Radwaste Control Room 41' MAB on ZLP-189. The handswitch is located on the right-hand side of ZLP-189 at approximately eye level. The indicating lights for FV-5044B are located above the handswitch. The indicating lights for FV-5044A are located on the right-hand side of ZLP-189 at approximately waist level (it is not located by it's control switch).
- 4) For this JPM step, we are only concerned with the position of FV-5044B.

Cue:

Initial Valve Position: Green Light – LIT Red Light – OFF

Final Valve Position: Green Light – OFF Red Light – LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 3(C)

Ensure 1(2)WL-FV-4039, "CPRWCT CONDENSATE POLISHING WASTE INLET FLOW CONTROL VALVE" is OPEN.

Standard:

Places 1(2)WL-FV-4039 "CPRWCT CONDENSATE POLISHING WASTE INLET FLOW CONTROL VALVE" in the OPEN position.

Comment:

- 1) The handswitch for FV-4039 is a three position switch with positions of "CLOSE", "AUTO", and "OPEN".
- 2) Handswitch for 1(2)WL-FV-4039 is located on ZLP-189 in the Radwaste Control Room 41' level MAB. Handswitch location on ZLP-189 is mid-panel at approximately eye level.

Cue:

Initial Valve Position: Green Light – LIT Red Light – OFF

Final Valve Position: Green Light – OFF Red Light – LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 4(C)

Ensure 1(2)WL-FV-4989, "FLOOR DRAIN TANK CONDENSATE POLISHING WASTE INLET FLOW CONTROL VALVE" is CLOSED.

Standard:

Ensures 1(2)WL-FV-4989 "FLOOR DRAIN TANK CONDENSATE POLISHING WASTE INLET FLOW CONTROL VALVE" in the CLOSED position.

Comment:

- 1) The handswitch for FV-4989 is a two position handswitch with positions of "CLOSE" and "OPEN".
- 2) Handswitch for 1(2)WL-FV-4989 is located on ZLP-189 in the Radwaste Control Room 41' level MAB. Handswitch location on ZLP-189 is on the left side at approximately eye level.
- 3) Procedure step 11.6 and all bulleted sub steps should be N/A'd by the applicant. As per the initiating cue the WMT is to be transferred to the CPRWCT. Procedure step 11.6 is for transferring the WMT to the Floor Drain Tank (FDT) and should therefore be N/A'd.

Cue:

Initial Valve Position: Green Light – LIT Red Light – OFF

Final Valve Position: Green Light – LIT Red Light – OFF

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 5(C)

Request that the TGB Operator CLOSE “1(2)WL-1347, LWPS DISCHARGE HEADER TO OPEN LOOP COOLING WATER ISOLATION VALVE”.

Standard:

Contacts the TGB Operator and requests that they CLOSE “1(2)WL-1347, LWPS DISCHARGE HEADER TO OPEN LOOP COOLING WATER ISOLATION VALVE”.

Comment:

This valve is located in the Turbine Building and will require assistance from the TGB Operator to close this valve.

Cue:

After a short period of time, as the TGB Operator, inform the applicant that WL-1347 is in the CLOSED position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 6**

Ensure "1(2)WL-FV-4077, WASTE MONITOR TANK PUMPS 1A, B & C (2A, B & C) DISCHARGE DIVERT VALVE" is in "RECIRC".

Standard:

Ensures "1(2)WL-FV-4077, WASTE MONITOR TANK PUMPS 1A, B & C (2A, B & C) DISCHARGE DIVERT VALVE" in the "RECIRC" position.

Comment:

The handswitch for FV-4077 is a three position switch with positions of "RECIRC", "AUTO", and "DISCH". There are two red indicating lights above the handswitch. The left red light indicates when in the "RECIRC" position. The right red light indicates when in the "DISCH" position.

Handswitch for 1(2)WL-FV-4077 is located on ZLP-189 in the Radwaste Control Room 41' level MAB. Handswitch location on ZLP-189 is on the right side at approximately chest level.

Cue:

Initial Valve Position: Left Red Light – LIT Right Red Light – OFF

Final Valve Position: Left Red Light – LIT Right Red Light – OFF

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 7(C)

Place the WMT Pump Discharge to Open Loop Cooling System Isolation Valve handswitch for the tank to be transferred to the DISCHARGE position to begin transfer.

Standard:

Places MWT 1E(2E) – “1(2)WL-FV-5064A, WASTE MONITOR TANK” “PUMP 1E(2E) DISCHARGE / RECIRC FLOW CONTROL VALVE” handswitch to the “DISCH” position.

Comment:

This handswitch is a two position switch with positions of “RECIRC” and “DISCH”.

Handswitch for 1(2)WL-FV-5064A is located on ZLP-722 in the Radwaste Control Room 41' level MAB. Handswitch location on ZLP-722 is at mid-panel at approximately waist level.

Cue:

Initial Valve Position: Green Light – LIT Red Light – OFF

Final Valve Position: Green Light – OFF Red Light – LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 8(C)*

Verify that NO flow exists on 1(2)WL-FQI-4078, LWPS Discharge Flow Transmitter.

Standard:

- * *Determines 1(2)-WL-FQI-4078, LWPS Discharge Flow Transmitter is counting up.*
- * *Places WMT Pump 1E(2E) handswitch in the STOP position.*
- *NOTIFIES the Unit/Shift Supervisor.*

Comment:

- 1) * - Denotes critical portion.
- 2) 1(2)WL-FQI-4078, LWPS Discharge Flow Transmitter is a mechanical digital counter. When flow exists, the counter will count up.
- 3) FQI-4078 is located on ZLP-189 in the Radwaste Control Room 41' level MAB. The indicator's location on ZLP-189 is on the right side at approximately waist level below Flow Recorder FR-4078.
- 4) The handswitch for WMT 1E(2E) is a three position switch. When the switch is taken to the "START" position, when released it will return to the center "NEUTRAL" position. When the switch is taken to the "STOP" position, it will maintain in this position.
- 5) The handswitch for WMT 1E(2E) is located on ZLP-722 in the Radwaste Control Room 41' level MAB. Handswitch location on ZLP-722 mid-panel approximately chest high.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

Cue:

- 1) FQI-4078 counter reading is 0007442 and the last digit is increasing at one per second.
- 2) If asked – WMT Pump 1E(2E) Indication:

Initially: Green Light – OFF Red Light – LIT

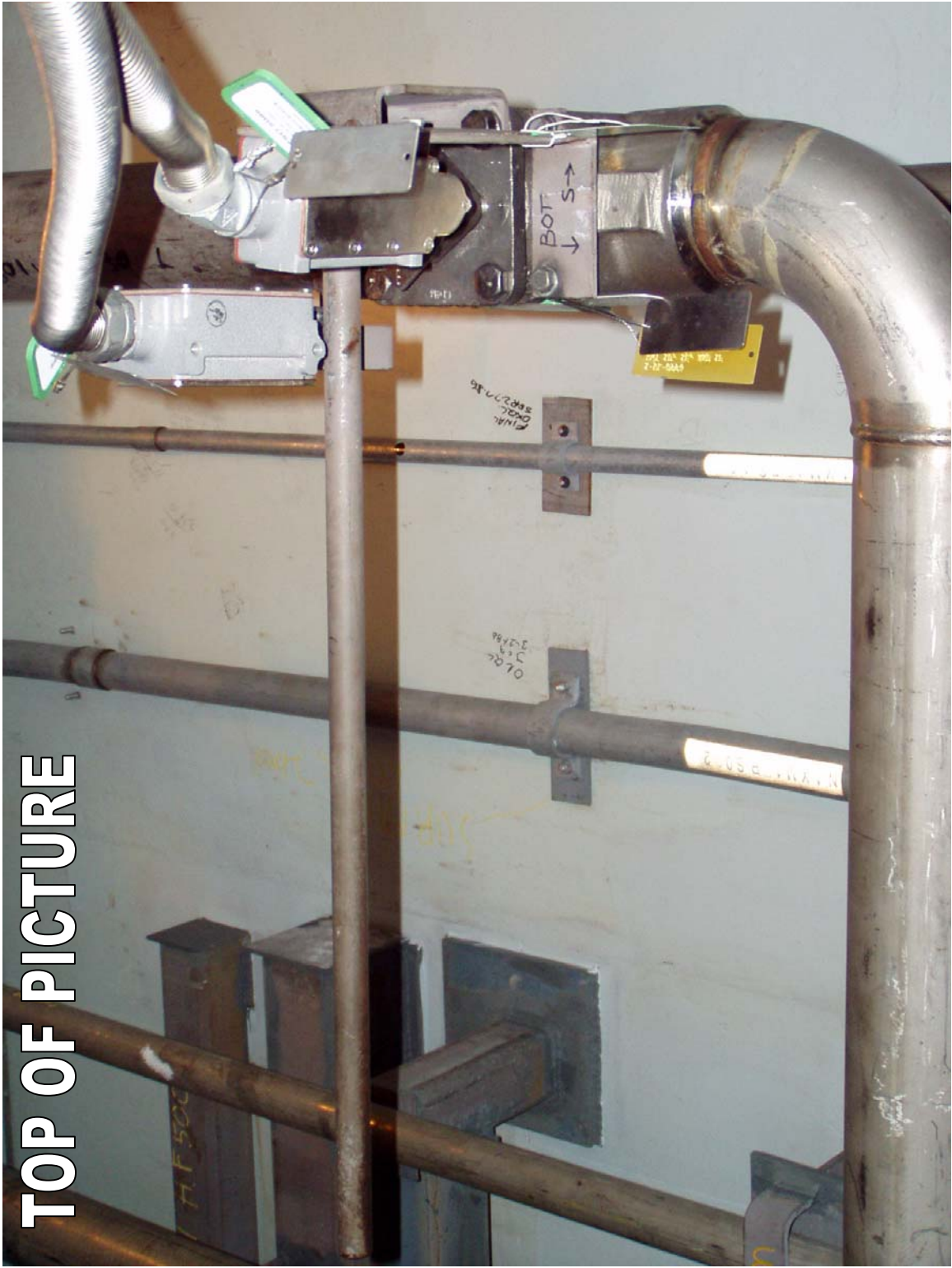
Finally: Green Light – LIT Red Light – OFF
- 3) If asked - FQI-4078 counter reading is steady (not changing).
- 4) If applicant notifies the Unit/Shift Supervisor – as the Unit Supervisor acknowledge that the transfer of WMT Pump 1E(2E) has been stopped.

Notes:

-TERMINATE THE JPM-

JPM STOP TIME_____

ATTACHMENT 1



UP

ATTACHMENT 2



UP

ATTACHMENT 3



TOP OF PICTURE



VERIFICATION OF COMPLETION

Job Performance Measure: TERMINATING AN UNMONITORED/UNPLANNED
RELEASE

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Chemistry has recommended moving the contents of WMT 1E to the CPRWCT for processing at a later date. Section 3.0, Prerequisites and Section 6.0, Recirculation of WMTs 1D(2D), 1E(2E), or 1F(2F) have been completed. Section 11.0 procedure steps 11.1 and 11.2 have been completed.

INITIATING CUE:

The Unit Supervisor requests you to transfer the contents of WMT 1E to the CPRWCT using Section 11 of OPOP02-WL-0005, Waste Monitor Tank (WMT) Operations. Procedure Steps 11.1 and 11.2 have been completed. You are directed to start at procedure step 11.3.

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: REVIEW A SHUTDOWN MARGIN CALCULATION

JPM NO.: A5

REVISION: 1

JPM Title: PERFORM A SHUTDOWN MARGIN CALCULATION

JPM No.: A5

Rev. No: 1

STP Task: 76950 Perform a Shutdown Margin Verification

STP Objective: 76950 Perform a Shutdown Margin Verification in accordance with 0PSP10-ZG-0003

Related K/A Reference: K/A 2.1.12 (2.9), Ability to apply Technical Specifications for a system.

References: Unit 1 Plant Curve Book.
Nuclear Design Report, Unit 1, Cycle 13.
0PSP10-ZG-0005, Shutdown Margin Verification Modes 1 & 2, Rev. 1

Task Normally Completed By: SRO

Method of Testing: Actual

Location of Testing: N/A

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 40 minutes

Required Materials (Tools/Equipment):

- Unit 1 Plant Curve Book for Cycle 13
- Unit 1 Cycle 13 NDR
- Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is operating at 100% power. During performance of 0PSP03-RS-0001, Monthly Control Rod Operability, a problem was noted with two rods. I&C has determined that control rods J-10 and F-6 in control bank C are stuck. Rod F-6 is known to be trippable and is stuck due to electrical control logic problems. Rod J-10 is known to be untrippable (mechanically stuck). Current plant status is:

- Highest NI channel: 100%
- RCS Tavg - 592 °F
- RCS Boron concentration - 1500 ppm
- RCCA Bank Position: All at 250 steps, except Control Bank D at 230 steps
- Current Cycle 13 burnup - 150 MWD/MTU - from Power History Database (PHDB). This is the current value and was determined early this morning (i.e. no additional EFPD have been attained).

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to verify compliance with Technical Specifications.

INITIATING CUE:

You are the Shift Supervisor and are to perform a second review of the test data per step 5.26 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2

For the purposes of this JPM use the following instructions:

- 1. Core Burnup is given as 150 MWD/MTU. Consider this to be '0' MWD/MTU on those Figures and/or Tables that don't have data for 150 MWD/MTU (i.e. no interpolation required to obtain 150 MWD/MTU data).**
- 2. You are to use table data where possible instead of curve data to minimize interpolation errors from reading the curve data.**
- 3. 'most conservative' values can be used as allowed by the procedure.**

JOB PERFORMANCE MEASURE INFORMATION SHEET

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines the SDM calculation is in error. SDM requirements ARE met and a TS entry does NOT have to be made.

HANDOUTS:

Student copy of 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2. This handout copy has information filled in to match conditions given in the ‘Initial Conditions’.

NOTES:

The procedure used to perform the Shutdown Margin calculation allows interpretation of data as well as a ‘most conservative’ approach. Because of this, there will be a range of numerical results, however the end result should be the same (i.e. numbers within this range should all indicate that Tech Spec Shutdown Margin requirements are met).

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Procedure Step 5.3

Unit number, Cycle number, date and time
Reactor Power level (%) and source
RCCA bank positions from CP-005 step counters or DRPI
RCS Boron concentration

Standard:

Verifies the required information is correct on Form 2

Comment:

This information is given in the Initial Conditions. If asked by candidate, information provided as the initial conditions are current.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Procedure Step 5.4

Standard:

Determines the Cycle Burnup is 150 MWD/MTU (correctly entered on Form 2)

Comment:

This procedure step updates the cycle power history that is periodically calculated to the current date/time. The initial conditions indicate that no update is required (value for cycle burnup is current for present date/time).

Notes:

SAT/UNSAT Performance Step: 3

Procedure Step 5.5

Standard:

Verifies this information is correct on Form 2

Comment:

The value in the NDR is given in % Δp and must be converted to pcm. There's a note in the procedure to this effect.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Procedure Step 5.6

Standard:

Verifies this information is correct on Form 2

Comment:

The procedure allows taking the most conservative value, thus the student could use either 0.75 % Δp for BOL or 0.94 % Δp for EOL. The EOL value is most conservative.

Notes:

SAT/UNSAT Performance Step: 5

Procedure Step 5.7

Standard:

Verifies this information is correct on Form 2

Comment:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6 (C)

Procedure Steps 5.8 and 5.9

Standard:

Determines the performer/verifier have assumed both stuck rods are untrippable and have enter '2' as the # of inoperable rods whereas it should be only 1 inoperable rod

Determines the recorded value of Inoperable RCCA Worth is twice what it should be (750 pcm or 940 pcm on Form 2)*

Comment:

The initial conditions stipulate that 2 rods are stuck, but only 1 RCCA is untrippable

* There are two possible values based on whether a 'most conservative' calculation is being used.

Notes:

SAT/UNSAT Performance Step: 7

Procedure Step 5.10

Standard:

Determines this step is in error based on using 2 inoperable rods vice 1.

Comment:

This is a 'carry forward' error from the error in procedure step 5.8.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

Procedure Step 5.11

Standard:

Verifies this information is correct on Form 2.

Comment:

The values of Reactor power, time in life and boron will exactly match the table data.

Notes:

SAT/UNSAT Performance Step: 9

Procedure Step 5.12

Standard:

Determines the Actual Shutdown Margin to be 3295.4 pcm or 3485.4 pcm

Comment:

- This is a 'carry forward' error from the error on procedure step 5.8

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Procedure Step 5.13

Standard:

Verifies this information is correct on Form 2

Comment:

Notes:

SAT/UNSAT Performance Step: 11 (C)

Procedure Step 5.13

Standard:

Compares the Actual Shutdown Margin to the Required Shutdown Margin and determines the Acceptance Criteria IS met. No TS entry is required.

Comment:

There will likely be some differences in the values obtained for the SDM Calculation between the 'KEY' and the candidate, but none of these differences should be sufficient to change the outcome EXCEPT the intended error.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET



- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A2 PERFORM A SHUTDOWN MARGIN CALCULATION

Applicant's Name:

SSN:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is operating at 100% power. During performance of 0PSP03-RS-0001, Monthly Control Rod Operability, a problem was noted with two rods. I&C has determined that control rods J-10 and F-6 in control bank C are stuck. Rod F-6 is known to be trippable and is stuck due to electrical control logic problems. Rod J-10 is known to be untrippable (mechanically stuck). Current plant status is:

- Highest NI channel: 100%
- RCS Tavg - 592 °F
- RCS Boron concentration - 1500 ppm
- RCCA Bank Position: All at 250 steps, except Control Bank D at 230 steps
- Current Cycle 13 burnup - 150 MWD/MTU - from Power History Database (PHDB). This is the current value and was determined early this morning (i.e. no additional EFPD have been attained).

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to verify compliance with Technical Specifications.

INITIATING CUE:

You are the Shift Supervisor and are to perform a second review of the test data per step 5.26 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2

For the purposes of this JPM use the following instructions:

- 1. Core Burnup is given as 150 MWD/MTU. Consider this to be '0' MWD/MTU on those Figures and/or Tables that don't have data for 150 MWD/MTU (i.e. no interpolation required to obtain 150 MWD/MTU data).**
- 2. You are to use table data where possible instead of curve data to minimize interpolation errors from reading the curve data. 'most conservative' values can be used as allowed by the procedure.**

	0PSP10-ZG-0005	Rev. 1	Page 1 of 1
Shutdown Margin Verification - Modes 1 and 2			
Form 2	Shutdown Margin Calculations - SAMPLE		Page 2 of 2

Unit 1 Cycle 13

The basic error is that only 1 rod should be considered inoperable per the initial conditions. This will affect steps 5.8, 5.9, 5.10, 5.12 and 5.14

Rod Worths

5.5 All Rods Inserted Less Most Reactive

Stuck Rod Worth (ARI LMRR) (+) 5900 pcm

5.6 Most Reactive Stuck Rod Worth (MRR) (+) 940 pcm

A value of 750 could also be used here.

5.7 Inserted RCCA Bank Worth (IRW) (+) 71 pcm

5.8 Number of Inoperable RCCA 2

Should be 1

5.9 Inoperable RCCA Worth (INOP RW) (+) 1880 pcm

Should be 750/940

= (MRR) × (Number of Inoperable RCCA)
= **Error! Reference source not found.** ×

5.8

Should be 5079 or 4889

Error! Reference source not found.

Available RCCA Worth (+) 3949 pcm

= (ARI LMRR) - (IRW) - (INOP RW)

= 5.5 - 5.7 - 5.9

Power Defect

5.11 Total Power Defect (-) 1593.6 pcm

Shutdown Margin Verification

5.12 Actual Shutdown Margin () 2355.4 pcm

Should be 3295.4 or 3485.4

= (Available RCCA Worth) + (Total Power Defect)

= 5.10 + 5.11

5.13 Required Shutdown Margin (+) 2653.9 pcm

5.14 Actual Shutdown Margin ≥ Required Shutdown Margin?

☐ Yes (Acceptance Criteria Satisfied)

☒ No

Should be 'Yes'

Completed By: Billy Herzog

Date: today

Verified By: Tom Jones Date: today

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

**TITLE: COMPLY WITH AFD TECH SPEC REQUIREMENTS FOR RAISING
POWER**

JPM NO.: A6

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: COMPLY WITH AFD TECH SPEC REQUIREMENTS FOR RAISING POWER

JPM No.: A6

Rev. No.: 1

STP Task: 92102, Given a topic or title of a specification included in the Technical Specifications or Technical Requirements Manual, describe the general requirements of the specification to include components or administrative requirements affected, limitations, major time frames involved, major surveillances in order to comply and the bases for the specification.

STP Objective: 16504, Knowledge of the Tech Spec limits concerning Axial Flux

Related K/A Reference: K/A 2.1.12 (4.0), Ability to apply Technical Specifications for a system

References: Tech Spec Section 3/4.2.1, Axial Flux Difference

Task Normally Completed By: SRO

Location of Testing: NTF

Time Critical Task: NO

Validation Time: 30 minutes

Required Materials (Tools/Equipment):

- Copy of Tech Spec section 3.2.1
- Plant Curve Book Figure 5.7, Target Axial Flux Difference

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

In Unit 1 the AXIAL FLUX DIFFERENCE HI alarm became inoperable on 8/30/05 at 0800 due to an ICS problem. Operators took requisite logs. During the time this alarm was out of service, Unit 1 experienced problems with the feedwater and feedwater heater systems that resulted in the need to make changes in reactor power. The power history for the unit is documented in an attachment.

INITIATING CUE:

As Unit Supervisor, you are to evaluate the power history provided with Tech Spec 3.2.1 and determine what is the earliest time AND date reactor power could be increased above 50% power assuming no additional penalty points accumulate.

NOTES:

- There were no penalty points in effect before the power history provided.
- All Power Range channels are operable.
- There are no intended errors on the information provided.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Candidate determines Tech Spec action statements were met and that reactor power can be increased above 50% on 9/1/05 at 0930.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

- Power history handout
- Plant Curve Book Figure 5.7, Target Axial Flux Difference Band
- Tech Spec 3.2.1

NOTES:

1. Provide the candidate with the STUDENT COPY of plant power history
2. A completed Answer KEY is provided for the Evaluator. **Do Not Hand to the Applicant.**

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Review power history to determine how many penalty points were accumulated and at what times.

Standard:

Determines there were a total of 90 penalty points accumulated from the given power history.

Comment:

- Per T.S. 3.2.1, one penalty point will be accumulated for each minute of operation outside the target band when >50% power.
- Per T.S. 3.2.1, one half penalty point will be accumulated for each minute of operation outside the target band when <50% power.
- Per T.S. 3.2.1, logged values of the indicated AFD shall be assumed to exist during the interval preceding each logging.
- Per T.S. 3.2.1, the indicated AFD shall be considered to be outside its target band when 2 or more operable excore channels are indicating AFD is outside its target band.
- See key copy of power history for specific times when penalty points were accumulated.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Determine at what date/time power could be increased above 50%

Standard:

Determines power can be increased above 50% on 9/1/05 at 0930.

Comment:

The first 30 penalty points were accumulated on 8/4/2005 at 0930. Power cannot be increased above 50% until 24 hrs. after these were accumulated, thus power cannot be increased above 50% until 0930 on 8/5/2005

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

In Unit 1 the AXIAL FLUX DIFFERENCE HI alarm became inoperable on 8/30/05 at 0800 due to an ICS problem. Operators took requisite logs. During the time this alarm was out of service, Unit 1 experienced problems with the feedwater and feedwater heater systems that resulted in the need to make changes in reactor power. The power history for the unit is documented in an attachment.

INITIATING CUE:

As Unit Supervisor, you are to evaluate the power history provided with Tech Spec 3.2.1 and determine what is the earliest time AND date reactor power could be increased above 50% power assuming no additional penalty points accumulate.

NOTES:

- There were no penalty points in effect before the power history provided.
- All Power Range channels are operable.
- There are no intended errors on the information provided.

8/30/2005

TIME	AXIAL FLUX DIFFERENCE				REACTOR POWER
	41C	42C	43C	44C	
0800	-2.5	-1.0	-1.0	-0.5	100
0900	-2.5	-1.0	-1.0	-0.5	100
1000	-2.5	-1.0	-1.0	-0.5	100
1100	-2.5	-1.0	-1.0	-0.5	100
1200	-2.5	-1.0	-1.0	-0.5	100
1300	-2.5	-1.0	-1.0	-0.5	100
1400	-2.5	-1.0	-1.0	-0.5	100
1500	-2.5	-1.0	-1.0	-0.5	100
1600	-2.5	-1.0	-1.0	-0.5	100
1700	-2.5	-1.0	-1.0	-0.5	100
1800	-2.5	-1.0	-1.0	-0.5	100
1900	-2.5	-1.0	-1.0	-0.5	100
2000	-2.5	-1.0	-1.0	-0.5	100
2100	-2.5	-1.0	-1.0	-0.5	100
2200	-2.5	-1.0	-1.0	-0.5	100
2300	-2.5	-1.0	-1.0	-0.5	100
2400	-2.5	-1.0	-1.0	-0.5	100
0100	-2.5	-1.0	-1.0	-0.5	100
0200	-2.5	-1.0	-1.0	-0.5	100
0300	-2.5	-1.0	-1.0	-0.5	100
0400	-2.5	-1.0	-1.0	-0.5	100
0500	-2.5	-1.0	-1.0	-0.5	100
0600	-2.5	-1.0	-1.0	-0.5	100
0700	-2.5	-1.0	-1.0	-0.5	100

8/31/2005

TIME	AXIAL FLUX DIFFERENCE				REACTOR POWER
	41C	42C	43C	44C	
0800	-2.5	-1.0	-1.0	-0.5	100
0830	-2.5	-1.0	-1.0	-0.5	100
0900	-10.0	-9.0	-9.0	-9.0	70
0930	-13.0	-12.0	-12.0	-10	65
1000	-10.0	-9.0	-9.0	-9.0	45
1030	-12.0	-12.0	-11.0	-10.5	30
1100	-10.0	-9.0	-9.0	-9.0	32
1130	-10.0	-9.0	-9.0	-9.0	34
1200	-9.5	-8.0	-8.5	-8.0	36
1230	-9.5	-8.0	-8.5	-8.0	38
1300	-8.0	-7.0	-7.0	-6.5	40
1330	-8.0	-7.0	-7.0	-6.5	42
1400	-8.0	-7.0	-7.0	-6.5	44
1430	-8.0	-7.0	-7.0	-6.5	46
1500	-7.0	-6.5	-6.5	-6.0	48
1530	-7.0	-6.5	-6.5	-6.0	50
1600	-7.0	-6.5	-6.5	-6.0	52
1630	-7.0	-6.5	-6.5	-6.0	54
1700	-6.0	-6.0	-6.0	-5.5	56
1730	-6.0	-6.0	-6.0	-5.5	58
1800	-6.0	-6.0	-6.0	-5.5	60
1830	-6.0	-6.0	-6.0	-5.5	62
1900	-5.0	-5.0	-4.5	-4.0	64
1930	-5.0	-5.0	-4.5	-4.0	66
2000	-5.0	-5.0	-4.5	-4.0	68

AFD is outside of target band, +30 penalty points

AFD is outside of target band, +15 penalty points

8/31/2005 (cont'd)

TIME	AXIAL FLUX DIFFERENCE				REACTOR POWER
	41C	42C	43C	44C	
2030	-5.0	-5.0	-4.5	-4.0	70
2100	-12.0	-12.0	-11.5	-11.0	55
2130	-11.0	-9.0	-9.0	-8.0	45
2200	-12.0	-12.0	-12.0	-11.5	48
2230	-10.0	-9.0	-9.0	-9.0	45
2300	-10.0	-9.0	-9.0	-9.0	45
2330	-9.5	-8.0	-8.5	-8.0	45
2400	-9.5	-8.0	-8.5	-8.0	45
0030	-8.0	-7.0	-7.0	-6.5	45
0100	-8.0	-7.0	-7.0	-6.5	45
0130	-8.0	-7.0	-7.0	-6.5	45
0200	-8.0	-7.0	-7.0	-6.5	45
0230	-8.0	-7.0	-7.0	-6.5	45
0300	-7.0	-6.5	-6.5	-6.0	45
0330	-7.0	-6.5	-6.5	-6.0	45
0400	-7.0	-6.5	-6.5	-6.0	45
0430	-7.0	-6.5	-6.5	-6.0	45
0500	-6.0	-6.0	-6.0	-5.5	45
0530	-6.0	-6.0	-6.0	-5.5	45
0600	-6.0	-6.0	-6.0	-5.5	45
0630	-6.0	-6.0	-6.0	-5.5	45
0700	-5.0	-5.0	-4.5	-4.0	45
0730	-5.0	-5.0	-4.5	-4.0	45

AFD is outside of target band, +30 penalty points

AFD is outside of target band, +15 penalty points

NUCLEAR TRAINING DEPARTMENT
ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: REVIEW A FAULTED ECO FOR ECW PUMP

JPM NO: A7

REVISION: 1

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: REVIEW A FAULTED ECO FOR ECW PUMP

JPM No.: A7

Rev. No.: 1

STP Task: T11500, Authorize Equipment Clearances

STP Objective: US11500, Authorize Equipment Clearances in accordance with OPGP03-ZO-ECO1A.

Related K/A Reference: G2.2.13 [3.6/3.8], Knowledge of Tagging and Clearance Procedures

References: OPGP03-ZO-ECO1, Rev. 15, Equipment Clearance Order Program
OPGP03-ZO-ECO1A, Rev. 2, Equipment Clearance Order Instructions
P&ID Drawing 9-F-05038 #2 SHT 1 Rev 16
P&ID Drawing 9-F-05039 #2 Rev 16
Single Line Diagram 9-E-PKAA-01 #2 Rev 10
Single Line Diagram 9-E-PMAC #2 SHT 1 Rev 14

Task Normally Completed By: SRO

Method of Testing: Actual Performance

Location of Testing: N/A

Time Critical Task: NO

Validation Time: 40 minutes

Required Materials (Tools/Equipment): Hi-Liters
P&ID Drawing 9-F-05038 #2 SHT 1
P&ID Drawing 9-F-05039 #2
Single Line Diagram 9-E-PKAA-01 #2
Single Line Diagram 9-E-PMAC #2

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

During the performance of a scheduled ECW Train A surveillance, flow anomalies and noises were noticed just downstream of ECW Pump 2A. ECW discharge check valve EW-0006 is suspected of having a detached disk after a walkdown by the system engineer. It has been decided to internally inspect EW-0006 for damage. Oracle is not available due to problems with the LAN. ECO# 2-05-0002 has been manually written to isolate ECW pump #2A at its closest boundaries for draining.

INITIATING CUE:

You are directed to perform the Technical Review of the ECO in accordance with OPGP03-ZO-ECO1A, Equipment Clearance Order Instructions. THREE errors have been inserted into the ECO, two (2) Critical and one (1) Non-Critical. As a MINIMUM, you are to IDENTIFY both Critical errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

- 1) The enclosed work package is provided as a means of supplemental information only, there are no intended errors in the work package.
- 2) There are no intended layout errors in the ECO form itself. (i.e., likeness to procedure form)
- 3) Single valve isolation is used for fluid boundaries.

CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

- 4) Restoration positions and components listed solely for restoration purposes are not included on this ECO. (not required)
- 5) Downstream loads cooled by ECW, including handswitches, are not included on this ECO. (not required)
- 6) The vent/drain path will be through Seal Water Filter "B" only.
- 7) There is no more than one (1) error associated with a component/device (i.e., breaker, valve, etc.).
- 8) Carryover (repeat) errors count as only one error (i.e., multiple line items with the same incorrect information).
- 9) Review of the individual ECO tags will not be required. ECO tags will not be provided.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Identifies both Critical errors inserted into the Equipment Clearance Order (ECO) IAW with Section 5.9 of 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

HANDOUTS:

- 1) Faulted ECO Form (Form 3 labeled with STUDENT HANDOUT).
- 2) CRWO (Work Package labeled with STUDENT HANDOUT).
- 3) Fluid and Electrical prints.
- 4) Working copy of 0PGP03-ZO-ECO1, Equipment Clearance Order Program and 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions.

NOTES:

- 1) A completed Answer KEY is provided for the Evaluator. The KEY contains the same incorrect entries on the line items as the Student Handout. The location of the errors will be highlighted and described on the KEY. Do not give this to the applicant.
- 2) Unmarked copies of the following are provided to the applicant:
 - Required P&IDs
 - Required Electrical drawings
 - Equipment Clearance Order Procedures (0PGP03-ZO-ECO1 and 0PGP03-ZO-ECO1A)

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step:** 1(C)*

Ensure adequate personnel and equipment safety is provided.

Standard:*Identifies the following ERRORS:*

- 1) * *Wrong power supply is listed for ECW Pump 2A. Should be 4160 V SWGR E2A Cubicle #7, **NOT** Cubicle #8 as listed. (ECO Line Item #5)*
- 2) *Vent and Drain valves are included on the ECO, however one of them is not tagged. (ECO Line Items #18 and #19)*
- 3) *Wrong valve description recorded for the equipment description on Line Item #13. Should be ECW Pump 2A Disch MOV instead of CCW Pump 2A Disch MOV as listed.*

Comment:

- 1) * - Denotes Critical Error. Error #1 and #2 are an extreme personnel safety and equipment safety hazard. Step 5.8.1 (for the preparer) and 5.9.1.1 (for the reviewer) of the ECO procedure requires all items to be properly tagged out to ensure personnel and equipment safety.
- 2) Error #1, wrong ECW Pump breaker power supply (Line Item #5) is carried over to Line Items #6 and #7 for consistency realism. If applicant considers this 3 errors, remind him/her of the Initiating Cue assumption #8 – this is considered only one (1) error.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

- 3) Error #2 is considered critical because the vent and drain valve on the ECO are in the OPEN position as needed to drain the system, however one (1) of the valves is not tagged as required by the procedure. As a minimum, either line item #18 or #19 SHALL have a Danger Tag. The applicant may Danger Tag either/or both valves. (Reference OPGP03-ZO-ECO1A Addendum 2 Step 2)
- 4) Error #3 is administrative in nature, it does not impact the functional portion of the ECO or its components.

Cue:

Notes:

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure: REVIEW A FAULTED ECO FOR ECW PUMP

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

During the performance of a scheduled ECW Train A surveillance, flow anomalies and noises were noticed just downstream of ECW Pump 2A. ECW discharge check valve EW-0006 is suspected of having a detached disk after a walkdown by the system engineer. It has been decided to internally inspect EW-0006 for damage. Oracle is not available due to problems with the LAN. ECO# 2-05-0002 has been manually written to isolate ECW pump #2A at its closest boundaries for draining.

INITIATING CUE:

You are directed to perform the Technical Review of the ECO in accordance with OPGP03-ZO-ECO1A, Equipment Clearance Order Instructions. THREE errors have been inserted into the ECO, two (2) Critical and one (1) Non-Critical. As a MINIMUM, you are to IDENTIFY both Critical errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

- 1) The enclosed work package is provided as a means of supplemental information only, there are no intended errors in the work package.
- 2) There are no intended layout errors in the ECO form itself. (i.e., likeness to procedure form)
- 3) Single valve isolation is used for fluid boundaries.

CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

- 4) Restoration positions and components listed solely for restoration purposes are not included on this ECO. (not required)
- 5) Downstream loads cooled by ECW, including handswitches, are not included on this ECO. (not required)
- 6) The vent/drain path will be through Seal Water Filter "B" only.
- 7) There is no more than one (1) error associated with a component/device (i.e., breaker, valve, etc.).
- 8) Carryover (repeat) errors count as only one error (i.e., multiple line items with the same incorrect information).

	0PGP03-ZO-ECO1A	Rev. 2	Page 99 of 106
Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Typical)		Page 1 of 3

ECO Number: 2 - 05 - 0002 **Unit:** 1 2 **Page** 1 **of** 4
Unit Year Number

Hazardous System? ☐ Yes ☒ No **Notify Fire Protection?** ☐ Yes ☒ No

Notify Security? ☐ Yes ☒ No

What Is Being Tagged? ECW Pump 2A Discharge Check Valve **TPNS#** 3R282TEW0006

Work Description: Disassemble check valve for inspection by Engineering

Prepared By: Tom Cunningham Today 2 hours ago
Signature Date Time

Tech Review By: _____
Signature Date Time

Approved By: _____
Signature Date Time

Notes:

OAS Number 10048

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Equipment Clearance Order Instructions				
Form 3	Equipment Clearance Order Form (Job Additions) (Typical)			Page 2 of 3

ECO Number: 2 - 05 - 0002
 Unit Year Number

Page 2 of 4

Job Number	Work Document WAN / CR / Procedure	Work Group	Job Addition		Ready for Work Group Acceptance	Work Group Sign ON (Print, Sign, Date Time)	Work Group Sign OFF (Print, Sign, Date Time)
			Add	SRO			
01	214365	MM					
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							
(Work Description)							

THIS FORM, WHEN COMPLETE, SHALL BE RETAINED FOR A MINIMUM OF 5 YEARS.

RMS Z10.03

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Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Line Items) (Typical)	Page 3 of 3	

ECO Number: 2 - 05 - 0002
 Unit Year Number

Page 3 of 4

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By
1	D		Screen Wash Pump 2A	Y	Hang	1	Pull to Lock		
2	D		ECW Traveling Screen 2A	Y	Hang	1	Pull to Lock		
3	D		ECW Pump 2A CRHS	Y	Hang	1	Pull to Lock		
4	D		ECW Pump 2A Discharge Isolation MOV-0121	Y	Hang	1	Auto/Close		
5	D	B	SWGR E2A Cub 8 ECW Pump 2A Hang tag on door	Y	Hang	2	Racked Out		
6			Closing Fuses for SWGR E2A Cub 8	Y					
7			Tripping Fuses for SWGR E2A Cub 8	Y					
8	D		ECW Self Cleaning Strainer 2A Handswitch	Y	Hang	3	Stop		
9	D		MCC E2A3 / F2 ECW Pump 2A Traveling Screen	Y	Hang	4	Off		
10	D		MCC E2A3 / B1 ECW Screenwash Booster Pump 2 A	Y	Hang	4	Off		
11	D		MCC E2A3 / A2 ECW Self Cleaning Strainer 2A	Y	Hang	4	Off		
12	D	B	MCC E2A3 / F3 ECW Pump 2A Discharge MOV Operator	Y	Hang	4	Off		
13	D	B	EW-MOV-0121 Handwheel CCW Pump 2A Disch MOV Do Not Declutch	Y	Hang	5	Do Not Operate		
14	D	B	EW-0117 ECW Pump 2A Lube Water Filter Inlet Valve	Y	Hang	5	Closed		

Line Number 5
(Critical Error)

The wrong power supply is listed. The correct power supply is **SWGR E2A Cub 7**. The error is carried forward to line items #6 and #7 for realism. This is considered as only one error.

Line Number 13
(Non-Critical Error)

The incorrect System Designation is used. Should be **"ECW"** instead of **"CCW"**.

THIS FORM, WHEN COMPLETE, SHALL BE RETAINED FOR A MINIMUM OF 5 YEARS.

	0PGP03-ZO-ECO1A	Rev. 2	Page 101 of 106
Equipment Clearance Order Instructions			
Form 3	Equipment Clearance Order Form (Line Items) (Typical)	Page 3 of 3	

ECO Number: 2 - 05 - 0002
 Unit Year Number

Page 4 of 4

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By
15	D	B	EW-0277 ECW Pump 2A Discharge Strainer Emergency Backflush Valve	y	Hang	5	Closed		
16	D	B	EW-0369A ECW Pump 2A Lube Water Supply Valve	y	Hang	6	Open		
17	D	B	EW-0385 ECW Pump 2A Lube Water Filter B Inlet Valve	y	Hang	6	Open		
18			EW-0413A ECW Pump 2A Lube Water Filter B Vent Valve	y		6	Open		
19			EW-0414A ECW Pump 2A Lube Water Filter B Drain Valve	y		6	Open		

Line Number 18 or 19 (Critical Error)

As a minimum, either line item 18 or 19 **MUST** be danger tagged. ("D" designator in the TYPE box and a "B" designator in the BOUNDARY box. Reference Addendum 2, Step 2 of 0PGP03-ZO-EC01A which states:

"At a minimum, a single vent or drain path **SHALL** be tagged open and marked as a BOUNDARY on the ECO to maintain the system depressurized in the event of leakby".

NUCLEAR TRAINING DEPARTMENT
JOB PERFORMANCE MEASURE

TITLE: **DECLARE EMERGENCY ACTION LEVEL**

JPM NO.: **A8**

REVISION: **1**

LOCATION: **Simulator**

NOTE: **THIS JPM TO BE PERFORMED AT THE CONCLUSION OF
SCENARIO 1**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: DECLARE EMERGENCY ACTION LEVEL

JPM No.: A8

Rev. No.: 1

Task No.: 74026 (SRO), Classify emergency conditions.

STP Objective: Given an emergency condition and a copy of the emergency classification tables from 0ERP01-ZV-IN01, Emergency Classification, classify the emergency condition.

**Related
K/A Reference:** 2.4.41 [4.0], Knowledge of the emergency action level thresholds and classifications.

References: 0ERP01-ZV-IN01, Rev. 6, Emergency Classification
0ERP01-ZV-SH01, Rev. 20, Shift Supervisor

**Task Normally
Completed By:** SRO

**Method
of Testing:** Actual Performance

**Location
of Testing:** Simulator

**Time
Critical Task:** YES (15 minutes based on E-Plan Evaluation criteria)

**Alternate
Path JPM:** NO

**Validation
Time:** 15 minutes

Required Materials (Tools/Equipment): NONE

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The plant was initially at 77% power. Once the crew took the watch, a Pressurizer Pressure transmitter failed causing a Pressurizer PORV to lift. The PORV failed to reseal and was isolated manually. Then, an operating Feedwater Booster Pump (FWBP) tripped followed by the trip of the standby FWBP 1 minute later. This necessitated a power reduction to within the capacity of the remaining FWBP. After the power decrease a SGTR occurred in 1A SG. When actions were taken to raise the setpoint of the ruptured SG PORV, the PORV failed open and could not be isolated locally. Subsequently, a shaft shear occurred on an ECW pump requiring action to be taken to protect a running ESF DG.

The Simulator is in FREEZE (not running) with the conditions that existed at the end of the exam scenario and is available for you to use in your Emergency Plan Classification determination. No Control Board controls are functional, however computer system screens may be selected to obtain additional information.

INITIATING CUE:

You are the Unit 1 Shift Supervisor. Based on the CURRENT, EXISTING Plant (simulator) conditions, classify the event at its **MINIMUM** Emergency Action Level (i.e. over-classification will be incorrect).

This JPM is time-critical. The time limit starts when you (the applicant) understands the Initial Conditions and Initiating Cue.

JOB PERFORMANCE MEASURE INFORMATION SHEET

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

A Site Area Emergency (SAE) is declared based on Emergency Action Level FS1, Loss of both fuel clad and RCS OR potential loss of both fuel clad and RCS

OR

Potential loss of either fuel clad or RCS AND loss of any additional barrier.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

NONE

NOTES:

- This JPM is to be performed in the Simulator immediately following exam Scenario #1. The plant conditions the Emergency Action Level declaration is based on are those that exist at the time Scenario #1 is stopped. The 'Initial Conditions' given in this JPM represent the major plant conditions of Scenario #1 relevant to the Emergency Plan Classification.
- No handouts are provided for the performer. The student is to use the copy of the Emergency Plan in the Simulator.
- A Key is provided for the evaluator with the applicable pages of 0ERP01-ZV-IN01, EMERGENCY CLASSIFICATION. **Do NOT hand this out to the student.**

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0ERP01-ZV-IN01, Emergency Classification.

Standard:

Obtains a copy of 0ERP01-ZV-IN01, Emergency Classification.

Comment:

A procedural handout will not be provided. The student is to use the Emergency Plan available in the Simulator

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Classify the event in accordance with Addendum 1 in 0ERP01-ZV-IN01.

Standard:

Classifies the event as an SAE based on Initiating Condition FS1, A Site Area Emergency (SAE) is declared based on Emergency Action Level FS1, Loss of both fuel clad and RCS OR potential loss of both fuel clad and RCS

OR

Potential loss of either fuel clad or RCS AND loss of any additional barrier.

Comment:

- The SAE classification is based on Recognition Category F, Fission Product Barrier Degradation, for the RCS AND for Containment. Refer to the KEY for details of classification.
- Addendum 2 of 0ERP01-ZV-IN01 may also be consulted as it gives bases information for the various Emergency Action Levels.

Cue:

If necessary, ensure the student understands he/she can tour the simulator and call up various computer displays as needed.

Notes:

This step must be completed within 15 minutes of the time when the applicant understands the initial conditions and initiating cue.

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A8, DECLARE EMERGENCY ACTION LEVEL

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature _____

Date _____

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The plant was initially at 77% power. Once the crew took the watch, a Pressurizer Pressure transmitter failed causing a Pressurizer PORV to lift. The PORV failed to reseal and was isolated manually. Then, an operating Feedwater Booster Pump (FWBP) tripped followed by the trip of the standby FWBP 1 minute later. This necessitated a power reduction to within the capacity of the remaining FWBP. After the power decrease a SGTR occurred in 1A SG. When actions were taken to raise the setpoint of the ruptured SG PORV, the PORV failed open and could not be isolated locally. Subsequently, a shaft shear occurred on an ECW pump requiring action to be taken to protect a running ESF DG.

The Simulator is in FREEZE (not running) with the conditions that existed at the end of the exam scenario and is available for you to use in your Emergency Plan Classification determination. No Control Board controls are functional, however computer system screens may be selected to obtain additional information.

INITIATING CUE:

You are the Unit 1 Shift Supervisor. Based on the CURRENT, EXISTING Plant (simulator) conditions, classify the event at its **MINIMUM** Emergency Action Level (i.e. over-classification will be incorrect).

This JPM is time-critical. The time limit starts when you (the applicant) understands the Initial Conditions and Initiating Cue.

Facility: <u>South Texas Project</u>	Date of Examination: <u>11/14/2005</u>	
Exam Level (circle one): RO / SRO(I)	Operating Test No.: <u>1</u>	
Control Room Systems® (8 for RO; 7 for SROI; 2 or 3 for SROU, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
e. (S1) Roll Electrical Buses during Plant Startup	S,N	VI
f. (S2) Respond to FHB Rad Monitor Alarm (ESF System)	S,N,A,E	VII
a. (S3) Perform Control Rod Operability Test	S,M,A	I
b. (S4) Fill an SI Accumulator	S,D	III
c. (S5) Place a SGFPT in service	S,N	IV-S
d. (S6) Shift CCW Trains	S,N	VIII
g. (C1) Establish Alternate Charging Lineup	C,D,A,E,L	II
h. (C2) Feed and Bleed the PRT (RO Only)	C,D,L	V
In-Plant Systems® (3 for RO; 3 for SROI; 3 or 2 for SROU)		
i. (P1) Place RWST on Recirc	D,E,R,A	III
j. (P2) Locally close MSIV's/MSIB's	D,L,E	IV-S
k. (P3) Startup of GWPS following PMT	N,A,R	IX
@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SROU systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
*Type Codes	Criteria for RO/SRO-I/SRO-U	
(A)lternate Path	4-6/ 4-6 2-3	
(C)ontrol Room		
(D)irect from Bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(L)ow-Power	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

NOTE: The following simulator JPMs are designed to be done concurrent: S1 and S2, S3 and S4, S5 and S6

Approved: _____ Date _____
 Facility Representative

Facility: <u>South Texas Project</u>		Date of Examination: <u>11/14/2005</u>
Exam Level (circle one): SRO(U)		Operating Test No.: <u>1</u>
Control Room Systems[@] (8 for RO; 7 for SROI; 2 or 3 for SROU, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. (S1) Roll Electrical Buses during Plant Startup	S,N	VI
b. (S2) Respond to FHB Rad Monitor Alarm (ESF System)	S,N,A,E	VII
In-Plant Systems[@] (3 for RO; 3 for SROI; 3 or 2 for SROU)		
c. (P1) Place RWST on Recirc	D,E,R,A	III
d. (P2) Locally close MSIV's/MSIB's	D,L,E	IV-S
e. (P3) Startup of GWPS following PMT	N,A, R	IX
<p>@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SROU systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>		
*Type Codes	Criteria for RO/SRO-I/SRO-U	
(A)lternate Path	4-6/ 4-6 2-3	
(C)ontrol Room		
(D)irect from Bank	$\leq 9 / \leq 8 / \leq 4$	
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	
(L)ow-Power	$\geq 1 / \geq 1 / \geq 1$	
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	
(R)CA	$\geq 1 / \geq 1 / \geq 1$	
(S)imulator		

NOTE: The following simulator JPMs are designed to be done concurrent: S1 and S2

Approved: _____ Date _____
 Facility Representative

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **ESTABLISH ALTERNATE CHARGING LINE-UP**

JPM NO.: **NRC JPM C1**

REVISION: **1**

LOCATION: **UNIT 1 OR UNIT 2 CONTROL ROOM OR THE SIMULATOR**

JOB PERFORMANCE MEASURE WORKSHEET
SOUTH TEXAS PROJECT

JPM Title: ESTABLISH ALTERNATE CHARGING LINE-UP

JPM No.: C1

Rev. No.: 1

STP Task: 503318, Ability to determine the proper actions to be taken if Charging flow cannot be established using normal means.

STP Objective: 80642, Respond to a SGTR in accordance with OPOP05-EO-EO30.

**Related
K/A Reference:** 004 A4.08, Ability to manually control and/or monitor in the Control Room: Charging (RO 3.8, SRO 3.4)

References: OPOP05-EO-EO30, Steam Generator Tube Rupture, Rev 18

**Task Normally
Completed By:** RO

**Method
of Testing:** Static Performance

**Location
of Testing:** Unit 1 or Unit 2 Control Room or the Simulator

**Time
Critical Task:** No

**Alternate
Path JPM:** Yes

**Validation
Time:** 20 minutes

Required Materials (Tools/Equipment): Procedure copy if being done in the plant. None needed if being done in the simulator.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A SGTR has occurred. The crew has completed the actions of 0POP05-EO-EO00 and has transitioned to 0POP05-EO-EO30. 1B(2B) CCP has tripped earlier and it's control switch is in PTL.

INITIATING CUE:

The Unit Supervisor directs you to establish maximum charging flow per step 15 of 0POP05-EO-EO30, STEAM GENERATOR TUBE RUPTURE.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Maximum charging flow is established through valve CV-0255.

JOB PERFORMANCE MEASURE INFORMATION SHEET**HANDOUTS:**

Working copy of 0POP05-EO-EO30, STEAM GENERATOR TUBE RUPTURE if this JPM is being performed in the plant.

NOTES:

This JPM to be performed statically in either Unit 1 or 2 Control Room or the Simulator

SIMULATOR SETUP (if performed in the Simulator)

1. Ensure Radio volume for both stations are set to a reasonable level.
2. Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.
3. Reset to the 100% power Storepoint and verify:
 - Step counter position annunciator light is out
 - Red light at the end of CP-010 is out
4. Check and clean the following procedures in the simulator (JPM specific):
 - 0POP05-EO-EO30, Steam Generator Tube Rupture
5. Place simulator in run, clear/reset any alarms, then GO TO FREEZE

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

SAT/UNSAT Performance Step:**1****Start time:** _____

Obtain a copy of 0POP05-EO-EO30, Steam Generator Tube Rupture

Standard:

Obtains a copy of 0POP05-EO-EO30, STEAM GENERATOR TUBE RUPTURE.

Comment:

A procedural handout is provided if this JPM is being done in the plant. If this JPM is being performed in the Simulator, the candidate will use procedures located there.

Cue:**Notes:**

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

CCPs - at least 1 running?

Standard:

The operator determines that CCP 1A(2A) is running.

Comment:

Per the initial conditions, 1B(2B) CCP tripped earlier and it's control switch is in PTL

Cue:

CCP 1A(2A) Red Light – LIT, Green Light – NOT LIT

CCP discharge pressure - 2900 psig

CCP 1B(2B) Red Light – NOT LIT, Green Light – LIT

CCP 1B(2B) Control Switch in PTL

Notes:

SAT/UNSAT Performance Step: 3

CHECK if charging flow has been ESTABLISHED.

Standard:

The operator determines that charging flow has NOT been established, and proceeds to the RNO column to establish charging.

Comment:

The cues below are provided so the operator can determine there is no charging flow. The RNO actions are detailed beginning with the next JPM step.

Cue:

Charging flow - 0 gpm
Charging flow HI/LO alarm - LIT (04M08 F-3)
CV-MOV-0025 Green Light – LIT, Red Light – NOT LIT
CV-FCV-0205 Red Light – LIT, Green Light – NOT LIT

Notes:

SAT/UNSAT Performance Step: 4

Ensure Containment Phase 'A' Reset

Standard:

Determines Containment Phase 'A' is reset

Comment:

Cue:

At Control Room Panel CP-002:

- Train 'A' Phase 'A' Isolation Status Red Monitoring Light: NOT LIT
- Train 'B' Phase 'A' Isolation Status Red Monitoring Light: NOT LIT
- Train 'C' Phase 'A' Isolation Status Red Monitoring Light: NOT LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

Ensure Charging Flow Control Valve closed.

Standard:

The operator attempts to close CV-FCV-0205 by performing the following:

- _____ A. *Places Charging Flow Controller CV-FK-0205 in Manual*
- _____ B. *Depress the "Lower" pushbutton until 0% demand is reached.*

Comment:

The operator should realize from the cues that the charging flow control valve did NOT close and proceed to ADDENDUM 5 to establish alternate charging. If the operator does not ask for FCV-205 position, then indicate maximum charging flow when MOV-0025 is opened. IF necessary, acknowledge as Unit Supervisor to perform ADDENDUM 5. ALTERNATE PATH ACTION.

Cue:

(CV-FCV-0205 remains fully open and does not respond to control.)

- A. CV-FK-0205 Auto Light LIT initially, Manual Light - LIT finally
- B. As lower pushbutton is depressed, demand decreases to zero, Green Controller Light - LIT.
- C. CV-FCV-0205 Red Light - LIT, Green Light - NOT LIT, and does not change.

If applicant asks about the position of the Instrument Air OCIV, FV-8565, provide the following:

- Green Light OFF
- Red Light ON

If applicant asks about Instrument Air Pressure, indicate that pressure is 120 psig.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6

Dispatch operator to 19 ft MAB Room 079 to perform the following:

- THROTTLE charging flow control manual bypass two turns open "1(2)-**CV-0255** CVCS CHARGING DISCHARGE FCV-0205 BYPASS VALVE".
- Close charging flow control manual inlet isolation valve "1(2)-**CV-254A** CVCS CHARGING DISCHARGE FCV-205 INLET VALVE".

Standard:

The operator dispatches a Plant Operator to perform operation identified above.

Comment:

Do not allow the student to use the Communication Console. When he/she gets to this step, have them tell you what they would tell the Plant Operator.

Cue:

After the student provides the specified direction to the Plant Operator, inform the student the referenced valves above have been positioned as directed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

CHECK normal or alternate charging loop isolation valve - OPEN.

Standard:

The operator determines that the normal isolation valve is OPEN.

Comment:

Cue:

1(2)-CV-MOV-0003 - Red light LIT; Green Light NOT LIT

1(2)-CV-MOV-0006 - Red light NOT LIT; Green Light LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: **8 (C)**

CHECK charging OCIV - OPEN.

Standard:

The operator opens "OCIV MOV-0025".

Comment:

This valve will initially be closed from Phase 'A' Isolation. Since Phase 'A' Isolation has been reset, this valve can be opened.

When this valve is opened, there will be some charging flow – see cue below.

Cue:

MOV-0025 has Green light LIT initially; Red light LIT finally.

Charging Flow – 50 gpm

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT/UNSAT Performance Step: 9**

Monitor RCP seal inlet temperatures all LESS THAN – 230 Deg. F

Standard:

Determines seal inlet temperatures are all less than 230 Deg. F

Comment:

Student can use indication on CP-004 (TI-0216) or a computer display.

Cue:

Indicate a value of 120 Deg F or whatever is actually displayed on the indicator the student is using.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET**SAT/UNSAT Performance Step: 10 (C)**Establish maximum charging flow.**Standard:**

The operator directs the plant operator to throttle CV-0255 to establish maximum charging flow IAW OPOP01-ZA-0018, Emergency Operating Procedure User's Guide, definition.

- _____ a. *CHECK CCP suction aligned to RWST*
- _____ b. *CHECK available CCP(s) – RUNNING*
- _____ c. *ENSURE all available CCPs - RUNNING*
- _____ d. *CHECK running CCP(s) discharge valve - OPEN*
- _____ e. *Direct Plant Operator to throttle CV-0255 (charging flow control manual bypass) to achieve desired flowrate*
- _____ f. *CLOSE the running CCP(s) recirculation valve*
- _____ g. *CHECK RCP seal injection flow between 6 AND 13 GPM*

Comment:

Maximum Charging Flow is defined as no more than 240 gpm per CCP including both seal injection and charging flows. To account for seal injection flow, a maximum charging flow of 200 gpm is normally used, however, as long as the total flow (charging and seal injection) are no more than 240 gpm, the requirement will be satisfied. With the cue of 8 gpm per RCP seal injection flow (see 'Cue' section on next pg.), the maximum charging flow will be 208 gpm however, due to meter accuracy the acceptable range will be 200-210 gpm based on these assumptions.

The examiner may have to question the candidate on the amount of charging flow the candidate wants to establish and the bases for it to ensure a mutual understanding for this step.

Do not allow the student to use the Communication Console. When he/she gets to the step to communicate with the Plant Operator, inform them you'll act as the Plant Operator.

SEE NEXT PAGE FOR CUES

Cue:

- a) Both CCP suction valves from RWST – Red lights LIT, Green lights NOT LIT
Both VCT outlet valves – Green lights LIT, Red lights NOT LIT
- b) CCP 1A(2A) Red Light – LIT, Green Light – NOT LIT
CCP 1B(2B) Red Light – NOT LIT, Green Light – LIT
CCP 1B(2B) switch is in PTL
- c) Running CCP(s) discharge valve - CCP 1A(2A) discharge valve RED light LIT, GREEN light NOT LIT.
- d) Give increments from 50 gpm until the examinee stops you. (This should occur at 200-210 gpm).
- e) Running CCP(s) recirc valve – INITIALLY: RED light LIT, GREEN light NOT LIT
FINALLY: GREEN light LIT, RED light NOT LIT
- f) Seal injection flow – 8 gpm per RCP

Notes:

- TERMINATE THE JPM -

Stop time: _____

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature

Date

Date

JPM HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A SGTR has occurred. The crew has completed the actions of 0POP05-EO-EO00 and has transitioned to 0POP05-EO-EO30. 1B(2B) CCP has tripped earlier and its control switch is in PTL.

INITIATING CUE:

The Unit Supervisor directs you to establish maximum charging flow per step 15 of 0POP05-EO-EO30, STEAM GENERATOR TUBE RUPTURE.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **Feed and Bleed the PRT**

JPM NO.: **C2**

REVISION: **1**

LOCATION: **UNIT 1 OR UNIT 2 CONTROL ROOM OR THE SIMULATOR**

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: Feed and Bleed the PRT

JPM No.: C2

Rev. No: 1

STP Task: CRO 4700 Feed and bleed the Pressurizer Relief Tank.

STP Objective: CRO 4700 When directed by the Unit Supervisor, feed and bleed the PRT per POP02-RC-0001.

Related K/A Reference: 007 A2.01, Ability to (a) predict the impacts of the following malfunctions or operations on the PRTS; and (b) based on those predictions, sue procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Stuck-open PORV or code safety (3.9/4.2)

References:

1)0POP02-RC-0001, Rev. 9, Pressurizer Relief Tank and Reactor Coolant Drain Tank

2)0OPO09-AN-04M7, Rev. 16, Annunciator Lampbox 4M07 Response Instructions

Task Normally Completed By: RO

Method of Testing: Simulated

Location of Testing: U1, U2 or Simulator

Time Critical Task: No

Alternate Path JPM: No

Validation Time: 20 min.

Required Materials (Tools/Equipment): Procedure copy if being done in the plant. None needed if being done in the simulator.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Annunciator 04M7, Window E-1, PRT TEMP HI was received when a PRZR PORV inadvertently lifted during a surveillance test. Current Pressurizer Relief Tank temperature is 115°F as read on PRT TEMP, TI-0668. The actions of POP09-AN-04M7 have been taken.

INITIATING CUE:

The Unit Supervisor directs you to cool the PRT below 105 °F using the **FEED AND BLEED METHOD** per POP02-RC-0001, Pressurizer Relief Tank and Reactor Coolant Drain Tank System Operation section 8.0 THEN return the system to it's normal lineup per Section 10.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The PRT has been cooled to less than 105 °F using the feed and bleed method and the RCDT System is in normal operation.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of 0POP02-RC-0001, Pressurizer Relief Tank and Reactor Coolant Drain Tank if this JPM is being performed in the plant.

NOTES:

This JPM to be performed statically in either Unit 1 or 2 Control Room or the Simulator

SIMULATOR SETUP (this section only applies if the static JPM is performed in the simulator. If not, delete this section):

- 1) Ensure Radio volume for both stations are set to a reasonable level.
- 2) Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.
- 3) Reset to the 100% power Storepoint and verify Step Counter position annunciator light on CP-005 is out.
- 4) Check and clean the following procedures (JPM specific):
 - 0POP02-RC-0001, Pressurizer Relief Tank and Reactor Coolant Drain Tank
 - 0OPO09-AN-04M7, Annunciator Lampbox 4M07 Response Instructions
- 5) Place simulator in run or can stay in freeze (recommended).

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of the procedure.

Standard:

Obtains a copy of 0POP02-RC-0001.

Comment:

A procedural handout is provided if this JPM is being done in the plant. If this JPM is being performed in the Simulator, the candidate will use procedures located there.

If the applicant wishes to review the annunciator response for Annunciator Panel 4M07, Window E-1, he/she can use the controlled copy in either control room or the simulator, wherever the JPM is being conducted.

Cue:

If asked, inform the candidate the Prerequisites have been completed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Verify positive N₂ pressure exists on the PRT.

Standard:

Checks PRT PRESS PI-0669 to be between 2 and 6 psig.

Comment:

Cue:

Indicate a pressure of 2-6 psig on PRT PRESSURE PI-0669 indicator (this is the normal pressure range for the PRT so you can use whatever value is actually displayed).

Notes:

SAT/UNSAT Performance Step: 3(C)

Stop any running RCDT Pump.

Standard:

Places running RCDT PUMP in PULL-TO-LOCK.

Comment:

The normal operating configuration for the RCDT pumps is one running and the other in pull-to-lock. Due to the auto-start feature on the pumps the running pump can only be stopped by taking it to pull-to-lock.

The initial conditions below indicate the 'A' pump running and the 'B' pump stopped in PTL.

Cue:

Initial Conditions:

RCDT Pump 1A(2A) control sw. in AUTO, Red light is LIT, Green light is NOT LIT

RCDT Pump 1B(2B) control sw. in PULL-TO-LOCK (PTL), Red light is NOT LIT, Green light is LIT

Final Conditions:

Both RCDT Pump control sw. in PTL, Red lights NOT LIT, Green lights LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4(C)

Align RCDT System to pump down the PRT.

Standard:

Performs the following RCDT System valve alignment:

- a. Closes FV-4903, DRAIN ISOL
- b. Closes FV-4910, ISOL
- c. Opens LV-4911, RCDT LEVEL CONT VLV
- d. Opens LV-3655, DRAIN
- e. Opens FV-4907, ISOL
- f. Opens/Verifies Open FV-3651, OCIV (*Non-Critical*)

Comment:

The following is the initial valve alignment and the required valve alignment for performance of this step:

<u>NUMBER</u>	<u>NAME</u>	<u>INITIAL</u>	<u>REQUIRED</u>
a. FV-4903	DRAIN ISOL	OPEN	CLOSED
b. FV-4910	ISOL FV-4910	OPEN	CLOSED
c. LV-4911	RCDT LEVEL CONT VLV	CLOSED	OPEN
d. LV-3655	DRAIN LV-3655	CLOSED	OPEN
e. FV-4907	ISOL FV-4907	CLOSED	OPEN
f. FV-3651	OCIV FV-3651	OPEN	OPEN

Cue:

OPEN VALVES: Red light is LIT, Green light is NOT LIT

CLOSED VALVES: Red light is NOT LIT, Green light is LIT

Both lights will on when the valves are in an intermediate position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5(C)

Cool the PRT.

Standard:

Performs the following to cool the PRT:

- a . Ensures RMW PUMP is running (Non-Critical)*
- b. Starts RCDT PUMP*
- c. Opens FV-3650, SPRAY ISOL (See cue below - *)*
- d. Closes FV-3650, SPRAY ISOL at 75% level on PRT LEVEL LI-0670 (See cue below - **)*
- e. Opens FV-3650, SPRAY ISOL at 65% level on PRT LEVEL LI-0670*
- f. Repeats Standards "d" and "e" until PRT TEMP TI-0668 is ≤ 105 °F*
- g. Closes FV-3650, SPRAY ISOL*

Comment:

To cool the PRT with Feed & Bleed the candidate will make the initial lineup as above, then cycle FV-3650, SPRAY ISOL, as necessary to control PRT level 65-75%. As this is being done the examiner will have to also indicate that PRT temperature is decreasing, finally getting below 105 °F. It's up to the examiner as to how many feed/bleed cycles occur before temperature is below 105 °F.

Cue:

* Prior to opening FV-3650, there's procedure step to locally verify the manual isolation valve (RM-0025) is open. When the candidate seeks to contact a Plant Operator to check this valve, inform him/her that it is open.

**The procedure provides for closing RM-0025 when not using spray by Shift/Unit Supervisor direction. When the candidate seeks to determine if the manual valve (RM-0025) should be closed when not using spray, inform the candidate that RM-0025 will remain open.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET

STEP 5 (C) CONTINUED

Cue:

- a. There's normally one RMW Pump running. Use this one to provide cues an RMW pump is in service.
- b. Both RCDT Pumps were in PTL from a previous step. The candidate can use either pump. As soon as he/she simulates taking the control sw. out of PTL to the AUTO position the pump will start; Red light LIT, Green light NOT LIT.
- c. FV-3650 ISOL: Initially Red light NOT LIT, Green light LIT. Finally Red light LIT, Green light NOT LIT (RCDT level will increase once this valve is opened).
- d. & e. FV-3650 is cycled to maintain PRT level 65-75%. The examiner will have to indicate PRT level on LI-0670 as requested by the candidate.
- f. Candidate repeats steps d. & e. until PRT temperature is $< 105^{\circ}\text{F}$.
- g. Closes FV-3650 ISOL: Initially Red light LIT, Green light NOT LIT. Finally Red light NOT LIT, Green light LIT.

If asked, indicate PRT pressure on PI-0669 is 2-6 psig.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Stop any running RCDT PUMP.

Standard:

Places running RCDT PUMP in PULL-TO-LOCK using CRHS on CP004.

Comment:

Cue:

Initially the running RCDT Pump control sw. in AUTO, Red light is LIT, Green light is NOT LIT

Finally, the running RCDT Pump control sw. in PTL, Red light is NOT LIT, Green light is LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7(C)

Realign RCDT for normal operation.

Standard:

Performs the following RCDT System valve alignment:

- a . Closes LV-3655, DRAIN*
- b. Closes FV-4907, ISOL*
- c. Closes LV-4911, RCDT LEVEL CONT VLV*
- d. Opens FV-4910, ISOL*
- e. Opens FV-4903, DRAIN*

Comment:

This is a restoration to the initial valve alignment.

Cue:

The following is the initial valve alignment and the required valve alignment for performance of this step:

<u>NUMBER</u>	<u>NAME</u>	<u>INITIAL</u>	<u>REQUIRED</u>
a. LV-3655	DRAIN LV-3655	OPEN	CLOSED
b. FV-4907	ISOL FV-4907	OPEN	CLOSED
c. LV-4911	RCDT LEVEL CONT VLV	OPEN	CLOSED
d. FV-4910	ISOL FV-4910	CLOSED	OPEN
e. FV-4903	DRAIN ISOL	CLOSED	OPEN

OPEN VALVES: Red light is LIT, Green light is NOT LIT

CLOSED VALVES: Red light is NOT LIT, Green light is LIT

Both lights will on when the valves are in an intermediate position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

Place the RCDT system in normal operation per Section 10.0.

Standard:

Verifies RCDT System normal conditions as follows:

- a. Verifies RCDT LEVEL LI-4901 is greater than 20%*
- b. Ensures DRAIN ISOL FV-4903 open*
- c. Ensures ISOL FV-4910 is open*
- d. If needed for cooling, ensure CCW is aligned to the RCDT Heat Exchanger (MOV-0393 open)*

Comment:

- b. & c. Valves FV-4903 and 4910 were opened in the previous JPM step
- d. CCW is normally lined up to the RCDT Heat Exchanger.

Cue:

- a. Indicate RCDT level is >20% on RCDT LEVEL, LI-4901
- b. DRAIN ISOL FV-4903 Red light is LIT, Green light is NOT LIT
- c. ISOL FV-4910 Red light is LIT, Green light is NOT LIT
- d. CCW to RCDT Hx MOV-0393 Red light is LIT, Green light is NOT LIT.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9(C)

Places the alternate RCDT Pump in Pull To Lock and places the other RCDT pump in service.

Standard:

Ensures one RCDT PUMP is in service.

Comment:

It's up to the candidate as to which RCDT Pump can be placed in service. He/she may inquire which to place in service from the US.

Cue:

If he/she inquires of the US which RCDT Pump to place in service, inform him/her it is their choice.

For the RCDT Pump being placed in service: Initially the control sw. is in PTL, Red light is NOT LIT, Green light is LIT. As the candidate takes an RCDT Pump control sw. out of PTL to the AUTO position, the pump will start. Red light LIT, Green light NOT LIT.

For the RCDT Pump being left in PTL: the control sw. is in PTL, Red light is NOT LIT, Green light is LIT.

Notes:

- TERMINATE THE JPM -

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Annunciator 04M7, Window E-1, PRT TEMP HI was received when a PRZR PORV inadvertently lifted during a surveillance test. Current Pressurizer Relief Tank temperature is 115°F as read on PRT TEMP, TI-0668. The actions of POP09-AN-04M7 have been taken.

INITIATING CUE:

The Unit Supervisor directs you to cool the PRT below 105 °F using the **FEED AND BLEED METHOD** per POP02-RC-0001, Pressurizer Relief Tank and Reactor Coolant Drain Tank System Operation section 8.0 THEN return the system to it's normal lineup per Section 10.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **Place RWST On Recirculation**

JPM NO: **P1**

REVISION: **1**

LOCATION: **UNIT 1 or 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: PLACE RWST ON RECIRCULATION

JPM No.: P1

Rev. No.: 1

STP Task: T18450, Lineup to recirculate and / or purify the refueling / borated water storage tank.

STP Objective: CRO92051, GIVEN a plant or system condition, PREDICT the operation of the Spent Fuel Pool Cooling and Cleanup System.

Related K/A Reference: Safety Function 3
006.K4.09, [3.8/4.2], Knowledge of ECCS design feature(s) and/or interlock(s) which provide: Valve Positioning on SI Signal

References: OPOP02-FC-0001, Rev 46, Spent Fuel Pool Cooling and Cleanup System

Task Normally Completed By: PO

Method of Testing: Simulated

Location of Testing: Plant

Time Critical Task: NO

Alternate Path JPM: YES

Validation Time: 30 Minutes

Required Materials (Tools/Equipment): Student Handout copy of OPOP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is at 100% power, steady state conditions. Maintenance has been recently completed on the Refueling Water Purification Pump (RWPP) and it is time to return it to service.

INITIATING CUE:

The Unit Supervisor directs you to place the RWST on purification recirculation using the RWPP through SFP demineralizer 1A(2A) in accordance with 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System. Prerequisites of this procedure have been verified. SFP Purification is aligned through SFP Demin 1B(2B).

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Places RWST on Purification recirc IAW section 7.4 of POP02-FC-0001. Secures the RWPP using either the pump handswitch or pump breaker when a Safety Injection is received in the Control Room.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)**HANDOUTS:**

Student HO of working copy of OPOP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System.

NOTES:

- 1) The Handout copy of the procedure has only the front section for Prerequisites and Notes/Precautions and the applicable sections for performance of the task.
- 2) The area around the Refueling Water Purification Pump (RWPP) may be posted as a Radiation Area in both units. In addition the area around the RWPP in Unit 2 may be posted as a Contaminated Area. This contaminated area is limited to the area immediately around the pump base and the area immediately forward of the pump, centered around a floor drain immediately forward of the pump. The valves and indications that will need to be accessed for this JPM are not in the contaminated area.
- 3) **The NRC Evaluator will use the following for RCA access:**
Unit 1: RWP-2005-0-000X, Rev. X, and use XXXX for the WAN
Unit 2: RWP-2005-0-000X, Rev. X, and use XXXX for the WAN

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step:** 1

Obtain a current copy of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System.

Standard:

Obtains a copy of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System.

Comment:

When the operator demonstrates he/she can locate a controlled copy of the correct procedure, provide him/her the JPM copy. The operator should review notes and precautions.

Cue:**Notes:**

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 2

Review the Prerequisites, Notes, and Precautions

Standard:

Reviews the procedure Notes and Precautions

Comment:

- 1) It is not necessary for performer to read aloud.
- 2) The performer should transition to section 7.4, Purification of RWST

Cue:

(If Asked) The 1A (2A) SFP Demineralizer Boron concentrations are equalized.

(If Asked) No Emergency Diesel Generator (ESF Diesel) is operating or is scheduled to be run.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 3

Verify SFP purification is in service and aligned through SFP demin 1B (2B).

Standard:

Verifies SFP purification is in service and aligned through SFP demin 1B (2B).

Comment:

As per the Initiating Cue, SFP Purification is aligned through SFP Demin 1B(2B).

Cue:

The Unit Supervisor reports that SFP purification is in service and aligned through SFP demin 1B.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 4 (C)

Open RWST to SFP Cleanup System valves.

Standard:

Contacts the Control Room to open the RWST TO SFP CLEANUP SYS valves FV-3936 and FV-3937.

Comment:

Cue:

(After a few seconds) – The Control Room reports valves SI-FV-3936 and SI-FV-3937 are open.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 5**

Open SFP Purification Loop A Return to RWST Isolation Valve.

Standard:

Opens 1(2)-FC-0046B "SFP PURIFICATION LOOP 1A(2A) RETURN TO RWST ISOLATION VALVE."

Comment:

- 1) This valve is located in the MAB 41' elevation, filter row Room 237. It is a wall mounted reach rod 90° turn valve requiring a wrench for operation. When facing the south wall, it is about 1/3 of the way down the hall, on the right side, approximately 1' above the ground.
- 2) A ratchet wrench is needed to operate the valve and is available in the Radwaste Control Room.

Cue:

1(2)-FC-0046B is CLOSED initially and OPEN after valve manipulation.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 6 (C)

Start RWPP 1A(2A)

Standard:

Starts the 1A(2A) RWPP using the Control Handswitch on ZLP-749 located in the FHB on the 22' elevation.

or

Calls the Radwaste Operator on the radio to start the 1A(2A) RWPP.

Comment:

The Pump Control Handswitch is located in the FHB and the pump itself is located in the MAB, therefore the performer can not directly tell if the pump is running satisfactorily or not.

Cue:

- 1) If asked, pump supply breaker is closed.
- 2) If the candidate calls the Radwaste Operator:
 - a) The Radwaste Operator reports that he has taken the pump start switch to "START" and has a RED indicating light illuminated on ZLP-749.
 - b) The RW Purification Flow Low Alarm on ZLP-749 has cleared.
 - c) The Radwaste Operator is leaving the area to continue rounds.
- 3) If the candidate starts the pump locally:
 - a) Pump run status indicating light on ZLP-749:
 - Initially – Green light LIT, Red light OUT
 - Finally – Red light LIT, Green light OUT
 - b) RW Purification Flow Low Alarm on ZLP-749 clears after pump is started.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 7**

Throttles Refueling Water Purification Pump Discharge Throttle Valve to obtain required flow 190 – 200 gpm

Standard:

Throttles 1(2)-FC-0042, REFUELING WATER PURIF PUMP DISCHARGE THROTTLE VALVE, as necessary to obtain between 190 and 200 gpm on 1(2)-FC-FIS-1417.

Comment:

All of the components are located in the RCB/MAB Chilled Water Pump Room – MAB 10' elevation Room 64 (Penetration Space). 1(2)-FC-FIS-1417 is on the south wall, forward of the RWPP.

The area around the Refueling Water Purification Pump (RWPP) may be posted as a Radiation Area in both units. In addition the area around the RWPP in Unit 2 may be posted as a Contaminated Area. This contaminated area is limited to the area immediately around the pump base and the area immediately forward of the pump, centered around a floor drain immediately forward of the pump. The valves and indications that will need to be accessed for this JPM are not in the contaminated area.

Cue:

If asked:

- 1) RWPP is running smoothly, initial discharge pressure is 130 psig.
- 2) Discharge flow on 1(2)-FC-FIS-1417 is **initially** indicating **225 gpm**.
- 3) As the candidate simulates throttling down on 1(2)-FC-0042, give **flow decrements** of **10 gpm** down to **195 gpm**. Final pump discharge pressure is 140 psig.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 8**

Verify Demineralizer Parameters.

Standard:

Verifies the following SFP demineralizer parameters:

- 1) *SFP demineralizer $\Delta P < 20$ psid.*
- 2) *SFP demineralizer outlet filter ΔP is < 35 psid.*

Comment:

- 1) 1(2)-FC-PDI-4405, Demin 1A(2A) ΔP Indicator is located on the 41' MAB Rm 238 Demin Row.
- 2) 1(2)-FC-PI-1412, SFP Demin Filter 1A(2A) Inlet Pressure Indicator is located on the 41' MAB Rm 237 Filter Row.
- 3) 1(2)-FC-PI-1413, SFP Demin Filter 1A(2A) Outlet Pressure Indicator is located on the 41' MAB Rm 237 Filter Row.
- 4) Provide Plant Page announcement cue immediately after the outlet filter ΔP cue.

Cue:

- 1) Demineralizer ΔP on 1(2)-FC-PDI-4405 $\rightarrow 7$ psid.
- 2) Outlet Filter ΔP between 1(2)-FC-PI-1412 and 1(2)-FC-PI-1413 $\rightarrow 4$ psid
- 3) Immediately after Cue #2, make Plant Page Announcement:
"ATTENTION ALL PLANT PERSONNEL, ATTENTION ALL PLANT PERSONNEL, UNIT 1(2) REACTOR TRIP AND SAFETY INJECTION"
- 4) If candidate requests Demineralizer flow on 1(2)- FC-FI-1414, provide the following:
 - Before SI – 195 gpm
 - After SI- 0 gpm

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 9 (C)

Secure the RWPP.

Standard:

Secures the RWPP using either one of the following methods:

- 1) Taking Pump Control Handswitch at ZLP-749 to "STOP" (FHB 22' elevation)*
- or*
- 2) Taking Pump Supply Breaker D2 on 480 V MCC 1(2)K3 to "OFF" (MAB 10' elevation @ MCC 1K3(2K3))*

Comment:

- 1) FV-3936 and FV-3937, RWPP suction valves, close on a Safety Injection.
- 2) The Radwaste Operator is no longer available for assistance.
- 3) The pump supply breaker 1(2)K3 / D2 would be the quicker choice from where the performer is currently located. The MCC is located on the MAB 10' elevation in the Electrical Equipment Room 065. (This room is adjacent to the elevator door.)
- 4) Terminate the JPM when the candidate performs one of the two actions listed in the standard above.

Cue:

If the candidate contacts the Radwaste Operator, inform the candidate that you are in the EAB at this time. (Not Available)

Notes:

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure: PLACE RWST ON RECIRCULATION

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is at 100% power, steady state conditions. Maintenance has been recently completed on the Refueling Water Purification Pump (RWPP) and it is time to return it to service.

INITIATING CUE:

The Unit Supervisor directs you to place the RWST on purification recirculation using the RWPP through SFP demineralizer 1A(2A) in accordance with 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System. Prerequisites of this procedure have been verified. SFP Purification is aligned through SFP Demin 1B(2B).

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: LOCALLY CLOSE MSIV AND MSIBs

JPM NO: P2

REVISION: 1

LOCATION: UNIT 1 or 2

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: LOCALLY CLOSE MSIV AND MSIBs

JPM No.: P2

Rev. No.: 1

STP Task: T82044, Respond to a Loss of All AC Power

STP Objective: CRO 82044, Respond to a Loss of All AC Power in accordance with OPOP05-EO-EC00, Loss of All AC Power

Related K/A Reference: 056AK3.02[4.4, 4.7], Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Actions contained in EOP for loss of offsite power.

References: OPOP05-EO-EC00, LOSS OF ALL AC POWER, Rev. 17

Task Normally Completed By: PO

Method of Testing: Simulated

Location of Testing: Plant

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 20 Minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit has just experienced a loss of all AC power, and procedure 0POP05-EO-EC00, LOSS OF ALL AC, is being performed. The crew is currently at step 10 a. RNO, and determines the Main Steam Isolation Valve (MSIV) for 1(2) 'A' Steam Generator did not shut and cannot be shut manually from the Control Room.

INITIATING CUE:

The Unit Supervisor directs you to locally close Steam Generator 1(2) 'A' MSIV by performing Addendum 3, "Failing Air to MSIVs and MSIBs".

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Steam Generator 1(2) 'A' MSIV has been closed locally.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

HANDOUTS:

Working copy of 0POP05-EO-EC00, LOSS OF ALL AC POWER Addendum 3.

NOTES:

None

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step:** 1

Obtain a copy of the procedure Addendum

Standard:*Obtains a copy of the procedure Addendum 3, Failing Air to MSIVs and MSIBs.***Comment:****Cue:**

Provide the Handout copy of 0POP05-EO-EC00, Loss of All AC Power, Addendum 3, Failing Air to MSIVs and MSIBs

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 2 (C)

CLOSE IA isolation to MSIV and MSIB (58 ft IVC, on wall by MSIV).

Standard:

The operator simulates CLOSING the appropriate air isolation valve.

_____ S/G A - "I(2)-IA-0555 INSTRUMENT AIR SUBHEADER ISOLATION VALVE"

Comment:

- 1) Valve located 58 ft. IVC, on wall by MSIV.
- 2) This valve is operated by a hand lever that rotates 90° to open or close the valve.

Cue:

- Initially, Valve OPEN
- As the operator simulates rotating the hand lever, indicate to the operator that the valve is closed once the lever reaches a position 90° from where it began.
- Finally, Valve CLOSED

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 3 (C)

VENT IA line to atmosphere by opening petcock on either air regulator to 1(2) 'A' MSIB.

Standard:

*The operator **simulates** opening petcock on either air regulator for the 1(2) 'A' MSIB:*

_____ *AIR REGULATOR 1(2)-IA-PCV-7037 OR 1(2)-IA-PCV-7038 for 1(2) MS FV-7412, SG 1A(2A) MSIV and FSV-7412, SG 1A(2A) MSIB.*

Comment:

- 1) There are three IA regulators, two of which may be used to bleed air pressure from the MSIV and MISB diaphragms. These are the two specified in the procedure. (The petcock for the third air regulator is plugged.)
- 2) The MSIB air regulators are located on the 58' IVC, on either side of the respective MSIB.
- 3) The petcocks are located on the bottom of the regulators

Cue:

After petcock opened, you hear air venting.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 4**

Check that MSIV and MSIB are closed.

Standard:

Determines the MSIV and MSIB are closed.

Comment:

- 1) There is no procedural requirement to do this, however, it will substantiate that the intended actions took place. Whether the valves closed or not is academic at this point since the operator can do nothing more to effect closure if it hasn't occurred by now.
- 2) Both the MSIB and MSIV have stem indicators that can be used to determine valve position.
- 3) The MSIB was originally closed as this is it's normal position at power.

Cue:**MSIB**

Initially: CLOSED
Finally: CLOSED

MSIV

Initially: OPEN
Finally: CLOSED

Notes:

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure: LOCALLY CLOSE MSIV AND MSIBs

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit has just experienced a loss of all AC power, and procedure 0POP05-EO-EC00, LOSS OF ALL AC, is being performed. The crew is currently at step 10 a. RNO, and determines the Main Steam Isolation Valve (MSIV) for 1(2) 'A' Steam Generator did not shut and cannot be shut manually from the Control Room.

INITIATING CUE:

The Unit Supervisor directs you to locally close Steam Generator 1(2) 'A' MSIV by performing Addendum 3, "Failing Air to MSIVs and MSIBs".

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **RETURNING GWPS TO SERVICE FOLLOWING 1 HOUR
PMT**

JPM NO: **P3**

REVISION: **1**

LOCATION: **UNIT 1 or 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: RETURNING GWPS TO SERVICE FOLLOWING 1 HOUR PMT

JPM No.: P3

Rev. No.: 1

STP Task: 031200, Operate the Gaseous Waste Processing System.

STP Objective: 031200, Given the specified procedure(s), logs/forms, tools and equipment, operate the Gaseous Waste Processing System in accordance with the specified procedure(s), with no assistance allowed in operating the system.

Related K/A Reference: 071 A2.01 [3.3/3.6], Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Use of waste gas release monitors, radiation, gas flow rate, and totalizer.

References: OPOP02-WG-0001, Rev. 14, Gaseous Waste Processing System Operations

Task Normally Completed By: PO

Method of Testing: Simulated

Location of Testing: Plant

Time Critical Task: NO

Alternate Path JPM: YES

CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE WORKSHEET (cont'd)

Validation

Time: 30 Minutes

Required Materials

(Tools/Equipment): Student Handout copy of 0POP02-WG-0001, Gaseous Waste Processing System Operations

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A one hour PMT was just completed on the GWPS system and it is time to return the system to normal.

INITIATING CUE:

The Unit Supervisor requests you to perform a system startup of the GWPS utilizing Section 7 of 0POP02-WG-0001, Gaseous Waste Processing System Operations. All applicable prerequisites have been completed.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Satisfactory startup of GWPS, completing steps 7.1 through 7.9.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

HANDOUTS:

Student Handout copy of OPOP02-WG-0001, Gaseous Waste Processing System Operations.

NOTES:

Room 068K in Unit 2 may be posted as a Radiation Area. (Applicable to JPM step 9.)

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step:** 1

Obtain a copy of the procedure.

Standard:*Obtains a copy of OPOP02-WG-0001, Gaseous Waste Processing System Operations.***Comment:**

The working copy of the procedure will consist of the sections covering the Purpose and Scope, Prerequisites, Notes and Precautions, and Section 7.0.

Cue:

Provide the applicant with the working copy of OPOP02-WG-0001, Gaseous Waste Processing System Operations.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 2

Review the Prerequisites and the Notes and Precautions.

Standard:

Reviews the Prerequisites, Notes and Precautions of OPOP02-WG-0001, Gaseous Waste Processing System Operations.

Comment:

Cue:

Inform the applicant that all prerequisites have been satisfied as per the Initiating Cue.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 3

Verify Chiller Glycol temperature less than or equal to 35°F. (Procedure Step 7.1)

Standard:

Verifies Chiller Glycol temperature is less than or equal to 35°F on "1(2)-WG-TI-4659 GWPS GLYCOL CHILLER TANK TEMPERATURE ELEMENT".

Comment:

1(2)-WG-TI-4659 is located on ZLP-116 in the Rad Waste Control Room 41' MAB.

Cue:

Temperature indication on 1(2)-WG-TI-4659 is 34°F.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 4**

Inform the Control Room that the inlet O2 monitor will be inoperable when the GWPS Inlet 1(2)-WG-FV-4657 and Outlet 1(2)-WG-FV-4671 Flow Valve Handswitches are placed in the OPEN position. (Procedure Step 7.2)

Standard:

Informs the Control Room that the inlet O2 monitor will be inoperable when the GWPS Inlet 1(2)-WG-FV-4657 and Outlet 1(2)-WG-FV-4671 Flow Valve Handswitches are placed in the OPEN position.

Comment:

FV-4657 and FV-4671 will be placed in the open position in JPM steps 5 and 6. Placing the inlet and outlet flow valves (FV-4657 and FV-4671) handswitches in the open position requires entry into Technical Requirements Manual (TRM) specifications 3/4.3.3.11 and 3/4.11.2.5 and an entry into the Control Room Log by the Control Room Staff.

Cue:

As the Control Room, acknowledge that the inlet O2 monitor will be inoperable when the GWPS inlet and outlet flow valve handswitches are placed in the OPEN position.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 5 (C)

Place 1(2)-WG-FV-4671, GWPS Discharge Flow Valve control switch in OPEN.
(Procedure Step 7.3)

Standard:

Places 1(2)-WG-FV-4671, GWPS Discharge Flow Valve control switch in OPEN.

Comment:

Located on 41' MAB Radwaste Control Panel ZLP-116.

Cue:

FV-4671 Handswitch: Initially CLOSE (Green Light – Lit, Red Light – Off)
Finally OPEN (Green Light – Off, Red Light – Lit)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 6 (C)

Place 1(2)-WG-FV-4657, GWPS Inlet Header Valve control switch in OPEN. (Procedure Step 7.4)

Standard:

Places 1(2)-WG-FV-4657, GWPS Inlet Header Valve control switch in OPEN.

Comment:

Located on 41' MAB Radwaste Control Panel ZLP-116.

Cue:

FV-4657 Handswitch: Initially CLOSE (Green Light – Lit, Red Light – Off)
Finally OPEN (Green Light – Off, Red Light – Lit)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 7 (C)**

If inlet header oxygen is greater than 1%, then start a nitrogen purge. (Procedure Step 7.5)

Standard:

Determines that inlet header oxygen is greater than 1% and that a nitrogen purge must be performed.

Comment:

1(2)-WG-AI-4655 Oxygen Monitor is a Tech Spec related piece of equipment and has a hinged cover over the controls. To preclude having the applicant open the cover and affect a piece of Tech Spec related equipment, Attachment 1, a picture of the Oxygen Monitor with the cover open is provided. **DO NOT ALLOW THE APPLICANT TO OPEN THE DOOR OF THE OXYGEN MONITOR.**

Attachment 1 shows the normal configuration of the Oxygen Monitor and the reading during normal operations. The following cues will provide the applicant with the needed information to determine that a nitrogen purge is required.

The following are the meter ranges for the indicated range switch positions on the Oxygen Monitor:

LO: 0 – 1%

MED: 0 – 5%

HI: 0 – 25% (There is no scale marked on the meter for this range.)

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

Cue:

- 1) If the applicant goes to open the cover to the Oxygen Monitor, provide Attachment 1 to the applicant.
- 2) If applicant asks what position that the range switch is in, inform the applicant that the switch is in the MED position.
- 3) If the applicant uses Attachment 1 to determine Oxygen level, indicate to the applicant that the needle points to 2 (indicating 2% oxygen).
- 4) If the applicant uses the meter on the actual Oxygen Monitor, indicate that the needle is pointing to the 2 (indication 2% oxygen). **DO NOT ALLOW THE APPLICANT TO OPEN THE COVER TO THE OXYGEN MONITOR.**
- 5) If the applicant indicates that they would change the range switch to the “LO” position and asks what the Oxygen Monitor is reading is in this position, inform the applicant that the meter is pegged high.
- 6) If applicant contacts the Control Room informing them of the requirement to start a nitrogen purge, acknowledge that a nitrogen purge must be performed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 8

Inform Main Control Room of increased nitrogen usage during nitrogen purge,
(Procedure Step 7.5.1)

Standard:

Informs Main Control Room of increased nitrogen usage during nitrogen purge.

Comment:

Cue:

As the control room, acknowledge that there will be an increased usage of nitrogen during the nitrogen purge.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 9 (C)

Open 1(2)-NL-0116, Low Pressure Nitrogen to Gaseous Waste System Isolation Valve.
(Procedure Step 7.5.2)

Standard:

Opens 1(2)-NL-0116, Low Pressure Nitrogen to Gaseous Waste System Isolation Valve.

Comment:

- 1) NL-0116 is located on the 10' MAB Room 068K.
- 2) Valve is a 90° turn valve.

Cue:

NL-0116: Initially – CLOSED
Finally – OPEN

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 10 (C)

Throttle open 1(2)-NL-0029, Low Pressure Nitrogen to Gaseous Waste System Isolation Valve while maintaining system pressure less than 2.5 psig. (Procedure Steps 7.5.3 and 7.5.4)

Standard:

Slowly throttles open 1(2)- NL-0029, LOW PRESSURE NITROGEN TO GWPS ISOLATION VALVE, to maintain less than 2.5 psig as indicated on N1(2)WG-PI-4656, GLYCOL CHILLER TANK INLET HEADER PRESSURE INDICATOR.

Comment:

Valve is located on MAB 10' in Room 068J.

Pressure Indicator is located on the 41' MAB on the Radwaste Control Panel ZLP-116. (of the 6 indicators located on the top right corner of ZLP-116, it is the second from left)

Applicant will require assistance from another operator to monitor pressure while nitrogen valve is throttled open.

Cue:

- NL-0029: Initially – CLOSED Finally - THROTTLED OPEN
- As the operator monitoring pressure, report pressure gradually increases, at 0.3 psig increments, as the valve is throttled open. Final pressure on PI-4656 is 2.3 psig.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 11 (C)

Place 1(2)-WG-FV-4671, GWPS Discharge Flow Valve control switch in NORMAL.
(Procedure Step 7.6)

Standard:

Places 1(2)-WG-FV-4671, GWPS Discharge Flow Valve control switch in NORMAL.

Comment:

Located on 41' MAB Radwaste Control Panel ZLP-116.

Cue:

FV-4671 Handswitch: Initially OPEN (Green Light – OFF, Red Light – Lit)
Finally NORMAL (Green Light – OFF, Red Light – Lit)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 12 (C)

Place 1(2)-WG-FV-4657, GWPS Inlet Header Valve control switch in NORMAL.
(Procedure Step 7.7)

Standard:

Places 1(2)-WG-FV-4657, GWPS Inlet Header Valve control switch in NORMAL.

Comment:

Located on 41' MAB Radwaste Control Panel ZLP-116.

Cue:

FV-4657 Handswitch: Initially OPEN (Green Light – OFF, Red Light – Lit)
Finally NORMAL (Green Light – OFF, Red Light – Lit)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 13 (C)

Ensure Inlet Header Oxygen (O₂) Detector is selected to the mid range.

Standard:

Ensures that the Inlet Header Oxygen (O₂) Detector is selected to the mid range.

Comment:

1(2)-WG-AI-4655 Oxygen Monitor is a Tech Spec related piece of equipment and has a hinged cover over the controls. To preclude having the applicant open the cover and affect a piece of Tech Spec related equipment, Attachment 2, a picture of the Oxygen Monitor with the cover open is provided. **DO NOT ALLOW THE APPLICANT TO OPEN THE DOOR OF THE OXYGEN MONITOR.**

Cue:

- 1) If the applicant goes to open the cover to the Oxygen Monitor, provide Attachment 2 to the applicant.
- 2) If applicant asks what position that the range switch is in, inform the applicant that the switch is in the MED position as shown.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 14**

Inform Main Control Room that GWPS Inlet 1(2)-WG-FV-4657 and Outlet 1(2)-WG-FV-4671 Flow Valve Handswitches are placed in NORMAL and the O2 monitor may be considered OPERABLE and conditions may exist to exit ACTIONS of TRM 3/4.3.3.11 and 3/4.11.2.5.

Standard:

Informs the Main Control Room that GWPS Inlet 1(2)-WG-FV-4657 and Outlet 1(2)-WG-FV-4671 Flow Valve Handswitches are returned to NORMAL and the O2 monitor may be considered OPERABLE and conditions may exist to exit ACTIONS of TRM 3/4.3.3.11 and 3/4.11.2.5.

Comment:**Cue:**

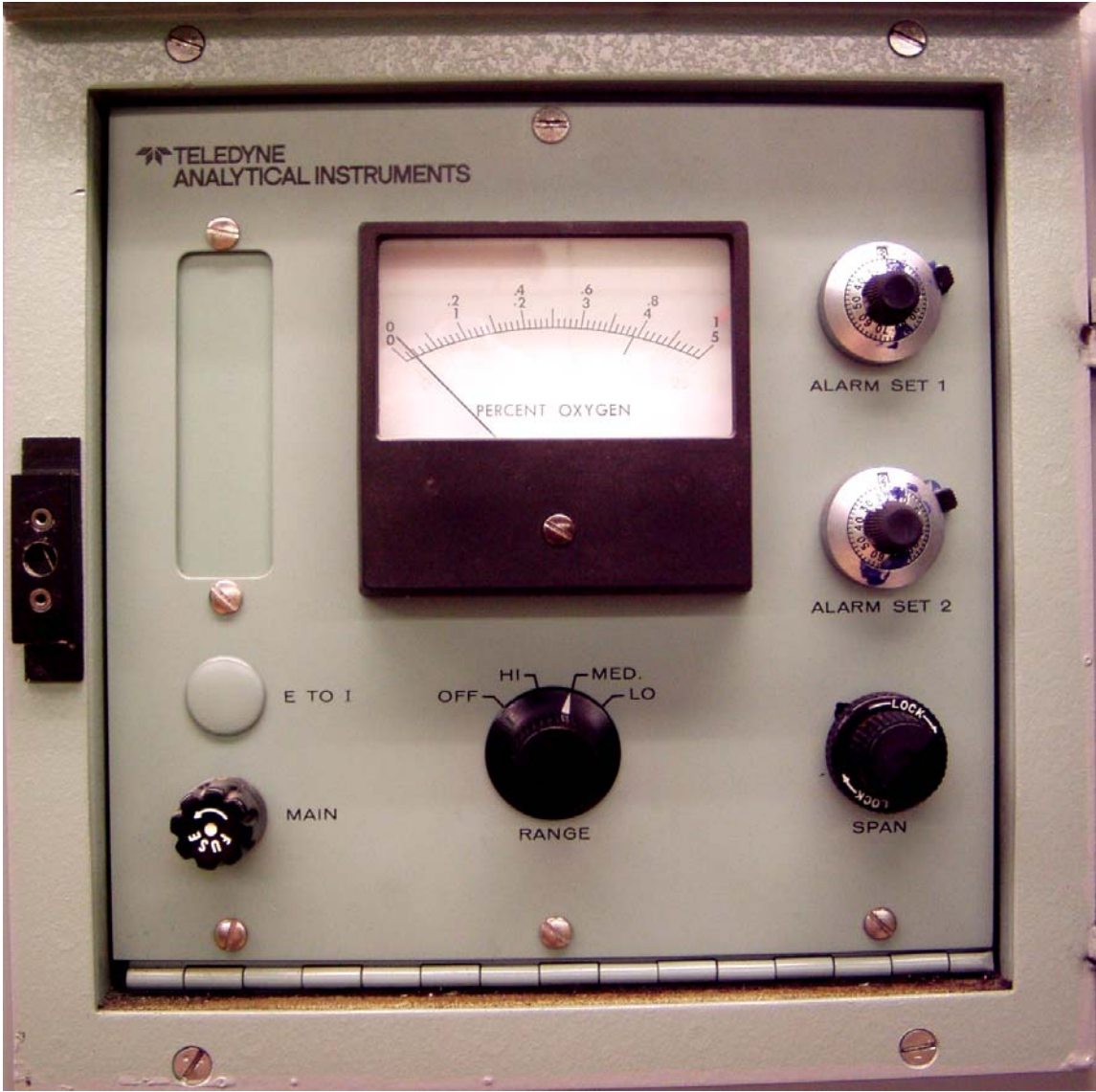
As the control room, acknowledge that GWPS Inlet 1(2)-WG-FV-4657 and Outlet 1(2)-WG-FV-4671 Flow Valve Handswitches are returned to NORMAL and the O2 monitor may be considered OPERABLE.

Notes:

-TERMINATE THE JPM-

JPM STOP TIME _____

ATTACHMENT 1



ATTACHMENT 2



VERIFICATION OF COMPLETION

Job Performance Measure: RETURNING GWPS TO SERVICE FOLLOWING 1
HOUR PMT

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A one hour PMT was just completed on the GWPS system and it is time to return the system to normal.

INITIATING CUE:

The Unit Supervisor requests you to perform a system startup of the GWPS utilizing Section 7 of 0POP02-WG-0001, Gaseous Waste Processing System Operations.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **Roll Electrical Busses During Plant Startup**

JPM NO: **S1**

REVISION: **1**

LOCATION: **Simulator**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: ROLL ELECTRICAL BUSES DURING PLANT STARTUP

JPM No.: S1

Rev. No.: 1

STP Task: 62800, Shift Auxiliary Busses between the Unit Aux XFMR and the Standby XFMR.

STP Objective: 62800, Shift Auxiliary Busses between the Unit Aux XFMR and the Standby XFMR per POP02-AE-0002.

Related K/A Reference: 062 A4.01 [3.3/3.1], Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard).

References: OPOP03-ZG-0005, Rev 48, Plant Startup to 100%
OPOP02-AE-0002, Rev 22, Transformer Normal Breaker and Switch Lineup

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 20 minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress in accordance with OPOP03-ZG-0005, Plant Startup to 100%. Reactor Power is presently at 12 - 16%. The Control Room Staff must transfer all the 13.8 KV Electrical Busses to the Standby Transformers in accordance with Step 6.58 of OPOP03-ZG-0005.

INITIATING CUE:

The Unit Supervisor directs you to Transfer the 13.8 KV Busses to the Standby Transformers in accordance with Section 16.0 of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup and the provided addendum. The Prerequisites of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup have been verified. The provided addendum establishes the alternate bus lineup per Step 4.13.1. Entry into Technical Specification 3.8.1.1.e is not required.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Performs the following 13.8 KV bus transfers without causing an automatic breaker actuation:

- *13.8 KV Aux Bus 1F and 13.8 KV STBY Bus 1F from the UAT to STBY XFMR 1*
- *13.8 KV Aux Bus 1G from the UAT to STBY XFMR 1*
- *13.8 KV STBY Bus from STBY XFMR 1 to STBY XFMR 2 and the 13.8 KV Aux Bus 1H from the UAT to STBY XFMR 2*
- *13.8 KV Aux Bus 1J from the UAT to STBY XFMR 2*

JOB PERFORMANCE MEASURE INFORMATION SHEET**HANDOUTS:**

Working copy of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup.

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

SIMULATOR SETUP

- 1) JPMs S1 and S2 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC# 189 and verify:
 - Step counter position annunciator light is out on CP-0005
 - Red light at the end of CP-010 is out.
- 5) Check and clean the following procedures (JPM specific):
 - OPOP03-ZG-0005, Plant Startup to 100%
 - OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup
- 6) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.
- 7) Match breaker flag indications on CP-010 and CP-003.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

8) Verify the following:

- CW Pump #14 Secured

9) Place the simulator in “FREEZE” until the examiners are ready to proceed.

10) There is no Simulator Lesson Plan associated with this JPM.

INSTRUCTOR ACTIONS

None

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step: 1**

Obtain a copy of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup, and transitions to Section 16.0.

Standard:

Obtains a copy of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup, and transitions to Section 16.0, Transferring 13.8 KV Bus Power.

Comment:

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The applicant should review the Notes and Precautions.

Cue:

Provide the completed and approved copy of Addendum 5 to the applicant (attached to back of JPM).

If applicant seeks US approval to proceed, inform the applicant that they have permission to proceed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 2 (C)

Perform the breaker manipulations for transferring the 1F Aux Bus and Standby Bus from the UAT to the STBY XFMR #1. (Procedure Step 16.6)

Standard:

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 1	"SPLY BKR SYNC SW ST-0120"	ON
_____ Step 2	"STBY XFMR 1 TO STBY BUS 1F SPLY ST-0120"	CLOSED
_____ Step 3	"UAT TO AUX BUS 1F SPLY P-0120"	OPEN
_____ Step 4	"SPLY BKR SYNC SW ST-0120"	OFF

Comment:**Cue:****Notes:**

If the supply breaker from the UAT is not opened within 15 seconds of closing the STBY XFMR 1 to STBY BUS 1F SPLY breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the 1F bus-tie breaker trips. If any breaker automatically trips, the student will fail to meet the requirements of this step.

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 3 (C)

Perform the breaker manipulations for transferring the 1G Aux Bus from the UAT to the STBY XFMR #1. (Procedure Step 16.6)

Standard:

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 5	<i>“TIE BKR SYNC SW T 0140”</i>	<i>ON</i>
_____ Step 6	<i>“AUX TO STBY BUS 1G TIE BKR T 0140”</i>	<i>CLOSED</i>
_____ Step 7	<i>“UAT TO AUX BUS 1G SPLY P 0140”</i>	<i>OPEN</i>
_____ Step 8	<i>“TIE BKR SYNC SW T 0140”</i>	<i>OFF</i>

Comment:**Cue:****Notes:**

If the supply breaker from the UAT is not opened within 15 seconds of closing the AUX TO STBY Bus 1G Tie Breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the 1G bus-tie breaker trips. If any breaker automatically trips, the student will fail to meet the requirements of this step.

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 4 (C)

Perform the breaker manipulations for transferring the 13.8 KV STBY Bus from STBY XFMR 1 to STBY XFMR 2 and the 13.8 KV Aux Bus 1H from the UAT to STBY XFMR 2. (Procedure Step 16.6)

Standard:

Performs the following steps on Addendum 5 IN SEQUENCE:

_____ Step 9	<i>"SPLY BKR SYNC SW ST 0150"</i>	<i>ON</i>
_____ Step 10	<i>"STBY XFMR 2 TO STBY BUS 1H SPLY ST-0150"</i>	<i>CLOSED</i>
_____ Step 11	<i>"STBY XFMR 1 TO STBY BUS 1H SPLY ST-0130"</i>	<i>OPEN</i>
_____ Step 12	<i>"SPLY BKR SYNC SW ST 0150"</i>	<i>OFF</i>
_____ Step 13	<i>"TIE BKR SYNC SW T 0130"</i>	<i>ON</i>
_____ Step 14	<i>"AUX TO STBY BUS 1H TIE BKR T 0130"</i>	<i>CLOSED</i>
_____ Step 15	<i>"UAT TO AUX BUS 1H SPLY P 0130"</i>	<i>OPEN</i>
_____ Step 16	<i>"TIE BKR SYNC SW T 0130"</i>	<i>OFF</i>

Comment:

To transfer the 1H bus requires two operations. The first is to transfer the STBY Bus from STBY XFMR 1 to STBY XFMR 2. The second is to transfer the Aux Bus from the UAT to STBY XFMR 2.

Cue:

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

Notes:

- 1) If the supply breaker from STBY XFMR 1 is not opened within 15 seconds of closing the STBY XFMR 2 to STBY Bus 1H SPLY breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds the STBY XFMR 2 to STBY Bus 1H SPLY breaker trips.
- 2) If the supply breaker from the UAT is not opened within 15 seconds of closing the AUX TO STBY Bus 1H Tie Breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the 1H bus-tie breaker trips.

If any breaker automatically trips, the student will fail to meet the requirements of this step.

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 5 (C)**

Perform the breaker manipulations for transferring the 1J Aux Bus from the UAT to the STBY XFMR #2. (Procedure Step 16.6)

Standard:

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 17 “SPLY BKR SYNC SW ST 0190”	<i>ON</i>
_____ Step 18 “STBY XFMR 2 TO AUX BUS 1J SPLY ST 0190”	<i>CLOSED</i>
_____ Step 19 “UAT TO AUX BUS 1J SPLY P 0150”	<i>OPEN</i>
_____ Step 20 “SPLY BKR SYNC SW ST 0190”	<i>OFF</i>

Comment:**Cue:****Notes:**

If the supply breaker from the UAT is not opened within 15 seconds of closing the STBY XFMR 2 to STBY Bus 1J SPLY breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the UAT to Aux Bus 1J SPLY breaker will trip. If any breaker automatically trips, the student will fail to meet the requirements of this step.

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure: ROLL ELECTRICAL BUSSES DURING PLANT
STARTUP

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress in accordance with OPOP03-ZG-0005, Plant Startup to 100%. Reactor Power is presently at 12 - 16%. The Control Room Staff must transfer all the 13.8 KV Electrical Busses to the Standby Transformers in accordance with Step 6.58 of OPOP03-ZG-0005.

INITIATING CUE:

The Unit Supervisor directs you to Transfer the 13.8 KV Busses to the Standby Transformers in accordance with Section 16.0 of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup and the provided addendum. The Prerequisites of OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup have been verified. The provided addendum establishes the alternate bus lineup per Step 4.13.1. Entry into Technical Specification 3.8.1.1.e is not required.

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Transformer Normal Breaker and Switch Lineup

Addendum 5

Transferring U1 13.8 KV AUX Buses to STBY XFMRs Checklist

Page 1 of 3

Transferring U1 13.8 KV AUX Buses to STBY XFMRs ChecklistDATE: Today**TYPICAL**

EVOLUTION	Transferring 13.8 KV AUX Buses to Standby XFMRs Checklist	
STEP NUMBER	BREAKER	FINAL POSITION
1	"SPLY BKR SYNC SW ST-0120"	ON
2	"STBY XFMR 1 TO STBY BUS 1F SPLY ST-0120"	CLOSED
3	"UAT TO AUX BUS 1F SPLY P-0120"	OPEN
4	"SPLY BKR SYNC SW ST-0120"	OFF
5	"TIE BKR SYNC SW T-0140"	ON
6	"AUX TO STBY BUS 1G TIE BKR T-0140"	CLOSED
7	"UAT TO AUX BUS 1G SPLY P-0140"	OPEN
8	"TIE BKR SYNC SW T-0140"	OFF
9	"SPLY BKR SYNC SW ST-0150"	ON
10	"STBY XFMR 2 TO STBY BUS 1H SPLY ST-0150"	CLOSED
11	"STBY XFMR 1 TO STBY BUS 1H SPLY ST-0130"	OPEN
12	"SPLY BKR SYNC SW ST-0150"	OFF
13	"TIE BKR SYNC SW T-0130"	ON
14	"AUX TO STBY BUS 1H TIE BKR T-0130"	CLOSED
15	"UAT TO AUX BUS 1H SPLY P-0130"	OPEN
16	"TIE BKR SYNC SW T-0130"	OFF

REVIEWED BY : Billy
Unit SupervisorToday / Now
Date / Time
No Retention Required

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: Respond to FHB Rad Monitor Alarm

JPM NO.: S2

REVISION: 1

LOCATION: Simulator

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: Respond to FHB Rad Monitor Alarm

JPM No.: S2

Rev. No: 1

STP Task: T 86200, Respond to Radiation Monitoring System Alarms

STP Objective: CRO86203, Determine the cause of the high radiation and take corrective action

Related K/A Reference: 073.A4.01, Ability to manually operate and/or monitor in the Control Room: effluent release (3.9/3.9)

References: OPOP04-RA-0001, Radiation Monitoring System Alarm Response, Rev. 18

Task Normally Completed By: RO/SRO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: No

Alternate Path JPM: Yes

Validation Time: 20 min.

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress in accordance with OPOP03-ZG-0005, Plant Startup to 100%. Reactor Power is presently at 12 - 16%. Fuel shuffling is being performed in the Spent Fuel Pool in anticipation for receipt of new fuel.

INITIATING CUE:

An alarm has come in on Rad Monitor Panel RM-11. The Unit Supervisor directs you to investigate the alarm in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response, and take appropriate action.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Places the Fuel Handling Bldg. HVAC in Emergency Mode in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of OPOP04-RA-0001, Radiation Monitoring System Alarm Response

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

SIMULATOR SETUP:

- 1) JPMs S1 and S2 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC # 189 and verify Step Counter position annunciator light on CP-005 is out.
- 5) Check and clean the following procedures (JPM specific):
 - OPOP04-RA-0001, Radiation Monitoring System Alarm Response
- 6) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.
- 7) Match breaker flag indications on CP-010 and CP-003.
- 8) Place the simulator in “FREEZE” until the examiners are ready to proceed.
- 9) When the examiner is ready to proceed, place the simulator in RUN, execute lesson plan # 6 in lesson plan group nrc2005 AND go to ‘Start Lesson’ and verify the following:
 - There are 3 blown fuse malfunctions listed on the ‘Active’ malfunction page.
 - RT-8035 is in alarm (DO NOT SILENCE OR ACKNOWLEDGE THE ALARM AT THE RM-11). at the RM-11. No other RM-11 alarms are in.

INSTRUCTOR NOTE: The simulator lesson malfunctions are already triggered. No further action is required after step 9 has been performed.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Investigates the alarm on the RM-11 and determines RT-8035 is in High Alarm

Standard:

- *Silences the audible alarm*
- *Note RT-8035 has an alarm*
- *Calls up a Trend or status display for RT-8035*
- *Goes to Addendum 10 of the procedure (RT-8035 and RT-8036 FHB Response)*

Comment:

Per a procedure NOTE, these actions are considered skill of the craft and may be performed before entering the procedure.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Check High or Alert alarm exists on RT-8035 or RT-8036

Standard:

Determines a High Alarm exists on RT-8035

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 3 (C)

Check FHB HVAC operating in Emergency Mode

Standard:

Determines FHB HVAC is NOT operating in Emergency Mode and goes to procedure Addendum 28.

Comment:

The candidate will have to evaluate the FHB HVAC status on Control Room Panel CP-018 to determine the system is not operating in Emergency Mode.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4 (C)

Open the Inlet Isolation Damper for one FHB Exhaust Filter Train to be placed in service

Standard:

Opens FV-9549 (Train 'A') or FV-9549A (Train 'B')

Comment:

- Only one Filter Train is to be placed into service per the procedure.
- Note which Train is being placed in service at this step as this information will be used to evaluate subsequent JPM steps.

Cue:

Various alarms will come in and clear on the panel the candidate is performing procedure steps. If the student wishes to consult Annunciator Response procedures, inform him/her that can be done for any alarms still present after all steps have been completed.

Notes:

SAT/UNSAT Performance Step: 5 (C)

Ensure two FHB Main Exhaust Fans are running

Standard:

Ensures two FHB Main Exhaust Fans are running

Comment:

Two Exhaust Fans are normally in service.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6

Start two FHB Exhaust Booster Fans

Standard:

Starts two FHB Exhaust Booster Fans

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 7

Place the FHB Exhaust Flow Controller in Manual and Closed for the Exhaust Filter train NOT being placed in service.

Standard:

Places the controller M/A Switch to "M" and depresses the CLOSE PB until the exhaust air damper is closed for the Exhaust Train NOT being placed in service.:

- Train 'A' - HV-9507
- Train 'B' - HV-9507A

Comment:

The controller placed in Manual and Closed should be the opposite of the train whose Inlet Isolation Damper was opened in JPM step 4.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8 (C)

Place the FHB Exhaust Filter Train Outlet Damper in the AUTO after MOD position for the Exhaust Filter Train being placed in service.

Standard:

Places the FHB Exhaust Filter Train Outlet Damper control in the MOD position and then allows the switch to spring-return to AUTO on the Exhaust Train to be placed in service:

- Train 'A' - HV-9507
- Train 'B' - HV-9507A

Comment:

The FHB Exhaust Filter Train Outlet Damper should be in the same Train as JPM step 4 and the opposite train selected in JPM step 7.

Cue:

Notes:

SAT/UNSAT Performance Step: 9 (C)

Close both FHB Exhaust Filter Bypass Dampers

Standard:

Closes FHB Exhaust Filter Bypass Dampers FV-9549D and FV-9549C

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Ensure the FHB Exhaust Air Flow Controller for the train placed in service is controlling.

Standard:

Determines the FHB Exhaust Air Flow Controller on the train that is in service is controlling 26,100 – 31,900 cfm.

- Train 'A' - HV-9507
- Train 'B' - HV-9507A

Comment:

This should be the same train placed in service in JPM steps 4 and 8.

Cue:

Notes:

SAT/UNSAT Performance Step: 11

Open a Relief Damper

Standard:

Opens Relief Damper FV-9500 or FV-9500A

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12

Verify all FHB Main Supply Fans stopped

Standard:

Verifies all FHB Main Supply Fans are stopped

Comment:

These fans should automatically stop when a relief damper was opened in JPM step 11.

Cue:

Notes:

SAT/UNSAT Performance Step: 13

Ensure all FHB Main Supply Fan Inlet Isolation Dampers are closed.

Standard:

Verifies FHB Main Supply Fan Inlet Isolation Dampers are closed:

- FV-9510/9510A
- FV-9520/9520A
- FV-9530/9530A

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup is in progress in accordance with OPOP03-ZG-0005, Plant Startup to 100%. Reactor Power is presently at 12 - 16%. Fuel shuffling is being performed in the Spent Fuel Pool in anticipation for receipt of new fuel.

INITIATING CUE:

An alarm has come in on Rad Monitor Panel RM-11. The Unit Supervisor directs you to investigate the alarm in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response, and take appropriate action.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: Perform Control Rod Operability Test

JPM NO: S3

REVISION: 1

LOCATION: Simulator

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: PERFORM CONTROL ROD OPERABILITY TEST

JPM No.: S3

Rev. No.: 1

STP Task: 2850, Perform Monthly Control Rod Operability Test.

STP Objective: 2850, Perform the Monthly Control Rod Operability Test in Accordance with 0PSP03-RS-0001.

Related K/A Reference: 003 AA2.03, Ability to determine and interpret the following as they apply to the dropped control rod: Dropped rod, using in-core/excore instrumentation, in-core or loop temperature measurements (3.6/3.8)

References: 0PSP03-RS-0001, Rev. 19, Monthly Control Rod Operability

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: YES

Validation Time: 30 minutes

Required Materials (Tools/Equipment): OPOP04-RS-0001, Control Rod Malfunction – Available
OPGP03-ZO-0042, Reactivity Management Program – Student Copy with applicable sections highlighted and flagged
Conduct of Operations Manual – Available
Notepad to use as Control Room Log

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is at 100% power, with Control Bank D at 247 steps. Corrective maintenance has been performed in the 2BD power cabinet and surveillance test 0PSP03-RS-0001, Monthly Control Rod Operability, is required as a retest for the affected Control Bank (D) following the corrective maintenance.

INITIATING CUE:

The Unit Supervisor directs you to perform the required portion of 0PSP03-RS-0001, Monthly Control Rod Operability for Control Bank "D" only.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

Operator inserts Control Bank "D" at least 10 steps but not more than 20 steps and then determines that control rod D12 has dropped and performs the Immediate Actions of 0POP04-RS-0001, Control Rod Malfunction.

JOB PERFORMANCE MEASURE INFORMATION SHEET**HANDOUTS:**

Working copy of 0PSP03-RS-0001, Monthly Control Rod Operability

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

SIMULATOR SETUP

- 1) JPMs S3 and S4 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC# 190 and verify:
 - Step counter position annunciator light is out on CP-0005
 - Red light at the end of CP-010 is out.
- 5) Check and clean the following procedures (JPM specific):
 - 0POP04-RS-0001, Control Rod Malfunction
 - 0PSP03-RS-0001, Monthly Control Rod Operability
 - 0PGP03-ZO-0042, Reactivity Management Program
- 6) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

7) Verify the following:

- ICS display of rod position is called up on an RO monitor and monitor is rotated to face CP-005.
 - The screen is accessed by clicking on the “Custom Graphics” arrow, then selecting the “RS” group (may have to select “Top Level Menu” first), then selecting the “RS-001 CONTROL ROD BANK POSITIONS” screen.

8) Place the simulator in “FREEZE” until the examiners are ready to proceed.

9) Simulator Lesson Plan.

- ‘Execute’ and ‘Start’ Lesson Plan #5 in User Group NRC2005. No further action is required. A dropped rod will occur based on a conditional trigger (rods moving inward for several seconds).

INSTRUCTOR ACTIONS

None

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step: 1**

Obtain a copy of 0PSP03-RS-0001, Monthly Control Rod Operability.

Standard:

Obtains 0PSP03-RS-0001, Monthly Control Rod Operability and reviews the Precautions and Notes.

Comment:

Provide the applicant with the Handout copy of 0PSP03-RS-0001.

Applicant should review 0PSP03-RS-0001, Monthly Control Rod Operability, in its entirety prior to performing the test per Step 3.9 of the procedure.

Applicant should review 0POP04-RS-0001, Control Rod Malfunction, per procedure Cautions and Notes Step 3.10.

Cue:**Notes:**

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 2

Ensure Prerequisites have been completed and Notes and Precautions have been read.
(Procedure Step 5.1.1)

Standard:

Ensures that Prerequisites have been completed and Precautions and Notes have been read and that Procedure Step 5.1.1 is initialed.

Comment:

Pre-reqs have already been verified and signed for.

Cue:

If asked, inform the candidate the pre-reqs are still current.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 3**

Conduct a prejob briefing. (Procedure Step 5.1.2)

Standard:

Conducts a prejob briefing including a discussion of the following and initials completion of Procedure Step 5.1.2 :

- _____ *Available Nuclear Instrumentation*
- _____ *Expected Results*
- _____ *Primary or backup indications of reactor power*
- _____ *Reactivity Management guidelines per OPGP03-ZO-0042, Reactivity Management Program*
- _____ *Any applicable lessons learned*

Comment:

A prejob brief is normally conducted with all personnel involved in the surveillance test present for the brief.

Due to the nature of conducting a JPM on a one on one basis, the applicants will accomplish this as described below and the cues provided on the next page.

There is a Student Handout copy of OPGP03-ZO-0042, Reactivity Management Program. Procedure pages that are flagged and the portions that are highlighted are the portions that have been determined to be applicable for the surveillance being performed. The applicant is free to review additional portions as desired.

Applicant should conduct a "Reactivity Briefing" at this point using the provided copy of OPGP03-ZO-0042, Reactivity Management Program procedure. The requirements of conducting a prejob brief will be satisfied by performing a review of highlighted portions OPGP03-ZO-0042, Reactivity Management Program procedure AND reviewing the conditions of step 5.1.2 of the surveillance procedure. The cues below provide information for these conditions.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**Cue:**

- Provide the applicant with a highlighted copy of OPGP03-ZO-0042, Reactivity Management Program procedure. The intent of providing a highlighted copy of the procedure is to focus the applicant to the areas that are applicable to the test being performed.

The below conditions are part of the prejob brief referenced in the surveillance procedure (step 5.1.2):

- When the discussion of “Available Nuclear Instrumentation” is conducted, inform the applicant that the Excore Nuclear Instruments and Extended Range Nuclear Instruments are available and in service.
- When the discussion of “Expected Results” is conducted, inform the applicant that it is expected that Control Bank “D” is inserted the required steps per procedure and withdrawn the same number of steps.
- When the discussion of “Primary or Backup indications of reactor power” is conducted, inform the applicant that the Excore Nuclear Instruments will be the primary indication of reactor power and that loop delta T will be the backup indication of reactor power.
- When the discussion of “Reactivity Management Guidelines per OPGP03-ZO-0042, Reactivity Management Guidelines” is conducted, inform the applicant it is per the highlighted portions of the procedure.
- When the discussion of “Any applicable lessons learned” is conducted, inform the applicant that there will be no lessons learned discussed at this time.

If asked, the examiner will act in the capacity of SRO providing oversight.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 4**

Ensure that a Control Room Logbook entry documents the commencement of this surveillance test. (Procedure Step 5.1.3)

Standard:

Completes Control Room Logbook entry documenting the commencement of this surveillance test and initials for completion of Procedure Step 5.1.3.

Comment:

The electronic control room logbook is not available in the simulator. A notepad will be made available to the applicant to for making logbook entries.

Cue:

Inform the applicant that the electronic control room logbook is not available and that we will be temporarily making log entries on a notepad until the electronic control room logbook is available.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 5

Ensure that Rod Bank Groups 1 and 2 (Including Control Bank D) Step Demand, are at equal rod positions.

Standard:

Ensures that Rod Bank Groups 1 and 2 (Including Control Bank D) Step Demand, are at equal rod positions.

Comment:

Only Control Bank D would be required to be checked, but the operator may verify all banks.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 6**

Call up the Computer display of rod positions on the Plant Computer. (Procedure Step 5.2.1)

Standard:

Calls up the Computer display of rod positions on the Plant Computer.

Comment:

The display, RS-001 CONTROL ROD BANK POSITIONS, will already be up as part of the Instructor Setup. The applicant will just have to check it on the monitor facing panel CP-005.

This screen is found on the ICS computer and is accessed by clicking on the "Custom Graphics" arrow, then selecting the "RS" group (may have to select "Top Level Menu" first), then selecting the "RS-001 CONTROL ROD BANK POSITIONS" screen.

Cue:

If the applicant doesn't recognize that this display is already available, inform him/her that it is.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 7(C)

Prepares to test Control Bank "D". (Procedure Step 5.2.3 and 5.2.4)

Standard:

Performs the following:

_____ * *Selects Control Bank D on ROD BANK SEL SW (CP-0005)*

_____ *Records Control Bank D Group Step Counter Demand "As Found" Positions on Table 1. (Rod Movement Verification)*

Comment:

* - Denotes the critical portion of the step.

Procedure Step 5.2.2 requires the candidate to complete Table 1 concurrently with steps 5.2.3 through 5.2.10.

Cue:

If the applicant seeks concurrence from the Unit Supervisor to begin, inform him/her that they have Unit Supervisor concurrence.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 8(C)

Insert Control Bank D. (Procedure Steps 5.2.5 through 5.2.7)

Standard:

Performs the following:

_____ * *Inserts Control Bank "D".*

_____ *Verifies DRPI and "STEP DEMAND" indications on the Plant Computer display agree with the DRPI and Group Demand indications on CP005 for each rod in Control Bank "D".*

Comment:

* - Denotes the critical portion of the step.

Inserting Control Bank "D" and Verifying DRPI indicates each rod moved (Procedure Steps 5.2.5 and 5.2.6) are to be performed concurrently.

Several seconds after rod insertion begins, Control Bank Rod D-12 will drop. The next JPM step (step 9) determines the response the applicant should take regarding this dropped rod.

Cue:**Notes:**

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step:** 9 (C)

Recognize that Control Rod D12 has dropped into the core and performs the immediate actions of 0POP04-RS-0001, Control Rod Malfunction.

Standard:

Performs immediate actions for a dropped control rod:

- _____ *Ensure ROD BANK SEL switch in MANUAL*
- _____ *Verifies All Rods – NO ROD MOTION*
- _____ *CHECK for Dropped Rods (Checks that only one rod has dropped so a Reactor Trip is not required).*

Comment:

1. The applicant should immediately stop rod movement. (He/she should inform the SS as directed by the procedure Caution prior procedure step 5.2.5).
2. The entry requirements are met for entry into 0POP04-RS-0001, Control Rod Malfunction, due to dropping Control Rod D-12.
3. The applicant should immediately recognize that the conditions exist for entry into 0POP04-RS-0001, Control Rod Malfunction, and perform the Immediate Actions for this procedure.
4. The Immediate Actions of 0POP04-RS-0001 are to be performed from memory.
5. *The student may not verbalize their immediate actions since some or all will be verification steps because of existing plant conditions. The examiner may have to query the student to ensure the student has considered all of the actions to take.*
6. The step for placing the ROD BANK SEL switch to MANUAL is satisfied if the switch is in any position but AUTO.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

Cue:

- 1) As the Unit or Shift Supervisor, acknowledge the report that control rod D-12 has dropped and inform the applicant to perform his/her immediate actions.
- 2) If the applicant announces that he/she is performing the Immediate Actions for dropped rod, acknowledge that he/she is performing the Immediate Actions.
- 3) If after a short period of time the applicant does not perform the Immediate Actions for a dropped rod, as the SS/US direct the applicant to:

“Perform the Immediate Actions of 0POP04-RS-0001, Control Rod Malfunction.”

Notes:

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure: PERFORM CONTROL ROD OPERABILITY TEST

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 is at 100% power, with Control Bank D at 247 steps. Corrective maintenance has been performed in the 2BD power cabinet and surveillance test 0PSP03-RS-0001, Monthly Control Rod Operability, is required as a retest for the affected Control Bank (D) following the corrective maintenance.

INITIATING CUE:

The Unit Supervisor directs you to perform the required portion of 0PSP03-RS-0001, Monthly Control Rod Operability for Control Bank "D" only.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: **Fill an SI Accumulator**

JPM NO: **S4**

REVISION: **1**

LOCATION: **Simulator**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: FILL AN SI ACCUMULATOR

JPM No.: S4

Rev. No.: 1

STP Task: T29650, Fill a Safety Injection Accumulator

STP Objective: T20110 Upon completion of this lesson, the trainee should be able to demonstrate a thorough understanding of the theory and fundamental concepts of design, operation, monitoring, and evaluation of control room equipment, controls and instrumentation contained within the Emergency Core Cooling System.

Related K/A Reference: 006 A4.07, Ability to manually operate and/or monitor in the control room ECCS pumps and valves. (4.4/4.4)

References: OPOP02-SI-0001, Rev. 23, Safety Injection Accumulators
OPOP09-AN-01M2, Rev. 13, Annunciator Lampbox 1M02 Response

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 20 minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The Unit is in Mode 1 at 100% power. The "ACC TK 1A LEVEL HI/LO" (1M02-B3) alarm is received. The "1A" Accumulator low level alarm is verified to be valid.

The current "1A" SI Accumulator Boron Concentration is 2850 ppm.

All other accumulator pressures and levels are in their normal green bands.

INITIATING CUE:

The Unit Supervisor directs you to increase level in the "1A" Accumulator to within 9000 – 9050 gallons IAW OPOP02-SI-0001, Safety Injection Accumulators.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

"A" SI Accumulator level is filled such that the "ACC TK 1A LEVEL HI/LO" annunciator is cleared. (8858 – 9074 gallons)

JOB PERFORMANCE MEASURE INFORMATION SHEET**HANDOUTS:**

Working copy of OPOP02-SI-0001, Safety Injection Accumulators

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

SIMULATOR SETUP

- 1) JPMs S3 and S4 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC# 190 and verify:
 - Step counter position annunciator light is out on CP-0005
 - Red light at the end of CP-010 is out.
- 5) Check and clean the following procedures (JPM specific):
 - OPOP02-SI-0001, Safety Injection Accumulators
- 6) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

- 7) Place the simulator in “FREEZE” until the examiners are ready to proceed.
- 8) There is no Simulator Lesson Plan associated with this JPM.

INSTRUCTOR ACTIONS

None

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step: 1**

Obtain a copy of OPOP02-SI-0001, Safety Injection Accumulators procedure.

Standard:

Obtains a copy of OPOP02-SI-0001, Safety Injection Accumulators

Comment:

The procedure may be referenced at any stage of the task.

Cue:

(If asked) – OPSP03-RC-0006, RCS Inventory is **NOT** in progress.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 2**

Review the “Prerequisites” and “Notes and Precautions” and proceed to Section 5.0.

Standard:

Reviews the Prerequisites, Notes, and Precautions for procedure 0POP02-SI-0001, Safety Injection Accumulators.

Comment:**Cue:**

If asked:

- 1) Safety Injection System Initial Lineup is complete.
- 2) Instrument Air is available.
- 3) Nitrogen is available.
- 4) No ESF D/G is in operation or is scheduled to be started and paralleled with off-site power.
- 5) 0PSP03-RC-0006, RCS Inventory is NOT in progress.
- 6) RCS pressure is 2235 psig.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 3

Verify Train A HHSI Pump Mini Flow valves are open. (Procedure Step 5.2)

Standard:

Verifies Train A HHSI Pump “MINI FLOW” valves open:

1-SI-MOV-0011A

1-SI-MOV-0012A

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 4

Verify HHSI Pump 1A Discharge valve open. (Procedure Step 5.3)

Standard:

Verifies 1-SI-MOV-0004A, HHSI "PUMP 1A DISCH" valve open.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 5

Verify Train A RWST to SI Suction Header valve open. (Procedure Step 5.4)

Standard:

Verifies 1-SI-MOV-0001A, "RWST TO SI SUCT HDR" valve open.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 6

Ensure that #11 ESF D/G is not operating in parallel with off-site power. (Procedure Step 5.5)

Standard:

Ensures that #11 ESF D/G is not operating in parallel with off-site power.

Comment:

Cue:

If asked, if #11 ESF D/G is scheduled to be started and paralleled with off-site power, inform the applicant that #11 ESF D/G is not scheduled to be started or paralleled with off-site power.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 7 (C)

Start Train A HHSI pump. (Procedure Step 5.6)

Standard:

Starts "HHSI Pump 1A" using handswitch on CP-001.

Comment:

Applicant may make Plant PA announcement informing plant personnel of HHSI Pump 1A start. Plant announcement is to be made **WITHOUT THE USE OF THE PLANT PA SYSTEM.**

Cue:

If asked, as the plant operator in the Fuel Handling Building – report that the HHSI Pump 1A is ready for start.

If asked, as the plant operator in the Fuel Handling Building, if the pump start was satisfactory, report that the pump is running satisfactory.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 8 (C)

Open Train A HHSI Pump Discharge to Accumulator Fill Isolation valve. (Procedure Step 5.7)

Standard:

Opens I-SI-FV-3973, "ACC 1A FILL ISOL" valve using handswitch on CP-001.

Comment:

When this valve is opened, a BYP/INOP alarm will sound. This is an expected condition for re-positioning this valve.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 9**

Monitor and Fill SI Accumulator "A". (Procedure Step 5.9)

Standard:

- 1) Monitors Level and Pressure of SI Accumulator "A" using ICS Computer (Plant Computer) points "SILA0950 / SILA0961" and "SIPA0960 / SIPA0961"*
- 2) Fills Accumulator "A" to a level above the reset of the low level annunciator.*
- 3) Ensures Accumulator "A" level does not exceed 9076 gallons.*
- 4) Ensures Accumulator "A" pressure does not exceed 643.7 psig.*

Comment:

Procedure Step 5.8 will be N/A. No SI will occur during JPM performance.

As a good practice and per the NOTE prior to procedure step 5.9, the applicant should also be monitoring the Control Board indications for SI Accumulator "A" conditions due to the delay between ICS Computer (Plant Computer) point updates.

Cue:**Notes:**

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 10 (C)

Close Train "A" HHSI Pump Discharge to Accumulator Fill Isolation valve. (Procedure Step 5.10)

Standard:

Closes I-SI-FV-3973, "ACC 1A FILL ISOL" using handswitch on CP-001 after the "ACC TK 1A LEVEL HI/LO" alarm clears and prior to the alarm actuation again on high level. (8858 – 9074 gallons)

Comment:

As a good practice and per the NOTE prior to procedure step 5.9, the applicant should also be monitoring the Control Board indications for SI Accumulator "A" conditions due to the delay between ICS Computer (Plant Computer) point updates.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 11 (C)

Stop Train "A" HHSI Pump. (Procedure Step 5.11)

Standard:

Stops "HHSI Pump 1A" using the handswitch on CP-001.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 12

Secure SI Train "A" Cubicle Fans. (Procedure Steps 5.12 and 5.13)

Standard:

Stops Train A "LHSI/HHSI/CSS PUMP CUBICLES" and "CNTMT SUMP ISOL VLV CUBICLES" Fans using handswitches on CP-022.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 13

Verify Train A SI Accumulator Level between 8822.8 and 9076.0 gallons. (Procedure Step 5.14)

Standard:

Verifies correct SI Accumulator Level band using ICS Computer (Plant Computer).

Comment:

Applicant should use computer points SILA0950 and SILA0951.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 14

Verify Train A SI Accumulator Pressure between 616.3 and 643.7 psig. (Procedure Step 5.15)

Standard:

Verifies correct SI Accumulator pressure band using ICS Computer (Plant Computer).

Comment:

Applicant should use computer points SIPA0960 and SIPA0961.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 15

Restore altered ECCS flow path. (Procedure Step 5.16)

Standard:

Determines that ECCS flow path was not altered per procedure step 5.1. This makes procedure step 5.16 N/A.

Comment:

Procedure Step 5.16 is N/A for current conditions.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 16**

Determine sampling requirements of the SI Accumulator 1A. (Procedure Step 5.17)

Standard:

Determines that the SI Accumulator 1A does not require sampling and boron concentration verified because the fill source was the RWST and that the SI Accumulator 1A boron concentration was within specification prior to the fill.

Comment:

Procedure Step 5.17 is N/A for current conditions. Accumulator 1A Boron Concentration does not require verification by sampling. The initial conditions Boron Concentration was 2850 ppm. The NOTE prior to Procedure Step 5.17 states that the Boron Concentration does not require verification if the fill source was the RWST and the Accumulator Boron Concentration was within specification prior to the fill.

Cue:**Notes:**

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure: FILL AN SI ACCUMULATOR

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU’VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The Unit is in Mode 1 at 100% power. The “ACC TK 1A LEVEL HI/LO” (1M02-B3) alarm is received. The “1A” Accumulator low level alarm is verified to be valid.

The current “1A” SI Accumulator Boron Concentration is 2850 ppm.

All other accumulator pressures and levels are in their normal green bands.

INITIATING CUE:

The Unit Supervisor directs you to increase level in the “1A” Accumulator to within 9000 – 9050 gallons IAW OPOP02-SI-0001, Safety Injection Accumulators.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: Place a SGFPT in Service

JPM NO: S5

REVISION: 1

LOCATION: Simulator

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: PLACE A SGFPT IN SERVICE

JPM No.: S5

Rev. No.: 1

STP Task: 20700, Startup/Shutdown the Main Feedwater Pumps at power

STP Objective: 20700, Startup/Shutdown the Main Feedwater Pumps at power in accordance with 0POP02-FW-0002, S.G.F.P.TURBINE

Related K/A 2.1.23, Ability to perform specific system and integrated plant procedures during all modes of plant operation. (3.9/4.0)

References: 0POP02-FW-0002, S.G.F.P.TURBINE

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 20 minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup to 100% is being performed in Unit 1 in accordance with 0POP03-ZG-0005, Plant Startup to 100%. Reactor Power is at approximately 30% (350 Mwe) with #11 Steam Generator Feed Pump (SGFPT) in service. SGFPT's # 12 and #13 are operating at minimum speed (approximately 3300 rpm). The Control Room Staff is presently at Step 7.23 of 0POP03-ZG-0005.

INITIATING CUE:

Another operator has just completed bringing SGFPT #12 to approximately 3300 rpm. The Unit Supervisor directs you to continue with placing #12 SGFPT in service in accordance with Section 13 of 0POP02-FW-0002, S.G.F.P. Turbine.

-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-

COMPLETION CRITERIA:

SGFPT # 12 is place in service (feeding SGs).

JOB PERFORMANCE MEASURE INFORMATION SHEET**HANDOUTS:**

Working copy of 0POP02-FW-0002, S.G.F.P. Turbine

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

SIMULATOR SETUP

- 1) JPMs S5 and S6 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC# 191 and verify:
 - Step counter position annunciator light is out on CP-0005
 - Red light at the end of CP-010 is out.
- 5) Check and clean the following procedures (JPM specific):
 - 0POP02-FW-0002, S.G.F.P. Turbine
 - 0POPO3-ZG-0005, Plant Startup to 100%
- 6) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

7) Verify the following:

- SGFPT #12 is on its turning gear
- SGFPT #13 is at approximately 3300 rpm

8) Place the simulator in “FREEZE” until the examiners are ready to proceed.

9) There is no Simulator Lesson Plan associated with this JPM.

INSTRUCTOR ACTIONS

None

JOB PERFORMANCE MEASURE CHECK SHEET**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, ...).

JPM START TIME _____**SAT / UNSAT Performance Step: 1**

Obtain a copy of 0POP02-FW-0002, S.G.F.P. Turbine

Standard:

Obtains a copy of 0POP02-FW-0002, S.G.F.P. Turbine

Comment:

The applicant should use the simulator copy of the procedure. No working copy will be provided by the Examiner.

The applicant should review Notes and Precautions.

Item 4.4 involves checking rotor position trip alarms are reset prior to latching the turbine, however, this feature is not modeled in the simulator. Also, this item should be NA at this time since the turbine is already latched..

Procedure Section 13 is the one to be used per the Initiating Cue instructions

Cue:

If the student asks if the Prerequisites are met, inform him/her that they are met.

If the student seeks to determine if ROTOR POSITION alarms are reset, inform him/her that they are reset.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 2

Ensure pre-startup testing of SGFP #12 has been completed (procedure step 13.1.1)

Standard:

Determines Pre-startup testing of SGFP #12 has been completed

Comment:

Cue:

When the applicant inquires about pre-startup testing, inform him/her that it has been completed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 3

(Step 13.1.2) If SGFP Turbine is at 3300 rpm, Then Go to Step 13.1.16

Standard:

Determines SGFPT #12 speed is at approx. 3300 rpm and proceeds to step 13.1.16

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 4

(Step 13.1.16) Verify the “SG LVL CONTROL” light is lit, indicating the “SPEED” controller has shifted to “SG LVL CONTROL”

Standard:

Determines the “SG LVL CONTROL” lite is lit for SGFPT #12.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 5

(Step 13.1.17) If the S/U SGFP 14 was placed in “PULL TO LOCK” for a SGFP start,
THEN PLACE S/U SGFP 14 handswitch to AUTO.

Standard:

Places the S/U SGFP 14 handswitch to AUTO

Comment:

The SUFP is initially in PTL to simulate performance of steps to bring the SGFPT to
3300 rpm just prior to this JPM.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 6

(Step 13.1.18) Depress the Increase “ Δ SPEED” pushbutton until it becomes continuously lit

Standard:

Determines the Increase “ Δ SPEED” pushbutton light is continuously lit

Comment:

The pushbutton light will already be lit as this step was actually done as part of placing the SGFPT at minimum speed.

This step is intended to ensure the Manual Speed Reference signal is increased to 5700 rpm, and does not interfere with the SG Level Control signal.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

SAT / UNSAT Performance Step: 7 (C)

(Step 13.1.19) Open the applicable SGFP “FW DISCH” valve

Standard:

Opens #12 SGFPT Discharge Valve, MOV-0072

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 8 (C)**

(Step 13.1.21) Ensure the SGFP “SPEED” controller is in the “MAN” position at minimum output.

(Step 13.1.22) Raise SGFPT speed to match required SGFP differential pressure or operating SGFPT speed using the ‘RAISE’ pushbutton on the SGFP turbine “SPEED” controller.

Standard:

- *Ensures the #12 SGFPT “SPEED” controller is in the “MAN” position at minimum output.*
- *Raises SGFPT #12 speed to match required SGFP differential pressure OR the speed of an operating SGFPT using the ‘RAISE’ pushbutton on the SGFP turbine “SPEED” controller.*

Comment:

1) The ‘required differential pressure’ is basically the existing DP on the operating SGFPT (#11).

2) As speed is increased and discharge pressure increases, the operating SGFPT will sense a higher DP and reduce speed. There will be interaction between these 2 pumps until balanced by the operator and system controls.

3) The applicant should closely monitor operating pump speed and pressure to prevent inadvertant SG level reactor trips. There’s a NOTE in the procedure to this effect.

Cue:**Notes:**

JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**SAT / UNSAT Performance Step: 9**

(Step 13.1.23) When the SGFP speed matches the “SGFP MASTER SPEED” controller OR any operating SGFP speed, THEN place the “SPEED” controller in AUTO.

Standard:

Increases SGFPT #12 speed to approximately match the other operating SGFPT's and places it's speed controller in AUTO.

Comment:**Cue:****Notes:**

-TERMINATE THE JPM-

JPM STOP TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure:

Performer's Name: _____

Date Performed: _____

Time to Complete: _____

JPM Results: **Sat / Unsat**

Evaluator:_____ **Signature:**_____

Date: _____

JPM – STUDENT HANDOUT**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup to 100% is being performed in Unit 1 in accordance with 0POP03-ZG-0005, Plant Startup to 100%. Reactor Power is at approximately 30% (350 Mwe) with #11 Steam Generator Feed Pump (SGFPT) in service. SGFPTs # 12 and #13 are operating at minimum speed (approximately 3300 rpm). The Control Room Staff is presently at Step 7.23 of 0POP03-ZG-0005.

INITIATING CUE:

Another operator has just completed bringing SGFPT #12 to approximately 3300 rpm. The Unit Supervisor directs you to continue with placing #12 SGFPT in service in accordance with Section 13 of 0POP02-FW-0002, S.G.F.P. Turbine.

NUCLEAR TRAINING DEPARTMENT
OPERATING JOB PERFORMANCE MEASURE

TITLE: Shift CCW Trains

JPM NO.: S6

REVISION: 1

LOCATION: Simulator

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: Shift CCW Trains

JPM No.: S6

Rev. No: 1

STP Task: T-4950, Startup a CCWS Train

STP Objective: CRO4950, Start a CCWS Train in accordance with 0POP02-CC-0001

Related K/A Reference: 008 A4.01, Ability to manually operate and/or monitor in the control room CCW indications and controls. (3.3/3.1)

References: 0POP02-CC-0001, Component Cooling Water, Rev. 28

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: No

Alternate Path JPM: No

Validation Time: 20 minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup to 100% is being performed in Unit 1 in accordance with 0POP03-ZG-0005, Plant Startup to 100%. Reactor Power is at approximately 30%.

INITIATING CUE:

To accommodate upcoming maintenance, the Unit Supervisor directs you to place CCW Train 'C' in service then secure CCW Train 'A'. CCW Train 'C' has been filled and vented.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

CCW Train 'C' is in service supplying loads and CCW train 'A' has been secured.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

None

NOTES:

SIMULATOR SETUP:

- 1) JPMs S5 and S6 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC # 191 and verify Step Counter position annunciator light on CP-005 is out.
- 5) Check and clean the following procedures (JPM specific):
 - 0POP02-CC-0001
- 6) Place simulator in run.
- 7) There is no simulator lesson for either of these JPM's.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S₁, S₂, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP02-CC-0001, Component Cooling Water

Standard:

Obtains a copy of 0POP02-CC-0001, Component Cooling Water

Comment:

The applicant should use the simulator copy of the procedure. No working copy will be provided by the Examiner.

The applicant should review Notes and Precautions.

Procedure Section 10 will be used to start a CCW train and Section 12 will be used to secure a CCW train.

Cue:

One of the procedure Notes & Precautions indicates a CCW temperature in the Letdown Hx change could result in a reactivity effect. If the candidate asks if this is being monitored, inform him/her that another operator is monitoring RCS temperature and power.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)*

- Ensure CCW Train 'C' has been filled and vented
- Ensure only one Rad Monitor valve is open for the running CCW train
- Ensure Supplementary Cooler control sw. in AUTO for CCW pump to be started.
- *Ensure ECW pump associated with the CCW pump to be started is running.
- Ensure CCW/ECW mode selector sw. for all trains are in OFF.

Standard:

- *Ensures CCW Train 'C' has been filled and vented*
- *Ensures CCW Train 'A' valve FV-4524 is open and FV-4525 and FV-4526 are closed*
- *Ensures Supplementary Cooler control sw. in AUTO for CCW pump 'C'.*
- *Ensures 'C' ECW pump in service*
- *Ensures CCW/ECW mode selector sw. for all trains are in OFF.*

Comment:

*Denotes critical portion of step

The information that CCW Train 'C' is filled and vented was given as part of the Initial Conditions.

When all mode switches are in OFF, alarm CCW STBY TRN NOT SELECTED will annunciate.

Cue:

If the candidate seeks to determine that CCW Train 'C' has been filled and vented, inform him/her that it is filled and vented.

If the candidate seeks permission to open the train CCW to RHR Hx valve to keep CCW flow up, inform him/her they have permission. This action is allowed by a note preceding step 10.5 in the procedure.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3 (C)

- Start desired CCW pump
- If CCW pump 1C was started then ensure the following valves open:
 - CCW SPLY HDR ISOL, MOV-0312
 - CCW RET HDR ISOL, MOV-0192
 - SUPPLY ISOL, MOV-0771
 - RET ISOL, MOV-0775

Standard:

- *Starts CCW Pump 'C'*
- *Ensures the following valves open:*
 - *CCW SPLY HDR ISOL, MOV-0312*
 - *CCW RET HDR ISOL, MOV-0192*
 - *SUPPLY ISOL, MOV-0771*
 - *RET ISOL, MOV-0775*

Comment:

- The candidate may make contact a plant operator to check the pump out before starting.
- The candidate may want to make a plant announcement prior to starting the pump. DO NOT ALLOW A PLANT ANNOUNCEMENT TO BE MADE. THE PA BUTTONS ON THE COMMUNICATIONS CONSOLE HAVE BEEN TAPED OVER TO PREVENT THIS.

Cue:

If the candidate acts to contact a plant operator to check out the pump before start, inform him/her that the pump is ready for a start.

If the candidate asks the plant operator if the pump had a satisfactory start, inform him/her that the pump is running satisfactory.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

- Check CCW header pressure greater than 80 psig on all running CCW trains
- Check flow on all running CCW trains is 7500-15000 gpm.
- Ensure the Supplementary Cooler is running for the CCW pump started.

Standard:

- *Checks CCW header pressure greater than 80 psig on CCW trains 'A' and 'C'*
- *Check flow on all 'A' and 'C' CCW trains is 7500-15000 gpm.*
- *Ensures the Supplementary Cooler is running for CCW pump 'C'*

Comment:

Flow will be <7500 gpm on both trains because there are not enough cooling loads in service. This will be taken care of when 'A' CCW Train is secured. There is a procedure step that addresses this condition (step 10.14).

Cue:

If the student informs you of the low flow condition, inform him/her to continue on.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

If desired to have a CCW Train in Standby mode of operation and pressures and flows are within values previously specified, then place a non-running CCW pump mode selector sw. in Standby

Standard:

Determines all Mode Sw. are to remain OFF.

Comment:

This step also requires flow be within prescribed limits as described in the previous step. Lining up the Mode Sw. at this point will not have an adverse effect, but they will all be returned to OFF when securing 'A' CCW Train.

Cue:

If asked, inform the student to leave all Train Mode Sw, in OFF. Selection of a standby train will occur after 'A' Train CCW is secured.

Notes:

[COMMENT5]

SAT/UNSAT Performance Step: 6

Ensure CCW/ECW mode selector sw. for running CCW pump(s) in OFF or RUN

Standard:

Places 'A' or 'C' CCW Train mode selector sw. in OFF and the other in RUN (or leaves all sw. in OFF per the cue of the previous JPM step).

Comment:

Cue:

If asked, inform the student to leave all Train Mode Sw, in OFF. Mode Sw. selection will occur after 'A' Train CCW is secured.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Maintain CCW System temperature $\geq 60^{\circ}\text{F}$ and $\leq 105^{\circ}\text{F}$ by regulating CCW Hx Bypass and Outlet valves.

Standard:

Verifies CCW supply temperature is $\geq 60^{\circ}\text{F}$ and $\leq 105^{\circ}\text{F}$

Comment:

This step completes the actions for placing a CCW train in service

Cue:

Notes:

SAT/UNSAT Performance Step: 8

Verify the following for the CCW Train to be secured:

- Associated RHR train is secured or RCS temperature is < 120 deg. F
- Associated RHR train Hx has no RCS flow
- Associated RHR train Hx has no low pressure letdown flow

Standard:

Verifies 'A' Train RHR train is secured and that there's no RCS or letdown flow through the RHR Hx.

Comment:

The low pressure letdown valves are normally powered off with the unit at power. Low pressure letdown will not be in service because RHR is secured and isolated from the RCS.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9

Ensure respective Rad Monitor valve for RT-8040 is open from an operating CCW train not being secured.

Standard:

Opens FV-4526 ('C' Train supply to RT-8040) and closes FV-4524 ('A' Train supply to RT-8040)

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 10

Ensure CCW/ECW mode selector switches for all trains in OFF

Standard:

Ensures CCW/ECW mode selector switches for all trains in OFF

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 11

- Verify CCW flow requirements (7500-15000 gpm per CCW Pump) will be within capacity of CCW pumps that are to remain running.
- When CCW flow requirements have been verified to be within capacity of CCW pump that are to continue running, then stop the desired CCW pump.

Standard:

- *Verifies CCW flow requirements (7500-15000 gpm per CCW Pump) will be within capacity of CCW pumps that are to remain running.*
- *Stops CCW pump 'A'*

Comment:

The student should know that flow requirements will be within the capacity of the CCW train to remain in service because this was the condition when the JPM began.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12

Align CCW pumps for normal automatic operation by performing the following:

- Verify CCW header pressure is > 80 psig on the running CCW trains.
- Verify CCW flow on all running trains between 7500 and 15000 gpm
- Ensure ECW/CCW mode selector sw. for the running CCW pump in OFF or RUN
- If US/SS desires non-running CCW pump selector sw. to be placed in Standby and flow and pressure are within specified limits, then place one non-running CCW pump selector sw. in Standby.

Standard:

Align CCW pumps for normal automatic operation by performing the following:

- *Verifies CCW header pressure is > 80 psig on 'C' CCW train.*
- *Verify CCW flow on 'C' train between 7500 and 15000 gpm*
- *Ensure ECW/CCW mode selector sw. for 'C' CCW pump in RUN*
- *Places 'B' CCW train mode selector sw. in Standby.*

Comment:

'A' Train Mode Sw. should be left in OFF as this is the train maintenance will be performed on.

Cue:

- If the candidate seeks information from the US/SS regarding placing CCW train 'C' in OFF or RUN, inform him/her to place CCW Train 'C' in RUN.
- If the candidate seeks information from the US/SS regarding placing CCW train 'B' in Standby, inform him/her to place CCW Train 'B' in Standby.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 13

- If a CCW pump was secured and associated ECW train is not required for operation of other plant equipment, then stop associated ECW train as directed by the US/SS.
- To stop the Supplementary Cooler associated with the CCW pump that was stopped, momentarily place the associated control sw. to STOP and ensure the control sw. returns to AUTO.

Standard:

- *Verifies ECW train 'A' is to remain in service.*
- *Stops the Supplementary Cooler for CCW pump 'A' and ensures it's control sw. is in AUTO.*

Comment:

Cue:

If asked, inform the student ECW Train 'A' is to remain in service.

Notes:

- TERMINATE THE JPM -

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _____

Signature

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant startup to 100% is being performed in Unit 1 in accordance with 0POP03-ZG-0005, Plant Startup to 100%. Reactor Power is at approximately 30%.

INITIATING CUE:

To accommodate upcoming maintenance, the Unit Supervisor directs you to place CCW Train 'C' in service then secure CCW Train 'A'. CCW Train 'C' has been filled and vented.

NRC EXAM

OPERATING TEST # 1

NRC SCENARIO # 1

Revision 1

Week of 11/14/2005

Facility: STP	NRC Exam Scenario No.: 1	Op-Test No.: 1
Source: New ____ Bank - Significantly Modified <u> X </u> Bank - Initial Condition Change <u> X </u>		
See page 3 for Examiner/student assignments		
Initial Conditions: 77% power with a plant startup in progress following a refueling outage (POP03-ZG-0005, step 7.32.6).		
Turnover: Continue power increase. BOL (150 MWD/MTU), 1621 ppmB. Circ Water Pump #14 and 'B' CCP are OOS for maintenance		

Event No.	Malf. No.	Event Type*	Event Description
1 (1 min)	02-19-03 (1.0)	RO (I) SRO (I)	Pressurizer Pressure transmitter PT-457 fails high
2 (NA)	50-HV-01 (0.4)	RO (C) SRO (C)	Pressurizer PORV 655A fails to close and the associated block valve must be closed – integral with scenario, occurs with above malfunction
3 (21 min)	08-29-01 08-29-02	BOP (C) SRO (C)	FWBP trip with failure of standby pump 1 min. after starting – occurs after TS consulted or after 20 min.
4	NA	ALL (N)	Power decrease due to FWBP failures – integral with scenario
5 (41 min)	05-03-01 (0.17)	All (M)	SG 'A' Steam Generator Tube Rupture (~500 gpm) ramped over 4 min. – occurs after main turbine load decrease is stopped or after 20 min.
6 (NA)	50-SA-02 (1.0) 50-SA-10 (0.09)	BOP (C) SRO (C)	SG 'A' stuck open PORV - integral to scenario, will occur when PORV setpoint adj. during SGTR
7 (NA)	04-09-11 (True)	RO (C) SRO (C)	Shaft Shear on ECW Pump 'B'

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

SCENARIO MISCELLANEOUS INFORMATION**INSTRUCTOR NOTES:**

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications, and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be placed in an Autograph file for recall when the scenario is completed:

- SG 'A' WR Level
- SG 'A' Pressure
- RCS WR Pressure
- CET Temperature
- Subcooling
- MOV-0001A position

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 and 2			
Event Description: Pressurizer pressure controlling channel (PT-457) fails high, Pressurizer PORV 655A fails open.			
Time	Position	Applicant's Actions or Behavior	Notes
	RO	Identify and respond to annunciators on CP004 indicative of a failed Pressurizer pressure channel: <ul style="list-style-type: none"> PRZR PRESS DEV LO/BU HTRS ON PRZR PRESS LO PORV BLKD PRZR PRESS HI RX TRIP ALERT 	
	RO	Diagnoses a failed Pressure channel (high) and informs the SRO.	
	RO	De-selects the failed channel	<i>This is an immediate action step</i>
	SRO (continuous)	Enters OPOP04-RP-0001, Loss of Automatic Pressurizer Pressure Control.	
	RO/SRO	Determine PT-457 is inoperable and the immediate actions have been taken.	
	RO	Checks Pressurize Pressure Controller operable	
	SRO/RO (C)	Checks Pressurizer PORV's closed. Determines PORV 655A is open, cannot be closed and closes it's block valve.	<i>This is Event # 2 Actions may be performed sooner if the crew diagnoses the failed open PORV earlier.</i>
	RO	Checks normal and auxiliary spray valves are closed.	
	RO	ENSURES Pressurizer pressure between 2210 and 2250; Ensures Pzr Heaters are energized appropriately	<i>There's also a continuous action step to maintain a pressure band of 2210-2250</i>
	RO	Ensures an operable Pressurizer Pressure channel is selected on CP-005 Pressure Recorder.	
	RO	Checks Pressurizer Pressure Controller is operable and that the output is correct for current plant conditions (15-35%) <u>when</u> pressure is 2220-2250.	

	RO	Checks the following Pressurizer Pressure features: <ul style="list-style-type: none"> • Spray Valves in Auto • Heaters in Auto • PORV's in Auto • PORV Block Valves open • Pressure Controller in Auto • Pressure 2220-2250 psig 	<i>-Except for failed open PORV -Except for one closed to isolate leaking PORV</i>
	SRO	NOTIFIES I&C to trip or bypass bistables for the failed channel Addendum 1 and INITIATES corrective action.	
	SRO/RO	Determine P-11 status appropriate for plant conditions.	<i>This is for Tech Spec compliance. The status light should be out.</i>
	SRO	Refers to Technical Specifications and determines that Table 3.3.1 action 6 and 3.3.2 action 20 currently apply for the failed channel (72 hr.) T.S. 3.4.4, Action a or b applies for inoperable PORV.*	<i>Both TS table 3.3-1 and 3.3-2 indicate the channel MAY be bypassed, but MUST be tripped within 72 hr. Event # 3 will occur here once Lead Examiner indicates so.</i>

* TS action is dependent on whether the PORV leakage can be classified as 'excessive seat leakage'. The difference in action is whether power is removed from the block valve or not.

OPERATOR ACTIONS

Op-Test No.: # 1 Scenario No.: # 1 Event No.: 3 and 4			
Event Description: FWBP trip with trip of Standby FWBP			
Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Identifies and responds to panel CP007 alarms: <ul style="list-style-type: none"> FW BOOST PUMP TRIP 	
	BOP	Determines the standby FWBP is running and reports status to the SRO.	
	SRO	Enters 0POP04-FW-0002, Steam Generator Feed Pump Trip	<i>When standby FWBP trips</i>
	SRO/BOP	Determines SGFPT's in service is adequate for current power level.	
	SRO/BOP	Determines SGFP Master Controller is operable.	
	SRO/BOP	Determines there is inadequate feedflow for current steamflow.	
	SRO/BOP	Ensures Startup SGFP in service	
	ALL	Commence a load reduction to reduce steamflow with feedflow: <ul style="list-style-type: none"> Commences boration Ensures Control Rods are in AUTO Turbine load reduced Monitor key parameters: <ul style="list-style-type: none"> Gen MVARs Tavg deviation Pzr Level RCS Pressure SG Level MSR Temperatures 	<i>Event 5 will occur once a sufficient power reduction has been performed. The load decrease should be allowed to continue until steamflow is below feedflow.</i>
	SRO/BOP	Ensures Feed Reg Valve are responding in AUTO	
	SRO/BOP	Ensures SGFP recirc valves are responding appropriately	
	SRO/BOP	Monitors SG levels trending to program	
	SRO/BOP	Checks for adequate Feed to Steam DP	
	SRO/RO	Checks ΔI within prescribed band.	
	SRO/BOP	Ensures Steam Dumps are in Tavg mode and reset.	

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 1 Event No.: 5 and 6			
Event Description: 'A' SG SGTR with Stuck Open SG PORV			
Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Identify and respond to various rad monitor alarms: <ul style="list-style-type: none"> • N-16 gamma monitors (ICS alarms) • SG Blowdown rad monitor (common) • CARS Rad Monitor • 'A' SG Blowdown Rad Monitor 	<i>The SGTR will ramp in over 4 min. which should give the crew time to perform some steps from OPOP04-RC-0004, Steam Generator Tube Leakage</i>
	SRO	Enters OPOP04-RC-0004, Steam Generator Tube Leakage	
	BOP	Monitors indications to identify the affected SG/s <ul style="list-style-type: none"> • Feedflow/steamflow mismatch • Rad monitor status 	
	All	Maintain contact with HP prior to performing local actions.	
	RO/BOP	Notify Chemistry to sample SGs and monitor rad monitors	
	BOP	Check SG blowdown aligned to the Blowdown demineralizers.	<i>Local operator will have to be contacted to determine status.</i>
	SRO/RO	Directs/maintains Pressurizer and VCT levels	<i>It's likely the crew will determine it's not possible to maintain these levels if not already done.</i>
	SRO	Orders a manual Reactor Trip and Safety Injection based on inability to maintain Pressurizer and/or VCT level	<i>This action may have already been taken by the crew.</i>
	SRO	Directs the crew to perform their immediate actions and enters OPOP05-EO-EO00, Reactor Trip or Safety Injection	
	RO/BOP	Perform the immediate actions of EO00, Reactor Trip or Safety Injection: <ul style="list-style-type: none"> • Rx tripped • Turbine tripped • Power to ESF Buses • Determines SI is actuated 	

	SRO	Verifies Immediate Actions	The Crew should place #11 AFW Pump in PTL when 'A' SG NR level is >14% (CIP action)
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	
	SRO/RO	Determines Containment Spray is not required.	
	SRO/RO	Check plant status: <ul style="list-style-type: none"> • RCP Seal cooling • RCS cooldown • Pzr valve status • RCP trip criteria • Selected Containment Isol. Valves 	
	ALL	Determine SG 'A' is ruptured	
	SRO	Transitions to 0POP05-EO-EO30, SGTR	
	ALL (continuous)	Monitors the status of Critical Safety Functions when the crew transitions to 0POP05-EO-EO30.	
	SRO/RO	Monitors if RCP's should be stopped	
	BOP	Identifies Ruptured SG as SG 'A'.	
	SRO/BOP	Isolates flow from the Ruptured SG by: <ul style="list-style-type: none"> • adjusting SG 'A' PORV setpoint to between 1260 and 1265 psig 	<i>Event # 6 will automatically occur when PORV setpoint adjusted</i>
	BOP	Recognizes SG 'A' is depressurizing and determines the PORV is open and cannot be closed.	
	SRO	Has a Plant Operator dispatched to locally close/isolate PORV	
	SRO	Transitions to 0POP05-EO-EO20 based on CIP entry (any SG depressurizing in an uncontrolled manner).	<i>May not transition until it's been determined the SG PORV cannot be isolated.</i>
	SRO/BOP	Checks MSIV's and MSIB's closed	

	SRO/BOP C	ISOLATES FAULTED SG ‘A’: <ul style="list-style-type: none"> • VERIFIES MSIV CLOSED • VERIFIES FEEDWATER ISOLATION <ul style="list-style-type: none"> - FWIVs and FWIBs - Pre-heater bypass valves - Mn & Low Power Reg Valves • RESET SI • RESET ESF LOAD SEQUENCERS • RESET S/G LO-LO LEVEL ACTUATION • CLOSE ‘A’ S/G AFW OCIV 	
	SRO/BOP	Determines SG ‘A’ PORV cannot be closed from the Control Room. Dispatches a Plant Operator to isolate the PORV.	<i>Plant Operator may have already been dispatched</i>
	SRO/BOP	Verifies SG ‘A’ blowdown and sample isolation valves are closed.	
	SRO	Notifies Chemistry to sample all SG’s for activity.	
	SRO/BOP	Checks for SG tube leakage	<i>Identifies tube leakage in ‘A’ SG. Other SGs are intact.</i>
	SRO	Transitions back to 0POP05-EO-EO30 step 1 based on ruptured SG indications on ‘A’ SG.	
	ALL	Monitors if RCP’s should be stopped	<i>RCP’s will likely be tripped by now.</i>
	BOP	Identifies Ruptured SG as SG ‘A’.	
	SRO/BOP	Ensures ‘A’ SG PORV is in Auto and closed (closed demand)	<i>‘A’ SG PORV is failed open and demand cannot be reduced. The crew may maintain the controller in Manual.</i>
	BOP	Verifies SG ‘A’ blowdown isolated	
	BOP	Checks SG ‘A’ MSIV and MSIB closed	

	SRO/BOP	Check ruptured SG level > 14%. Determine NOT to feed SG 'A' regardless of level	Level will likely be <14%, however a procedure 'CAUTION' indicates a faulted SG should not be feed unless needed for cooldown. The crew should NOT feed 'A' SG.
	BOP	Verifies SG 'A' AFW OCIV closed	
	BOP	Determines SG 'A' pressure < 468 psig	
	SRO	Transitions to 0POP05-EO-EC31, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired	<i>Event #7 will occur here.</i>

Op-Test No.: # 1 Scenario No.: # 1 Event No.: 7 Event Description: 'B' ECW Pump Shaft Shear			
Time	Position	Applicant's Actions or Behavior	Notes
	RO	Identify and respond to the following alarms: <ul style="list-style-type: none"> • 1B ECW PUMP DISCH PRESS LO • 1B ECW SEAL WTR PRESS LO • #12 DG TRBL 	
	SRO	Directs actions from Annunciator Response Procedure 0POP09-AN-02M4	
	RO	Stops 'B' ECW Pump	
	RO	Places #12 ESF DG in Emergency Stop	
	RO	Ensures Essential Chiller 12B is secured	<i>Terminate Scenario</i>

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO C	CLOSES BLOCK VALVE FOR STUCK OPEN PZR PORV	Isolates failed Pressurizer PORV such that a manual or automatic reactor trip does not occur.	
SRO/BOP C	ISOLATES FAULTED SG 'A': <ul style="list-style-type: none"> • VERIFIES MSIV CLOSED • VERIFIES FEEDWATER ISOLATION <ul style="list-style-type: none"> - FWIVs and FWIBs - Pre-heater bypass valves - Mn & Low Power Reg Valves • RESET SI • RESET ESF LOAD SEQUENCERS • RESET S/G LO-LO LEVEL ACTUATION CLOSE 'A' S/G AFW OCIV	Isolates the faulted SG before transitioning out of EO20.	

TURNOVER INFORMATION

- Reactor power is 77%. Plant startup in progress following a refueling outage. Currently in procedure OPOP03-ZG-0005, Plant Startup to 100%, step 7.32.6
- Cycle burnup is 150 MWD/MTU
- RCS Boron Concentration is 1621 ppm.
- Circulating Water Pump #14 is out of service for electrical maintenance. Estimated return to service is 4 days.
- 'B' CCP is out of service for electrical maintenance.
- 11 gallon dilutions approximately every 30 minutes to maintain temperature. Xenon is building in.
- Total Batch Integrator is set at 10 gallons, getting 11.
- Boric Acid Tanks A and B are at 7700 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc

NRC EXAM

OPERATING TEST # 1

NRC SCENARIO # 2

Revision 1

Week of 11/14/2005

Facility: STP

NRC Exam Scenario No.: 2

Op-Test No.: 1

Source:

New ____ Bank - Significantly Modified ____X____ Bank - Initial Condition Change ____X____

See page 3 for Examiner/student assignments

Initial Conditions: 28% power with a plant shutdown in progress for periodic turbine blade inspection.

Turnover: continue with power decrease (POP03-ZG-0006, step 5.18.7) after Letdown orifice swap. BOL (150 MWD/MTU), 1689 ppmB. The National Weather Service has issued a Severe Weather Warning in effect until 2000 hrs. The Aux. Steam header is being warmed up.

Event No.	Malf. No.	Event Type*	Event Description
1 (1 min)	N/A	RO (N) SRO (N)	Swap Letdown orifices
2 (13 min)	02-20-03	RO (I) SRO (I)	Pressurizer Level channel (LT-468) fails low – once Letdown Demins returned to service or after 12 minutes
3 (26 min)	Rose Override Schematic sap040s (0.0)	BOP (I) SRO (I)	SG 'A' steam pressure channel PT-514 fails low – after TS for failed Pzr. Level channel are consulted or after 13 minutes.
4 (39 min)	08-18-01 (0.5)	BOP (C) SRO (C)	SG 'A' MFW Reg Valve drifts open - after TS consulted for failed steam pressure channel or 13 minutes.
5 (NA)	52-LI-31 52-LI-36	RO (C) SRO (C)	2 Control Rods fail to fully insert on the Reactor Trip – integral to the scenario
6 (NA)	Stem Override	RO (C) SRO (C)	Emergency Borate Valve MOV-218 fails to open – integral to scenario
7 (~60 min)	02-01-01 (1.0)	All (M)	RCS break develops into a LBLOCA (upon ES01 entry) – 5 min. ramp – after boation started in ES01 entered or 10 minutes after ES01 entered.

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

SCENARIO MISCELLANEOUS INFORMATION**INSTRUCTOR NOTES:**

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications, and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be placed in an Autograph file for recall when the scenario is completed:

- Containment Pressure
- SG 1A NR Level
- RCS Wide Range Pressure
- Pressurizer Level
- Charging Flow
- RWST to CCP Suction Valve
- Normal Boration Flow

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by “C” in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as “(continuous)” in the position column.
3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS**Op-Test No.: # 1 Scenario No.: 2 Event No.: 1****Event Description:** Swap Letdown Orifices

Time	Position	Applicant's Actions or Behavior	Notes
	SRO	Directs the RO to place the 85 gpm orifice in service and remove the 120 gpm orifice from service per OPOP02-CV-0004, Chemical and Volume Control Subsystem.	
	RO	Ensure Letdown Demineralizers are bypassed and notifies Chemistry they are bypassed.	
	RO	Places Letdown pressure control valve PCV-0135 in manual and adjusts pressure to approximately 200 psig.	
	RO	Opens the 85-100 gpm orifice isolation valve and throttles PCV-0135 to control letdown pressure.	
	RO	Re-establishes a Letdown pressure of 350-380 psig	
	RO	Ensures Letdown relief valve did not lift AND remain open.	
	RO	Adjusts PCV-0135 to control letdown pressure at approx. 400 psig.	
	RO	Closes the 120-150 gpm orifice isolation valve.	
		Re-establishes a Letdown pressure of 350-380 psig and places Letdown Pressure Control Valve, PCV-0135 in Auto	
	RO	Returns Demins to service	<i>Event # 2 will occur here</i>

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 Scenario No.: 2 Event No.: 2			
Event Description: Pressurizer Level Channel LT-468 Fails Low			
Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and reports the following annunciators on Control Panel CP004: • LETDN HX OUTL FLO HI/LO	<i>Operators may recognize letdown has isolated before an alarm comes in.</i>
	RO	Determines there is no Letdown flow, informs SRO to implement 0POP04-CV-0004, Loss of Normal Letdown	
	SRO	Directs/ensures actions of 0POP04-CV-0004, Loss of Normal Letdown	<i>The crew may diagnose that letdown was lost due to an instrument failure and immediately go to 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.</i>
	SRO/RO	Ensure Charging flow isolated and Letdown Isolation FV-0011 closed	<i>Actions from CIP</i>
	SRO/RO	Determines there is no Letdown flow and performs the following: • Ensures Letdown Orifice Isolation Valve FV-0011 is closed • Places FCV-0205, CHG FLOW CONT in MANUAL and closes valve. • Opens recirc valve on operating Charging Pump • Maintains RCP Seal Injection 6-13 gpm • Isolates all Letdown orifices • Ensures Letdown Isolation valves LCV-0465 and 0468 are closed.	
	SRO/RO	Check Pressurizer Level channels, determined LT-0468 is failed low	
	SRO (continuous)	Directs/ensures actions of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.	

	SRO/RO	<p>Determines there is no Letdown flow and performs the following:</p> <ul style="list-style-type: none"> • Ensures Letdown Orifice Isolation Valve FV-0011 is closed • Places FCV-0205, CHG FLOW CONT in MANUAL and closes valve. • Opens recirc valve on operating Charging Pump • Maintains RCP Seal Injection 6-13 gpm • Isolates all Letdown orifices • Ensures Letdown Isolation valves LCV-0465 and 0468 are closed 	<i>These actions may have been taken if the SRO initially went to 0POP04-CV-0004, Loss of Normal Letdown</i>
	RO	Determines LT-0468 is failed and de-selects failed channel	<i>LT-0468 is not a selectable instrument on the Control Panel.</i>
	RO	Selects an operable channel for the CP-005 Pressurizer Level Recorder	<i>The failed channel does input to this recorder.</i>
	SRO	<p>Directs RO to place Excess Letdown in Service.</p> <ul style="list-style-type: none"> • CCW in service to the Excess LD Hx • Excess LD diverted to RCDT • Excess LD Isolation Valves opened • Establishes Excess LD flow by slowly opening HCV-0227, Temp control Valve 	<i>Event # 3 will occur here when flush for Excess Letdown is started.</i>
	SRO	Notifies I&C to trip bistables for LT-0468.	
	RO	Checks all Tavg channels operable	
	RO	Checks Tavg within 1.5 °F of Tref	
	RO	Checks Pressurizer Level >17%	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 Scenario No.: 2 Event No.: 3			
Event Description: SG 'A' Steam Pressure Channel PT-514 fails low			
Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciators on Control Panel CP006: <ul style="list-style-type: none"> SG 1A STM PRESS LO ALERT SG 1A STM/FW FLOW MSMTCH 	
	SRO/BOP C	Performs immediate actions of 0POP04-FW-0001: <ul style="list-style-type: none"> PLACES SG 1A FEEDWATER MAIN FEED REG. VALVE (MFRV) CONTROLLER IN MANUAL ADJUSTS CONTROLLER OUTPUT TO RESTORE SG 1A LEVEL TO PROGRAM 	
	SRO (continuous)	Directs/ensures actions of 0POP04-FW-0001, Loss of Steam Generator Level Control.	
	SRO	Ensures immediate actions are taken	
	SRO/BOP	Determine 'A' Mn. Reg Valve is responding in Manual.	
	SRO/BOP	Determine SGFPT controls are responding.	<i>The operating SGFPT controller will be in AUTO, but the Master Feedpump Controller will be in Manual.</i>
	SRO/BOP	Ensure appropriate Feed to steam DP	
	BOP	Restores SG 1A NR level 68-74%	
	SRO/BOP	Ensure all SG levels 20-87.5%	
	BOP	Checks SG water level control instruments for failures. Identifies that steam pressure channel PT-514 for SG 1A has failed low.	
	BOP	Selects alternate steamflow channel for SG 1A level control.	

	BOP	<p>Performs the following:</p> <ul style="list-style-type: none"> • Verifies SG levels between 68% and 74% • Places SG 1A Feed Regulating Valve in AUTO 	
	BOP	Checks Feedpump Master Controller in Auto.	<i>The controller will be in Manual as it was initially. This procedure directs that it be placed in Auto, however the crew may elect to leave it in Manual as a condition for the startup procedure.</i>
	SRO	<p>Checks Tech Specs and determines the following apply:</p> <ul style="list-style-type: none"> • Table 3.3-3, items 1.f, 4.c and 4.e (action 20 for all 3) 	<i>Event # 4 will occur after TS have been consulted.</i>
	SRO	Notifies I&C to trip or bypass the failed channel.	

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 Scenario No.: 2 Events No.: 4, 5, 6			
Event Description: SG 'A' MFW Reg Valve drifts open/Stuck Rods on Reactor Trip/Failure of Emergency Borate Valve MOV-218			
Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciators on Control Panel CP006: <ul style="list-style-type: none"> SG 1A LVL DEV HI/LO 	<i>The operator may diagnose abnormal SG level before this alarm comes in.</i>
	SRO/BOP	Performs immediate actions of 0POP04-FW-0001: <ul style="list-style-type: none"> Places SG 1A feedwater Main Feed Reg. Valve (MFRV) controller in manual Adjusts controller output to match feed/steam flow and restore SG 1A level to program 	<i>-This action won't be satisfied as the valve is acting independent of the control.</i>
	SRO (continuous)	Directs/ensures actions of 0POP04-FW-0001, Loss of Steam Generator Level Control.	<i>This procedure may not be re-entered if the crew immediately determines they cannot control 'A' SG level.</i>
	SRO	Ensures immediate actions are taken	
	BOP	Determines SG 'A' MFW Reg Valve cannot control SG 'A' level, informs SRO.	
	SRO	Orders a manual Reactor Trip	<i>An automatic trip may occur before the crew can manually trip the reactor.</i>
	SRO (continuous)	Enters 0POP05-EO-0000, Reactor Trip or Safety Injection. Directs crew to perform immediate actions	
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: <ul style="list-style-type: none"> Reactor tripped Turbine tripped AC ESF Busses energized SI actuated or required 	<i>Should note that 2 rods failed to fully insert (Event # 5)</i>

	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	<i>The crew is allowed to make a subjective determination that the reactor is tripped (prevents doing RNO actions unnecessarily)</i>
	SRO	Transitions to 0POP05-EO-ES01, Reactor Trip Response. Directs crew to monitor Critical Safety Functions	
	ALL	Monitor RCS for cooldown, take appropriate action to stabilize RCS temperature if necessary: <ul style="list-style-type: none"> • Control AFW • Close steam drains • Trip SGFPT's • Isolate Blowdown 	
	SRO/BOP	Ensure FW Isolation and SGFPT's tripped	<i>Tripping the SGFPT's will cause an auto start of the Startup Feedpump.</i>
	SRO/BOP	Ensure Main or Aux Feed available to SG's	
	SRO/RO	Determines 2 Control Rods failed to fully insert. Attempts Emergency Boration, determines Emergency Borate Valve MOV-218 won't open.	<i>This is Event # 5. Event # 6 will occur when Emergency Boration started.</i>
	SRO/RO C	Establishes Emergency Boratation: <ul style="list-style-type: none"> • Commences Normal Boration until a plant operator can lineup for gravity feed of the BA tanks to CCP suction. OR <ul style="list-style-type: none"> • Opens RWST valves to CCP suction 	<i>-Should establish >50 gpm on FI-0205A</i> <i>-Should establish >190 gpm on FI-0205A</i> <i>Event 7 will occur after Emergency Boration has been started.</i>
	SRO/RO	Verifies ECW available to running ESF DG's	
	SRO/RO	Checks Pressurizer Level is >17% and the following in service: <ul style="list-style-type: none"> • charging • seal injection • letdown 	
	SRO/RO	Check Pressurizer Pressure control	

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 2 Event No.: 7			
Event Description: RCS Break develops into LBLOCA			
Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Determine RCS Pressure and Pressurizer level are decreasing.	
	SRO	Directs SI actuation. Directs the crew to re-enter 0POP05 EO EO00, Reactor Trip or SI.	<i>Crew may not have time for manual SI actuation before it automatically occurs.</i>
	RO/BOP	Performs the immediate actions of EO00, Reactor Trip or Safety Injection	
	ALL (continuous)	Monitor for RCP trip criteria (RCS pressure < 1430 psig and at least 1 HHSI Pump operating) or Containment Phase 'B' Isolation occurs, and trip RCPs as required.	<i>These conditions will likely already exist.</i>
	ALL (continuous)	Monitor/apply adverse containment values when containment pressure is ≥ 5 psig.	
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	
	SRO/RO	Determines Containment Spray is operating correctly and Phase 'B' Isolation has occurred.	<i>If RCB pressure ≥ 9.5 psig at this time</i>
	SRO/RO	Check plant status: 1. RCP Seal cooling 2. RCS cooldown 3. Pzr valve status 4. RCP trip criteria 5. Selected Containment Isol. Valves	
	ALL	Determine RCS isn't intact	
	SRO	Informs crew of transition to 0POP05-EO-E010, Loss of Reactor or Secondary Coolant and to monitor Critical Safety Functions	
	ALL	Determine there's a Orange or Red Path on Containment Integrity.	<i>Conditions for entry into this procedure may or may not exist at this point. They should occur sometime during the scenario though.</i>

	SRO	Transitions to FRP1, Response to Imminent Pressurized Thermal Shock	<i>Transition will be time dependent, but conditions should occur sometime during the scenario. Also, Addendum 5 of EO00 must be complete before transition to an FRP is allowed.</i>
	SRO/RO	Exits FRP1 at Step 1 (RNO) based on RCS Pressure <415 psig and LHSI flow being > 500 gpm.	
	SRO	Transitions to FRZ1, Response to Containment High Pressure and directs operator actions based on ORANGE Path on Containment CSF.	
	SRO/RO	Verifies Containment Isolation Phase 'A' and Containment Ventilation Isolation.	
	SRO/RO	Determines Containment Spray is required and in service. <ul style="list-style-type: none"> • Stops RCPs if not already done. • Verifies proper Spray Valve lineup • Verifies Containment Phase 'B' Isolation 	
	SRO/RO	Checks Reactor Containment Fan Cooler (RCFC) status.	
	SRO/BOP	Checks SG MSIVs/MSIBs closed and that no faulted SG exist.	
	SRO	Transitions to EO10, Loss of Reactor or Secondary Coolant.	
	ALL	Determine if RCPs should be stopped	<i>Should be stopped by this time</i>
	SRO/BOP	Determines RCS pressure is < 415 psig and bypasses step to de-pressurize intact SG's.	
	SRO/BOP	Verifies no SG's are faulted	
	SRO/RO	Reset actuation systems for <ul style="list-style-type: none"> • SI • ESF Sequencers • Phase 'A' and 'B' Isolations 	
	SRO/BOP	Controls intact SG levels 34-50%	
	ALL	Checks Secondary Radiation (for SGTR)	
	SRO/RO	Checks Pressurizer PORV availability	

	RO/BOP	Restores IA to containment when directed by verifying IA pressure is >95 psig and opening the IA OCIV.	
	SRO/RO	Place Containment H2 Monitors in service.	
	SRO/RO	Place SFPC in service	<i>Has 2.5 hr. to do this, but usually done immediately</i>
	SRO/RO	Checks if Charging flow is established	
	SRO/RO	Determines Safety Injection cannot be terminated.	
	SRO/RO	Checks if Containment Spray can be stopped.	<i>Containment pressure will be too high to allow securing Cont. Spray</i>
	SRO/RO	Checks if LHSI Pumps can be stopped.	
	All	Checks RCS and SG Pressures	
	SRO/RO	Secures any unloaded ESF DG's	
	SRO (continuous)	Transitions to 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, when RWST level decreases to less than 75,000 gallons.	
	RO	Resets SI and ESF Sequencers	
	RO	Verifies CCW flow to RHR Hx's	
	RO	Secures any running Charging Pumps	
		Verifies HHSI/LHSI lineup for recirculation: <ul style="list-style-type: none"> • Cold Leg Injection Valves open • Recirc valves closed • Containment Sump to SI Pump Suction valves open 	
		Determines 'B' Train Cont. Sump to SI Pump Suction valve is not open. Secures the train HHSI, LHSI and Cont. Spray Pumps.	
	RO	Closes RWST to SI Pump Suction valves	
	SRO/RO	Verifies at least one train of HHSI, LHSI and Containment Spray aligned for recirculation with pump/s running.	<i>Terminate Scenario</i>

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/BOP C	<ul style="list-style-type: none">• PLACES SG 1A FEEDWATER MAIN FEED REG. VALVE (MFRV) CONTROLLER IN MANUAL• ADJUSTS CONTROLLER OUTPUT TO MATCH FEED/STEAM FLOW AND RESTORE SG 1A LEVEL TO PROGRAM	Manually controls SG level such that a manual or automatic reactor trip is not required.	
SRO/RO C	<p>Establishes Emergency Boratation:</p> <ul style="list-style-type: none">• Commences Normal Boration until a plant operator can lineup for gravity feed of the BA tanks to CCP suction. <p>OR</p> <ul style="list-style-type: none">• Opens RWST valves to CCP suction	Emergency Boration is established before exiting 0POP05-EO-ES01, Reactor Trip Response.	

TURNOVER INFORMATION

- Power decrease is in progress for periodic turbine blade inspection. Currently at approximately 28% power on hold to swap Letdown orifices.
- Place the 85-100 gpm orifice in service, then remove the 100-150 gpm orifice from service to accommodate letdown flow measurements by Engineering.
- When Letdown orifices have been swapped, resume the power decrease at OPOP03-ZG-0006, Step 5.18.7
- Cycle burnup is 150 MWD/MTU, fuel is conditioned to 100% power.
- RCS Boron Concentration is 1689 ppm.
- Boric Acid Tanks A and B are at 7700 ppm.
- Half hour dilutions to maintain this power level are approximately 11 gallons. Xe is building in.
- Total Batch Integrator is set at 10 gallons, getting 11.
- The National Weather Service has issued a Severe Weather Warning in effect until 2000 hrs.
- The Aux Steam header is being warmed up from Unit 2
- No personnel are in containment
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc

NRC EXAM

OPERATING TEST # 1

NRC SCENARIO # 3

Revision 1

Week of 11/14/2005

Facility: STP	NRC Exam Scenario No.: 3	Op-Test No.: 1
Source: New ____ Bank - Significantly Modified ____ Bank - Initial Condition Change <u> X </u>		
See page 3 for Examiner/student assignments		
Initial Conditions: 100% power, 'A' Train outage in progress with 'A' HHSI, LHSI and #11 AFW Pump OOS.		
Turnover: The plant has been at 100% power for the last 124 days. PR-42 failed 4 days ago. Channel II OTDT bistable has been tripped in accordance with 0POP02-NI-0001. BOL, 1363 ppmB.		

Event No.	Malfunction No.	Event Type*	Event Description
1 (1 min)	10-12-02 (True)	RO (C) SRO (C) BOP (C)**	Ground and Loss of MCC E1B1 – Ground occurs 1 min after crew takes the watch and loss of MCC automatically occurs 1 minutes after LC E1B1 Trouble alarm (ground)
2 (14 min)	06-16-02 (0.0)	RO (I) BOP (I) SRO (I)	PT-505 fails low – after the standby charger is in service and Tech Specs consulted or after 12 minutes.
3 (24 min)	02-25-02 (0.0)	RO(I) SRO (I)	Loop 1A Cold Leg RTD TT-410B fails low – once T.S. consulted for PT-505 failure or after 10 minutes.
4 (NA)	01-12-01 01-12-02 1K1/1L1 overrides	RO (C) BOP (C) SRO (C)	ATWS: failure of auto and manual reactor trip. Failure of auto turbine trip from SSPS (failure of Reactor Trip from the Control Room) – occurs automatically with Tcold failure.
5 (NA)	50-HV-02 (1.0)	All (M)	PORV 656A fails open during ATWS actions and cannot be isolated due to loss of power to PORV block valve (E1B1) – will automatically occur 15 seconds after Rad Monitor Containment Isolation Valves are closed.
6 (NA)	04-13-02 (True)	BOP (C) SRO (C)	HHSI Pump 'B' fails to start – integral with scenario, will be apparent after SI initiates

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

**the component failure for the BOP relates to failure of AFW valves in Train 'B' and will be evident following the reactor trip.

SCENARIO MISCELLANEOUS INFORMATION**INSTRUCTOR NOTES:**

Refer to the Instructor Notes file for directions on Simulator Setup, Expected Booth Communications, and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be placed in an Autograph file for recall when the scenario is completed:

- RCS WR Pressure
- Pressurizer Level
- Reactor Power
- RCS WR Temperature
- Charging flow
- Boration flow
- MOV-0001B position

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by “C” in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as “(continuous)” in the position column.
3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS**Op-Test No.:** # 1 **Scenario No.:** # 3 **Event No.:** 1**Event Description:** Ground on 480 VAC Loadcenter E1B1 and subsequent loss of MCC E1B1

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges 480V LC E1B1 TRBL alarm and consults Annunciator Response Procedure.	
	RO	Sends a Plant Operator to check for ground fault lights (all lights on), transformer temperature and supply breaker position.	
	RO	Based on Plant Operator report, informs Unit Supervisor.	
	RO	Acknowledges and responds to the following alarms: <ul style="list-style-type: none"> • 125V DC SYSTEM E1B11 TRBL (Window C1) • DG 12 TRBL (Window A6) • Numerous BYP/INOP alarms 	<i>This are symptoms of loss of the MCC</i>
	SRO/RO	Enters 0POP09-AN-03M2, windows C1 and 0POP09-AN-03M2 windows A6	
	RO	Checks Bus E1B11 indications at CP-003, determines there is no battery charger supplying 125 VDC Bus E1B11, bus is energized from it's battery	
	RO/BOP	Checks computer points to determine Bus E1B11 status – notes 'Trouble' on #1 Charger	
	SRO/RO	Dispatches an operator to determine cause of E1B11 and DG TRBL alarm	
	ALL	Determine 480v MCC E1B1 is de-energized.	
	SRO	Determines Bus E1B11 must be re-energized by a charger within 15 minutes or Battery E1B11 will be inoperable	<i>This is a Tech Spec consideration</i>

	SRO	Directs Plant Operator to place the standby Charger in service on Bus E1B11 per 0POP02-EE-0001	
	SRO	Refers to Tech Spec 3.8.1.1 and 3.8.2.1 (there may be others based on BYP/INOP alarms).	<ul style="list-style-type: none"> • <i>Determines TS 3.8.2.1.c applied during the time the 1E1B11 Battery was not connected to a charger. If the standby charger was not placed in service within 15 min. procedure 0POP02-EE-0002 will have to be consulted to declare the battery operable once again.</i> • <i>Event #2 will occur once TS have been consulted.</i>
	ALL	May perform Board walkdowns and/or refer to prints to determine effects of loss of 480v MCC E1B1.	

OPERATOR ACTIONS (Cont')**Op-Test No.:** # 1 **Scenario No.:** # 3 **Event No.:** 2**Event Description:** PT-505 fails low

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and announces Annunciators: <ul style="list-style-type: none"> TREF/AUCT TAVG DEV TURB IMP PRESS ROD WTHDR. BLKD 	
	RO/BOP	Determine PT-505 has failed	
	SRO	Directs/ensures performance of 0POP04-TM-0004, Failure of Turbine Impulse Transmitter PT-505/506.	
	RO	Ensures Rod Control is in manual	<i>Rods will automatically insert due to the failure.</i>
	RO	Verifies Tavg within 1.5°F of program Tavg.	
	SRO/BOP	Transfers steam dumps to "Pressure Control" mode.	
	SRO/BOP	Defeats failed channel using IMP SEL switch.	
	SRO/RO	Checks TURB IMP PRESS ROD WTHDRWL BLKD (5M02, E-5) extinguished	
	SRO	Verifies Permissive P-13 is in the correct state for current plant conditions.	<ul style="list-style-type: none"> <i>This is to comply with TS Table 3.3-1, item 19f. The correct condition is for the status light to be out.</i> <i>Event # 3 will occur here after TS have been consulted.</i>
	SRO	Notifies I&C to trip the bistable for the failed channel	

OPERATOR ACTIONS (Cont')**Op-Test No.:** # 1 **Scenario No.:** # 3 **Event No.:** 3 and 4**Event Description:** Loop 1A Cold Leg RTD TT-410B fails low/ATWS

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Responds to annunciators: BANK INSRT LO, TREF/AUCT TAVG DEV, DT/AUCT DT DEV, TAVG/AUCT TAVG DEV	
	ALL	Determine an automatic reactor trip should have occurred.	<i>pre-existing Power Range channel failure and this Tcold failure will yield 2 OTDT channels in trip</i>
	SRO	Directs a manual reactor trip	
	RO/BOP	Determine neither Reactor Trip Sw. works	
	BOP	Attempts to opens LC 1K1 and 1L1 breakers	
	RO/BOP	Dispatch a Plant Operator to locally open the Reactor Trip Breakers	
	BOP	When a reactor trip occurs, re-closes LC 1K1 and 1L1 breakers	
	SRO	Determines the Reactor hasn't tripped and directs/ensures the actions of OPOP05-EO-FRS1, Response to Nuclear Power Generation, ATWS	
	RO/BOP	Determines a Reactor Trip has not occurred and ensures the following: <ul style="list-style-type: none"> • Manual trip w/both trip switches has been attempted • Inserts control rods manually • LC 1K1 and 1L1 breakers open • Plant Operator dispatched to locally open trip breakers 	<i>Immediate Action</i>
	BOP	Trips the turbine and verifies turbine is tripped	<i>Immediate Action</i>
	BOP	Verifies AFW Pumps in service	<i>Available AFW Pumps will have to be manually started.</i>

	SRO/RO C	COMMENCES EMERGENCY BORATION <ul style="list-style-type: none"> • Opens Alt Boration Valve MOV - 218 • Ensures a CCP in service and charging flow established > 50 gpm. • Ensures a Boric Acid Pump is running 	<i>Reactor Trip Breakers will automatically open here and Event # 5 will automatically occur here</i>
	RO	Verifies Containment Ventilation Isolation	
	ALL	Determine a Reactor Trip has occurred	
	SRO	Goes to Step 18, Verify adequate Shutdown Margin <ul style="list-style-type: none"> • Ensure Emergency Boration in service • notifies chemistry to sample for Boron 	
	SRO	Transitions to 0POP05-EO-EO00, Reactor Trip or SI	<i>Refer to Event #5 for continuation of operator actions</i>

NOTE: The loss of power to MCC E1B1 will de-energize the hydraulic pumps for SG 'B' PORV. Once the energy in the accumulator is expended the valve will fail 'as-is'. If the SG 'B' PORV fails partially open, the crew must dispatch a Plant Operator to manually isolate the PORV to prevent uncontrolled steam flow from 'B' SG. A transition to 0POP05-EO-EO20, Faulted SG Isolation may be made once 0POP05-EO-EO00 is completed until it's known that the PORV can be isolated.

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 Scenario No.: # 3 Event No.: 5			
Event Description: PORV 655A fails open, cannot be isolated			
Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: <ul style="list-style-type: none"> • Reactor tripped • Turbine tripped • AC ESF Busses energized • Determines SI is actuated or required 	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	ALL (continuous)	Monitor for RCP trip criteria: <ul style="list-style-type: none"> • RCS Pressure < 1430 psig • At least 1 HHSI Pump running 	<i>Conditions may exist by this time trip the RCP's</i>
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	
	SRO/RO	Determines Containment Spray is not required.	
	SRO/RO	Check plant status: <ul style="list-style-type: none"> • RCP Seal cooling • RCS cooldown • Pzr valve status 	<i>Will discover failed Pzr PORV if not already done. Procedure step requires a transition to EO10.</i>
	SRO	Transitions to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.	
	ALL	Implement Critical Safety Functions once EO00 Addendum 5 complete	
	ALL (continuous)	Determine if RCPs' should be stopped <ul style="list-style-type: none"> • RCS Pressure < 1430 psig • At least 1 HHSI Pump running 	<i>RCP's are probably stopped by now.</i>
	SRO/RO	De-pressurize SG's to below 1000 psig and adjusts: <ul style="list-style-type: none"> • Steam Dumps set to maintain 980-994 psig • SG PORVs set to maintain 995-1000 psig 	<i>SG pressures may already be <1000 psig</i>

	SRO/BOP	Determine SG's are intact	
	RO	Resets actuation systems: <ul style="list-style-type: none"> • SI • ESF Sequencers • Phase 'A' • Phase 'B' 	
	BOP	Check intact SG levels > 14% NR. Control AFW to maintain levels 22-50%	<i>Will have to x-tie to feed SG 'A' and 'B'.</i>
	BOP	Checks for secondary radiation: <ul style="list-style-type: none"> • Resets SG Blowdown and Sample Isolation ckt. • Notifies Chemistry to sample • Checks Rad Monitors 	
	RO	Checks Pressurizer PORV status	<i>PORV 656A will still be stuck open & cannot be isolated at this time.</i>
	RO	Establish Inst. Air to Containment	
	RO	Monitor Containment H2 - Places H2 Monitors in service	<i>MCC E1B1 should be restored here allowing PORV 656A Isolation Valve to be closed.</i>
	SRO/RO (C)	ONCE MCC E1B1 RE-ENERGIZED, PORV 656A ISOLATION VALVE CLOSED.	<i>Closure of PORV Isolation Valve will allow the RCS to re-pressurize allowing a transition to ES11 once SI Termination criteria have been met. All criteria should be met except RCS pressure and that should be met after a few more minutes.</i>
	SRO	Transitions to 0POP05-EO-ES11, SI Termination. Directs crew to monitor Critical Safety Functions	<i>Once the PORV is isolated, RCS pressure will increase and be controlled by the operable PORV.</i>
	SRO/RO	Verify reset of actuation systems: <ul style="list-style-type: none"> • SI • ESF Sequencers • Phase 'A' • Phase 'B' 	
	SRO/RO	Verify Inst. Air restored to Containment	
	SRO/RO	Ensures SFPC restored from CCW	

	SRO/RO	Secure LHSI and HHSI Pumps	
	SRO/RO	Checks Charging Pump in service and re-establishes charging flow.	
	SRO/RO	Monitors for SI re-initiation criteria	<i>SI re-initiation should not be required.</i>
	SRO/RO	Determines if Containment Spray should be stopped; was not actuated.	
	SRO/RO	Verifies all Control Rods inserted	
	SRO	Determines Letdown can be established and directs RO to establish Letdown per Addendum 2.	<i>Establishing Letdown will help the crew regain RCS pressure control.</i>
	RO	Places Normal Letdown in service	<i>Terminate scenario once Normal Letdown in service</i>
	SRO/RO	Checks VCT Makeup Control systems is in Auto and set for 2800-3000 ppm.	
	SRO/RO	Checks CCP's are aligned to the VCT.	
	SRO/BOP	Place Steam Dumps in Steam Pressure Control Mode.	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	INITIATE EMERGENCY BORATION	WHILE THE REACTOR IS NOT TRIPPED INSERT NEGATIVE REACTIVITY INTO THE CORE BY ESTABLISHING EMERGENCY BORATION	
SRO/RO	ONCE MCC E1B1 RE- ENERGIZED, PORV 656A ISOLATION VALVE CLOSED.	CLOSE THE BLOCK MOV UPSTREAM OF THE STUCK-OPEN PORV BEFORE EXITING EO10.	

TURNOVER INFORMATION

- Reactor power is 100%
- Cycle burnup is 150 MWD/MTU
- RCS Boron Concentration is 1363 ppm.
- 'A' Train outage in progress. 'A' HHSI, 'A' LHSI and #11 AFW Pump are out of service.
- Power Range Channel 42 failed 4 days ago. Appears to be a detector failure. Actions of 0POP04-NI-0001, Nuclear Instrument Malfunction, have been completed. QPTR is being monitored every 12 hr. Flux mapping for QPTR will next be performed in approximately 4 hr. Tech Spec 3.3.1 requirements have been satisfied
- Hourly dilutions to maintain current power are approximately 11 gallons. Xenon is at equilibrium conditions.
- Total Batch Integrator is set at 10 gallons, getting 11.
- Boric Acid Tanks A and B are at 7700 ppm.
- No personnel are in containment
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc