

REGION II JOB PERFORMANCE MEASURE

ADM-105

PERFORM A POWER IMBALANCE VERIFICATION

Alternate Path: N/A

Alt Path Failure: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By: _____ Date: _____

EP Review By: N/A Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

REGION II
JOB PERFORMANCE MEASURE

Task Title : Perform a power imbalance verification.

Task Number : N/A

Alternate Path: N/A

Time Critical: No

Validation Time: 27 minutes

K/A Rating(s):

System: G
K/A: 2.1.25
Rating: 3.9/4.2

Task Standard:

Candidate determines that Axial Power Imbalance is NOT within the limits of the COLR.

References:

PT/1/A/0600/001 (Periodic Instrument Surveillance) procedure and Enclosures 13.1
OP/1/A/1105/014 (Control Room Instrumentation Operation and Information)
Core Operating Limits Report

Tools/Equipment/Procedures Needed:

PT/1/A/0600/001 (Periodic Instrument Surveillance) procedure and Enclosures 13.1
OP/1/A/1105/014 (Control Room Instrumentation Operation and Information)
Core Operating Limits Report

=====
Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

=====
Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **NONE**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

- Unit 1 had a transient from 100% power 4 hours ago.
- The current time is 0800.
- The Reactor Calculations package is **NOT** running.
- All other equipment is operable.
- PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosure 13.1 (Mode 1 & 2) has been completed up to page 7, Axial Power Imbalance Operating Limits.
- Minimum incore detector operability requirements have been verified met per PT/0/A/1103/019 (Backup Incore Detector System).

INITIATING CUE

The SRO directs you to:

1. Perform Axial Power Imbalance verification in accordance with PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosure 13.1 (Mode 1 & 2).

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		<p>PT/1/A/0600/001, SR 3.2.2.1 Axial Power Imbalance Operating Limit: IF > 40% RTP, verify Power imbalance within operational alarm limits in COLR.</p> <p>IF Reactor Calculations package is <u>NOT</u> running on computer, refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information).</p> <p><u>STANDARD:</u> Determine reactor power is greater than 40%. Determine Reactor Calculation package is <u>NOT</u> running per Initial Conditions and refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information).</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
2	3.2.3	<p>OP/1/A/1105/014 Encl. 4.13</p> <p>IF Reactor Calculations package is <u>NOT</u> running, verify minimum incore detector operability requirements are met. Refer to PT/0/A/1103/019 (Backup Incore Detector System).</p> <p><u>STANDARD:</u> Determine the minimum incore detector operability requirements are met from the initiating cue.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p>3</p>	<p>3.2.4</p>	<p>Order of preference of measurement systems to determine axial imbalance and quadrant power tilt is as follows:</p> <p>A. Incore Detectors (Computer Reactor Calculation Package).</p> <p>B. Outcore Detectors (Power Range Outcore Detectors).</p> <p>C. Backup Incore Detectors. Refer to PT/0/A/1103/019 (Backup Incore Detector System).</p> <p>STANDARD: Candidate reviews step and determines Outcore Detectors should be used. Continues to Step 3.2.5</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>4</p>	<p>3.2.5</p>	<p>IF at least one power range outcore detector is NOT operable in each quadrant (NI-5 thru NI-8), outcore detectors shall NOT be used to measure axial imbalance or quadrant power tilt</p> <p>STANDARD: Determine NI-5 thru NI-8 are operable and can be used to measure axial imbalance.</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>5</p>	<p>3.2.6</p>	<p>IF Outcore Detectors (Power Range Outcore Detectors) are needed for tilt calculations, contact Rx Engineering group to perform PT/0/A/1103/018 (Excore Tilt Calculations).</p> <p>STANDARD: Determine this step does not apply because they are not determining tilt calculation at this time.</p> <p>EXAMINER CUE: If asked, notify the candidate that tilt calculations are not required.</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p>6</p>	<p>3.2.7</p>	<p>IF Outcore Detectors (Power Range Outcore Detectors) are needed for imbalance calculations, refer to the following alternate method for determining (%) Reactor Power Axial Imbalance:</p> $\frac{NI-5^* + NI-6^* + NI-7^* + NI-8^*}{4} = \% \text{ Imbalance (Avg.)}$ <p>* Use Imbalance CR gauges reading for each NI.</p> <p><u>STANDARD:</u> Using the attached NI graphic determine that % Imbalance (Avg.) is - 19.2%.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>7</p>		<p>Refer to the Unit 1 COLR to determine if the calculated outcore imbalance is within the limit for current plant conditions.</p> <p><u>STANDARD:</u> Determine the calculated outcore imbalance (- 19.2%) exceeds the limit (- 17.7%) for current plant conditions.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- | | |
|---|---|
| 6 | This step is required to determine average imbalance. |
| 7 | This step is required to determine if imbalance is within the limits of the COLR. |

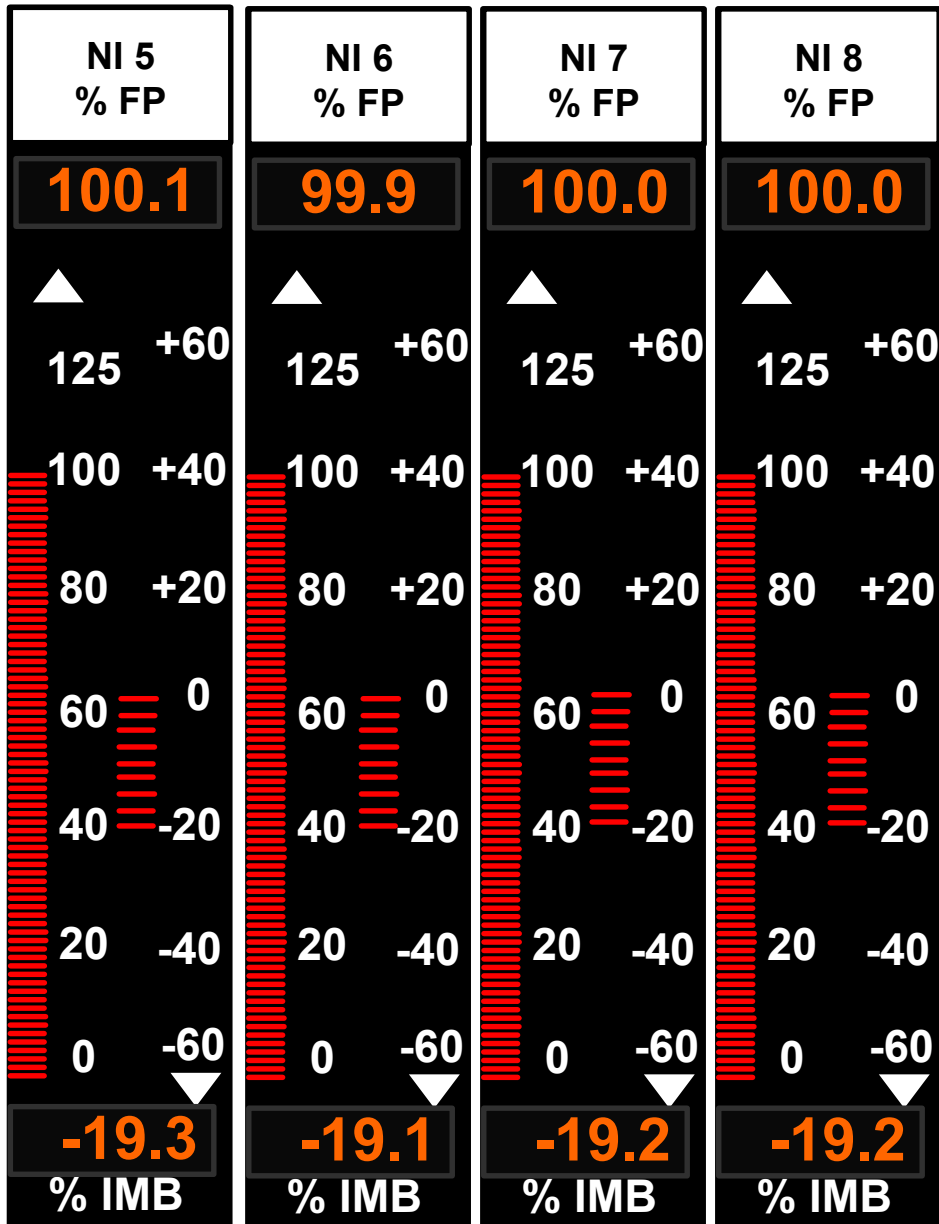
BACKUP INCORE CHART "A"		
POINT #	%	Location
1	158.6	G09-L2
2	112.1	G09-L4
3	98.6	G09-L6
4	159.2	E09-L2
5	111.8	E09-L4
6	98.4	E09-L6
7	158.8	G05-L2
8	97.5	G05-L6
9	159.9	M07-L2
10	99.2	M07-L6
11	158.6	K11-L2
12	98.1	K11-L6
13	157.8	F13-L2
14	158.6	D05-L2
15	112.3	F13-L4
16	158.1	C06-L2
17	99.6	C06-L6
18	98.8	F13-L6
19	97.6	O10-L6
20	98.3	L03-L6
21	159.6	L03-L2
22	98.6	D05-L6
23	158.7	O10-L2
24	111.9	D05-L4

BACKUP INCORE CHART "B"		
POINT #	%	Location
1	98.6	E07-L6
2	97.4	G11-L6
3	99.2	M09-L6
4	*OOS	K05-L6
5	*OOS	K05-L4
6	*OOS	L06-L2
7	*OOS	L06-L4
8	*OOS	L06-L6
9	156.2	M09-L2
10	*OOS	K05-L2
11	159.2	G11-L2
12	*OOS	E07-L2
13	158.2	C10-L2
14	98.1	C10-L6
15	*OOS	F03-L2
16	98.5	F03-L6
17	*OOS	N04-L2
18	112.1	N04-L4
19	*OOS	N04-L6
20	159.3	O06-L2
21	*OOS	O06-L4
22	*OOS	O06-L6
23	*OOS	L13-L2
24	98.8	L13-L6

Note: Listed points with values are "in calibration".

* Work Request written

POWER RANGE NI'S



CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

- Unit 1 had a transient from 100% power 4 hours ago.
- The current time is 0800.
- The Reactor Calculations package is **NOT** running.
- All other equipment is operable.
- PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosures 13.1 (Mode 1 & 2) has been completed up to page 7, Axial Power Imbalance Operating Limits.
- Minimum incore detector operability requirements have been verified met per PT/0/A/1103/019 (Backup Incore Detector System).

INITIATING CUE

The SRO directs you to:

1. Perform Axial Power Imbalance verification in accordance with PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosure 13.1 (Mode 1 & 2).

REGION II JOB PERFORMANCE MEASURE

ADM-S105

PERFORM A POWER IMBALANCE VERIFICATION AND DETERMINE ANY REQUIRED ACTIONS AND COMPLETION TIMES

Alternate Path: N/A

Alt Path Failure: _____

Time Critical: No

Time Critical Criteria: _____

Prepared By: _____ Date: _____

EP Review By: N/A Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

REGION II JOB PERFORMANCE MEASURE

Task Title : Perform a power imbalance verification and determine any required actions and completion times.

Task Number : N/A

Alternate Path: N/A

Time Critical: No

Validation Time: 35 minutes

K/A Rating(s):

System: G
K/A: 2.1.25
Rating: 3.9/4.2

Task Standard:

Candidate determines that Axial Power Imbalance is NOT within the limits of the COLR and determines the appropriate TS requirements.

References:

PT/1/A/0600/001 (Periodic Instrument Surveillance) procedure and Enclosures 13.1
OP/1/A/1105/014 (Control Room Instrumentation Operation and Information)
Core Operating Limits Report
Tech Specs

Tools/Equipment/Procedures Needed:

PT/1/A/0600/001 (Periodic Instrument Surveillance) procedure and Enclosures 13.1
OP/1/A/1105/014 (Control Room Instrumentation Operation and Information)
Core Operating Limits Report
Tech Specs

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **NONE**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

- Unit 1 had a transient from 100% power 4 hours ago.
- The current time is 0800.
- The Reactor Calculations package is **NOT** running.
- All other equipment is operable.
- PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosure 13.1 (Mode 1 & 2) has been completed up to page 7, Axial Power Imbalance Operating Limits.
- Minimum incore detector operability requirements have been verified met per PT/0/A/1103/019 (Backup Incore Detector System).

INITIATING CUE

The SRO directs you to:

1. Perform Axial Power Imbalance verification in accordance with PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosure 13.1 (Mode 1 & 2).
2. Determine all Tech Spec/SLC required actions and completion times, if any.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		<p>PT/1/A/0600/001, SR 3.2.2.1 Axial Power Imbalance Operating Limit: IF > 40% RTP, verify Power imbalance within operational alarm limits in COLR.</p> <p>IF Reactor Calculations package is <u>NOT</u> running on computer, refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information).</p> <p><u>STANDARD:</u> Determine reactor power is greater than 40%. Determine Reactor Calculation package is <u>NOT</u> running per Initial Conditions and refer to OP/1/A/1105/014 (Control Room Instrumentation Operation And Information).</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
2	3.2.3	<p>OP/1/A/1105/014 Encl. 4.13</p> <p>IF Reactor Calculations package is <u>NOT</u> running, verify minimum incore detector operability requirements are met. Refer to PT/0/A/1103/019 (Backup Incore Detector System).</p> <p><u>STANDARD:</u> Determine the minimum incore detector operability requirements are met from the initiating cue.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p>3</p>	<p>3.2.4</p>	<p>Order of preference of measurement systems to determine axial imbalance and quadrant power tilt is as follows:</p> <p>A. Incore Detectors (Computer Reactor Calculation Package).</p> <p>B. Outcore Detectors (Power Range Outcore Detectors).</p> <p>C. Backup Incore Detectors. Refer to PT/0/A/1103/019 (Backup Incore Detector System).</p> <p>STANDARD: Candidate reviews step and determines Outcore Detectors should be used. Continues to Step 3.2.5</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>4</p>	<p>3.2.5</p>	<p>IF at least one power range outcore detector is NOT operable in each quadrant (NI-5 thru NI-8), outcore detectors shall NOT be used to measure axial imbalance or quadrant power tilt</p> <p>STANDARD: Determine NI-5 thru NI-8 are operable and can be used to measure axial imbalance.</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>5</p>	<p>3.2.6</p>	<p>IF Outcore Detectors (Power Range Outcore Detectors) are needed for tilt calculations, contact Rx Engineering group to perform PT/0/A/1103/018 (Excore Tilt Calculations).</p> <p>STANDARD: Determine this step does not apply because they are not determining tilt calculation at this time.</p> <p>EXAMINER CUE: <i>If asked, notify the candidate that tilt calculations are not required.</i></p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p>6</p> <p>3.2.7</p>		<p>IF Outcore Detectors (Power Range Outcore Detectors) are needed for imbalance calculations, refer to the following alternate method for determining (%) Reactor Power Axial Imbalance:</p> $\frac{NI-5^* + NI-6^* + NI-7^* + NI-8^*}{4} = \% \text{ Imbalance (Avg.)}$ <p>* Use Imbalance CR gauges reading for each NI.</p> <p><u>STANDARD:</u> Using the attached NI graphic determine that % Imbalance (Avg.) is - 19.2%.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>7</p>		<p>Refer to the Unit 1 COLR to determine if the calculated outcore imbalance is within the limit for current plant conditions.</p> <p><u>STANDARD:</u> Determine the calculated outcore imbalance (- 19.2%) exceeds the limit (- 17.7%) for current plant conditions.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>8</p>		<p>Reference Tech Specs to determine required actions.</p> <p><u>STANDARD:</u> Enter TS 3.2.2 Condition A: Restore AXIAL POWER IMBALANCE to within limits within 2 hours.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- | | |
|---|---|
| 6 | This step is required to determine average imbalance. |
| 7 | This step is required to determine if imbalance is within the limits of the COLR. |
| 8 | This step is required to determine actions required by Tech Specs. |

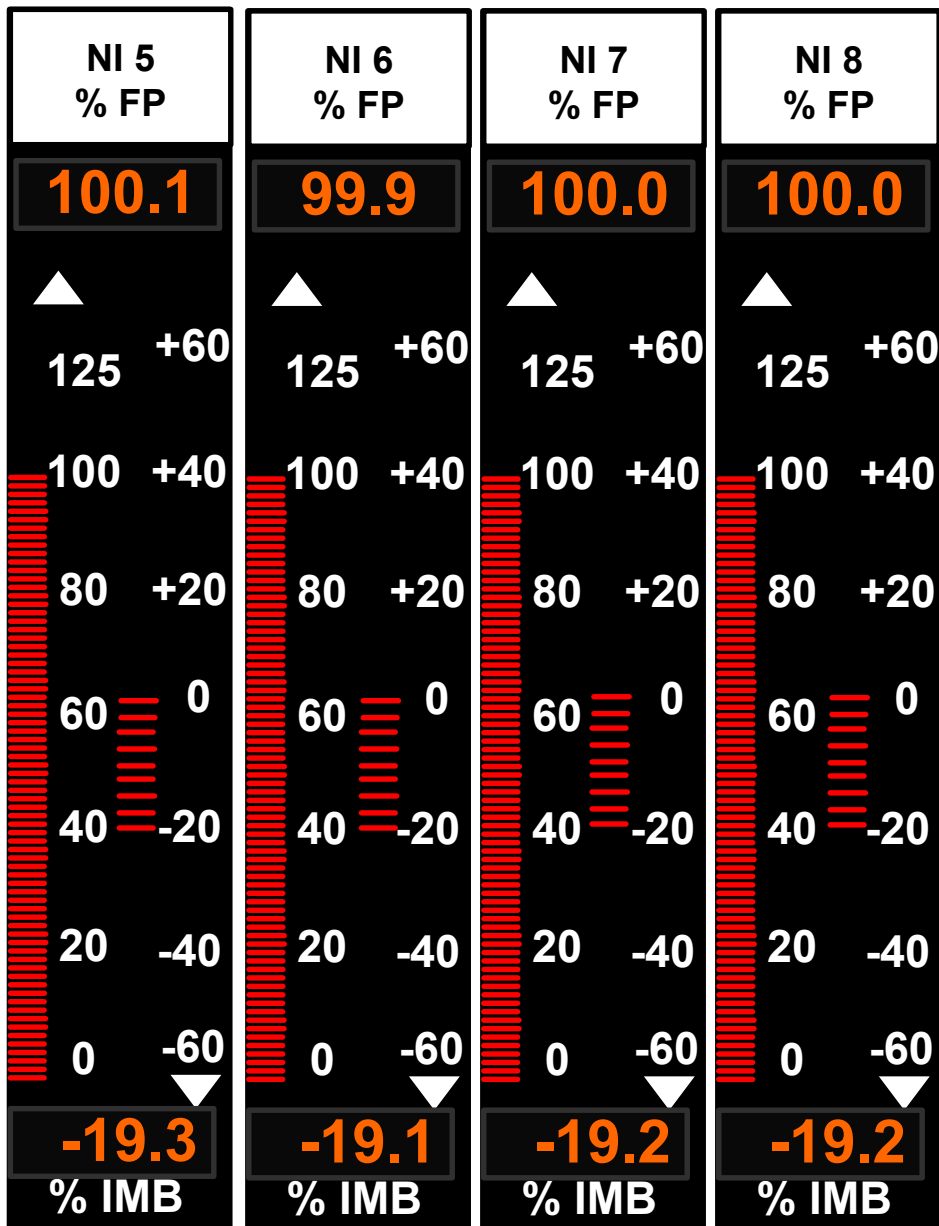
BACKUP INCORE CHART "A"		
POINT #	%	Location
1	158.6	G09-L2
2	112.1	G09-L4
3	98.6	G09-L6
4	159.2	E09-L2
5	111.8	E09-L4
6	98.4	E09-L6
7	158.8	G05-L2
8	97.5	G05-L6
9	159.9	M07-L2
10	99.2	M07-L6
11	158.6	K11-L2
12	98.1	K11-L6
13	157.8	F13-L2
14	158.6	D05-L2
15	112.3	F13-L4
16	158.1	C06-L2
17	99.6	C06-L6
18	98.8	F13-L6
19	97.6	O10-L6
20	98.3	L03-L6
21	159.6	L03-L2
22	98.6	D05-L6
23	158.7	O10-L2
24	111.9	D05-L4

BACKUP INCORE CHART "B"		
POINT #	%	Location
1	98.6	E07-L6
2	97.4	G11-L6
3	99.2	M09-L6
4	*OOS	K05-L6
5	*OOS	K05-L4
6	*OOS	L06-L2
7	*OOS	L06-L4
8	*OOS	L06-L6
9	156.2	M09-L2
10	*OOS	K05-L2
11	159.2	G11-L2
12	*OOS	E07-L2
13	158.2	C10-L2
14	98.1	C10-L6
15	*OOS	F03-L2
16	98.5	F03-L6
17	*OOS	N04-L2
18	112.1	N04-L4
19	*OOS	N04-L6
20	159.3	O06-L2
21	*OOS	O06-L4
22	*OOS	O06-L6
23	*OOS	L13-L2
24	98.8	L13-L6

Note: Listed points with values are "in calibration".

* Work Request written

POWER RANGE NI'S



CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

- Unit 1 had a transient from 100% power 4 hours ago.
- The current time is 0800.
- The Reactor Calculations package is **NOT** running.
- All other equipment is operable.
- PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosures 13.1 (Mode 1 & 2) has been completed up to page 7, Axial Power Imbalance Operating Limits.
- Minimum incore detector operability requirements have been verified met per PT/0/A/1103/019 (Backup Incore Detector System).

INITIATING CUE

The SRO directs you to:

1. Perform Axial Power Imbalance verification in accordance with PT/1/A/0600/001 (Periodic Instrument Surveillance), Enclosure 13.1 (Mode 1 & 2).
2. Determine all Tech Spec/SLC required actions and completion times, if any.

REGION II JOB PERFORMANCE MEASURE

ADM-102

CALCULATE REQUIREMENTS TO MAKEUP TO THE BWST

Alternate Path: (N/A)

Alt Path Failure: _____

Time Critical: (No)

Time Critical Criteria: _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

REGION II
JOB PERFORMANCE MEASURE

Task Title : Calculate requirements to makeup to the BWST

Task Number : N/A

Alternate Path: N/A

Time Critical: No

Validation Time: 15 min

K/A Rating(s):

System: GEN
K/A: 2.1.37
Rating: 4.3/4.6

Task Standard:

Calculate volume of CBAST and DW needed to yield the proper volume at the correct Boron concentration to makeup to the BWST.

References:

EOP Encl. 5.4 (Makeup to the BWST)
OP/0/A/1108/001 (Curves and General Information) (Rev. 109)
COLR

Tools/Equipment/Procedures Needed:

EOP Encl. 5.4 (Makeup to the BWST)
OP/0/A/1108/001 (Curves and General Information)
Calculator
Straight edge/ruler

=====

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

=====

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. NONE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

- OAC is not available
- Unit 1 shutdown and cool down in progress due to a tube rupture in the 1A SG
- SGTR Tab in progress
- Unit 1 BWST level = 38 feet
- Unit 1 BWST Boron concentration = 2600 ppm
- 1A BHUT level = 40 inches
- 1A BHUT Boron Concentration = 240 ppm
- CBAST Boron Concentration = 12,501 ppm

INITIATING CUES

The CRS instructs you to initiate EOP Encl. 5.4 (Makeup to the BWST) to determine the required volumes of CBAST and DW to begin makeup to the BWST from 1A BHUT.

You are to calculate the required volumes of CBAST and DW to fill 1A BHUT to **168 inches** and match the current BWST Boron concentration.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	1	<p>Determine current volume in 1A BHUT using <u>any</u> of the following:</p> <ul style="list-style-type: none"> • OAC graphic CS01 • BHUT Volume vs. Level Curve in OP/0/A/1108/001 (Curves and General Information) <p><u>STANDARD:</u> Refer to Enclosure 4.1, BHUT Volume vs. Level Curve in OP/0/A/1108/001 (Curves and General Information) and determine that the volume of water in the 1A BHUT:</p> <p style="padding-left: 40px;">40" ≈ 18,250 gallons (18,000 to 18,500 gal)</p> <p style="padding-left: 40px;">168" ≈ 81,000 gallons (80,750 to 81,250 gal)</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

<p style="text-align: center;">2</p>	<p style="text-align: center;">2</p>	<p>Determine volume of CBAST required per the following to yield a volume in 1A BHUT of 81,000 gals at 2600 ppm:</p> $\frac{(\text{BHUT}_{vf} \times \text{BHUT}_{cf}) - (\text{BHUT}_{vi} \times \text{BHUT}_{ci})}{\text{CBAST}_c} = \# \text{ gal of CBAST needed}$ $\frac{(80,750 \times 2,600) - (18,500 \times 240)}{12,501} = \underline{\mathbf{16,439 \text{ gal}}}$ <p>of CBAST needed</p> $\frac{(81,250 \times 2,600) - (18,000 \times 240)}{12,501} = \underline{\mathbf{16,553 \text{ gal}}}$ <p>of CBAST needed</p> <p><u>STANDARD:</u> Candidate calculates the required volumes from CBAST between: 16,439 and 16,553 gallons.</p> <p>BHUT_{vf} = Final BHUT volume (gal) 80,750 to 81,250 gals BHUT_{vi} = Initial BHUT volume (gal) 18,000 to 18,500 gals BHUT_{cf} = Final BHUT conc (ppmb) 2600 ppmb BHUT_{ci} = Initial BHUT conc (ppmb) 240 ppmb CBAST_c = CBAST conc (ppmb) 12,501 ppmb</p> <p>Note: Instructions are to fill 1A BHUT to 168" which correlates to ~81,000 gal.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
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3	2	<p>Determine volume of DW required per the following to yield a volume in 1A BHUT of 80,750 to 81,250 gals at 2600 ppm:</p> <p>BHUT_vf - BHUT_vi - # gallons CBAST needed = # gallons of DW needed</p> <p><u>81,250</u> - <u>18,000</u> - <u>16,439</u> = <u>46,811</u> gallons of DW needed</p> <p><u>80,750</u> - <u>18,500</u> - <u>16,553</u> = <u>45,697</u> gallons of DW needed</p> <p><u>STANDARD:</u> Candidate calculates the required volumes from DW between: 45,697 and 46,811 gallons</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
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TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- 1 Required for determining the correct water volumes.
- 2 These calculations are required for determining the correct water volumes.
- 3 These calculations are required for determining the correct water volumes.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

- OAC is not available
- Unit 1 shutdown and cool down in progress due to a tube rupture in the 1A SG
- SGTR Tab in progress
- Unit 1 BWST level = 38 feet
- Unit 1 BWST Boron concentration = 2600 ppm
- 1A BHUT level = 40 inches
- 1A BHUT Boron Concentration = 240 ppm
- CBAST Boron Concentration = 12,501 ppm

INITIATING CUES

The CRS instructs you to initiate EOP Encl. 5.4 (Makeup to the BWST) to determine the required volumes of CBAST and DW to begin makeup to the BWST from 1A BHUT.

You are to calculate the required volumes of CBAST and DW to fill 1A BHUT to **168 inches** and match the current BWST Boron concentration.

REGION II JOB PERFORMANCE MEASURE

ADM-201

Determine SSF RCMU Pump Operability

Alternate Path: (N/A)

Alt Path Failure: _____

Time Critical: (N/A)

Time Critical Criteria: _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

REGION II JOB PERFORMANCE MEASURE

Task Title : Determine SSF RCMU Pump Operability

Task Number : N/A

Alternate Path: N/A

Time Critical: No

Validation Time: 10 minutes

K/A Rating(s):

System: GEN
K/A: 2.2.42
Rating: 3.9/4.6

Task Standard:

Determine SSF RCMUP Operability as directed by OP/1/A/1105/014 (Control Room Instrumentation And Information) Encl. 4.1 (Mode 1 & 2). Curve on Page of Encl. 4.1 (Unit 1&2 Spent Fuel Pool Level Vs Temperature Curves) of OP/0/A/1108/001B (Spent Fuel Pool Level Vs Temperature Curves) is used to determine the RCMUP is Operable.

References:

OP/1/A/1105/014 (Control Room Instrumentation And Information), Encl. 4.1 (Mode 1 & 2)
Encl. 4.1 (Unit 1&2 Spent Fuel Pool Level Vs Temperature Curves) of OP/0/A/1108/001B (Spent Fuel Pool Level Vs Temperature Curves)

Tools/Equipment/Procedures Needed:

- OP/1/A/1105/014 (Control Room Instrumentation And Information) Encl. 4.1 (Mode 1 & 2)
- OP/0/A/1108/001B (Spent Fuel Pool Level Vs Temperature Curves) Encl. 4.1 (Unit 1&2 Spent Fuel Pool Level Vs Temperature Curves)

=====

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

=====

Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **NONE**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 at 100%
- Unit 2 was shutdown (subcritical) on 06/01 at 1900
- Current date and time: 06/13 at 2300
- Unit 2 core 2EOC26 defueling has just completed
- 2SF-1 and 2SF-2 are open
- 2SF-1 and 2SF-2 leakage = 0.0 gpm
- Spent Fuel Pool Level = - 1.8 feet (OSF LT0001; OAC points O1A2186 and O1A2187)
- Spent Fuel Pool Temperature = 120°F (OSF TT0002P)
- OP/1/A/1105/014 Encl. 4.1 (Mode 1 & 2) in progress

INITIATING CUES:

The CRS instructs you to continue with OP/1/A/1105/014 (Control Room Instrumentation and Information) Encl. 4.1 (Mode 1 & 2) starting on page 15 of 16, and determine Unit 1 SSF RCMUP Operability.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1	flow chart page 2	<p>Determine pages of Encl. 4.1 (Unit 1&2 Spent Fuel Pool Level Vs Temperature Curves) that apply.</p> <p>STANDARD: Refer to flowchart on page 2 of Encl. 4.1 (Unit 1&2 Spent Fuel Pool Level Vs Temperature Curves) of OP/0/A/1108/001B since the most recent RFO was on Unit 2 and determine that either Figure 20 or 27 is to be used.</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
2	flow chart page 2	<p>Determine appropriate curve.</p> <p>STANDARD: Determine that Figure 20 on page 27 of 35 should be utilized since alternate temperature indication is not being used per cue sheet.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
3	Figure 20	<p>Verify SFP level > specified on appropriate curve on Figure 20 (page 27 of 35).</p> <p>STANDARD: Determine that correct curve is "Day > 12 & ≤ 13". Determine from initiating cue that Spent Fuel Pool water temperature is 120°F. Determine from initiating cue that Spent Fuel Pool water level is -1.8 feet.</p> <p>Determine that SFP level is > than the appropriate curve and therefore the RCMUP is OPERABLE.</p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- 2 This step is required to determine correct curves.
- 3 This step is required to determine SSF RCMUP is operable.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- Unit 1 at 100%
- Unit 2 was shutdown (subcritical) on 06/01 at 1900
- Current date and time: 06/13 at 2300
- Unit 2 core 2EOC26 defueling has just completed
- 2SF-1 and 2SF-2 are open
- 2SF-1 and 2SF-2 leakage = 0.0 gpm
- Spent Fuel Pool Level = - 1.8 feet (0SF LT0001; OAC points O1A2186 and O1A2187)
- Spent Fuel Pool Temperature = 120°F (0SF TT0002P)
- OP/1/A/1105/014 Encl. 4.1 (Mode 1 & 2) in progress

INITIATING CUES:

The CRS instructs you to continue with OP/1/A/1105/014 (Control Room Instrumentation and Information) Encl. 4.1 (Mode 1 & 2) starting on page 15 of 16, and determine Unit 1 SSF RCMUP Operability.

REGION II JOB PERFORMANCE MEASURE

ADM-S201

DETERMINE TECH SPEC REQUIREMENTS FOR INOPERABLE PZR HEATERS

Alternate Path: (No)

Alt Path Failure: _____

Time Critical: (No)

Time Critical Criteria: _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

**REGION II
JOB PERFORMANCE MEASURE**

Task Title : Determine Tech Spec Requirements for Inoperable PZR Heaters

Task Number : N/A

Alternate Path: N/A

Time Critical: No

Validation Time: 15 minutes

K/A Rating(s):

System: GEN

K/A: 2.2.40

Rating: 3.4/4.7

Task Standard:

Determine that minimum number of PZR heaters for SSF operability are NOT operable and as a result TS 3.10.1 Condition A must be entered. The Required Action and Completion Time is to restore SSF ASW system to Operable within 7 days.

References:

Technical Specifications

Tools/Equipment/Procedures Needed:

Technical Specifications

=====
Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

=====
Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. NONE

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 2 is operating at 100% power.

Pressurizer Steam Space Leakage = 0.0 gpm

Number of SSF Bank 2 Pressurizer Heaters available = 16

INITIATING CUES:

The SM directs you to:

1. Evaluate TS 3.10 (SSF) and determine if the required Pressurizer heaters are operable.
2. As a result of your evaluation above, document all applicable Conditions, Required Actions, and Completion Times (if any) below.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		<p>Candidate will evaluate Tech Spec requirements.</p> <ul style="list-style-type: none"> • Evaluate TS B 3.10.1 for Unit 2 <p>STANDARD: Determine that:</p> <ul style="list-style-type: none"> • For Unit 2 the maximum allowed PZR Steam Space Leakage is 0.0 gpm. • Number of Bank 2 PZR heaters required is 17. • As a result the minimum number of PZR heaters for SSF operability are NOT operable. <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
2		<p>Candidate will evaluate the Table on Page B 3.10.1-4.</p> <p>STANDARD: Determine that the SSF ASW system inoperable,</p> <ul style="list-style-type: none"> • TS 3.10.1 Condition A should be entered. • Required Action and Completion Time is to restore SSF ASW system to Operable within 7 days <p>EXAMINER NOTE: <i>Normally the SSF ASW System being inoperable would render ALL of the SSF systems inoperable. However, if the SSF ASW System is inoperable due to inoperable PZR heaters, the other SSF systems remain operable.</i></p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- 1 Critical since this step is required to determine if required SSF PZR heaters are operable
- 2 Critical since this step is required to ensure compliance with Tech Specs

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Unit 2 is operating at 100% power.

Pressurizer Steam Space Leakage = 0.0 gpm

Number of SSF Bank 2 Pressurizer Heaters available = 16

INITIATING CUES:

The SM directs you to:

1. Evaluate TS 3.10 (SSF) and determine if the required Pressurizer heaters are operable.
2. As a result of your evaluation above, document all applicable Conditions, Required Actions, and Completion Times (if any) below.

REGION II JOB PERFORMANCE MEASURE

ADM-301a

Determine Posting and Access Requirements of LPI Room Based on Plan View

Alternate Path: (No)

Alt Path Failure: _____

Time Critical: (No)

Time Critical Criteria: _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

REGION II JOB PERFORMANCE MEASURE

Task Title : Determine Posting and Access Requirements of LPI Room Based on Plan View

Task Number : (N/A)

Alternate Path: (N/A)

Time Critical: No

Validation Time: 10 minutes

K/A Rating(s):

System: GEN
K/A: 2.3.12
Rating: 3.2/3.7

Task Standard:

Determine that:

1. Area should be posted as a Locked High Radiation Area
2. Continuous RP coverage is required.
3. The total accumulated annual dose at completion of job is 1383 mrem.

References:

PD-RP-ALL-0001 Radiation Worker Responsibilities
Survey Map of Room 61

Tools/Equipment/Procedures Needed:

PD-RP-ALL-0001 Radiation Worker Responsibilities
Survey Map of Room 61

=====
Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

=====
Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **NONE**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

You are a Reactor Operator. An event has occurred which resulted in a significant change in the radiological conditions in Room 61 (LPI and RBS Pumps).

Your total whole body dose this year is 1265 mrem.

INITIATING CUE

Using the survey map provided, determine the following for Room 61:

- The RP related posting(s) you would expect to encounter at the entry to Room 61
- If Continuous RP coverage is required for you to perform venting of the 1A LPI Pump
- If venting the 1A LPI pump takes three (3) hours, determine your total accumulated annual dose when the job is complete and you have exited the room based on the following:
 - 10 minutes spent at 1A LPI Pump initiating the vent
 - 5 minutes spent at 1A LPI Pump securing the vent
 - 2 hours 45 minutes spent in the LDWA

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		<p>Using the survey map provided, determine the area posting requirements.</p> <p>STANDARD: Candidate reviews the survey map and determines:</p> <ul style="list-style-type: none"> Based on an area around LPI sump pumps being 1075 mr/hr (> 1000 mr/hr, but < 500 rad/hr), the area should be posted as a Locked High Radiation Area (LHRA). <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT ___ UNSAT</p>
2		<p>Determine RP coverage required to vent the 1A LPI Pump</p> <p>STANDARD: Candidate determines that continuous RP coverage is required since the area is a LHRA.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT ___ UNSAT</p>
3		<p>Determine total accumulated annual dose after completion of job.</p> <p>STANDARD: Candidate determines the dose as a result of the venting as follows:</p> <p>.25 hours X 76 mr/hr = 19 mrem 2.75 hours X 36 mr/hr = 99 mrem 19 + 99 = 118 mrem</p> <p>Determine the total accumulated annual dose following completion of the job.</p> <p>1265 + 118 = 1383 mrem</p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT ___ UNSAT</p>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- 1 Determines General Area posting requirements for the room to be entered.
- 2 Determines RP continuous coverage requirements.
- 3 Determines total accumulated annual dose.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

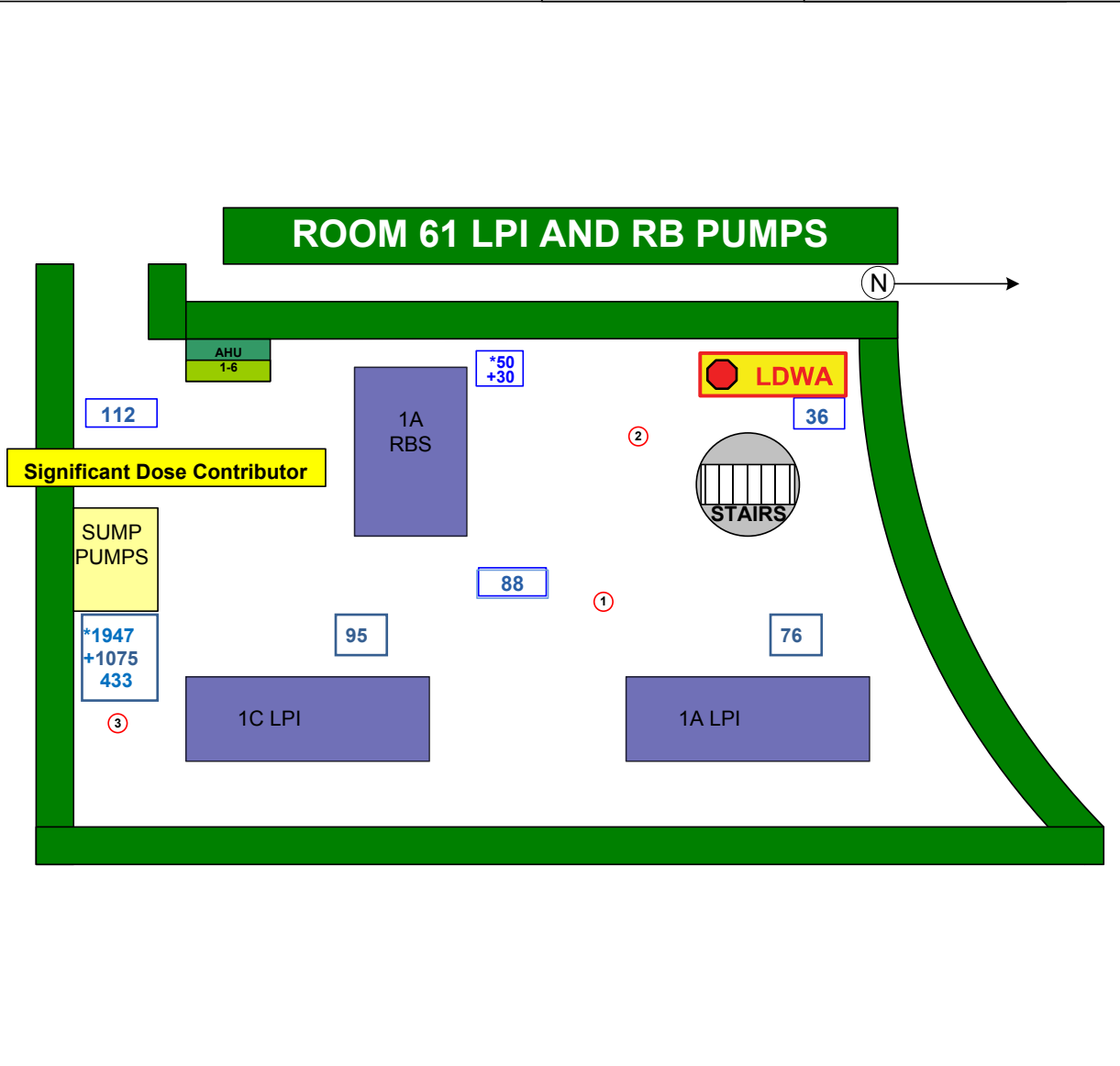
You are a Reactor Operator. An event has occurred which resulted in a significant change in the radiological conditions in Room 61 (LPI and RBS Pumps).

Your total whole body dose this year is 1265 mrem.

INITIATING CUE

Using the survey map provided, determine the following for Room 61:

- The RP related posting(s) you would expect to encounter at the entry to Room 61
- If Continuous RP coverage is required for you to perform venting of the 1A LPI Pump
- If venting the 1A LPI pump takes three (3) hours, determine your total accumulated annual dose when the job is complete and you have exited the room based on the following:
 - 10 minutes spent at 1A LPI Pump initiating the vent
 - 5 minutes spent at 1A LPI Pump securing the vent
 - 2 hours 45 minutes spent in the LDWA



Comments: CONTACT RP REGARDING ANY ATTEMPTS TO CLEAN LPI ROOM SUMP

Summary of Highest Readings

Smears

Air Samples & Wipes

- 1) 554 DPM/100 cm2 β/γ
- 2) 485 DPM/100 cm2 β/γ
- 3) 978 DPM/100 cm2 β/γ

Symbol Legend (for example only)

Dose Rate		Type: Job Coverage	
*150	Contact Reading	HS-50	Hot Spot
+75	30 cm Reading	RCA	Posting
20	General Area		Drip Bag
15	Smear	15	Wipe
15	Air Sample		

RWP: 5036
Reactor Power = 100%

Unless otherwise noted, dose rates in mrem/hr.

Surveyor: W. Walters

Approved by: N. Wriston, Date: Today

REGION II JOB PERFORMANCE MEASURE

ADM-S401

DETERMINE EMERGENCY CLASSIFICATION

Alternate Path: (No)

Alt Path Failure: _____

Time Critical: (Yes)

Time Critical Criteria: Classify event within 15 minutes

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

**REGION II
JOB PERFORMANCE MEASURE**

Task Title : Determine Emergency Classification

Task Number : N/A

Alternate Path: N/A

Time Critical: Yes (15 min).

Validation Time: 15 minutes

K/A Rating(s):

System: Gen
K/A: 2.4.38
Rating: 2.4/4.4

Task Standard:

Appropriate classification is determined within 15 minutes.

References:

RP/0/A/1000/001 (Emergency Classification)

Tools/Equipment/Procedures Needed:

RP/0/A/1000/001 (Emergency Classification)

=====
Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____
NAME

SIGNATURE / DATE

=====
Comments

SIMULATOR OPERATOR JPM SETUP INSTRUCTIONS

1. **NONE**

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

0800 Unit 1 experiences a runback and trip due to a loss of Stator Coolant.

0805 The Operator dispatched to determine if the MS Relief Valves have reseated reports that 1A SG appears to have two MSRVs damaged and still passing steam.

0806 1B SG has been isolated due to excessive heat transfer and RCS Temperature stabilized at 520°F CETCs.

0815 Calculations indicate a 1A S/G Tube leak of 240 gpm is occurring. 1RIA-40 = 1,245 cps and increasing.

The 1A S/G is being fed by the 1A MDEFWP and is being used for RCS Temperature control. Feeding the 1B S/G for Tube to Shell Delta Temperature concerns is NOT required at this time.

INITIATING CUE:

Determine the appropriate Emergency Classification.

THIS IS A TIME CRITICAL JPM

Note: Do not use Emergency Coordinator's judgment while classifying the event.

START TIME: _____

SEQ STEP	PROC STEP	DESCRIPTION	
1		<p>Classify the Event.</p> <p>STANDARD: Refer to RP/0/A/1000/01 (Emergency Classification) Encl. 4.1 (Fission Product Barrier Matrix) Determine 4 points are applicable due to "SGTR \geq 160 gpm" under Potential Loss of RCS Barriers.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT ___ UNSAT</p>
2		<p>Classify the Event.</p> <p>STANDARD: Refer to RP/0/A/1000/01 (Emergency Classification) Encl. 4.1 (Fission Product Barrier Matrix) Determine 3 points are applicable due to "Failure of secondary side of SG results in a direct opening to the environment with SG Tube Leak \geq 10 gpm in the SAME SG" under Loss of Containment Barriers. Add the points together (4 + 3) for a total of 7 points. Refer to the classifications across the bottom of Encl. 4.1 and determine a Site Area Emergency (SAE) is (7 - 10 points). 1. Classify as a Site Area Emergency. 2. Time by which classification must be declared: 0815 + 15 minutes = 0830</p> <p>Time of Classification: _____</p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT ___ UNSAT</p>

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

**SEQ
STEP #**

Explanation

- 1 This step is required for the candidate to utilize the procedure and determine the conditions meet a Site Area Emergency classification within 15 minutes.
- 2 This step is required for the candidate to utilize the procedure and determine the conditions meet a Site Area Emergency classification within 15 minutes.

CANDIDATE CUE SHEET**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)****INITIAL CONDITIONS:**

- 0800 Unit 1 experiences a runback and trip due to a loss of Stator Coolant.
- 0805 The Operator dispatched to determine if the MS Relief Valves have reseated reports that 1A SG appears to have two MSRVs damaged and still passing steam.
- 0806 1B SG has been isolated due to excessive heat transfer and RCS Temperature stabilized at 520°F CETCs.
- 0815 Calculations indicate a 1A S/G Tube leak of 240 gpm is occurring. 1RIA-40 = 1,245 cps and increasing.
- The 1A S/G is being fed by the 1A MDEFWP and is being used for RCS Temperature control. Feeding the 1B S/G for Tube to Shell Delta Temperature concerns is NOT required at this time.

INITIATING CUE:

Determine the appropriate Emergency Classification.

THIS IS A TIME CRITICAL JPM

Note: Do not use Emergency Coordinator's judgment while classifying the event.

Emergency Declaration: _____