

FINAL SUBMITTAL

**BRUNSWICK EXAM
50-325 & 50-324**

JULY 27 - AUGUST 3, 2001

FINAL AS-GIVEN JPMs FOR EACH

WALK-THROUGH TEST

SEE FINAL GRADING EXAM

Brunswick_CARB_JPMs FINAL

Facility: **BRUNSWICK**Date of Examination: **7/30-8/3/01**Examination Level (circle one): ~~RO~~ / **SRO**Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	GEN 2.1.3(3.0/3.4)	Evaluate Overtime Eligibility
	GEN 2.1.34 (2.3/2.9)	Evaluate Off-site Power Source Operability per the CO DSR
A.2	GEN 2.2.30 (3.5/3.3)	Evaluate SRM / IRM Overlap
A.3	272000/A4.05 (2.3 / 3.7)	Estimate Source Term for a Release from the Main Stack per PEP-03.6.1.
A.4	GEN 2.4.30 (2.2/3.6)	NRC Reporting Requirements - Large Break LOCA

JPM A.1.a (SRO)

Facility: BRUNSWICK

Task No: A.1.a

Task Title: Evaluate Overtime Eligibility.**Job Performance Measure No:****K/A Reference:** GEN 2.1.3 (3.0/3.4) Knowledge of shift turnover practices**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance ____ Actual Performance XXClassroom XX Simulator ____ Control Room ____ Plant**Applicant Performance:** SAT/UNSAT**Required Materials:**

None

General References:

0AP-001, Rev 9

Modified LOT-OJT-JP-201-CO1

Time Critical Task: YES/NO**Validation Time:** 10 Min.

A.1.a**Applicant Sheet**

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

TASK CONDITIONS:

The following is the schedule of 2 operators for a seven day period during the spring outage.

INITIATING CUE: Using the information in the schedule table, determine whether overtime guidelines have been violated; listing the violations (if any). Consider each case separately.

	Operator # 1	Operator #2
Monday	0700-1900	0800- 2000 Came in late, stayed to make-up time
Tuesday	0700-1900	0300-1900 (called in)
Wednesday	0700-2100 (held over; relief called in sick)	0700-1900
Thursday	1900-0700 (called in on off day)	0700-1900
Friday	1900-0100 (went home sick)	OFF
Saturday	1900-0700	0700-1900
Sunday	1900-0700	0700-1900

READ TO THE EXAMINEE

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

TASK CONDITIONS:

The following is the schedule of 2 operators for a seven day period during the spring outage.

INITIATING CUE: Using the information in the schedule table, determine whether overtime guidelines have been violated; listing the violations (if any). Consider each case separately.

	Operator # 1	Operator #2
Monday	0700-1900	0800- 2000 Came in late, stayed to make-up time
Tuesday	0700-1900	0300-1900 (called in)
Wednesday	0700-2100 (held over; relief called in sick)	0700-1900
Thursday	1900-0700 (called in on off day)	0700-1900
Friday	1900-0100 (went home sick)	OFF
Saturday	1900-0700	0700-1900
Sunday	1900-0700	0700-1900

TASK STANDARD:

Step	Description	Standard	SAT/UNSAT
1	Obtain a current revision of OAP-001	Current Revision of OAP-001 obtained	
2	Evaluate Operator 1	Determine Operator #1 exceeded: 1. >24 in 48 (wed - thur) 2. > 72 in 7 days	Critical *
4	Evaluate Operator 2	Determine Operator #2 exceeded: 1. < 8 hr break (mon - tue) 2. >16 in 24 hrs (mon - tue) 3. >24 in 48 hrs (mon - wed) 4. >72 in 7 day	Critical *

Five out of six violations must be identified to be satisfactory.

JPM A.1.b (SRO)

Facility: BRUNSWICK

Task No: A.1.b

Task Title: EVALUATE OFF-SITE POWER SOURCE OPERABILITY PER THE CO DSR
Job Performance Measure No:

K/A Reference: 262001/A2.10 (2.9/3.4)

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance XX Actual Performance
Classroom XX Simulator ___ Plant

Required Materials:

Process Computer
Calculator

General References:

2OI-03.2 Rev. 67
Unit 2 Technical Specifications
LOT-SIM-JP-201-D07

Time Critical Task: YES/NO

Validation Time: RO - 10 Min, SRO - 15 Min

A.1.b**Applicant Sheet**

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

TASK CONDITIONS:

1. You are a Unit Two (2) Reactor Operator.
2. The load dispatcher has informed the Control Room that system reserve is low.
3. The fourth Circulating Water Intake Pump has been started on Unit Two (2) per guidance of 2OP-29.0.
4. Buses Common A and B are being supplied by their respective Unit power.
5. Unit 2 is in Mode 1.

INITIATING CUE:

You are directed by the Unit SCO to determine if electrical loading is within the limits established in the CO Daily Surveillance Report (DSR), and report the required actions for Unit 2.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

1. You are a Unit Two (2) Reactor Operator.
2. The load dispatcher has informed the Control Room that system reserve is low.
3. The fourth Circulating Water Intake Pump has been started on Unit Two (2) per guidance of 2OP-29.0.
4. Buses Common A and B are being supplied by their respective Unit power.
5. Unit 2 is in Mode 1.

INITIATING CUE:

You are directed by the Unit SCO to determine if electrical loading is within the limits established in the CO Daily Surveillance Report (DSR), and report the required actions for Unit 2.

Task Standard:

Supervisor informed SAT is inoperable. If Applicant is an SRO, determine that Tech Spec actions are applicable per LCO 3.8.1. Action C.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

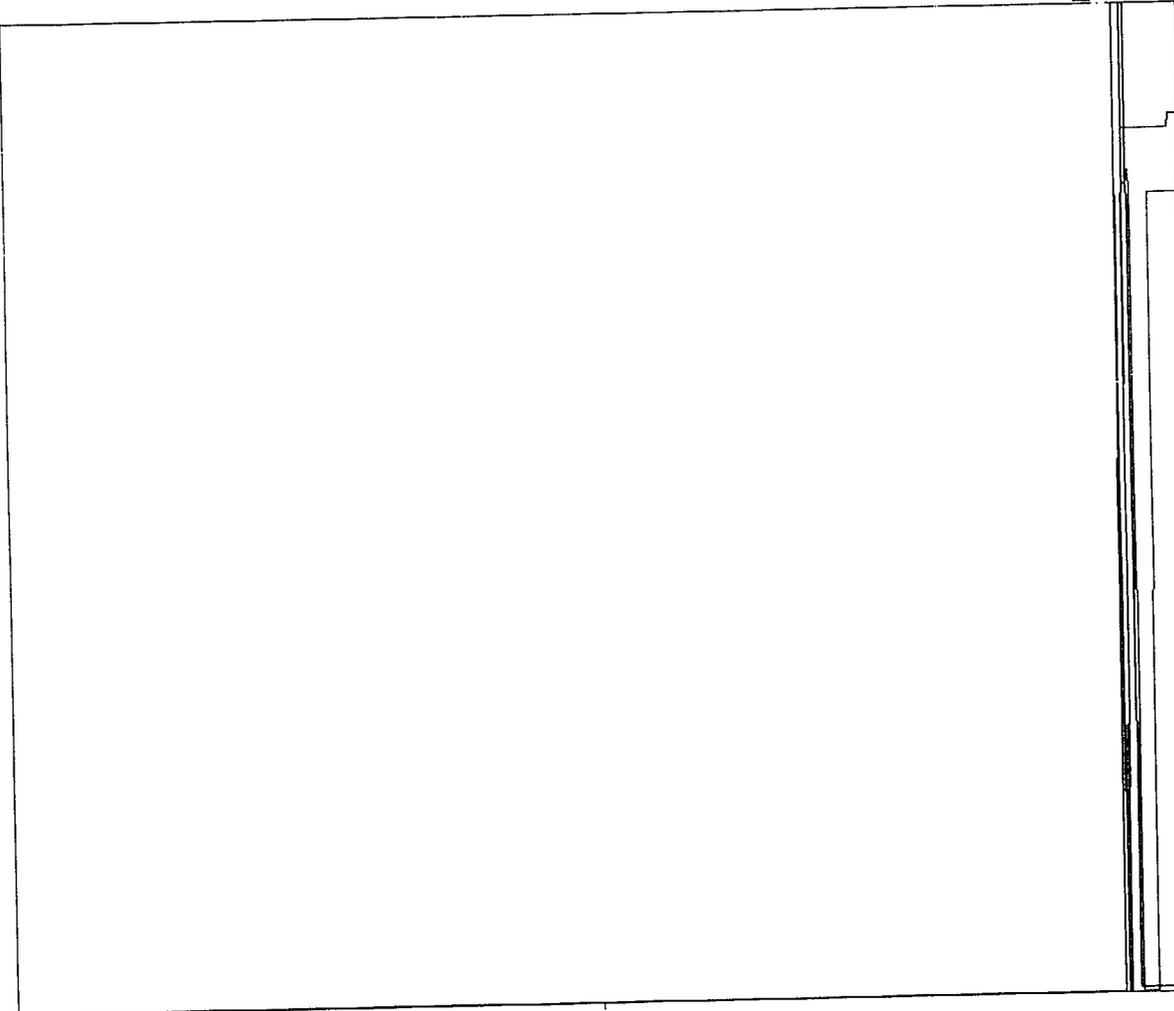
Task	Description	Standard	Sat/Unsat
1	Obtain current revision of 2OI-03.2.	Current revision of 2OI-03.2 obtained and verified if applicable.	
2	Determine Attachment 1 notes S, T, and U apply.	Determine Attachment 1 notes S, T, and U apply.	
PROMPT: When examinee demonstrates the ability to obtain computer point readings for BOP Bus amps, inform examinee that the readings are as follows: E008 (Bus 2C Amps): 1294.7			
3	Determine amps on Bus 2C. <i>NOTE: Bus 2C amps determined using computer point E008.</i>		
PROMPT: When examinee demonstrates the ability to obtain computer point readings for BOP Bus amps, inform examinee that the readings are as follows: E013 (Bus 2D Amps): 1777.3			
4	Determine amps on Bus 2D. <i>NOTE: Bus 2D amps determined using computer point E013.</i>		
PROMPT: When examinee demonstrates the ability to obtain computer point readings for BOP Bus amps, inform examinee that the readings are as follows: E037 (Common B Amps): 334.2			
5	Determine amps on Bus Common B. <i>NOTE: Bus Common A amps determined using computer point E037.</i>		
NOTE: DO NOT PROVIDE THIS TO THE STUDENT: The total of the above values is 3406.2 amps.			
PROMPT: If requested, inform examinee that the Motor Driven Fire Pump is being fed from E4 and is currently running for a PT on Unit 1 and that NSW 2B is running as indicated by the red lamp "on" on panel XU-2.			
PROMPT: If requested, indicate to examinee that NSW Pump 2A, RHR 2A, RHR 2B, CS 2A and CS 2B are all in standby as indicated by green lights at the RTGB.			
6	Determine if the following loads are running: RHR 2A or 2B. NSW 2A or 2B.	PROMPT: RHR 2A and 2B are NOT running.	

Task	Description	Standard	Sat/Unsat
		NSW 2A is NOT running and NSW 2B <u>IS</u> running.	
	CS 2A or 2B.	CS 2A and 2B are NOT running.	
	Motor Driven Fire Pump.	Motor Driven Fire Pump <u>IS</u> running.	
7	Determine total amperage limit.	Total allowable load limit is <u>3389</u> amps (3315 + 40+34).	
8	Determine current load exceeds the allowable limit and that the SAT shall be considered inoperable.	Determines total load of 3406.2 exceeds limit of 3389 and that SAT is inop.	Critical
9	Supervisor informed SAT is inoperable.		
<u>NOTE:</u> IF THE EXAMINEE IS AN RO, THE JPM IS COMPLETE AT THIS TIME.			
<u>PROMPT:</u> If the examinee is an SRO, direct examinee to determine the required actions per Technical Specifications for the current condition (no other equipment inoperable at this time)			
Determines that LCO 3.8.1 Action C applies requiring performance of SR 3.8.1.1., correct breaker alignments and indicated power availability (PT-12.8.1) within 2 hours and at least once per 12 hours thereafter.			
<u>NOTE:</u> Required Action C.2 only applies if one 4 KV E Bus can not be supplied from offsite power. It does not apply in this case.			
Determines that LCO 3.8.1 Action C.3 applies, requiring restoration of the inoperable offsite circuit to OPERABLE status within the next 72 hours.			
10	Refer to Tech Secs	Determine that Tech Spec actions are applicable per LCO 3.8.1. Action C.	Critical

TERMINATING CUE: When the RO has determined that the SAT is inoperable, and the SRO has determined the required Tech Spec actions, this JPM is complete.

300.00
1600.0
2000.0

0.00
0.00
0.00



U2ED_E037
334.20 A

U2ED_E008
1294.7 A

U2ED_E013
1777.3 A

07:34:44

08:34:34

09:34:34

OK

JPM A.2 (SRO)

Facility: BRUNSWICK

Task No: A.2

Task Title: Evaluate SRM / IRM Overlap.

Job Performance Measure No:

K/A Reference: 2.2.30 (3.5/3.3) Knowledge of RO duties in the control room during startup activities.

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance ____ Actual Performance XX
Classroom XX Simulator ____ Control Room ____ Plant

Applicant Performance: SAT/UNSAT

Required Materials:

0GP-02, Rev 70

General References:

0GP-02, Rev 70

Time Critical Task: YES/NO

Validation Time: 15 Min.

A.2 Applicant Sheet

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

TASK CONDITIONS:

1. Unit startup is in progress per OGP-02 with SRMs and IRMs fully inserted.
2. Prior to control rod withdrawal, SRM and IRM indicated readings recorded in the Rector Operating Log are as follows:

SRM Indicated Readings

A	120 cps
B	110 cps
C	140 cps
D	110 cps

IRM Indicated Readings

A	1/40, Range 1
B	1/40, Range 1
C	2/40, Range 1
D	1/40, Range 1
E	2/40, Range 1
F	1/40, Range 1
G	1/40, Range 1
H	2/40, Range 1

3. Following control rod withdrawal to criticality the following SRM and IRM count rates are observed:

SRM Indicated Readings

A	5×10^2 cps
B	5×10^4 cps
C	5×10^5 cps
D	5×10^4 cps

IRM Indicated Readings

A	5/40, Range 1
B	4/40, Range 1
C	2/40, Range 1
D	6/40, Range 1
E	3/40, Range 1
F	6/40, Range 1
G	4/40, Range 1
H	5/40, Range 1

INITIATING CUE:

Assess the above SRM and IRM indications for proper overlap and determine applicable tech spec action(s) and whether the unit startup may continue.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

- 4. Unit startup is in progress per OGP-02 with SRMs and IRMs fully inserted.
- 5. Prior to control rod withdrawal, SRM and IRM indicated readings recorded in the Rector Operating Log are as follows:

<u>SRM Indicated Readings</u>		<u>IRM Indicated Readings</u>	
A	120 cps	A	1/40, Range 1
B	110 cps	B	1/40, Range 1
C	140 cps	C	2/40, Range 1
D	110 cps	D	1/40, Range 1
		E	2/40, Range 1
		F	1/40, Range 1
		G	1/40, Range 1
		H	2/40, Range 1

- 6. Following control rod withdrawal to criticality the following SRM and IRM count rates are observed:

<u>SRM Indicated Readings</u>		<u>IRM Indicated Readings</u>	
A	5×10^2 cps	A	5/40, Range 1
B	5×10^3 cps	B	4/40, Range 1
C	5×10^4 cps	C	2/40, Range 1
D	5×10^3 cps	D	6/40, Range 1
		E	3/40, Range 1
		F	6/40, Range 1
		G	4/40, Range 1
		H	5/40, Range 1

INITIATING CUE:

Assess the above SRM and IRM indications for proper overlap and determine applicable tech spec action(s) and whether the unit startup may continue.

TASK STANDARD:

1. Determines IRMs "C" and "E" are inoperable. **(SRO ONLY)**
2. Tech Spec table 3.3.1.1-1 item 1a. not met. Per LCO 3.3.1.1 Condition A, place inoperable IRM channels in the trip condition within 12 hours. Determines tech spec surveillance requirement SR 3.3.1.1.6 can not be satisfied. **(SRO ONLY)**
3. Procedure OGP-02 Caution prior to step 5.2.18 requires a reactor shutdown and notification of reactor engineer. **(RO and SRO)**

SAT/UNSAT

JPM A.3 (SRO)

Facility: BRUNSWICK

Task No: A.3

Task Title: Estimate Source Term for a Release from the Main Stack per PEP-03.6.1.

Job Performance Measure No:

K/A Reference: 272000/A4.05 (2.3 / 3.7) - Ability to manually convert process radiation monitor readings to offsite release rates

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance ____ Actual Performance XX

Classroom XX Simulator ____ Control Room ____ Plant

Applicant Performance: SAT/UNSAT

Required Materials:

Calculator

General References:

OPEP-03.6.1 Rev. 11, Release
Estimation Based
Upon Stack/Vent
Readings.

LOT-OJT-JP-301-A09

Time Critical Task: YES/NO

Validation Time: 15 Min.

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

TASK CONDITIONS:

1. A Loss of Coolant Accident on Unit One (1) has required declaration of a General Emergency. Unit One (1) has initiated Drywell Venting actions due to high Containment Pressure per EOP-01-SEP-01.
2. Off-Site Dose Projection is required. ERFIS is not available in the EOF, and the Radiological Control Manager has requested the Control Room to determine the Source Term for the Main Stack Release.
3. The Main Stack flow transmitter (2-VA-FT-3359) is not operational. Main Stack flow indication is not available.
4. Unit Two (2) has been placed in Hot Shutdown. Unit Two (2) specific releases to the Main Stack are SJAE A and Seal Steam Exhauster A.
5. Unit One (1) releases to the Main Stack consist of two drywell purge fans in operation and one Standby Gas Train (A) in operation.
6. Plant common releases to the Main Stack consist of AOG Building Ventilation and one Radwaste Exhaust Fan (B) in operation.
7. Recorder 2-D12-RR-4599 indicates the following:
 - Low Range (green) Pen is pegged high
 - Mid Range (blue) Pen indicates $3.3E-02$ (scale is $1E-4$ to $1E+2$)
 - High Range (red) Pen is pegged low.

INITIATING CUE:

You are directed by the Shift Superintendent to estimate the Source Term release from the Main Stack per PEP-03.6.1, and inform him of the Source Term estimation.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

1. A Loss of Coolant Accident on Unit One (1) has required declaration of a General Emergency. Unit One (1) has initiated Drywell Venting actions due to high Containment Pressure per EOP-01-SEP-01.
2. Off-Site Dose Projection is required. ERFIS is not available in the EOF, and the Radiological Control Manager has requested the Control Room to determine the Source Term for the Main Stack Release.
3. The Main Stack flow transmitter (2-VA-FT-3359) is not operational. Main Stack flow indication is not available.
4. Unit Two (2) has been placed in Hot Shutdown. Unit Two (2) specific releases to the Main Stack are SJAE A and Seal Steam Exhauster A.
5. Unit One (1) releases to the Main Stack consist of two drywell purge fans in operation and one Standby Gas Train (A) in operation.
6. Plant common releases to the Main Stack consist of AOG Building Ventilation and one Radwaste Exhaust Fan (B) in operation.
7. Recorder 2-D12-RR-4599 indicates the following:
 - Low Range (green) Pen is pegged high
 - Mid Range (blue) Pen indicates $3.3E-02$ (scale is $1E-4$ to $1E+2$)
 - High Range (red) Pen is pegged low.

INITIATING CUE:

You are directed by the Shift Superintendent to estimate the Source Term release from the Main Stack per PEP-03.6.1, and inform him of the Source Term estimation.

Task Standard:

Step	Description	Standard	SAT/UNSAT
1	Obtain current revision of PEP-03.6.1	Current Revision of OPEP03.6.1 obtained	
2	Refer to Attachment 1 for source term calculation from the plant stack and determine calculation per Attachment 1 is required	Determined that calculation of main stack source term is required by PEP-03.6.1 Attachment 1	
3	Enter time on Attachment 1	Time is entered on Attachment 1	
<p>NOTE: If requested, inform applicant that the digital readout indicates 3.31E-2</p>			
4	Obtain monitor readings from 2-D12-RR-4599 (on cue sheet)	Record 2-D12-RR-4599 reading as 3.3E-2 on Attachment 1	
5	<p>Estimate Stack Flow using Attachment 6 as follows:</p> <p>Unit 1 flow determined to be (DW Purge A + DW Purge B + SBTG A) 17,900 CFM</p> <p>Unit 2 flow determined to be 950 cfm (SJA E A + SPE A)</p> <p>Common flow determined to be 41,200 cfm (RW Fan B + AOG Vent)</p> <p>Total Stack flow estimated at (Unit 1 + Unit 2 + Common) 60,050 cfm</p>	<p>Unit 1 flow calculated and recorded as 17,900 cfm on attachment 6</p> <p>Unit 2 flow determined to be 950 cfm and recorded on Attachment 6</p> <p>Common flow determined and recorded as 41,200 cfm on attachment 6</p> <p>Total Stack flow estimate recorded as 60,050 cfm on attachment 6</p>	
6	Determine Release Rate (3.3E-2 X 60,050 X 472 = 9.35 E5 _C/sec)	Release Rate from Main Stack determined to be 9.3-9.4 E5 _C/sec	Critical

JPM A.4 (SRO)

Facility: BRUNSWICK

Task No: A.4

Task Title: NRC Reporting Requirements - Large Break LOCA**Job Performance Measure No:****K/A Reference:** GEN 2.4.30 (2.2/3.6) Knowledge of which events related to system operations/status should be reported to outside agencies.**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance ____ Actual Performance XXClassroom XX Simulator ____ Control Room ____ Plant**Applicant Performance:** SAT/UNSAT**Required Materials:****General References:**

OOI-01.07, Rev 10

SRR-OJT-JP-201-D09

Time Critical Task: YES/NO**Validation Time:** 10 Min.

A.4 Applicant Sheet

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

TASK CONDITIONS:

1. Unit One (1) was operating at rated power.
2. A line break in the drywell resulted in a Reactor scram. HPCI/RCIC initiated but were unable to maintain Reactor level. No circuit alterations were performed for HPCI or RCIC. Reactor level dropped below the Top of Active Fuel requiring Emergency Depressurization. Low pressure ECCS initiated and restored Reactor level to the normal band.
3. Current plant conditions are:

Reactor Level	+180"
Reactor Pressure	25 psig
Drywell Pressure	10 psig
4. Core Spray is injecting to maintain Reactor Level. One RHR Loop is operating in drywell and suppression chamber spray. One Loop of RHR is operating in suppression pool cooling and spray.
5. All systems functioned as designed during the event. There are no significant releases of radioactivity in excess of 10CFR20 limits. There are no indications of fuel failure.

INITIATING CUE:

You are directed by the Shift Superintendent to determine reportability of this event per OI-01.07, complete Attachment 1, Reportability Evaluation Checklist, and inform the Shift Superintendent when Attachment 1 is completed.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

1. Unit One (1) was operating at rated power.
2. A line break in the drywell resulted in a Reactor scram. HPCI/RCIC initiated but were unable to maintain Reactor level. No circuit alterations were performed for HPCI or RCIC. Reactor level dropped below the Top of Active Fuel requiring Emergency Depressurization. Low pressure ECCS initiated and restored Reactor level to the normal band.
3. Current plant conditions are:

Reactor Level	+180"
Reactor Pressure	25 psig
Drywell Pressure	10 psig
4. Core Spray is injecting to maintain Reactor Level. One RHR Loop is operating in drywell and suppression chamber spray. One Loop of RHR is operating in suppression pool cooling and spray.
5. All systems functioned as designed during the event. There are no significant releases of radioactivity in excess of 10CFR20 limits. There are no indications of fuel failure.

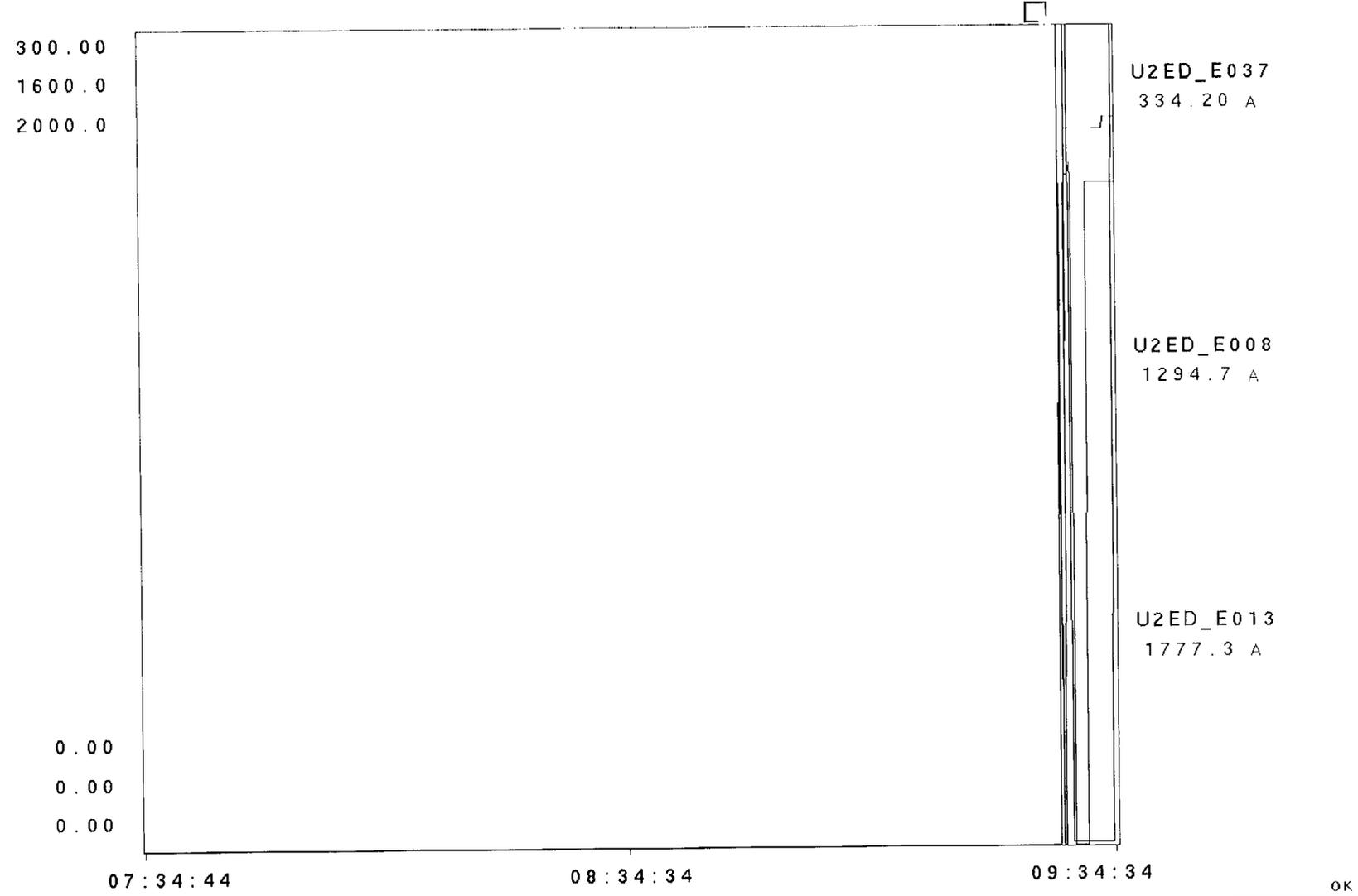
INITIATING CUE:

You are directed by the Shift Superintendent to determine reportability of this event per OI-01.07, complete Attachment 1, Reportability Evaluation Checklist, and inform the Shift Superintendent when Attachment 1 is completed.

PERFORMANCE CHECKLIST

	STANDARD	SAT/UNSAT
1.	Current revision of OI-01.07 obtained.	
2.	The following four hour reportability items are checked yes: a. 2.2 b. 2.3 c. 2.4	
3	The Following eight hour reportability items are checked yes: d. 3.1 e. 3.3.1 f. 3.3.2 g. 3.3.3 h. 3.3.4 i. 3.3.5 j. 3.3.6	
4.	NO 24 hour reportability items	
5.	Event is determined to be 4 hour reportable.	Critical
6.	Shift Superintendent informed of results.	

Pass/fail criteria: Applicant must get step 5 correct; AND must get 10 of the 12 items correct on the reportability evaluation check list.



Facility: **BRUNSWICK** Date of Examination: 7/30-8/3/01
 Examination Level (circle one): RO / SRO Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	GEN 2.1.3(3.0/3.4)	Evaluate Overtime Eligibility
	GEN 2.1.7 (3.7/4.4)	Evaluate Off-site Power Source Operability per the CO DSR
A.2	GEN 2.2.30 (3.5/3.3)	Evaluate SRM / IRM Overlap
A.3	GEN 2.3.4 (2.5/3.1)	Calculate Worker Stay Time
A.4	GEN 2.3.4 (3.0/3.5)	Determine Communication Methods for E-Plan Activation

JPM A.1.a (RO)

Facility: BRUNSWICK

Task No: A.1.a

Task Title: Evaluate Overtime Eligibility.

Job Performance Measure No:

K/A Reference: GEN 2.1.3 (3.0/3.4) Knowledge of shift turnover practices

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance ___ Actual Performance XX

Classroom XX Simulator ___ Control Room ___ Plant

Applicant Performance: SAT/UNSAT

Required Materials:

None

General References:

OAP-001, Rev 9

Modified LOT-OJT-JP-201-

CO1

Time Critical Task: YES/NO

Validation Time: 10 Min.

A.1.a Applicant Sheet

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

TASK CONDITIONS:

The following is the schedule of 2 operators for a seven day period during the spring outage.

INITIATING CUE: Using the information in the schedule table, determine whether overtime guidelines have been violated; listing the violations (if any). Consider each case separately.

	Operator # 1	Operator #2
Monday	0700-1900	0800- 2000 Came in late, stayed to make-up time
Tuesday	0700-1900	0300-1900 (called in)
Wednesday	0700-2100 (held over; relief called in sick)	0700-1900
Thursday	1900-0700 (called in on off day)	0700-1900
Friday	1900-0100 (went home sick)	OFF
Saturday	1900-0700	0700-1900
Sunday	1900-0700	0700-1900

READ TO THE EXAMINEE

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Wednesday	0700-2100 (held over; relief called in sick)	0700-1900
Thursday	1900-0700 (called in on off day)	0700-1900
Friday	1900-0100 (went home sick)	OFF
Saturday	1900-0700	0700-1900
Sunday	1900-0700	0700-1900

Task Standard:

Step	Description	Standard	SAT/UNSAT
1	Obtain a current revision of OAP-001	Current Revision of OAP-001 obtained	
2	Evaluate Operator 1	Determine Operator #1 exceeded: 1. >24 in 48 (wed - thur) 2. > 72 in 7 days	Critical *
4	Evaluate Operator 2	Determine Operator #2 exceeded: 1. < 8 hr break (mon - tue) 2. >16 in 24 hrs (mon - tue) 3. >24 in 48 hrs (mon - wed) 4. >72 in 7 day	Critical *

Five out of six violations must be identified to be satisfactory.

JPM A.1.b (RO)

Facility: BRUNSWICK

Task No: A.1.b

Task Title: EVALUATE OFF-SITE POWER SOURCE OPERABILITY PER THE CO DSR
Job Performance Measure No:

K/A Reference: 262001/A2.10 (2.9/3.4)

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance	<u>XX</u>	Actual Performance	
Classroom	<u>XX</u>	Simulator	___
		Plant	

Required Materials:
Process Computer
Calculator

General References:

2OI-03.2 Rev. 67
Unit 2 Technical Specifications
LOT-SIM-JP-201-D07

Time Critical Task: YES/NO

Validation Time: RO - 10 Min, SRO - 15 Min

A.1.b

Applicant Sheet

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

TASK CONDITIONS:

1. You are a Unit Two (2) Reactor Operator.
2. The load dispatcher has informed the Control Room that system reserve is low.
3. The fourth Circulating Water Intake Pump has been started on Unit Two (2) per guidance of 2OP-29.0.
4. Buses Common A and B are being supplied by their respective Unit power.
5. Unit 2 is in Mode 1.

INITIATING CUE:

You are directed by the Unit SCO to determine if electrical loading is within the limits established in the CO Daily Surveillance Report (DSR), and report the required actions for Unit 2.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

1. You are a Unit Two (2) Reactor Operator.
2. The load dispatcher has informed the Control Room that system reserve is low.
3. The fourth Circulating Water Intake Pump has been started on Unit Two (2) per guidance of 2OP-29.0.
6. Buses Common A and B are being supplied by their respective Unit power.
7. Unit 2 is in Mode 1.

INITIATING CUE:

You are directed by the Unit SCO to determine if electrical loading is within the limits established in the CO Daily Surveillance Report (DSR), and report the required actions for Unit 2.

Task Standard:

Supervisor informed SAT is inoperable. If Applicant is an SRO, determine that Tech Spec actions are applicable per LCO 3.8.1. Action C.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

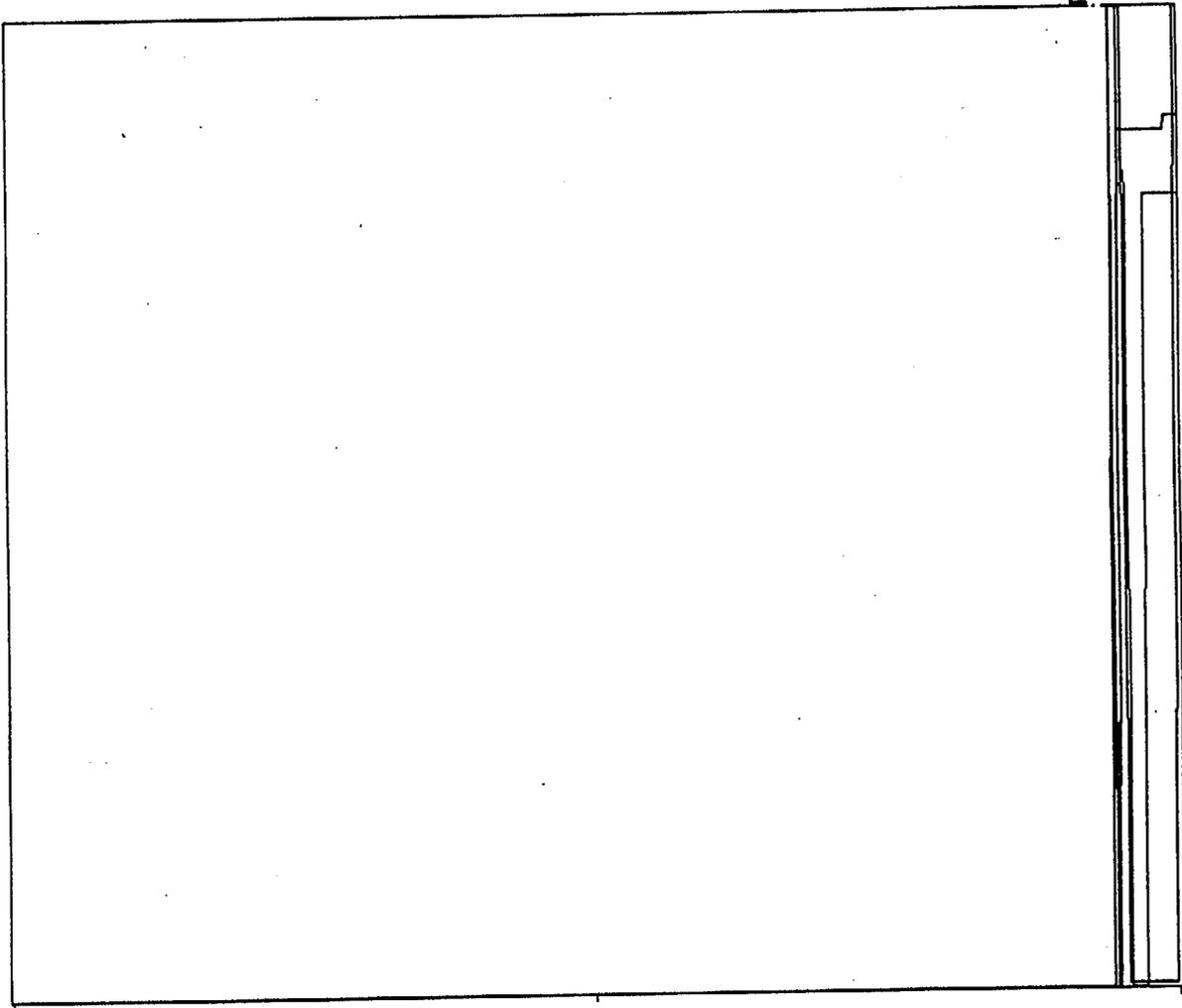
Task	Description	Standard	Sat/Unsat
1	Obtain current revision of 2OI-03.2.	Current revision of 2OI-03.2 obtained and verified if applicable.	
2	Determine Attachment 1 notes S, T, and U apply.	Determine Attachment 1 notes S, T, and U apply.	
PROMPT: When examinee demonstrates the ability to obtain computer point readings for BOP Bus amps, inform examinee that the readings are as follows: E008 (Bus 2C Amps): 1294.7			
3	Determine amps on Bus 2C. <i>NOTE: Bus 2C amps determined using computer point E008.</i>		
PROMPT: When examinee demonstrates the ability to obtain computer point readings for BOP Bus amps, inform examinee that the readings are as follows: E013 (Bus 2D Amps): 1777.3			
4	Determine amps on Bus 2D. <i>NOTE: Bus 2D amps determined using computer point E013.</i>		
PROMPT: When examinee demonstrates the ability to obtain computer point readings for BOP Bus amps, inform examinee that the readings are as follows: E037 (Common B Amps): 334.2			
5	Determine amps on Bus Common B. <i>NOTE: Bus Common A amps determined using computer point E037.</i>		
NOTE: DO NOT PROVIDE THIS TO THE STUDENT: The total of the above values is 3406.2 amps.			
PROMPT: If requested, inform examinee that the Motor Driven Fire Pump is being fed from E4 and is currently running for a PT on Unit 1 and that NSW 2B is running as indicated by the red lamp "on" on panel XU-2.			
PROMPT: If requested, indicate to examinee that NSW Pump 2A, RHR 2A, RHR 2B, CS 2A and CS 2B are all in standby as indicated by green lights at the RTGB.			
6	Determine if the following loads are running: RHR 2A or 2B.	PROMPT: RHR 2A and 2B are NOT running.	

Task	Description	Standard	Sat/Unsat
	NSW 2A or 2B.	NSW 2A is NOT running and NSW 2B <u>IS</u> running.	
	CS 2A or 2B.	CS 2A and 2B are NOT running.	
	Motor Driven Fire Pump.	Motor Driven Fire Pump <u>IS</u> running.	
7	Determine total amperage limit.	Total allowable load limit is <u>3389</u> amps (3315 + 40+34).	
8	Determine current load exceeds the allowable limit and that the SAT shall be considered inoperable.	Determines total load of 3406.2 exceeds limit of 3389 and that SAT is inop.	Critical
9	Supervisor informed SAT is inoperable.		
<p>NOTE: IF THE EXAMINEE IS AN RO, THE JPM IS COMPLETE AT THIS TIME.</p> <p>PROMPT: If the examinee is an SRO, direct examinee to determine the required actions per Technical Specifications for the current condition (no other equipment inoperable at this time)</p> <p>Determines that LCO 3.8.1 Action C applies requiring performance of SR 3.8.1.1., correct breaker alignments and indicated power availability (PT-12.8.1) within 2 hours and at least once per 12 hours thereafter.</p> <p>NOTE: Required Action C.2 only applies if one 4 KV E Bus can not be supplied from offsite power. It does not apply in this case.</p> <p>Determines that LCO 3.8.1 Action C.3 applies, requiring restoration of the inoperable offsite circuit to OPERABLE status within the next 72 hours.</p>			
10	Refer to Tech Secs	Determine that Tech Spec actions are applicable per LCO 3.8.1. Action C.	Critical

TERMINATING CUE: When the RO has determined that the SAT is inoperable, and the SRO has determined the required Tech Spec actions, this JPM is complete.

300.00
 1600.0
 2000.0

 0.00
 0.00
 0.00



U2ED_E037
 334.20 A

U2ED_E008
 1294.7 A

U2ED_E013
 1777.3 A

07:34:44

08:34:34

09:34:34

OK

JPM A.2 (RO)

Facility: BRUNSWICK**Task No:** A.2**Task Title:** Evaluate SRM / IRM Overlap.**Job Performance Measure No:****K/A Reference:** 2.2.30 (3.5/3.3) Knowledge of RO duties in the control room during startup activities.**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance ___ Actual Performance XX
Classroom XX Simulator ___ Control Room ___ Plant**Applicant Performance:** SAT/UNSAT**Required Materials:**

OGP-02, Rev 70

General References:

OGP-02, Rev 70

Time Critical Task: YES/NO**Validation Time:** 15 Min.

A.2 Applicant Sheet

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

TASK CONDITIONS:

1. Unit startup is in progress per OGP-02 with SRMs and IRMs fully inserted.
2. Prior to control rod withdrawal, SRM and IRM indicated readings recorded in the Reactor Operating Log are as follows:

SRM Indicated Readings

A	120 cps
B	110 cps
C	140 cps
D	110 cps

IRM Indicated Readings

A	1/40, Range 1
B	1/40, Range 1
C	2/40, Range 1
D	1/40, Range 1
E	2/40, Range 1
F	1/40, Range 1
G	1/40, Range 1
H	2/40, Range 1

3. Following control rod withdrawal to criticality the following SRM and IRM count rates are observed:

SRM Indicated Readings

A	5×10^2 cps
B	5×10^4 cps
C	5×10^5 cps
D	5×10^4 cps

IRM Indicated Readings

A	5/40, Range 1
B	4/40, Range 1
C	2/40, Range 1
D	6/40, Range 1
E	3/40, Range 1
F	6/40, Range 1
G	4/40, Range 1
H	5/40, Range 1

INITIATING CUE:

Assess the above SRM and IRM indications for proper overlap and determine applicable tech spec action(s) and whether the unit startup may continue.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

- Unit startup is in progress per OGP-02 with SRMs and IRMs fully inserted.
- Prior to control rod withdrawal, SRM and IRM indicated readings recorded in the Rector Operating Log are as follows:

SRM Indicated Readings

A	120 cps
B	110 cps
C	140 cps
D	110 cps

IRM Indicated Readings

A	1/40, Range 1
B	1/40, Range 1
C	2/40, Range 1
D	1/40, Range 1
E	2/40, Range 1
F	1/40, Range 1
G	1/40, Range 1
H	2/40, Range 1

- Following control rod withdrawal to criticality the following SRM and IRM count rates are observed:

SRM Indicated Readings

A	5×10^2 cps
B	5×10^3 cps
C	5×10^4 cps
D	5×10^3 cps

IRM Indicated Readings

A	5/40, Range 1
B	4/40, Range 1
C	2/40, Range 1
D	6/40, Range 1
E	3/40, Range 1
F	6/40, Range 1
G	4/40, Range 1
H	5/40, Range 1

INITIATING CUE:

Assess the above SRM and IRM indications for proper overlap and determine applicable tech spec action(s) and whether the unit startup may continue.

TASK STANDARD:

1. Determines IRMs "C" and "E" are inoperable. **(SRO ONLY)**
2. Tech Spec table 3.3.1.1-1 item 1a. not met. Per LCO 3.3.1.1 Condition A, place inoperable IRM channels in the trip condition within 12 hours. Determines tech spec surveillance requirement SR 3.3.1.1.6 can not be satisfied. **(SRO ONLY)**
3. Procedure OGP-02 Caution prior to step 5.2.18 requires a reactor shutdown and notification of reactor engineer. **(RO and SRO)**

SAT/UNSAT

JPM A.3 (RO)

Facility: BRUNSWICK

Task No: A.3

Task Title: Calculate Worker Stay Time**Job Performance Measure No:****K/A Reference:** GEN 2.3.4 (2.5/3.1) Knowledge of radiation exposure limits and contamination control / including permissible levels in excess of those authorized.**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance ____ Actual Performance XX
Classroom XX Simulator ____ Control Room ____ Plant**Applicant Performance:** SAT/UNSAT**Required Materials:**

Calculator

Time Critical Task: YES/NO**General References:****Validation Time:** 20 Min.

A.3 Applicant Sheet

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

TASK CONDITIONS:

After Unit One refueling outage the 1B RWCU pump requires maintenance on the north end of the pump. Two mechanics have been assigned the task. Listed below is the workers accumulated yearly dose following the refueling outage.

Worker	Description	Dose
1	CP&L Employee whose doses (CP&L and non-CP&L) for the current are known	1800 mrem TEDE
2	New CP&L Employee whose CP&L dose for the current year is known. Non-CP&L dose has not yet been determined	350 mrem TEDE
3	Vendor representative whose CP&L dose for the year is known. Non-CP&L dose has not yet been determined	400 mrem TEDE

INITIATING CUE:

Using the survey map provided calculate how long each worker may remain in the area to perform the maintenance before reaching the administrative exposure limits. Assume no dose is received in transit to the work area.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

After Unit One refueling outage the 1B RWCU pump requires maintenance on the north end of the pump. Two mechanics have been assigned the task. Listed below is the workers accumulated yearly dose following the refueling outage.

Worker	Description	Dose
1	CP&L Employee whose doses (CP&L and non-CP&L) for the current are known	1800 mrem TEDE
2	New CP&L Employee whose CP&L dose for the current year is known. Non-CP&L dose has not yet been determined	350 mrem TEDE
3	Vendor representative whose CP&L dose for the year is known. Non-CP&L dose has not yet been determined	400 mrem TEDE

INITIATING CUE:

Using the survey map provided calculate how long each worker may remain in the area to perform the maintenance before reaching the administrative exposure limits. Assume no dose is received in transit to the work area.

Task Standard:

Each Maintenance workers maximum stay time calculated.

Step	Description	Standard	SAT/UNSAT
0	Obtain copy of Radiation Control and Protection Manual		
1	Determine stay time for worker #1	2000 mrem admin limit - 1800 mrem = 200 mrem $200\text{mrem}/45\text{ mrem/hr} = 4.44\text{ hrs}$	Critical
2	Determine stay time for worker #2	500 mrem admin limit - 350 mrem = 150 mrem $150\text{ mrem}/45\text{ mrem/hr} = 3.33\text{ hrs}$	Critical
3	Determine stay time for worker #3	500 mrem - 400 mrem = 100 mrem $100\text{ mrem}/45\text{ mrem/hr} = 2.22\text{ hrs}$	Critical

JPM A.4 (RO)

Facility: BRUNSWICK

Task No: A.4

Task Title: Determine Communication Methods for E-Plan Activation**Job Performance Measure No:****K/A Reference:** GEN 2.3.4 (3.0/3.5) Knowledge of communications procedures associated with EOP implementation.**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance ____ Actual Performance XXClassroom XX Simulator ____ Control Room ____ Plant**Applicant Performance:** SAT/UNSAT**Required Materials:****General References:**

OPEP-03.1.3

OPEP-Appendix A

Time Critical Task: YES/NO**Validation Time:** 10 Min.

A.4 Applicant Sheet

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

TASK CONDITIONS:

You are an extra licensed operator assigned to Unit 2 when, at 0200, an Alert is declared due to a tornado striking inside protected area resulting in major damage to structures housing safety-related systems. In addition to structural damage, both units have tripped off-line and a number of electrical problems have been identified, including inoperability of the following:

- The Emergency Notification System
- The Selective Signaling System
- The BEN System
- Commercial Telephone lines

INITIATING CUE:

The Shift Superintendent has prepared the appropriate notification forms and has directed you to make notifications to the State and Counties, the Nuclear Regulatory Commission, and to initiate Emergency Response Organization callout in accordance with the appropriate OPEP.

For each of these tasks, identify the way you would make the specified notification and, where appropriate, the phone number you would use.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

You are an extra licensed operator assigned to Unit 2 when, at 0200, an Alert is declared due to a tornado striking inside protected area resulting in major damage to structures housing safety-related systems. In addition to structural damage, both units have tripped off-line and a number of electrical problems have been identified, including inoperability of the following:

- The Emergency Notification System
- The Selective Signaling System
- The BEN System
- Commercial Telephone lines

INITIATING CUE:

The Shift Superintendent has prepared the appropriate notification forms and has directed you to make notifications to the State and Counties, the Nuclear Regulatory Commission, and to initiate Emergency Response Organization callout in accordance with the appropriate OPEP.

For each of these tasks, identify the way you would make the specified notification and, where appropriate, the phone number you would use.

TASK STANDARD:

Identify the following methods and phone numbers:

State and Counties: VHF Radio (no phone or channel number)

NRC: Cellular or satellite phone - 301-816-5100

ERO Callout: Cellular or satellite phone - 754-1098

Facility: **BRUNSWICK** Date of Examination: **7/30-8/3/01**
 Exam Level (circle one): **RO / SRO(I) / SRO(U)** Operating Test No.:
1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
1. Transfer RPS Bus B From Normal to Alternate Power (SROU)	M,S,A	7
2. Place The Master Feedwater Controller In Service Per GP-02 (SROU)	M,S,A	2
3. Emergency Equalization Around MSIV's - Anticipate Emergency Depressurization (SROU)	D,C,L	3
4. Establish UAT Backfeed	D,S	6
5. HPCI Start Using the "Hard Card" - Steam Line Break With Auto Isolation Failure	D,S,A	4
6. Recirculation Pump Start - Recirculation Pump Speed Control Failure (pressure control)	D,S,A	1
7. Install Circuit Alterations For Drywell Cooling Per AOP-36.2	D,C	5

B.2 Facility Walk-Through

1. Control Room Evacuation - AOP-32 - Scram and MSIV Closure From Outside the Control Room (SROU)	D, R	1
2. Resetting a RCIC Mechanical Overspeed Trip (SROU)	D	4
3. Perform Actions Associated With Fires - Aligning the Fire Protection Alternate Water Supply	D	8

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

JPM B.1.a

B.1.a Applicant Sheet

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

TASK CONDITIONS:

1. An RPS MG Set B spurious trip has occurred.
2. No scram signal is present on RPS Bus A.
3. No Tracking LCO exist on RPS EPA Breakers.

INITIATING CUE:

The Unit SCO has directed that you energize RPS Bus B from the alternate source per OP-03 and inform him when the applicable procedure section is complete.

Facility: BRUNSWICK

Task No: B.1.a

Task Title: Transfer RPS Bus B From Normal to Alternate Power
Job Performance Measure No:**K/A Reference:** 212000/A2.02 (3.7, 3.9)**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance __ Actual Performance XX
Classroom __ Simulator XX Plant**READ TO THE EXAMINEE**

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

Initiating Cue:

1. An RPS MG Set B spurious trip has occurred.
2. No scram signal is present on RPS Bus A.
3. No Tracking LCO exist on RPS EPA Breakers.

The Unit SCO has directed that you energize RPS Bus B from the alternate source per OP-03 and inform him when the applicable procedure section is complete.

Task Standard:

Places RPS Bus B on alternate power supply, identifies ATWS as a result of Bus A failure, and scrams reactor.

Applicant Performance: SAT/UNSAT

Initial Conditions:

IC - 11
Rx. Pwr. - 100%
Core Age - BOC
RPS MG Set/Bus B tripped and initial plant response complete.

System	Tag	Title	Value
MI	IAEPAALT	RPS ALT EPA BKRS	TRIPPED
ED	IBZNORM	RPS ALT POWER	E8 - ALT

1. Trip RPS MG Set B via Malfunction, MF, RP004F, RPS B MG Set TRIP.
2. Perform necessary actions to stabilize the plant following the loss of RPS Bus B.
3. Acknowledge alarms.
4. RPS ALT Supply EPA breakers #5 and #6 and RPS ALT POWER SOURCE are positioned as required via Remote Functions when requested.
5. Automatic scram prevented, manual scram possible.

Required Materials:
NONE

General References:
2OP-03.0, Rev. 37
Modified LOR-SIM-JP-003-AO3

Time Critical Task: YES/NO

Validation Time: 10 Min.

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
1	Obtain current revision of 2OP-03	Current revision of 2OP-03 is referenced.	
2	Determine RPS Alternate Power source must be transferred.	Recognize RPS Alternate Power Source must be transferred to ALTERNATE (2E8).	

NOTE:

Applicant may direct AO to perform per procedure Section 8.5 rather than differentiate steps 3,4, and 5.

3	Contact AO to open EPA #6 and EPA #5 breakers.	AO directed to place EPA breakers #6 and #5 to OFF.	
4	Direct AO to transfer RPS Alternate Power Throwover Switch to Alternate.	Direct transfer of RPS Alternate Power Throwover Switch to Alternate.	Critical
5	Direct AO to Close EPA breakers #5 and #6 per OP-03.	Direct EPA breakers #5 and #6 CLOSED per OP-03.	Critical
6	Verify white ALT light above the RPS Power Source Select Switch is on.	RPS ALT Power available (center white light) on Panel P610 is on. Proc step 8.5.10	

NOTE:

After RPS ALT power is restored, student must refer to Section 8.2 of OP-03 to transfer power for RPS B to Alternate.

PROMPT:

Inform the examinee that OP-03.0 Attachment 10 will be completed by other operators

NOTE:

With RPS B deenergized, the MSIV SOL. COIL DC lights on Panel H12-P622 for the Inboard MSIVs, B21-F022A-D, and the MSIV SOL. COIL AC lights on Panel H12-P623 for the Outboard MSIVs, B21-F028A-D, will be extinguished. Likewise the Inboard MSIV LOGIC DC and Outboard MSIV LOGIC AC lights on panel H12-P601 will be extinguished. These lights should illuminate when RPS B is energized AND the Group 1 PCIS LOGIC has been reset.

7	PLACE RPS POWER SOURCE SELECT SWITCH on P610 to ALT B.	RPS POWER SOURCE SELECT SWITCH on P610 placed to ALT B. proc. step:8.2.2.5	Critical
8	Reset APRM setdowns	APRM SETDOWN TRIP SET-DN trips reset. White alarm lights not lit, Panel P603, APRM section. Proc step 8.2.2.6	Critical

PROMPT:

Fail 1 Div 1 APRM Upscale with ATWS (allow manual SCRAM)

9	Identify RPS Bus A failure		
10	Identify failure of reactor to automatically scram	Declares ATWS	Critical

Task	Description	Standard	Sat/Unsat
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NOTE:

At this point applicant may stop to consider resetting the scram groups 1/4 and 2/3, as it is the next task in the procedure. Choosing to reset the scrams vice scrambling the reactor on indication of an ATWS is grounds for an automatic UNSAT for this JPM.

11	Manually scram reactor perform RO duties for scram	Verifies shut down reactor, etc	Critical
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TERMINATING CUE:

When immediate post-trip actions are complete, the JPM may be terminated:

- Trip the turbine
- Mode switch to S/D (Terminate)
- Master FW controller setdown to 170"

JPM B.1.b

B.1.b Applicant Sheet

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

TASK CONDITIONS:

1. Unit Two startup is in progress per GP-02.
2. Reactor Feedpump discharge pressure is greater than 900 psig.
3. GP-02 is completed up to step 5.3.57.

INITIATING CUE:

You are directed to place the Feedwater Master Controller in Automatic per GP-02, step 5.3.57 and inform your supervisor when step 5.3.57 is complete.

BRUNSWICK NUCLEAR PLANT
JOB PERFORMANCE MEASURE WORKSHEET

TITLE: Place The Master Feedwater Controller In Service Per GP-02

NO: LOR-SIM-JP-032-C01

SUPERVISOR-OPERATOR TRAINING

DATE

Time Required for Completion: 10 Minutes (approximate).

APPLICABLE METHOD OF TESTING

Performance:	Simulate	<input type="checkbox"/>	Actual	<input checked="" type="checkbox"/>	Unit	<u>2</u>
Setting:	Classroom	<input type="checkbox"/>	Plant	<input type="checkbox"/>	Simulator	<u>X</u>
Time Critical:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Time Limit	<u>N/A</u>
Alternate Path:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>		

EVALUATION

Trainee: _____ SSN: _____

Did Trainee Obtain and Verify Procedure?: Yes No

JPM: Pass Fail

Questions: Pass Fail N/A

Remedial Training Assessment Required?: Yes No

(See TAP-1.05)

Evaluator Signature: _____ Date: _____

Comments:

SIMULATOR SETUP:

A. Initial Conditions:

1. Recommended Initial Conditions

IC	06
Rx. Pwr.	5%
Core Age	BOC

2. Required Plant Conditions

IC-06

B. Malfunctions/Overrides

None

C. Special Instructions

None

SAFETY CONSIDERATIONS:

NONE

EVALUATOR NOTES: (Do not read to trainee)

1. The applicable procedure section will be provided to the trainee after the applicant identifies the location and correct procedure.
2. The examinee should be given a copy of GP-02 marked up through (but not including) step 5.3.77.

Read the following to trainee.

TASK CONDITIONS:

1. Unit Two startup is in progress per GP-02.
2. Reactor Feedpump discharge pressure is greater than 900 psig.
3. GP-02 is completed up to step 5.3.57.

INITIATING CUE:

You are directed to place the Feedwater Master Controller in Automatic per GP-02, step 5.3.57 and inform your supervisor when step 5.3.57 is complete.

PERFORMANCE CHECKLIST

NOTE: Critical items denoted by (*). Sequence is assumed unless denoted in the Comments.

NO.	DESCRIPTION	STANDARD	EVAL S/U ⁽¹⁾
1.	Verify or place the Master RFPT Sp/Rx Lvl Ctl station in manual.	MSTR RFPT SP/RX LVL CTL C32-SIC-R600 indicates M (Manual).	
2.	Verify Feedwater Control mode selector in 1 Elem.	C32-CS-Z2 is in the 1 ELEM position.	
3.	Depress select push button on on-line feed pump (RFPT A) control station until bias is displayed and ensure bias set at 0%.	Bias for the on-line Feed Pump displays 0% at RFPT A SP CTL C32-SIC-R601A control station.	
4.	Depress select push button on on- line feed pump until pump demand is displayed.	Pump demand for Feed Pump A is displayed at RFPT SP CTL C32-SIC-R601A control station.	
*5.	Depress select push button on Master Controller until Master Demand is displayed.	Master Demand is displayed on MSTR SP/RX LVL C32-SIC-R600.	
*6.	Set Master Demand signal equal to the on-line Feed Pump demand signal using increase push button.	MASTR DEM display on C32-SIC-R600 is equal to PMP A DEM display on C32-SIC-R601A.	
*7.	Depress A/M push button on RFPT A control station.	RFPT A SP CTL C32-SIC-R601A control station indicates A (auto).	
8.	Depress select push button on off-line feed pump (B) until level error displayed.	LVL ERROR is displayed on the RFPT B SP CTL C32-SIC-R601B control station.	
*9.	Depress A/M push button on Master Controller and verify automatic.	A (Auto) is displayed on MSTR RFPT SP/RX LVL CTL C32-SIC-R600 control station.	
10	Verify pump A demand and valve demand remain unchanged.	PMP A (C32-SIC-R601A) and VALVE DEM (FW-LIC-3269) remain constant.	
*11.	Place SULCV control station in manual control.	FW-LIC-3269 control station indicates M (manual).	

PERFORMANCE CHECKLIST

NOTE: Critical items denoted by (*). Sequence is assumed unless denoted in the Comments.

NO.	DESCRIPTION	STANDARD	EVAL S/U ⁽¹⁾
	control.	(manual).	
*12.	Open SULCV using increase push button until valve demand is 100%	VALVE DEM on FW-LIC-3269 control station is 100%, Reactor level is 182-192".	
13	Inform supervisor Master Controller is in service per GP-02.	Supervisor is informed.	

TERMINATING CUE: When the applicant informs the examiner that there is a problem with the Master Feedwater Controller and the reactor level is being controlled manually either using the feedwater pump individual controller in manual or manually adjusting the SUV per GP-02, this JPM is complete.

⁽¹⁾Comments required for any steps found UNSAT.

JPM B.1.c

B.1.c Applicant Sheet

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

TASK CONDITIONS

1. A scram and Group 1 Isolation have occurred.
2. No fuel failure or main steam line breaks have occurred.
3. The Main Condenser is available as a heat sink.
4. The Unit SCO has determined that Anticipation of Emergency Depressurization is required.

INITIATING CUE:

You are directed by the Unit SCO to perform the control operator actions associated with Emergency Equalization around the MSIV's, open MSIVs when pressure is <200 psid using the Hard Card and then perform Anticipation of Emergency Depressurization.

Facility: BRUNSWICK

Task No: B.1.c

Task Title: Emergency Equalization Around MSIV's/Anticipate Emergency
Depressurization**Job Performance Measure No:****K/A Reference:**

239001/A4.01 (4.2/4.0)

Examinee: _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance XX
Classroom Actual Performance
Simulator Plant Unit 1**Required Materials:** None**General References:**EOP-01-RVCP, Reactor Vessel Control
Procedure
Hard Card for MSIV equalization and reopening
(S/960)
LOT-SIM-JP-025-A03**Time Critical Task:** YES/NO**Validation Time:** 15 Min.

READ TO THE EXAMINEE

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

Initiating Cue:

1. A scram and Group 1 Isolation have occurred.
2. No fuel failure or main steam line breaks have occurred.
3. The Main Condenser is available as a heat sink.
5. The Unit SCO has determined that Anticipation of Emergency Depressurization is required.

You are directed by the Unit SCO to perform the control operator actions associated with Emergency Equalization around the MSIV's, open MSIVs when pressure is <200 psid using the Hard Card and then perform Anticipation of Emergency Depressurization.

Task Standard:

MSIVs have been reopened and the reactor has been depressurized <300 psig via BPVs.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
1	Obtain "Hard Card" for MSIV equalization.	"Hard Card" obtained for MSIV equalization	
2	Place the condenser vacuum bypass switches in bypass position.	Note: Inform applicant no spare operators are available if a request for another operator is made. PROMPT: Inform examinee low condenser vacuum bypass switches are in Bypass	Critical
3	Place MSIV control switches to close.	PROMPT: All MSIV control switches in closed position.	Critical
4	Reset Group 1 isolation. Resets Group 1 Isolation reset switches; A72-S32 and S33 on P601 are depressed and white PCIS/Group 1 status lights on P601 are ON.	PROMPT: White PCIS/Group 1 status lights on P601 are ON.	Critical
5	Outboard MSIV switches: B21-F028A, B21-F028B, B21-F028C, B21-F028D placed in OPEN.	PROMPT: MSIVs are OPEN.	Critical
6	Open MS-F020, MSL Drain Isolation Valve.	PROMPT: MS-F020 indicates open.	
7	Open B21-F019, MSL Outboard drain Isolation Valve.	PROMPT: B21-F019 indicates open.	Critical
8	Close MS-V28, Steam supply to MSR's, SJAE's, RFP's.	PROMPT: MS-V28 indicates closed.	
9	Close MVD-F021, Common drain line orifice Bypass Valve to condenser	PROMPT: MVD-F021 indicates closed.	
10	Open B21-F016,MSL Inboard drain Isolation Valve	PROMPT: B21-F016 indicates open.	Critical
11	Open MS-F038 A,B,C,D, MSL orifices bypass valves to increase steam line pressure.	PROMPT: MS-F038A,B,C, and D indicate open. Steam Line pressure increasing	Critical
12	Main turbine steam line pressure A/B indication on XU-1 verified to be increasing.	PROMPT: Main turbine steam line pressure indication is increasing.	
13	Close MSL drain valves MS-V46, MS-V47, MS-V48, MS-V49 & MS-V35.	PROMPT: MS-V46, V47, V48, V49 and V35 indicate closed.	
	Verify differential pressure between	PROMPT: If asked SRO direction is to	Critical

Task	Description	Standard	Sat/Unsat
14	reactor and main turbine is less than or equal to 200 psid.on ERFIS, C32-R608, R609, or C32-PI-R605A or B on P-603/601 or any other available reactor pressure indication available.	use 200# differential with Rx pressure at 1000# and main steamline press is 900#	____
15	Open Inboard MSIV's. Inboard MSIV switches for B21-F022A, B21-F022B, B21-F022C, B21-F022D placed in the OPEN position.	Inboard MSIVs B21-F022A, B21-F022B, B21-F022C, B21-F022D indicate open after the valve is repositioned	Critical ____
16	Open MVD-F021, Common drain line orifice Bypass Valve to condenser.	PROMPT: MVD-F021 indicates open.	
17	Direct AO to Open V5005	PROMPT: Valve open	
18	Open MS-V46, V47, V48, V49 and V35, MSL drain valves.	PROMPT: MS-V46, MS-V47, MS-V48, MS-V49 & MS-V35 indicate open.	
19	Ensure open MS-V43, MS-V44, MS-V45, MS-V37/V39, MS-V41/V42, MS-V36, MSL drain valves.	PROMPT: MS-V43, MS-V44, MS-V45, MS-V37/V39, MS-V41/V42, MS-V36 indicate open	

NOTE:

If MS-V28 is not re-opened, vacuum will not be re-established for opening of bypass valves

PROMPT:

If asked, inform examinee that opening MS-V28 is required at this time.

20	Open MS-V28.	PROMPT: MS-V28 indicates open and condenser vacuum is increasing above 7".	Critical
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NOTE: The main turbine bypass valves will not open until condenser vacuum is above 7".

PROMPT: When informed actions to equalize and open MSIVs are complete, direct examinee to rapidly depressurize the reactor to the main condenser in excess of 100 degrees F/Hour while maintaining steam flow below 3 million lbm/hour.

TERMINATING CUE: When MSIVs have been reopened this JPM may be terminated.

JPM B.1.d

B.1.d Applicant Sheet

TASK CONDITIONS:

1. The Unit 2 Startup Auxiliary Transformer has tripped and locked out, requiring a manual Reactor scram and resulting in a Loss Of Off-Site Power.
2. 230 KV Bus 2B is energized. 230 KV Bus 2A is locked out due to the SAT lock out.
3. Diesel generators 3 and 4 are tied to 4KV Buses E3 and E4.
4. Unit 2 is in process of establishing a UAT backfeed per AOP-36.1 and 2OP-50 to re-energize BOP Buses.
5. 2OP-50 Section 8.13, has been completed through step 13.

INITIATING CUE:

You are directed by the Control Room Supervisor to complete the steps for UAT backfeed from 230 KV Bus 2B and inform the Supervisor when all BOP buses are energized.

BRUNSWICK NUCLEAR PLANT
JOB PERFORMANCE MEASURE WORKSHEET

TITLE: Establish A UAT Backfeed

Time Required for Completion: 15 Minutes (approximate).

APPLICABLE METHOD OF TESTING

Performance:	Simulate	<u> ___ </u>	Actual	<u> X </u>	Unit	<u> 2 </u>
Setting:	Classroom	<u> ___ </u>	Plant	<u> ___ </u>	Simulator	<u> X </u>
Time Critical:	Yes	<u> ___ </u>	No	<u> X </u>	Time Limit	<u> N/A </u>
Alternate Path:	Yes	<u> ___ </u>	No	<u> X </u>		

EVALUATION

Trainee: _____ SSN: _____

Did Trainee Obtain and Verify Procedure?: Yes ___ No ___

JPM: Pass ___ Fail ___

Questions: Pass ___ Fail ___ N/A

Remedial Training Assessment Required?: Yes ___ No ___

(See TM-1.05)

Evaluator Signature: _____ Date: _____

Comments:

SIMULATOR SETUP:

A. Initial Conditions:

1. Recommended Initial Conditions

IC 11
Rx. Pwr. 100%
Core Age BOC

2. Required Plant Conditions

SAT tripped with at least one 230 KV Bus available to supply power through the UAT

B. Malfunctions

Event	System	Tag	Title	Value (ramp rate)	Activate Time (sec)	Deactivate Time (sec)
A*	EE	EE020F	Unit 2 SAT Relay Failure	N/A	0 SEC	N/A

C. Remote Functions

System	Tag	Title	Value (ramp rate)
EG*	EGZMGDIS	UAT Backfeed Logic & No Load Disconnect	ENABLE

* = Required

D. Special Instructions

1. Initiate SAT failure and scram the reactor. Perform the scram immediate actions. Enter Remote Function for UAT backfeed. Reset the backup generator lockout.

SAFETY CONSIDERATIONS:

None

EVALUATOR NOTES: (Do not read to trainee)

1. The applicable procedure section will be provided to the trainee.
 2. If this is the first JPM of the JPM set, read the JPM briefing contained in TM-4.06 or Operating Test briefing from NUREG 1021, ES-302 to the trainee.
 3. A copy of 2OP-50, Section 8.13, signed off to through step 13 should be provided to the examinee.
-

Read the following to trainee.

TASK CONDITIONS:

1. The Unit 2 Startup Auxiliary Transformer has tripped and locked out, requiring a manual Reactor scram and resulting in a Loss Of Off-Site Power.
2. 230 KV Bus 2B is energized. 230 KV Bus 2A is locked out due to the SAT lock out.
3. Diesel generators 3 and 4 are tied to 4KV Buses E3 and E4.
4. Unit 2 is in process of establishing a UAT backfeed per AOP-36.1 and 2OP-50 to re-energize BOP Buses.
5. 2OP-50 Section 8.13, has been completed through step 13.

INITIATING CUE:

You are directed by the Control Room Supervisor to complete the steps for UAT backfeed from 230 KV Bus 2B and inform the Supervisor when all BOP buses are energized.

PERFORMANCE CHECKLIST

NOTE: Critical items denoted by (*). Sequence is assumed unless denoted in the Comments.

NO.	DESCRIPTION	STANDARD	EVAL S/U ⁽¹⁾
1.	Obtain latest revision of 2OP-50 section 8.13.	Current revision of 2OP-50 section 8.13 obtained	
<p>NOTE: If asked Only 2B BUS is energized, however for this JPM this condition is adequate to meet initial caution intent</p>			
2.	Place the Synchroscope for Generator PCB 29B to the ON position.	Synchroscope switch placed to ON for PCB 29B.	
3.	Verify running voltage is approx. 120 volts.	Running voltage verified to be approx. 120 volts.	
*4.	Close generator PCB 29B.	Generator PCB 29B switch placed to CLOSE.	
5.	Verify incoming volts increase to approximately 120 volts.	Incoming voltage verified at approximately 120 volts.	
6.	Place synchroscope switch for PCB 29B to OFF.	Synchroscope for 29B is placed to OFF.	
<div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> <p>NOTE: The steps for the remaining PCB are N/A. The sequence of BOP Bus energization is not critical. The generator lockouts are reset due to being an initial condition of the procedure.</p> </div>			
*7.	Place Synchroscope for UAT to Bus 2C to ON.	Synchroscope for UAT to Bus 2C breaker placed to ON.	
*8.	Close the UAT to Bus 2C breaker.	UAT to Bus 2C breaker is closed.	
9.	Verify UAT to Bus 2C breaker is closed.	UAT to Bus 2C breaker verified to be closed.	
10	Place Synchroscope switch for UAT to 2C breaker to OFF.	Synchroscope switch for UAT to 2C breaker is placed to OFF.	

PERFORMANCE CHECKLIST

NOTE: Critical items denoted by (*). Sequence is assumed unless denoted in the Comments.

NO.	DESCRIPTION	STANDARD	EVAL S/U ⁽¹⁾
0	Place Synchroscope for UAT to Bus 2D to ON.	Synchroscope for UAT to Bus 2D breaker placed to ON.	
*12.	Close the UAT to Bus 2D breaker.	UAT to Bus 2D breaker is closed.	
13	Verify UAT to Bus 2D breaker is closed.	UAT to Bus 2D breaker verified to be closed.	
14	Place Synchroscope switch for UAT to 2D breaker to OFF.	Synchroscope switch for UAT to 2D breaker is placed to OFF.	
*15.	Place Synchroscope for UAT to Bus 2B to ON.	Synchroscope for UAT to Bus 2B breaker placed to ON.	
*16.	Close the UAT to Bus 2B breaker.	UAT to Bus 2B breaker is closed.	
17	Verify UAT to Bus 2B breaker is closed.	UAT to Bus 2B breaker verified to be closed.	
18	Place Synchroscope switch for UAT to 2B breaker to OFF.	Synchroscope switch for UAT to 2B breaker is placed to OFF.	
19	Verify alarm UA-13 3-6 is clear.	Alarm UA-13 3-6 is verified to be clear.	
PROMPT: Inform examinee that it is not necessary to transfer E Bus power to the normal feeder at this time.			
20	Inform system engineer Buses 2C, 2D and 2B have been energized.	Engineer informed Buses 2C, 2D and 2B have been energized.	

TERMINATING CUE: When the actions for energizing Buses 2C, 2D and 2B from the UAT are complete, this JPM is complete.

⁽¹⁾Comments required for any steps found UNSAT.

LIST OF REFERENCES

RELATED TASKS:

262 002 B4 01

K/A REFERENCE AND IMPORTANCE RATING:

262001 A4.01 3.4/3.7

REFERENCES:

2OP-50, Section 8.13, Rev 55

TOOLS AND EQUIPMENT:

None

CP&L REQUIREMENTS COMPLETED

None

JPM B.1.e

B.1.e Applicant Sheet

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

TASK CONDITIONS:

1. MSIVs have closed.
2. RCIC has been started for RPV level control.
3. SRVs are being used for RPV pressure control.

INITIATING CUE:

You are directed to start HPCI for pressure control using the "Hard Card" and inform your supervisor when HPCI has been started for pressure per the Hard Card.

Facility: BRUNSWICK

Task No: B.1.e

**Task Title: HPCI START USING THE "HARD CARD" - STEAM LINE BREAK WITH
AUTO ISOLATION FAILURE**

Job Performance Measure No:

**K/A Reference: 206000/A4.05 (4.4/4.4)
A2.14 (3.3, 3.4)**

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance ___ Actual Performance XX
Classroom ___ Simulator XX

READ TO THE EXAMINEE

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

Initiating Cue:

1. Reactor Feed pumps have tripped.
2. Reactor Vessel Level has decreased to below the low level 2 HPCI initiation setpoint.
3. HPCI did NOT auto start.

You are directed to start HPCI for injection to the RPV using the "Hard Card" and inform your supervisor when HPCI has been started per the Hard card and is injecting at rated flow.

Task Standard:

When HPCI has been manually isolated, this JPM is complete.

Applicant Performance: SAT/UNSAT

Required Materials:

None

General References:

HARD CARD "Emergency HPCI
Operation" 2/0577S
LOR-SIM-JP-19-A08

Time Critical Task: YES/NO

Validation Time: 5 Min.

SIMULATOR SETUP:

A. Initial Conditions:

1. Recommended Initial Conditions:

IC-11
Rx. Pwr. 100%
Core Age BOC

2. Required Plant Conditions:

RPV level below LL2 with Feedwater not available and HPCI failed to auto start.

B. Malfunctions

Event	System	Tag	Title	Value (ramp rate)	Activate Time (sec)	Deactivate Time (sec)
E1	ES	ES047F	HPCI Stm Brk HPCI Room	20% (0 SEC)	0 SEC	N/A
A	ES	ES040F	HPCI Auto Start Failure	NA	0 SEC	N/A

C. Overrides

Remote Functions

System	Tag	Title	Value (ramp rate)
PC	IAPCJP0 3	E41-F002 Auto Closure Disabled	ON
PC	IAPCJP0 4	E41-F003 Auto Closure Disabled	ON

D. Special Instructions

1. Trip Feed Pumps.
2. When level is below +112", place the simulator in FREEZE.

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
1	Reference HPCI Pressure Control In EOPs Hard Card.	HPCI Pressure Control In EOPs Hard Card. referenced.	
2	Ensure HPCI Auto Initiation is RESET	Verifies or resets auto initiation	
3	Verify Auxiliary Oil Pump is not running	Verifies AOP is not running	
4	Open E41-F011	Opens E41-F011	
5	Open E41-F059	Opens E41-F059	
6	Start the HPCI Barometric Condenser Vacuum Pump (E41-S4) and leave in start	The HPCI VACUUM PUMP is started and left in start	
7	Open the Turbine Steam Supply, E41-F001	TURBINE STEAM SUPPLY VLV, E41-F001, is opened.	Critical
8	Start the Auxiliary Oil Pump.	AUXILIARY OIL PUMP, is started.	Critical

NOTE: If asked the desired reactor pressure is 800 - 1000 psig

9	Throttle Open E41-F008 to maintain desired reactor pressure	Throttles Open E41-F008 to maintain pressure of 800 to 1000 psig	
10	Ensure E41-V8 and E41-V9 are closed	Ensures E41-V8 and V9 are closed	Critical
11	Ensure E41-F012 is closed when flow has increased above 800 gpm	Closes E41-F012 when flow is > 800 gpm	

NOTE: When the HPCI injection valve is opened, initiate Event Trigger E1 to activate HPCI Steam line Break

12	Recognize HPCI Turbine Trip and isolation signal, diagnose steam line break with failure to auto isolate.	HPCI steam line break is diagnosed.	
13	Close HPCI isolation valves E41-F002 and E41-F003.	E41-F002 or E41-F003 indicate full closed.	Critical
14	Contact Supervisor	Supervisor informed HPCI manually isolated due to steam line break with failure to auto isolate.	

Task

Description

Standard

Sat/Unsat

TERMINATING CUE: When HPCI has been manually isolated, this JPM is complete.

JPM B.1.f

B.1.f Applicant Sheet

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

TASK CONDITIONS:

1. Reactor Recirculation Pump 2B has tripped, and the cause of trip has been corrected.
2. Reactor Recirculation Pump 2A is running at less than 23,500 gpm
3. RWCU system is in operation with a suction from the bottom head and the Recirc loop.
4. An off-going control operator has completed steps in OP-02 Section 5.2 up to Step 5.2.2.22, and OP-02, Section 8.2 up to step 8.2.2.4.
5. Another operator is logging parameter per 8.2.2.2, step 2.

INITIATING CUE:

You are to continue the startup of Reactor Recirculation Pump 2B and inform the Unit SCO when OP-02 Sections 5.2 and 8.2 are completed.

Facility: BRUNSWICK

Task No: B.1.f

Task Title: Recirculation Pump Start - Recirculation Pump Speed Control Failure

Job Performance Measure No:

K/A Reference: 202001/A4.01 (3.7/3.7)
A2.05 (3.8/4.0)

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance ___ Actual Performance XX

Classroom ___ Simulator XX

READ TO THE EXAMINEE

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

Initiating Cue:

1. Reactor Recirculation Pump 2B has tripped, and the cause of trip has been corrected.
2. Reactor Recirculation Pump 2A is running at less than 23,500 gpm
3. RWCU system is in operation with a suction from the bottom head and the Recirc loop.
4. An off-going control operator has completed steps in OP-02 Section 5.2 up to Step 5.2.2.22, and OP-02, Section 8.2 up to step 8.2.2.4.
5. Another operator is logging parameter per 8.2.2.2, step 2.

You are to continue the startup of Reactor Recirculation Pump 2B and inform the Unit SCO when OP-02 Sections 5.2 and 8.2 are completed.

Task Standard:

When Recirculation Pump 2B scoop tube is locked, this JPM may be terminated.

Applicant Performance: SAT/UNSAT

Required Materials:

Steam Tables

General References:

2 OP-02 , Rev. 99
LOR-SIM-JP-002-A07

Time Critical Task: YES/NO Validation Time: 20 Min.

SIMULATOR SETUP:

A. Initial Conditions:

1. Recommended Initial Conditions
IC - 09
Rx. Pwr. - 50%
Core Age - BOC
2. Required Plant Conditions
Recirculation Pump A secured with Pump B flow <23,500 gpm and rod line below 80%, at least 10% margin to APRM rod block.

B. Event Triggers

Event	Trigger Description
E1	Auto Initiated (Q2716SR7 Not Equal To True) (Recirc B Run Back Red Light Out)

C. Malfunctions

None

D. Overrides

Event	Panel	Tag	Title	Value (ramp rate)	Activate Time (sec)	Deactivate Time (sec)
E1	P60 3	P2740A1 1	Recirc B Flow Control	1.0 (60 SEC)	0	0

E. Special Instructions

1. Trip the 2B Recirc Pump from the RTGB with the control switch.
2. Place the B32-V17 Seal Staging Valve to "MANUAL/OPEN" position.
3. Reduce 2A Recirc Pump Flow to less than 22,000 GPM (approx 32% speed).
4. Reduce 2B Recirc Flow Ctlr output to approx. 16%

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
------	-------------	----------	-----------

NOTE:

Provide applicant with marked up copies of OP-02 Sections 5.2 and 8.2

- | | | | |
|----|---------------------------------------|--|--|
| 1. | Obtain current revision of OP-02. | Current revision of OP-02 obtained. | |
| 2. | Determine the RPV Dome temperature. | a. RPV pressure is obtained
b. Pressure reading is corrected for PSIA.
c. Pressure reading is located on the Saturated Steam table (or process computer) and corresponding temperature obtained. | |
| 3. | Obtain bottom head drain temperature. | Point 5 of G31-TI-R607 is read. | |
| 4. | Calculate differential temperature. | Bottom head drain temperature is subtracted from Dome temperature. (<145 °F) | |
| 5. | Record the differential temperature. | Differential temperature and time of verification logged in Control Operator's logbook. | |

PROMPT: If asked, it is **NOT** desired to place APRM normal setpoints in setup

- | | | | |
|----|--|---|--|
| 6. | Determine the temperature differential between the idle and operating loop. | a. Operating loop temperature is read off B32-R650 or process computer.
b. Idle loop temperature is read off B32-R650 or process computer.
c. ΔT obtained verified <50 °F and recorded. | |
| 7. | Record the differential temperature. | Differential temperature and time of verification logged in Control Operator's logbook. | |
| 8. | Verify that the operating loop flow is less than or equal to 23,500 gpm (50% of rated flow). | Operating loop flow is read off recorder B32-R614 or meter B32-R617 and operating loop flow is verified to be less than or equal to 23,500 gpm. | |
| 9. | Record operating loop flowrate. | Operating loop flowrate and time of verification logged in Control Operator's | |

Task	Description	Standard	Sat/Unsat
		verification logged in Control Operator's logbook.	
10.	Close the Discharge valve.	Control switch for the B32-F031B is taken to the CLOSE position or verified closed by B32-F031B Green indication only is illuminated.	Critical
11.	Start the B Recirc MG set.	The B Recirc MG set switch is placed to the Start position.	Critical
12.	Verify proper start sequence of the Recirc MG set and Pump Motor.	<ul style="list-style-type: none"> a. MG set B drive motor breaker closed by RED light indication. b. MG set accelerates. c. The Generator Field breaker closes (RED indication) 6 seconds after the Drive motor breaker closed. d. Recirc Loop B Flow increases on B32-R614. 	
13.	Record time of pump start.	Time at which MG set drive motor breaker closed logged in Control Operator's logbook.	
14.	Open the Recirc B pump discharge valve.	Take the B32-F031B valve control switch to the OPEN position for 2 seconds then release for 10 seconds. Repeat this for at least the first minute of travel, then fully open B32-F031B.	Critical

PROMPT: If asked, direct applicant to reset runback

15.	Reset the runback per section 8.3.	Runback is reset as follows:	
	<ul style="list-style-type: none"> a. Lower speed demand on Pump 2B until control established with potentiometer. b. Monitor for speed increase on Pump 2B. c. Depress Runback Reset push button for pump 2B. 	<ul style="list-style-type: none"> Speed control potentiometer lowered below runback limit. Pump speed monitored while runback is reset. Recirc B Runback Reset is depressed. 	

NOTE : When Recirc Pump B runback is reset, (can be monitored on the Panel Mimics in the Instructor Console) ensure Event Trigger E1 activates the Recirc Pump B Speed Control Failure.

NOTE :

When examinee locks the scoop tube,

Task	Description	Standard	Sat/Unsat
		and informs the Unit SCO of the failure the JPM is complete. Since the examinee cannot complete the task, it is acceptable for the examiner to inform the examinee that the JPM is complete.	
		If examinee informs supervisor of recirc pump speed control failure, inform examinee another operator has been directed to enter AOP-03.0 to perform required subsequent actions.	
16.	Lock the scoop tube.	Recirc pump B scoop tube is locked, by placing "Scoop Tube B Lock" to TRIP with \leq 10% power increase.	Critical

TERMINATING CUE:
When Recirculation Pump 2B scoop tube is locked, this JPM may be terminated.

JPM B.1.g

B.1.F Applicant Sheet

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

TASK CONDITIONS:

1. Unit One (1) is in a Station Blackout.
2. Buses E1 and E2 have been energized from Unit Two (2) by cross-tie.
3. Sufficient load is available to reestablish drywell cooling on Unit One (1).
4. Unit One (1) has a LOCA signal sealed in due to high drywell pressure concurrent with low Reactor pressure.

INITIATING CUES:

You are directed to install the circuit alterations per AOP-36.2, Section 3.2.13, Steps 8, 9 and 11 to allow reestablishing drywell cooling and inform the Control Room when 1-SW-V103 and 1-SW-V106 can be opened and RBCCW Pump 1A can be started.

Facility: BRUNSWICK

Task No: B.1.g

Task Title: Install Circuit Alterations For Drywell Cooling Per AOP-36.2**Job Performance Measure No:****K/A Reference:** 295012/AA1.02 (3.8/3.8)**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance XX Actual Performance
Classroom ___ Simulator ___ Control Room U1**Required Materials:**Screwdriver, tape and jumper
from RO desk locked drawer**General References:**AOP-36.2, Rev 14
LOR-OJT-JP-303-A05**Time Critical Task:** YES/NO**Validation Time:** 10 Min.

READ TO THE EXAMINEE

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

Initiating Cue:

1. Unit One (1) is in a Station Blackout.
2. Buses E1 and E2 have been energized from Unit Two (2) by cross-tie.
3. Sufficient load is available to reestablish drywell cooling on Unit One (1).
4. Unit One (1) has a LOCA signal sealed in due to high drywell pressure concurrent with low Reactor pressure.

You are directed to install the circuit alterations per AOP-36.2, Section 3.2.13, Steps 8, 9 and 11 to allow reestablishing drywell cooling and inform the Control Room when 1-SW-V103 and 1-SW-V106 can be opened and RBCCW Pump 1A can be started.

Task Standard:

When circuit alterations have been performed per AOP-36.2 Section 3.2.11, this JPM is complete.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
1.	Obtain current revision of AOP-36.2 Section 3.2.13.	Current revision of AOP-36.2 obtained.	
2.	Obtain screwdriver, tape and jumper from RO desk locked drawer.	Screwdriver, tape and jumper obtained from RO desk locked drawer.	
3.	Lift and tape white wire 1-DK7-26 in Panel 1-XU-24 (ESS Logic Cabinet H59) on terminal TA93.	White wire 1-DK7-26 in Panel 1-XU-24 (ESS Logic Cabinet H59) on terminal TA93 is lifted.	Critical

PROMPT:

When informed wire in XU-24 is lifted, inform examinee that 1-SW-V103 has been opened.

4.	Lift and tape grey wire 1-DE3-26 in Panel 1-XU-7 (ESS Logic Cabinet H58) on terminal TE24.	Grey wire 1-DE3-26 in Panel 1-XU-7 (ESS Logic Cabinet H58) on terminal TE24 is lifted.	Critical
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PROMPT:

When informed wire in XU-7 is lifted, inform examinee that 1-SW-V106 has been opened.

If asked, inform examinee that 480V MCC 1XE is energized and RBCCW Pump 1C control switch has been placed to OFF.

5.	Install jumper in Panel 1-XU-7 (ESS Logic cabinet H58) between terminals TB71 and TB72.	Jumper in Panel 1-XU-7 (ESS Logic cabinet H58) between terminals TB71 and TB72 installed.	Critical
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PROMPT:

When informed jumper is installed in XU-7, inform examinee RBCCW Pump 1A is running.

6.	Notify Control Room circuit alterations installed.	Control Room notified circuit alterations installed.	
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TERMINATING CUE:

When circuit alterations have been performed per AOP-36.2 Section 3.2.11, this JPM is complete

JPM B.2.a

B.2.a

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

TASK CONDITIONS:

1. The SS has made the determination that control room evacuation IS required.
2. Scram and MSIV closure could NOT be completed prior to evacuating the Control Room.
3. This JPM will be performed for Unit ___. (Designated by examiner)

INITIATING CUES:

A reactor scram and MSIV Closure could NOT be completed prior to evacuating the Control Room. You are directed by the Shift Superintendent to perform **ALL** the immediate actions called for in 0AOP-32.0, from memory, and inform him when the required actions are completed.

Facility: BRUNSWICK

Task No: B.2.a

Task Title: Control Room Evacuation - AOP-32 - Scram and MSIV Closure From Outside the Control Room

Job Performance Measure No:

K/A Reference: 295016/AA1.01 (3.8/3.9)

Examinee: _____

NRC Examiner:

Date:

Method of testing:

Simulated Performance XX Actual Performance
Classroom ___ Simulator ___ Control Room ___ Plant XX

Required Materials:

None 0AOP-32.0
LOR-OJT-JP-302-E01

General References:

Time Critical Task: YES/NO

Validation Time: 5 Min.

START FROM CABLE SPREAD ROOM

READ TO THE EXAMINEE

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

TASK CONDITIONS:

1. The SS has made the determination that control room evacuation IS required.
2. Scram and MSIV closure could NOT be completed prior to evacuating the Control Room.
3. This JPM will be performed for Unit __. (Designated by examiner)

A reactor scram and MSIV Closure could NOT be completed prior to evacuating the Control Room. You are directed by the Shift Superintendent to perform **ALL** the immediate actions called for in 0AOP-32.0, from memory, and inform him when the required actions are completed.

Task Standard:

When the EPA Breakers have been opened, this JPM is complete.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
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NOTE:

JPM TO BE PERFORMED WITHOUT PROCEDURE!

NOTE:

EPA Breakers should be opened in sequence specified to avoid duty cycle of downstream breaker, but sequence is not critical. If upstream breaker (EPA-1,3) is opened first that step becomes critical and the downstream breaker (EPA-2,4) non critical.

PROMPT:

If requested, indicate EPA POWER OUT light indications going out as EPA breakers are opened.

NOTE 1: It is critical that as a minimum, either Bkrs 1 AND 3 OR Bkrs 2 AND 4 are opened.

NOTE 2: The breakers must be opened in the correct order (as written below)

1.	Open EPA-2 circuit breaker for "A" RPS MG set.	EPA-2 circuit breaker open as indicated when the red POWER OUT light is extinguished.	Critical
2.	Open EPA-1 circuit breaker for "A" RPS MG set.	EPA-1 circuit breaker open as indicated when the red POWER OUT light is extinguished.	Critical
3.	Open EPA-4 circuit breaker for "B" RPS MG set.	EPA-4 circuit breaker open as indicated when the red POWER OUT light is extinguished.	Critical
4.	Open EPA-3 circuit breaker for "B" RPS MG set.	EPA-3 circuit breaker open as indicated when the red POWER OUT light is extinguished.	Critical
5.	Open EPA-6 circuit breaker for RPS alternate power supply.	EPA-6 circuit breaker open as indicated when the red POWER OUT light is extinguished.	
6.	Open EPA-5 circuit breaker for RPS alternate power supply.	EPA-5 circuit breaker open as indicated when the red POWER OUT light is extinguished.	
7.	Inform Shift Superintendent.	Shift Superintendent informed that EPA breakers are open.	

TERMINATING CUE:

When the EPA Breakers have been opened, this JPM is complete.

JPM B.2.b

B.2.b Applicant Sheet

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

TASK CONDITIONS:

1. The RCIC turbine has tripped due to the mechanical overspeed trip device.
2. RCIC speed has been verified to be less than 4000 rpm.
3. All applicable prerequisites have been satisfied.
4. This task will be performed at the lab

INITIATING CUE:

The Reactor Operator has directed you to locally reset the RCIC mechanical overspeed trip device per the operating procedure and inform the Control Room when the required actions are complete.

Facility: BRUNSWICK

Task No: B.2.b

Task Title: Resetting a RCIC Mechanical Overspeed Trip**Job Performance Measure No:****K/A Reference:** 217000/A4.02 (3.9/3/9)
SG #7 (3.8/3.7)
SG #9 (3.9/3.5)
K4.04 (3.0/3.1)
A2.02 (3.8/3.7)**Examinee:** _____**NRC Examiner:****Date:****Method of testing:**Simulated Performance XX Actual Performance
Classroom ___ Simulator ___ Control Room ___ Plant ___ Lab XX**Required Materials:**

Plant page

General References:

1. 1(2) OP-16
2. Vol II/SD-16
3. AOR-OJT-JP-016-A01

Time Critical Task: YES/NO**Validation Time:** 8 Min.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

- | | |
|----|---|
| 1. | The RCIC turbine has tripped due to the mechanical overspeed trip device. |
| 2. | RCIC speed has been verified to be less than 4000 rpm. |
| 3. | All applicable prerequisites have been satisfied. |
| 4. | This task will be performed on Unit _____. |

The Reactor Operator has directed you to locally reset the RCIC mechanical overspeed trip device per the operating procedure and inform the Control Room when the required actions are complete.

Task Standard:

All actions necessary to reset a RCIC mechanical overspeed trip have been performed.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
1.	Obtain current revision of OP-16, Section 8.3.	Current revision of OP-16 Section 8.3 obtained.	
2.	Identifies the RCIC turbine trip and throttle valve is in the "Tripped condition.	States that the RCIC turbine trip and throttle valve is closed	

PROMPT: IF asked if the control room has closed the motor actuator, state that they tried but it didn't work and the applicant must do it locally.

3.	Closes the RCIC Turbine Trip and Throttle valve.	Uses the handwheel to close the actuator such that the collar is returned to the correct position to allow for reset.	Critical
4.	Depending on body position, either push or pull the emergency connection rod in the direction of the RCIC turbine trip and throttle valve (E51-V8) approximately one inch.	Emergency connection rod moved in direction of RCIC turbine trip and throttle valve approximately one inch.	Critical
5.	Observe tappet and ball assembly drop into place.	Tappet and ball assembly drops down into place.	

PROMPT:

Inform applicant that the tappet and ball assembly has **NOT** dropped into place.

6.	If the tappet and ball assembly does not drop in place, lightly depress the assembly.	Tappet and ball assembly lightly depressed and dropped into place.	Critical
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PROMPT:

When required, inform applicant that tappet and ball assembly **HAS** dropped into place.

7.	Release the emergency connection rod.	Emergency connection rod released.	Critical
8.	Notify the control room that the mechanical trip device for the RCIC turbine is reset.	Control room notified that RCIC mechanical trip device for the RCIC turbine has been reset.	

TERMINATING CUE:

The JPM may be terminated when all actions necessary to reset a RCIC mechanical overspeed trip have been performed.

JPM B.2.c

B.2.c Applicant Sheet

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

TASK CONDITIONS:

4. A seismic event has caused the structural integrity of the Fire Protection Storage Tank to become breached.
5. The Fire Protection System was in a normal operating configuration with some minor leaks and NO system demand before the seismic event.
6. All fire pumps have been secured per applicable sections of OP-41.
7. The Shift Supervisor has determined that the MUD Tank must now be lined up to supply the Fire Protection Header followed by Jockey Pump startup.

INITIATING CUES:

You are directed by the Control Operator to perform the Auxiliary Operator actions associated with transferring the Fire Protection System water supply to the MUD Tank, and then start the Jockey Pumps in accordance with OP-41. You are to inform the Control Operator when the task assignment is complete.

Facility: BRUNSWICK

Task No: B.2.c

Task Title: PERFORM ACTIONS ASSOCIATED WITH FIRES - Aligning the Fire Protection Alternate Water Supply**Job Performance Measure No:**

K/A Reference: 286000/A1.01 (2.9/2.9)
 A1.05 (3.2/3.2)
 A2.06 (3.1/3.2)
 A3.01 (3.4/3.4)
 A3.02 (3.1/3.2)
 K3.03 (3.6/3.8)
 K4.01 (3.4/3.6)
 K4.03 (3.3/3.4)
 K5.04 (2.9/2.9)

Examinee: _____**NRC Examiner:****Date:****Method of testing:**

Simulated Performance XX Actual Performance
 Classroom ___ Simulator ___ Control Room ___ Plant XX

Required Materials:

1. OOP-41, Sect 8.51, Att 47
2. SD-41
3. AOP-13.0
4. P&ID 9527-D-2043
5. AOR-OJT-JP-041-A02

General References:

1. OP-41

Time Critical Task: YES/NO **Validation Time:** 18 Min.

READ TO THE EXAMINEE

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

TASK CONDITIONS:

1. A seismic event has caused the structural integrity of the Fire Protection Storage Tank to become breached.
2. The Fire Protection System was in a normal operating configuration with some minor leaks and NO system demand before the seismic event.
3. All fire pumps have been secured per applicable sections of OP-41.
4. The Shift Supervisor has determined that the MUD Tank must now be lined up to supply the Fire Protection Header followed by Jockey Pump startup.

You are directed by the Control Operator to perform the Auxiliary Operator actions associated with transferring the Fire Protection System water supply to the MUD Tank, and then start the Jockey Pumps in accordance with OP-41. You are to inform the Control Operator when the task assignment is complete.

Task Standard:

When Auxiliary Operator actions necessary for transferring the Fire Protection System water supply to the MUD Tank, and the Jockey Pumps have been started in accordance with OP-41, this JPM is complete.

Applicant Performance: SAT/UNSAT

PERFORMANCE INFORMATION

Task	Description	Standard	Sat/Unsat
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NOTE: The applicant is expected to demonstrate his/her ability to obtain the needed sections of OP-41. After the applicant has satisfactorily demonstrated their ability to do this, the evaluator may provide copies of the procedure sections to the applicant.

NOTE: The applicant may wish to execute performance of OP-41 Attachment 47 for the purposes of documentation. This is an acceptable practice and is not dependant upon direction from OP-41 Section 8.51, Step 8.51.2.9. If an NRCS revision check is being performed, Attachment 47 is included as part of the check.

1. Obtain current revision of OP-41 Applicant obtains copy of OP-41.
2. Applicant reviews index of OP-41 to determine the needed sections required to perform the task assignment. Applicant determines from a review of OP-41 index that the following procedure sections are needed: Section 8.51
3. Applicant reviews OP-41 Section 3.0, Precautions and Limitations. Applicant determines from OP-41 Section 3.0 that there are no Precautions or Limitations directly applicable to the Auxiliary Operator for this task assignment.

PROMPT: If asked as a member of the Control Room Operating Crew about determination of OP-41 Prerequisites being met, acknowledge the request and inform the applicant that all applicable prerequisites are met.

4. Applicant reviews OP-41 Section 4.0, Prerequisites. Applicant determines from a review of OP-41, Section 4.0 that several prerequisites are applicable.

PROMPT: When the applicant begins to evaluate the Initial Conditions of OP-41, Section 8.51, as the Control Room Supervisor, inform the applicant that you have evaluated both Initial Conditions 1 and 2 as having been met as required and that you are directing the applicant to continue with Step 1.

5. Applicant reads the Initial Conditions of OP-41, Section 8.51. Applicant recognizes that Initial Conditions have been met as informed by the Control Room Supervisor.

PROMPT: If asked for valve operation feedback by the applicant for determination of valve position, provide applicant information consistent with actions being taken for the particular valve

6. Ensure Upstream Drain Valve for 2-FP-V58, 2-FP-V59, is closed. Applicant locates 2-FP-V59 in the northeast floor sump area of the Diesel Critical

Task	Description	Standard	Sat/Unsat
		Driven Fire Pump Room.	
		Applicant removes locking devices from 2-FP-V59 and turns the valve handwheel clockwise in the closed direction until the handwheel movement becomes firmly unable to move any further with normal force.	
7.	Unlock and close Combined Suction Valve From Fire Protection Storage Tank, 2-FP-V57.	Applicant locates 2-FP-V57 in the area immediately behind the Motor Driven Fire Pump (P-2) in the north end of the MWT Building.	Critical
		Applicant removes locking devices from valve handwheel <u>and</u> closes 2-FP-V57 by turning the valve handwheel clockwise in the closed direction until the handwheel movement becomes firmly unable to move any further with normal force.	
8.	Unlock and open the Demineralized Water Storage Tank Outlet To The Fire Protection System, 2-MUD-V37.	Applicant locates 2-MUD-V37 on the west side of the MUD Tank.	Critical
		Applicant removes locking devices from valve handwheel <u>and</u> opens 2-FP-V37 by turning the valve handwheel counter-clockwise in the open direction until the handwheel movement becomes firmly unable to move any further with normal force.	
9.	Unlock and open Fire Pumps Suction Valve From The Demineralized Water Storage Tank, 2-FP-V58.	Applicant locates 2-FP-V58 in the Diesel Driven Fire Pump Room in the northeast corner of the MWT Building.	Critical
		Applicant removes locking devices from valve handwheel <u>and</u> opens 2-FP-V58 by turning the valve handwheel counter-clockwise in the open direction until the handwheel movement becomes firmly unable to move any further with normal force.	
10.	Applicant reads the NOTE immediately ahead of OP-41 Section 8.51, Step 8.51.2.5.	Applicant reads the NOTE and determines that it is applicable to the next step; OP-41 Section 8.51, Step 8.51.2.5.	
11.	Places Jockey Pump P-4 in HAND	Applicant locates the Jockey Pump Control Panel in the south central area of the MWT Building.	
		Applicant rotates the Jockey Pump P-4 Control Switch to the right into the HAND position, verifying that the associated indicator lights show that the red light is on and the green light is off.	
		Applicant locates the Jockey Pump	

Task	Description	Standard	Sat/Unsat
12.	Places Jockey Pump P-3 in HAND	Control Panel in the south central area of the MWT Building. Applicant rotates the Jockey Pump P-3 Control Switch to the right into the AUTO position. , verifying that the associated indicator lights show that the red light is on and the green light is off.	

PROMPT: If contacted as a member of the Control Room Operating Crew for guidance concerning the starting of Fire Pump P-1 and/or P-2, direct the applicant to follow his initial instructions for the assigned task.

13.	Applicant recognizes that he was not directed to perform OP-41 Step 8.51.2.7	Applicant stops performance of OP-41 Section 8.51 and does not perform OP-41 Steps 8.51.2.7 through 8.51.2.8.	
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PROMPT: If applicant starts the Motor-Driven Fire Pump P-2 or the Diesel Driven Fire Pump P-1, and if the applicant checks a local Fire Protection Header Pressure Indicator, indicate to the applicant that pressure is 130 psig by pointing to the appropriate location on the gauge face. (Pressure will remain at this value for the duration of time that P-1 and/or P-2 are running.)

PROMPT: If asked, if Control Room desires to isolate relief valves respond "NOT AT THIS TIME".

PROMPT: If applicant reports that he erroneously started P-1 and/or P-2, inform the applicant that other Auxilliary Operators are enroute to secure the pumps and that he is to continue with Jockey Pump startup.

PROMPT: If the applicant indicates that he would check the running pumps for proper operation, indicate to applicant as appropriate, that all pump and pump motor conditions appear to be normal.

PROMPT: When Jockey Pump P-4 is in HAND and if applicant did not start the Motor-Driven Fire Pump P-2 and/or the Diesel Driven Fire Pump P-1, and if the applicant checks a local Fire Protection Header Pressure Indicator, indicate to the applicant that pressure is 40 psig by pointing to the appropriate location on the gauge face.

PROMPT: When Jockey Pump P-3 is in AUTO, and if applicant did not start the Motor-Driven Fire Pump P-2 and/or the Diesel Driven Fire Pump P-1, and if the applicant checks a local Fire Protection Header Pressure Indicator, indicate to the applicant that pressure is 55 psig and very slowly rising* by pointing to the appropriate location on the gauge face.

*Pressure should be rising about 3-5 pounds per minute

TERMINATING CUE: When Auxilliary Operator actions necessary for transferring the Fire Protection System water supply to the MUD Tank, and the Jockey Pumps have been started in accordance with OP-41, this JPM is complete.

FINAL SUBMITTAL

**BRUNSWICK EXAM
50-325 & 324/2001-301**

JULY 27 - AUGUST 3, 2001

FINAL SCENARIOS

~~XXXXXXXXXX~~ AND

OUTLINES ES-D-1

Facility: Brunswick

Scenario No.: NRC-1

Op-Test No.: 1

Examiners: _____

_____Operators: _____

Initial Conditions: The plant is operating at middle of cycle steady state conditions. Power is currently 90% per the Load Dispatchers request. CSW Pump 2C and SLC Pump 2A are under clearance.

Turnover: Perform Core Spray System Operability Test, PT-07.2.4A. Raise reactor power to 100% when contacted by the Load Dispatcher

Event No.	Malf. No.	Event Type*	Event Description
1	NA	N-BOP SRO	Perform Core Spray system operability test PT-07.2.4A
2	1	C-BOP SRO	Core Spray pump overload requires pump to be tripped
3	2	I-BOP SRO	Reactor Building radiation monitor fails, Reactor Building isolates, Standby Gas fails to start
4	3	R-RO SRO	System frequency lowers requiring power to be raised to 100% per AOP-22.0
5	4	C-RO SRO	Feedwater heater 4B tube leak trips heater, power rises and must be reduced per AOP-03.0
6	5	I-RO SRO	Steam leak in the turbine building, MSIVs fail to auto close
7	6	M-ALL	High Power ATWS
8	7		RWCU fails to isolate when SLC is initiated
9 -#	8		RCIC fails to start, HPCI or RCIC must be manually started to stabilize RPV level

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

SCENARIO DESCRIPTION

The plant is operating at 90% power, Beginning Of Cycle. EHC Pump B is out of service for maintenance. APRM E is failed downscale and bypassed.

Core Spray Pump A flow test will be performed. After flow is established, a pump overload will alarm requiring the pump to be tripped.

Reactor Building Vent Rad Monitor B will spike upscale, then fail downscale. Reactor Building HVAC will isolate, but SBGT will fail to auto start. SBGT must be manually started to maintain Secondary Containment integrity.

The load dispatcher will request power be raised to 100% due to loss of generation. Frequency will drop to 59.8 Hz requiring the crew to enter AOP-22 and raise power. Frequency will return to normal.

A Feedwater Heater 4B tube leak will result in a Hi-Hi extraction trip for the heater. Feedwater temperature will lower resulting in a power rise. The crew will respond per AOP-03.0 and reduce power as required to maintain $\leq 100\%$.

A steam leak will develop in the Turbine Building resulting in area radiation alarms in the Turbine Building. The crew will respond per AOP-05.0. The leak will result in elevated temperatures, causing an MSIV isolation signal. The Group I isolation will fail to initiate requiring manual isolation. The reactor will fail to scram due to SDV hydraulic block.

The MSIV closure coupled with the ATWS will require the use of SRVs for pressure control, causing suppression pool temperature to rise. When SLC is initiated, RWCU fails to auto isolate and must be manually isolated.

When RPS reset is attempted, scram groups 2/3 will fail to reset and rod insertion via manual scram actuations will be unavailable. RMCS is available to manually insert control rods.

RPV level should be initially lowered to $< 90"$. Suppression pool temperature reaching 110°F will require the operators to further lower RPV water level and suppress reactor power.

After RPV level drops below LL2, RCIC will fail to auto initiate. RCIC can be manually started, or HPCI can be used to stabilize level once APRMs are downscale.

Once RPV level is stable, the RPS reset logic will be repaired, allowing rod insertion by RPS actuation. When all control rods have been inserted and RPV water level is being restored $> +170"$, the scenario may be terminated.

OBJECTIVES

SRO

- 344226B402, Direct Actions For A Low System Frequency Per AOP-22.0
- 344205B402, Direct Shift Response To A Moderator Temperature Decrease Per AOP-03.0
- 344225B402, Direct Actions For Radioactive Spills, High Radiation And Airborne Activity Per AOP-05.0
- 344232B502, Direct Actions When A Scram Has Been Initiated And Reactor Power Cannot Be Determined To Be Less Than 3% Per EOP-01-RSP
- 344201B502, Direct Actions To Control Reactor Power Per EOP-01-LPC
- 344202B502, Direct Actions To Control Reactor Pressure Per EOP-01-LPC
- 344235B502, Direct Actions To Deliberately Lower Level Per EOP-01-LPC

RO

- 209003B201, Perform Core Spray System Operability Test Per PT-07.2.4a (07.2.4b)
- 273002B401, Respond To A Process Radiation Monitoring Downscale/Inop Annunciator Per The Appropriate APP
- 261003B101, Perform A Control Room Manual Startup Of SBTG Per OP-10
- 262203B401, Respond To A Low System Frequency Condition Per AOP-22
- 202002B101, Increase Reactor Recirculation Pump Speed/Reactor Power Using The Manual Control Stations Per OP-02
- 200210B401, Respond To A Moderator Temperature Decrease Per AOP-03.0
- 272201B401, Respond To An Area Radiation Annunciator Per APP UA-03
- 200601B401, Respond to radioactive spills, high radiation and airborne activity per AOP-5.0
- 211005B501, Manually Initiate Standby Liquid Control Per OP-05

201041B501, Insert Control Rods With Reactor Manual Control System Per EOP-01-LEP-02

218003B501, Inhibit ADS Actuation Per EOP-01

239602B501, Operate SRVs To Maintain Reactor Pressure Per EOP-01-LPC

217003B101, Manually Startup The RCIC System Per OP-16

206001B501, Terminate And Prevent HPCI Injection

256007B501, Terminate And Prevent Condensate System Injection To Reactor Vessel

205014B101, Start Up RHR In Suppression Pool Cooling Mode Per OP-17

SIMULATOR SETUP

Initial Conditions

IC 11
 Rx Pwr 90%
 Core Age BOC

Event Triggers

Event	Trigger Description
E1	Manually Initiated (Core Spray A Motor Overload)
E2	Manually Initiated (Rx Bldg Vent Rad Monitor B Fails)
E3	Manually Initiated (Feedwater Heater 4B Tube Leak)
E4	Manually Initiated (Steam Line Break in the Turb Bldg)
E5	Auto Initiated (Deletes Override on SBTG A, SBTG A Switch ON)
E6	Auto Initiated (Deletes Override on SBTG B, SBTG B Switch ON)

Malfunctions

Event	System	Tag	Title	Value (Ramp)	Activate Time	Deactivate Time
A	RP	RP011F	ATWS #4	#4	0 SEC	NA
A	ES	ES041F	RCIC Fail To Auto Start	NA	0 SEC	NA
A	NI	NI042F	APRM E Fails Low	NA	0 SEC	NA
A	RW	RW015F	G31-F001 Fail Auto Close	NA	0 SEC	NA
A	RW	RW016F	G31-F001 Fail Auto Close	NA	0 SEC	NA
A	MS	MS006F	MSIV Fail Auto Close	NA	0 SEC	NA
E1	ES	ES017F	Core Spray Pump A Ovid	NA	0 SEC	NA
E2	RM	RM006F	RB Vent Mon B Fails Up	NA	0 SEC	5 SEC
E2	RM	RM005F	RB Vent Mon B Fails Down	NA	5 SEC	NA
E3	CF	CF022F	FW Htr 4B Tube Leak	920000 0 SEC	0 SEC	NA
E4	MS	MS002F	MSL Break In Turb Bldg	1% 5:00	0 SEC	NA

Overrides

Switches

Event	Panel	Tag	Title	Value (Ramp)	Activate Time	Deactivate Time
A	XU-51	K6101A	SBGT A Push Off	ON	0 SEC	NA
A	XU-51	K6103A	SBGT B Push Off	ON	0 SEC	NA
A	P603	K2504A	Scram Reset GP 2/3	OFF	0 SEC	N/A
A	XU-3	K5417A	EHC Pump B	OFF	0 SEC	N/A

Remote Functions

System	Tag	Title	Status
ED	IAFGRID	Grid Frequency	60.0

Materials

ENP-24 for IC-11

PT-07.2.4A, complete up to step 7.8 (Pump Testing)

Stopwatch

Special Instructions

Post Exam In Progress Stop Signs at all simulator entrances.

Reduce Power to 90% and zero DVM.

Advance all chart recorders to indicate steady state conditions.

Place all SPDS displays to the Critical Plant Variable display (#100).

Ensure appropriate keys have blanks in switches.

Exit shutdown screen on RWM and place the RWM key in the key locker.

Reset alarms on SJAE, MSL, and RWM NUMACs.

Ensure reference material is in appropriate location.

Verify all logbooks have blank sheets only.

Bypass APRM Channel E and place EC tag on Bypass Switch.

Place EHC Pump B to OFF and place red cap on control switch.

Load malfunctions/overrides.

On command line type trc:5, did:k6101A (unless loaded in CAE).

On command line type trc:6, did:k6103A (unless loaded in CAE).

Load CAE file if available.

Ensure ENP-24 for IC-11 present @ P603.

SHIFT BRIEFING

Plant Status

The plant is operating at 90% power 2 weeks following a refueling outage (Beginning Of Cycle). Power is currently being maintained at 90% at the load dispatcher's request.

Equipment Out of Service

EHC Pump 2B is under clearance for motor replacement and is expected to remain out of service for two days.

APRM Channel Echo failed downscale last shift and is bypassed. I&C is currently investigating.

No other equipment is out of service

Plan of the Day

Maintain 90% power until contacted by the load dispatcher, then raise power to 100%.

I&C is continuing troubleshooting on APRM Channel Echo.

PT-07.2.4A, Core Spray Pump Loop A operability is in progress and completed up to step 7.8 (Pump Testing). Complete PT-07.2.4A as soon as shift turnover is complete.

No other special activities are scheduled for this shift.

SCENARIO TRAINING INFORMATION

Instructor Notes

This guide is designed to meet the requirements of an examination scenario for Initial License as outlined in NUREG-1021, Revision 8, ES-301 and Appendix D.

During the execution of this scenario, the students should be rated on the performance of the objectives, compliance with general simulator performance standards, and for overall team skills in accordance NUREG-1021, ES-303.

Common Student Problems/Errors

None

Simulator Deficiencies

There are no known simulator deficiencies applicable to this scenario.

Critical Tasks (Critical Tasks are identified to ensure scenario validity and do not constitute pass/fail criteria for Initial License.)

Manually close the MSIVs.

Initiate SLC before suppression pool temperature exceeds 110°F.

Insert control rods per LEP-02.

Lower RPV water level to suppress power per EOP-01-LPC.

Reason For Revision

NRC 2001 Initial License Exam.

SIMULATOR SCENARIO

SHIFT TURNOVER

Instructor Activities

- Set up the simulator per the setup.
-

Plant Response

-

Operator Activities

SCO

- Conduct shift turnover shift briefing.

RO/BOP

- Perform board walk-down.
- Monitor the plant.

EVENT 1 CORE SPRAY PT/PUMP OVERLOAD

Instructor Activities

- When asked, as RBAO report CS suction pressure is 6 psig, lubricant level is normal, and you are stationed to monitor system piping.
- When requested, report SW-V128 is open (Room Cooler SW valve).
- Monitor Core Spray flow on panel mimic. After flow exceeds 4100 gpm, initiate trigger E1 to activate Core Spray pump A Overload.
- If asked, as outside AO report 51 device on \emptyset B showing target at pump breaker on E3.
- If asked as I&C to investigate, acknowledge the request.

Plant Response

- Core Spray Pump A Overload alarms, pump does not trip (should not for \emptyset B overload).

Operator Activities

SCO

- Direct continuation of PT-07.2.4A.
- Direct Core Spray A be tripped after overload alarm.
- Direct I&C to investigate.
- Refer to Tech Spec 3.5.1 and determine Action A (7 day) applies.

RO

- Monitor plant during PT performance.

BOP

- Record pump suction pressure (local reading).
- Align cooling to the vital header (open SW-V111 or SW-V117).
- Ensure SW-V118 is open and SW-V141 is closed.
- Start Core Spray Pump A and verify discharge pressure ≥ 300 psig in ≤ 5 seconds.
- Ensure room cooler starts (RTGB) and SW-V128 opens (local).
- Throttle open test return to ≥ 4100 gpm, ensure min flow valve closes, and ensure pump discharge pressure is ≥ 280 psig.
- Recognize and report Core Spray overload, refer to APP and trip pump.
- Dispatch AO to investigate at Bus E3 (check for relay targets).
- Return Core Spray to standby alignment (close E21-F015A).

EVENT 2 REACTOR BUILDING VENT RAD MONITOR FAILS

Instructor Activities

- When actions are complete for the Core Spray overload, initiate trigger E2 to fail RB Vent Rad Monitor B.
- Monitor SBGT A/B control switches on panel mimic, when switches are placed to ON, ensure switch overrides on SBGT automatically delete, or manually delete them.
- If asked as I&C to investigate, acknowledge the request.
- NOTE: the SCO may conservatively declare SBGT Inoperable, but until I&C determines cause of failure to start (may be failed instrument input only) this should not be considered to be required.

Plant Response

- D12-N010B initially spikes upscale, then fails downscale.
- Group 6 and Secondary Containment isolations.
- SBGT fails to auto start, can be manually started.
- Major alarms UA-3 3-5 (Rad Monitor Hi-Hi) and UA-5 6-7 (Reactor Building Low Pressure).

Operator Activities

SCO

- Direct verification of auto actions for rad monitor failure.
- Direct SBGT be manually started.
- Direct I&C to investigate failure of vent rad monitor and SBGT to auto start.
- Refer to Tech Spec 3.3.6.2 (Function 3) and determine Action A is applicable (24 hours).
- Refer to Tech Spec 3.3.6.1 (Function 2d) and determine Action A is applicable (24 hours).

RO

- Monitor the plant.

BOP

- Recognize/report failure of vent rad monitor.
- Refer to APPs for vent rad monitor (UA-3 3-5).
- Ensure Group 6 and Secondary Containment isolations.
- Recognize/report loss of Secondary Containment negative pressure and failure of SBGT to auto start.
- Manually start both SBGT trains A and B by placing to ON.

EVENT 3 LOWERING GRID FREQUENCY

Instructor Activities

- When the crew has responded to the rad monitor failure, call control room as load dispatcher, report loss of generation has resulted in unstable grid conditions and request power be raised to 100%, then modify remote function ED_IAGRID, 59.8.
- If contacted as NE, recommend power be raised using flow, no restrictions to rate apply.
- When power has been raised to at least 99%, modify remote function ED_IAGRID, 60. Call control room as load dispatcher and report grid stability has been restored.

Plant Response

- Generator under frequency alarms (UA-6 1-2).
- EHC Set Speed light goes out.
- EHC Increasing Speed light illuminates.

Operator Activities

SCO

- Direct power be raised to 100%.
- Direct entry into AOP-22.0.

RO

- Raise power to 100% using Recirculation flow.

BOP

- Enter and announce AOP-22.0.
- Determine unrestricted operation at present frequency (5 minute time limit begins at 59.3 hertz).

EVENT 4 FW HEATER 4B TUBE LEAK

Instructor Activities

- When power is $\geq 99\%$ and grid frequency is restored, initiate trigger E3 to activate feedwater heater tube leak
- If asked as TBAO to investigate, report indicated high level in FW Heater 4B and emergency drain opening by controller indication.
- If notified as NE, recommend power reduction to 90% until thermal limits are verified.

Plant Response

- FW Heater 4B level rises initiating extraction trip
- FW temperature drops $\approx 20^\circ\text{F}$ and reactor power rises $\approx 3\%$ (without operator action to lower power)
- Major alarms UA-4 5-9 (Heater Hi/Lo) and UA-4 1-9 (Extraction Trip)

Operator Activities

SCO

- Direct entry into AOP-03.0.
- Direct reactor power reduction to maintain power $\leq 100\%$ per ENP-24 and AOP-03.0 immediate actions.
- Notify NE to monitor thermal limits.
- Refer to OP-35 to evaluate heater performance.
- Direct further power reduction as recommended by the NE.
- Direct bypassing of FW heater 4B & 5B per OP-32.

RO

- Reduce reactor power to maintain power $\leq 100\%$ per ENP-24 and AOP-03.0 immediate actions.
- Reduce reactor power per NE recommendation and SCO direction using ENP-24.

BOP

- Diagnose Heater alarms as high heater level and tube rupture in FW Heater 4B (May use PC Display 432).
- Dispatch AO to investigate at Heater level controller.
- Enter and announce AOP-03.0.
- Refer to OP-35 to evaluate heater performance.
- Reduce power as directed by the SCO.
- Refer to OP-32 for bypassing feedwater heaters.

EVENT 5 MAIN STEAM LINE LEAK

Instructor Activities

- When the crew has responded to the tube break and power is being maintained <100%, initiate event trigger E4 to activate MSL break.
- After the Turbine Building ARM alarms, call the Control Room as Turbine Building AO and report sound of steam leak on hot side, you cannot tell where from.

Plant Response

- Turbine Building ARM alarm (UA-3 5-7)
- Turbine Building area temperatures rise toward Group 1 isolation setpoint.
- MSIVs fail to auto close when tunnel temp hi alarms are received (A-6 3-6 and 4-6).

Operator Activities

SCO

- Enter and direct activities of AOP-05.0.
- Direct evacuation of Turbine Building.
- Consider manual scram and MSIV closure.
- Direct manual scram and MSIV closure when tunnel hi temp alarms are received.

RO

- Monitor the plant
- Reduce reactor power and/or scram reactor as directed by the SCO.
- Recognize report alarms A-6 3-6 and 4-6 (Hi Temp) and failure of MSIVs (Group 1) to auto close.
- Insert manual scram.
- Recognize/report ATWS.

BOP

- Monitor the plant.
- Report Turbine Building ARM alarm.
- Determine ARM readings (back panel).
- Enter, announce and execute AOP-05.0.
- Evacuate Turbine Building as directed by SCO.

EVENT 6 MSIV CLOSURE FAILURE/INITIAL ATWS ACTIONS

Instructor Activities

- None

Plant Response

- MSIVs fail to auto close on valid Group 1 signal, must be manually closed.
- Most Control Rods fail to insert.
- Pressure rises rapidly lifting SRVs, initiating ARI and tripping Recirc Pumps.
- RWCU fails to auto isolate when SLC is initiated

Operator Activities

SCO

- Direct manual scram and closure of MSIVs.
- Enter and direct EOP-01-RSP, transition to Level/Power Control EOP-01-LPC.
- Direct Mode Switch to Shutdown.
- Direct ARI initiated and Recirc Pumps tripped.
- Direct ADS inhibited.
- Direct pressure control using SRVs.
- Direct initiation of SLC (prior to 110°F) and verification of RWCU (Group 3) isolation.
- Direct LEP-02 performed.
- Transition to EOP-01-LPC.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Diagnose failure of MSIVs to auto close and manually close.
- (RO/BOP) Recognize and report ATWS.
- (RO/BOP) Place Mode Switch to Shutdown.
- (RO/BOP) Verify ARI initiated and Recirc pumps tripped.
- (RO/BOP) Inhibit ADS.
- (RO/BOP) Operate SRVs to control pressure as directed by the SCO.
- (RO/BOP) Initiate SLC (prior to 110°F).
- (RO/BOP) Manually isolate RWCU (Group 3).
- (RO/BOP) Enter LEP-02 and drive control rods using RMCS:
 - Start 2nd CRD Pump.
 - Place CRD FCV in manual and open to establish drive pressure.
 - Bypass RWM.
 - Select and drive rods using Emergency In.

EVENT 7 LEVEL/POWER CONTROL ACTIONS

Instructor Activities

- If requested to install jumpers for LEP-02, Section 3, wait 3 minutes and insert MF RP005F (Auto Scram Defeat), and report jumpers installed.
- If requested as I&C to investigate RPS reset failure, acknowledge request.

Plant Response

- Suppression Pool starts heating up
- Power remains above 4%.
- RCIC fails to initiate at LL2

Operator Activities

SCO

- Enter and execute EOP-01-LPC.
- Determine level >90" and power >4%.
- Direct injection to the Reactor be terminated and prevented (HPCI and Condensate/Feedwater).
- When level reaches +90", evaluate Table 3, if Table 3 not yet met, establish a level band of LL4 to +90". (may choose to not establish injection at this time if Table 3 conditions are imminent to prevent having to terminate and prevent injection a second time).

RO/BOP (Circle candidate performing action)

- (RO/BOP) Terminate and prevent Condensate/Feedwater:
Trip Reactor Feed Pumps A and B.
Close FW Heater outlet isolation valves FW-V6 and V8.
- (RO/BOP) Continue to drive control rods per LEP-02.
- (RO/BOP) Terminate and prevent HPCI:
If HPCI not running, place Aux Oil Pump to Pull-To-Lock.
If HPCI running, depress and hold Trip push button, when HPCI turbine speed reaches 0 RPM, place Aux Oil Pump to Pull-To-Lock, then release Trip push button and ensure E41-V8 & V9 remain closed.
- (RO/BOP) Continue to operate SRVs to control pressure.
- (RO/BOP) If directed, control level as directed by SCO.
- (RO/BOP) Recognize failure of RCIC to auto start @ LL2.
- (RO/BOP) Manually start RCIC per the Hard Card if required for level control:
Open cooling valve E51-F046.
Start vacuum pump.
Open steam supply E51-F045.
Open injection valve E51-F013.
Adjust Flow Control as needed.

EVENT 8 SUPPRESSION POOL TEMPERATURE >95°F

Instructor Activities

- If requested to defeat Drywell Cooler LOCA lockout, wait 3 minutes and execute batch file to defeat the LOCA lockout.

Plant Response

- Suppression pool temperature continues to rise.
- If level lowered to LL3, drywell temperature and pressure rises until drywell coolers restarted.

Operator Activities

SCO

- Enter and execute Primary Containment Control, EOP-02-PCCP.
- Direct actions to maximize suppression pool cooling.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Continue to insert control rods.
- (RO/BOP) Place both loops of RHR in suppression pool cooling per the Hard Card.
- (RO/BOP) Continue to control reactor pressure.

EVENT 9 TABLE 3 CONDITIONS MET

Instructor Activities

- None

Plant Response

- Suppression pool temperature rises >110°F
- Reactor power remains >4%.

Operator Activities

SCO

- Determine level must be lowered until Table 3 conditions no longer met.
- Direct injection be or remain terminated.
- If LOCA signal received, direct Core Spray terminated and prevented.
- If LOCA signal received, direct drywell cooling be restored per SEP-10.
- Evaluate TAF and LL4 using Caution 1 graphs.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Continue to drive control rods using RMCS
- (RO/BOP) Monitor APRMs for downscapes.
- (RO/BOP) If necessary terminate and prevent HPCI.
- (RO/BOP) Override Core Spray pumps if LOCA signal received.
- (RO/BOP) Return RHR to Suppression Pool cooling if LOCA signal received.
- (RO/BOP) Continue to control pressure using SRVs.
- (RO/BOP) Monitor Reactor level for TAF.

EVENT 10 APRMs DOWNSCALE OR RPV LEVEL AT TAF

Instructor Activities

- If requested to defeat HPCI hi torus level transfer, wait 3 minutes and insert RF EP_IAEOPJP4, and report HPCI hi torus level transfer defeated.

Plant Response

- APRMs reading <4%, or RPV level at TAF.
- Based on power level if at TAF, HPCI may be required to maintain level above LL4.

Operator Activities

SCO

- Direct injection be established to maintain RPV level LL4 to the level where APRMs downscals were received or TAF.
- Determine level must remain in this band until SLC tank level @40% (or reactor shutdown under all conditions by control rod insertion).

RO/BOP (Circle candidate performing action)

- Report APRM downscals when in.
- Continue rod insertion per LEP-02.
- Monitor SLC tank level and SLC operation.
- Report level at TAF (if APRM downscals not in).
- Operate HPCI and/or RCIC as required to maintain level between LL4 and the level to which it was lowered.
- Continue to operate SRVs to control pressure.

EVENT 11 REACTOR LEVEL STABILIZED/CONTROL ROD INSERTION

Instructor Activities

- After level has been stabilized, if I&C has been requested to investigate RPS, delete switch override K2504A (RPS Reset) and report problem has been fixed (if asked a loose wire re-landed).
- When RPS is reset, and scram discharge volume level is lowering, insert MF_RP009F (ATWS #2), then delete MF_RP011F (ATWS #4).
- When RPS and ARI are reset for the 2nd time, and scram discharge volume level is lowering, insert MF_RP008F (ATWS #1), then delete MF_RP009F (ATWS #2).

Plant Response

- Rod motion on manual scram.

Operator Activities

SCO

- Direct I&C to investigate RPS reset failure.
- Exit LPC and enter RVCP and RSP.
- Direct level to be restored +170-200 inches.
- Direct cooldown be maintained $\leq 100^{\circ}\text{F}/\text{Hr}$ during level restoration.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Enter LEP-02, Section 3:
 - Place ARI to INOP and reset.
 - Place SDV Test Switch to ISOLATE.
 - Attempt to reset RPS.
 - Diagnose/report RPS reset logic failure.
 - When RPS repaired, reset RPS.
 - Place SDV Test switch to NORMAL and ensure SDV vent & drain valves open.
 - After 2 minutes, insert manual scram.
 - Recognize rod movement and repeat actions.
 - Insert any remaining rods with RMCS.
- (RO/BOP) Report when all rods in (or all rods in but one).
- (RO/BOP) Restore level +170-200 inches while maintaining cooldown $\leq 100^{\circ}\text{F}/\text{Hr}$.
- (RO/BOP) Terminate SLC operation.

TERMINATING CUE

Instructor Activities

- ☺ When level is being restored to normal band, the scenario may be terminated.
- ☺ If desired, complete Administrative category A.4 (E-Plan) requirements with SRO.

2

Facility: Brunswick

Scenario No.: NRC-2

Op-Test No.: 1

Examiners: _____

Operators: _____

Initial Conditions: The plant is operating at middle of cycle steady state conditions. Power is currently 75% per the Load Dispatchers request. CSW Pump 2C and SLC Pump 2A are under clearance.

Turnover: Maintain present power until contacted by the Load Dispatcher, then raise power at the Load Dispatchers request.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	R-RO SRO	Power increase at load dispatchers request
2	1	I-BOP SRO	Inadvertent HPCI initiation requires HPCI operation terminated per AOP-03.0
3	2	C-RO SRO	Reactor Feed Pump trip places plant in restricted region of power to flow map requiring exit per AOP-04.0
4	3	N-BOP SRO	Transfer BOP Buses 2C and 2D to the SAT per OP-50
5	4	C-BOP SRO	Failure of Air Compressor to load and standby Air Compressors to auto start.
6	5	I-RO SRO	EHC pressure regulator fails high
7	6	M-ALL	SRV Fails Open, SRV Tail Pipe Ruptures
8	7		Containment spray logic fails
9			Pressure suppression pressure limit exceeded requiring emergency depressurization

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

SCENARIO DESCRIPTION

The plant is operating at 75% power, middle of cycle with CSW Pump 2C and SLC Pump 2A under clearance.

The crew will begin to raise power toward 100% per GP-12.

When power has been increased to 80%, HPCI will inadvertently initiate. The crew will respond per AOP-03.0 and terminate HPCI operation. A scram on high flux may occur if HPCI is not terminated. HPCI will be declared Inoperable and Tech Specs addressed.

Reactor Feed Pump 2A will trip resulting in a Recirc runback to Limiter #2. The flow reduction will place the unit in the Restricted Region of the power to flow map. The crew will respond per AOP-23.0, AOP-04.0 and Tech Specs. Control rods must be inserted to exit the Restricted Region.

A UAT ground alarm will be received and verified to be valid by maintenance. The crew will respond per the APP and transfer BOP Buses 2C and 2D to the SAT.

Air Compressor D loading valve will fail and instrument air pressure will drop. Service Air will isolate and Air Compressors A/B/C will fail to auto start. The crew should respond per AOP-20.0 and start Air Compressors A/B/C. If the standby compressors are not started and air pressure continues to lower, feedwater flow will be lost to the RPV.

The EHC pressure regulator will fail resulting in opening of Turbine Control and Bypass valves to the Max Combined Flow limit (110%). Steam line pressure drops to the MSIV isolation setpoint and the MSIVs close. The reactor fails to auto scram. Manual scram channel B push button will fail. ARI will fail to auto initiate on high RPV pressure. The rods can be inserted by placing the Mode Switch to Shutdown (steam flow is less than 3 mlb/hr due to the MSIV closure) or by manually initiating ARI.

RPV pressure will spike high due to the MSIV closure and RPS failure. SRVs will lift on high pressure. SRV F will fail to reclose when rods are inserted and RPV pressure lowers. The tail pipe on SRV F will rupture in the suppression chamber airspace shortly after the valve sticks open resulting in rapidly rising containment pressure and temperature.

Feed flow is lost to the RPV due to MSIV closure. HPCI may be manually started to restore RPV level but will fail shortly after being started.

If containment spray is attempted the logic will fail. Suppression chamber pressure will rise above the safe value for Pressure Suppression Pressure requiring emergency depressurization. Low pressure ECCS and Condensate must be operated during depressurization to prevent uncontrolled injection.

When the reactor has been depressurized, the scenario may be terminated.

OBJECTIVES

SRO

344205B402, Direct Shift Response To A Moderator Temperature Decrease Per AOP-03.0

344227B402, Direct Action For Condensate/Feedwater System Failures Per AOP-23.0

344206B402, Direct Shift Response To A Recirculation Flow Control Failure Causing A Decreasing Flow Per AOP-04.0

344223B402, Direct Actions For Pneumatic Air System Failures Per AOP-20.0

344231B402, Direct Actions For Safety/Relief Valve Failures Per AOP-30.0

344217B502, Direct Actions To Control RPV Level Per EOP-01-RVCP

344220B502, Direct Actions To Emergency Depressurize The RPV Per EOP-01-RVCP

344214B502, Direct Actions To Control Primary Containment Pressure Per EOP-02-PCCP

344216B502, Direct Actions To Control Suppression Pool Temperature Per EOP-02-PCCP

RO

202002B101, Increase Reactor Recirculation Pump Speed/Reactor Power Using The Manual Control Stations Per OP-02

200210B401, Respond To A Moderator Temperature Decrease Per AOP-03.0

259001B401, Respond To A Condensate/Feedwater System Failure Per AOP-23

202014B401, Respond To A Recirc Flow Control Failure Decreasing Per AOP-04.0

262002B101, Transfer Auxiliary Power From The SAT To The UAT Per OP-50

248002B401, Respond to an EHC failure causing Low Reactor Pressure

239008B401, Respond To An SRV Failure Per AOP-30.0

218002B501, Operate ADS/SRVs To Emergency Depressurize The Reactor Per EOP-01-RVCP

205014B101, Start Up RHR In Suppression Pool Cooling Mode Per OP-17

SIMULATOR SETUP

Initial Conditions

IC 13
 Rx Power 75%
 Core Age MOC

Event Triggers

Event	Trigger Description
E1	Manually Initiated (HPCI Initiation)
E2	Manually Initiated (RFP A Trips)
E3	Manually Initiated (UAT Winding Y Ground)
E4	Manually Initiated (Air Compressor D Fails)
E5	Manually Initiated (EHC Regulator Fails High)
E6	Auto Initiated (SRV F Red = TRUE)
E7	Auto Initiated (ARI Keylock Switch = TRIP)
E8	Manually Initiated (HPCI Power Supply Loss)

Malfunctions

Event	System	Tag	Title	Value (Ramp)	Activate Time	Deactivate Time
E1	ES	ES014F	Inadvertent HPCI	NA	0 SEC	NA
E2	CF	CF036F	RFP A Low Suct Press	NA	0 SEC	NA
E4	IA	IA009F	Air Compr D Fails To Load	NA	0 SEC	NA
E5	MS	MS003 F	Press Reg Fails High	NA	0 SEC	NA
E5	RP	RP005F	Auto Scram Defeat	NA	0 SEC	NA
E6	ES	ES004F	SRV F Fails Open	NA	0 SEC	NA
E6	CA	CA020F	SRV F Broke Tailpipe	NA	60 SEC	NA
E8	ES	ES015F	HPCI Power Supply Loss	NA	0 SEC	NA

Overrides

Switches

Event	Panel	Tag	Title	Value (Ramp)	Activate Time	Deactivate Time
A	XU-2	K4A01A	Air Compr A Auto	OFF	0 SEC	NA
A	XU-2	K4A02A	Air Compr B Auto	OFF	0 SEC	NA
A	XU-2	K4A03A	Air Compr C Auto	OFF	0 SEC	NA
A	P603	K2625A	ARI CS-5560	INOP	0 SEC	NA
A	P603	K2503A	Rx Manual Scram B	OFF	0 SEC	NA
A	P601	K1227A	Cont Spray A Control	AS IS	0 SEC	NA
A	P601	K1727A	Cont Spray B Control	AS IS	0 SEC	NA

Lamps

Event	Panel	Tag	Title	Value (Ramp)	Activate Time	Deactivate Time
A	P603	Q2625SRE	ARI Inop White	OFF	0 SEC	NA
A	P603	Q2625SWE	ARI Auto Green	ON	0 SEC	NA

Alarms

Event	Panel	Tag	Title	Value (Ramp)	Activate Time	Deactivate Time
E3	XU-1	ZUA13210	UAT Winding Y Ground	ON	0 SEC	NA

Remote Functions

Event	System	Tag	Title	Status	Activate
A	ED	IABKCF	DC Fuses CSW Pump 2A	OUT	0 SEC
A	SL	IASLRA	SLC Pump A Motor Breaker	OPEN	0 SEC

Materials

ENP-24 for IC-13

SPECIAL INSTRUCTIONS

Ensure exam security requirements are met.

Reduce power to 75%, allow conditions to stabilize, zero DVM and adjust APRM GAFs (activate GAF Pots under NI Remote Function).

Advance all chart recorders to indicate steady state conditions.

Place all SPDS displays to the Critical Plant Variable display (#100).

Ensure appropriate keys have blanks in switches.

Exit shutdown screen on RWM and place the RWM key in the key locker.

Reset alarms on SJAE, MSL and RWM NUMACs.

Ensure reference material is in appropriate location.

Verify all logbooks have blank sheets only.

Load malfunctions/overrides.

In expert command line enter "trc:7, did:k2625a" (unless loaded in CAE file).

Load CAE file if available.

Place red caps on CSW Pump 2C control switch and SLC Pump 2A indicating light.

Ensure ENP-24 for IC-13 @ P603.

SHIFT BRIEFING

Plant Status

The plant is operating at approximately 75% power, 166 days following refueling (middle of cycle). Power is currently being held at 75% per the Load Dispatcher's direction.

Equipment Out Of Service

CSW Pump 2C is under clearance for routine maintenance and will remain out of service this shift.

SLC Pump 2A is under clearance after tripping during a PT last shift. Maintenance is investigating the cause of the trip.

No other equipment is out of service.

Plan of the Day

Maintain 75% power until contacted by the Load Dispatcher, then raise power to 100% per GP-12. The Load Dispatcher is expected to request power ascension shortly after shift turnover is complete.

No other activities are scheduled for this shift.

SCENARIO TRAINING INFORMATION

Instructor Notes

This guide is designed to meet the requirements of an examination scenario for Initial License as outlined in NUREG-1021, Revision 8, ES-301 and Appendix D.

During the execution of this scenario, the students should be rated on the performance of the objectives, compliance with general simulator performance standards, and for overall team skills in accordance with NUREG-1021, ES-303.

Common Student Problems/Errors

None noted to date.

Simulator Deficiencies

There are no known simulator deficiencies applicable to this scenario.

Critical Tasks

Insert control rods by placing the Mode Switch to Shutdown or by manually initiating ARI.

Emergency depressurize the reactor when suppression chamber pressure cannot be maintained in the Safe region of the Pressure Suppression Pressure Limit.

Reason For Revision

New scenario developed for HLC 2001 NRC exam.

SIMULATOR SCENARIO

SHIFT TURNOVER

Instructor Activities

- Set up the simulator per the setup.
-

Plant Response

-

Operator Activities

SCO

- Conduct shift turnover shift briefing.

RO

- Perform board walk-down.
- Monitor the plant

BOP

- Perform board walk-down.
- Monitor the plant.

EVENT 1 POWER INCREASE

Instructor Activities

- When the crew has the watch, call control room as load dispatcher and request BNP2 raise power to 100%.
- If contacted as NE report rods at desired pattern and power should be raised to 100% using flow.
- Ensure RO (Not the BOP) performs alternate power verification at 80% per GP-12.

Plant Response

-

Operator Activities

SCO

- Direct power be raised using Recirc flow per GP-12.
- Direct alternate power verification at 80% power.

RO

- Raise reactor power by increasing Recirc flow per GP-12 and OP-02.
- Perform alternate power verification per GP-12.

BOP

- Monitor the plant.

EVENT 2 HPCI INITIATION

Instructor Activities

- While the RO is performing the alternate power verification at 80%, initiate Trigger E1 to initiate the HPCI system.
- If asked as I&C to investigate, acknowledge the request.

Plant Response

- HPCI Initiation causes power to rise if HPCI is allowed to inject to the RPV.
- HPCI Low Flow (A-1 1-4) alarms 15 seconds after steam supply (E41-F001) begins to open.

Operator Activities

SCO

- Direct entry into AOP-03.0.
- Direct termination of HPCI operation.
- Direct reduction of reactor power if necessary to prevent a scram.
- Contact I&C to investigate HPCI failure.
- Refer to Tech Spec 3.5.1. Determine Action D applies (Verify RCIC Operable and restore HPCI to Operable within 14 days).
- Refer to OI-01.07 and determine reportability requirements (8 hour for loss of single train, item 3.4 on Attachment 1).

RO

- Reduce reactor power as required to prevent a reactor scram if directed by the SCO
- Monitor the plant.

BOP

- Diagnose and report inadvertent HPCI initiation.
- Enter and announce AOP-03.0.
- Verify by two independent methods the initiation is not valid and terminate HPCI operation as follows:
 - Depress and hold turbine trip push button.
 - When HPCI turbine coasts to 0 RPM, place Aux Oil Pump to Pull-To-Lock.
 - Release trip push button and ensure HPCI remains shutdown.

EVENT 3 RFPT TRIP

Instructor Activities

- When actions for the inadvertent HPCI initiation are complete, initiate Trigger E2 to activate the RFP A trip.
- If asked as TBAO to investigate, report nothing apparent you can see.
- If asked as I&C to investigate, acknowledge the request.

Plant Response

- Reactor Water Level Hi/Lo (A-7 2-2) alarms and recirc runs back to limiter #2.
- APRM Upscale alarms (A-6 2-8) indicating entry into the restricted region of the power to flow map.
- Plant operating in Monitored Region after Restricted Region exit.

Operator Activities

- SCO
- Direct entry into AOP-23.0.
- Direct entry into AOP-04.0.
- Contact I&C to investigate RFPT trip.
- Determine region of operation per COLR power to flow map.
- Direct control rod insertion per ENP-24 to exit the restricted region.
- Ensure Tech Spec requirements met for Restricted/Monitored Region entry (TS 3.2.3 for FCCB determine FCCB within 15 minutes or exit restricted region, TS 3.3.1.3 for PBDS- required in Restricted or Monitored Regions – NOTE: Tech Spec actions contained in AOP-04.0).

RO

- Recognize and report runback to Limiter #2.
- Ensure RFP B responds to restore and maintain RPV level.
- Recognize and report APRM Upscale alarm (Restricted Region Entry Alarm).
- Monitor for indications of Thermal Hydraulic Instability (THI).
- Insert control rods per ENP-24 to exit restricted region.

BOP

- Recognize and announce RFPT trip.
- Enter and announce AOP-23.0.
- Enter and announce AOP-04.0.
- Determine region of operation per COLR power to flow map.
- Execute Core Mon to determine FCCB.

EVENT 4 BOP BUS TRANSFER

Instructor Activities

- When the restricted region has been exited, initiate Trigger E3 to activate UAT Ground alarm.
- If contacted as TBAO, report no ground relays are picked up on Bus 2C or 2D.
- If contacted as I&C to investigate, report ground relay for UAT is picked up and the ground alarm is valid.

Plant Response

- UA-13 2-10, UAT Winding Y Ground alarm.

Operator Activities

SCO

- Direct actions of APP UA-13 2-10.
- Direct I&C to investigate if ground alarm is valid.
- Direct transfer of Buses 2C and 2D from UAT to SAT per OP-50.

RO

- Monitor the plant.

BOP

- Enter APP UA-13 2-10.
- Direct AO to check Buses 2C and 2D for ground indications.
- Transfer BOP Buses 2C and 2D from UAT to SAT per OP-50:
 - For Bus 2C and 2D, turn sync switch on for SAT supply breaker.
 - Close SAT supply breaker and verify UAT supply breaker opens.
 - Turn SAT supply breaker sync switch off.

EVENT 5 AIR COMPRESSOR D FAILS

Instructor Activities

- When the crew has transferred BOP Buses 2C and 2D to the SAT, initiate Trigger E4 to fail Air Compressor D.
- If asked to investigate, report Air Compressor D is running unloaded and will not load. Report no indications of any air leaks.
- If requested to reset service air isolation, modify Remote Function AI_IAAI706, RESET
- If requested, as Unit 1 grant permission to crosstie air if Unit 2 is sure there are no air leaks, if directed to open service air crosstie, wait 2 minutes and modify Remote Function AI_VHAI007L, OPEN.

Plant Response

- Air header pressure lowers.
- Air Compressors A, B & C fail to start, can be manually started (should start at \approx 110 psig).
- Service Air Low Pressure (UA-1 5-4) alarms at 107 psig.
- When pressure lowers to 105 psig, service air isolates.
- If pressure drops to 100 psig, Instrument Air Low Pressure (UA-1 4-4) alarms.
- If air pressure not restored, Condensate/Feedwater recirc valves fail open and Feedwater is lost.

Operator Activities

SCO

- Direct entry into AOP-20.0.
- Direct verification of automatic actions.
- Direct Air Compressors A/B/C be manually started (may also choose to direct service air crosstie).
- Direct Service Air restored.
- Direct I&C to investigate air compressor failures.

RO

- Monitor the plant.

BOP

- Recognize/report lowering air header pressure.
- Enter/announce AOP-20.0.
- Verify auto actions.
- Manually start air compressors A/B/C.
- Dispatch AO to investigate.
- Direct AO to reset service air isolation.
- If directed, direct crosstie of service air.

EVENT 6 EHC FAILURE/ELECTRICAL ATWS

Instructor Activities

- When the crew has responded to the air compressor failure, initiate Trigger E5 to fail EHC.
- Monitor SRV operation (panel mimics). If SRV F does not open to control pressure, manually initiate E6.

Plant Response

- Turbine and bypass valves open to Max Combined flow limit (110%).
- Steam line pressure lowers to 850 psig closing MSIVs (Group 1).
- Pressure rapidly rises lifting SRVs.
- RPS fails to initiate an auto scram.
- ARI fails to auto actuate on high pressure.
- RPS manual scram B push button fails.
- SRV F fails to close after opening.
- Rods inserted by placing Mode Switch to Shutdown or by manually initiating ARI.

Operator Activities

SCO

- Enter and direct scram procedure, EOP-01-RSP.
- If rods not yet inserted, transition to Level/Power Control, EOP-01-LPC.
- Direct manual scram.
- Direct Mode Switch to Shutdown when steam flow is <3 mlb/hr.
- If EOP-01-LPC has been entered, when control rods inserted, exit LPC and enter Reactor Vessel Control Procedure, EOP-01-RVCP.

RO

- Diagnose and report loss of EHC pressure control.
- Recognize MSIV closure and failure to auto scram, insert manual reactor scram.
- Recognize/report failure of RPS manual scram.
- Place Mode Switch to Shutdown and/or manually initiate ARI.
- Recognize and report when control rods are inserted.

BOP

- Diagnose and report failed open SRV and perform actions of AOP-30 (cycle control switch several times leaving switch in CLOSE).

EVENT 7 BROKEN SRV TAILPIPE

Instructor Activities

- If requested as I&C to investigate spray logic, acknowledge the request.
- After HPCI is started, wait approximately 30 seconds and initiate Trigger E8 to fail HPCI controller power supply.
- If asked as I&C to investigate HPCI power loss, acknowledge the request.

Plant Response

- SRV F tail pipe ruptures in the suppression chamber air space 1 minute after opening.
- HPCI available for injection by taking Aux Oil Pump out of Pull-To-Lock.
- Suppression chamber and drywell pressure rapidly rise.
- Suppression chamber pressure leads drywell pressure and torus-drywell vacuum breakers lifting indicate broken SRV tailpipe.
- RHR unavailable for spray due to failure of spray logic.
- Pressure suppression pressure limit is exceeded.

Operator Activities

SCO

- Enter Reactor Vessel Control Procedure, EOP-01-RVCP (if not already entered) and Primary Containment Control Procedure, EOP-02-PCCP.
- Direct RPV level be restored and maintained +170-200".
- Direct initiation of suppression chamber spray.
- Direct initiation of drywell spray.
- Direct I&C to investigate failure of spray logic.
- Determine leak is in suppression chamber based on higher suppression chamber pressure and/or vacuum breaker operation.
- When PSPL exceeded, determine emergency depressurization is required.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Start HPCI (start Aux Oil Pump) to restore and maintain RPV level +170-200".
- (RO/BOP) Diagnose and report rapidly rising containment pressures.
- (RO/BOP) Determine leak is in suppression chamber based on higher suppression chamber pressure and/or vacuum breaker operation.
- (RO/BOP) Attempt to initiate spray per SEP-02 and/or SEP-03.
- (RO/BOP) Diagnose and report failure of RHR Loop A and/or B spray logic.
- (RO/BOP) Diagnose and report failure of HPCI controller power supply.

EVENT 8 EMERGENCY DEPRESSURIZATION

Instructor Activities

- After ADS valves have been opened, if both spray logics have not yet been attempted, delete switch override on spray logic not yet attempted, or if I&C has been directed to investigate RHR spray logic, delete switch override K1227A or K1727A and report logic repaired.

Plant Response

- RCIC may trip due to elevated suppression chamber pressure.
- Low pressure ECCS initiates when RPV pressure drops below 410 psig (Core Spray injects at 300 psig, RHR injects at 200 psig).
- Condensate begins to inject at approximately 400 psig if FW-V6 and FW-V8 (Feedwater Heater outlet isolation valves) are not closed.

Operator Activities

SCO

- Direct low pressure ECCS be operated to prevent uncontrolled injection.
- Direct Condensate be operated to prevent uncontrolled injection.
- Direct 7 ADS valves opened.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Open 7 ADS valves.
- (RO/BOP) Override RHR and Core Spray Pumps off when RPV pressure drops below 410 psig if injection is not required for RPV level control.
- (RO/BOP) Verify LOCA actuations.
- (RO/BOP) Operate the condensate system to prevent uncontrolled injection (close FW-V6 and FW-V8).

EVENT 9 REACTOR DEPRESSURIZED

Instructor Activities

- None

Plant Response

- RHR Outboard Injection valves E11-F017A/B can be closed 5 minutes after opening.
- Only one loop of RHR available for containment cooling/spray since a LPCI signal present and one loop's spray logic is failed.

Operator Activities

SCO

- Direct RPV level be maintained +170-200".
- Direct RHR be placed in drywell and suppression chamber spray when injection valves E11-F017A and/or B can be closed (whichever loop has spray logic).
- Refer to Caution 1 for level instrument operability.
- As time permits direct placing H2/O2 monitors (4409 & 4410) in service.

RO/BOP (Circle candidate performing action)

- (RO/BOP) Operate available injection systems (Condensate, RHR, Core Spray) to maintain +170-200".
- (RO/BOP) Place RHR Loop A(B) into drywell and suppression chamber spray per SEP-02 and SEP-03:
 - Close E11-F017A(B).
 - Verify Drywell Coolers and Recirc Pumps tripped.
 - Place "Think Switch" to Manual.
 - Start RHR Pump.
 - Verify safe region of spray initiation limit and torus level <+21".
 - Open E11-F021A(B).
 - Open E11-F016 A(B). to establish flow 8000-10,000 GPM-(drywell spray)
 - Start RHR Service Water (open service water supply valve, place LPCI override switch to override, start RHR SW Pumps and throttle open E11-F068A or B (4000 GPM max – 1 pump, 8000 GPM max – 2 pump).
 - Close RHR HX Bypass E11-F048A(B).
 - Open E11-F028 A(B) and E11-F027A(B) (torus spray – SEP-03)
- (RO/BOP) If directed, place H2/O2 (4409 & 4410) monitors in service.

TERMINATING CUE

Instructor Activities

- ☺ When the Reactor has been depressurized, the scenario may be terminated.
- ☺ If desired, complete Administrative Category A.4 (E Plan) requirements with the SRO.