JOB PERFORMANCE MEASURE

Job Position SRO / RO / NO	No. JP-OP-315-0005-203	Revision 2
JPM Title Pull Fuses for a Stuck Open Safety Relief Valve	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO / NO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: Perform / **Walkthrough** / Discuss

Location: **Plant** / Simulator / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.											
2.											
3.											
*** 4.**											
*** 5.**											
*** 6.**											
*** 7.**											
8.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Information

System:

239002 - Safety Relief Valves

Task:

02A0001101 - Recognize, respond to and correct failed Safety Relief Valve

References: Required (R) / Available (A)

20.000.25, Failed Safety Relief Valve (R)

Tools and Equipment Required:

Appropriate electrical safety personal protective equipment (PPE)
Fuse pullers

Initial Conditions:

- You are an extra NO on shift.
- A Main Turbine trip from full power resulted in the actuation of Safety Relief Valves (SRV).
- SRV B2104-F013E has failed to close.
- 20.000.25, Failed Safety Relief Valve, is being implemented.

Initiating Cue(s):

The CRS directs you to attempt SRV closure by pulling the SRV E fuse(s) using Enclosure A of 20.000.25.

Terminating Cue(s):

Terminate JPM when fuses are removed and MCR report has been made

Task Standard:

SRV E control power fuses are pulled in accordance with 20.000.25.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 3 - Reactor Pressure Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 239002 – Relief/Safety Valves

K/A STATEMENT:

A2 Ability to (a) predict the impacts of the following on the Relief/Safety Valves; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences

A2.03 Stuck Open SRV..... 4.1 / 4.2

Maintenance Rule Safety Classification:

B2104-06

Maintenance Rule Risk Significant? (Yes or No)

Yes

PERFORMANCE EVALUATION

Start Time _____

ELEMENT		STANDARD	
CUE:	**Provide examinee with the Cue Sheet. After candidate explains how to obtain a controlled copy of 20.000.25, provide him/her a copy of 20.000.25, Enclosure A.**		
1.	Refer to Enclosure A of 20.000.25 to determine fuse location.	1.	Determines that appropriate fuses are located in panel RR H11-P628.
2.	Obtain required tools and PPE.	2.	Obtains fuse puller and appropriate PPE per ODE14 Attachment 13.
3.	Proceed to panel RR H11-P628.	3.	Arrives at panel RR H11-P628
CUE:	**Fuse TB-AA-F12 is removed.**		
*** 4**.	Locate and pull fuse TB-AA-F12 (B21C-F3E).	*** 4**.	Simulates fuse removal.
CUE:	**Fuse TB-AA-F23 is removed.**		
*** 5**.	Locate and pull fuse TB-AA-F23 (B21C-F4E)	*** 5**.	Simulates fuse removal.
CUE:	**Fuse TB-DD-F14 is removed.**		
*** 6.**	Locate and pull fuse TB-DD-F14 (B21C-F7E)	*** 6.**	Simulates fuse removal.
CUE:	**Fuse TB-DD-F25 is removed.**		
*** 7.**	Locate and pull fuse TB-DD-F25 (B21C-F8E)	*** 7.**	Simulates fuse removal.
8.	Report to Main Control that the fuses for SRV E have been pulled.	8.	Makes report and acknowledges that fuses will NOT be reinstalled.
CUE:	**Acknowledge report to Main Control Room. Reply that SRV E is closed, and direct the applicant to NOT reinstall fuses.**		
CUE:	**Terminate JPM when fuses are removed and MCR report has been made.**		

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JPM Title Pull Fuses for a Stuck Open Safety Relief Valve	No.: JP-OP-315-0005-203 Revision: 2 Page 5

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

None

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the Cover Sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

N/A

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

N/A

Cue Sheet: (JP-OP-315-0005-203)

Initial Conditions:

- You are an extra NO on shift.
- A Main Turbine trip from full power resulted in the actuation of Safety Relief Valves (SRV).
- SRV B2104-F013E failed to close.
- 20.000.25, Failed Safety Relief Valve is being implemented.

Initiating Cue(s):

The CRS directs you to attempt SRV closure by pulling the SRV E fuse(s) using Enclosure A of 20.000.25.

Cue Sheet: (JP-OP-315-0005-203)

Initial Conditions:

- You are an extra NO on shift.
- A Main Turbine trip from full power resulted in the actuation of Safety Relief Valves (SRV).
- SRV B2104-F013E failed to close.
- 20.000.25, Failed Safety Relief Valve is being implemented.

Initiating Cue(s):

The CRS directs you to attempt SRV closure by pulling the SRV E fuse(s) using Enclosure A of 20.000.25.

Job Position SRO / RO / NO	No. JP-OP-315-0262-003	Revision 2
JPM Title Transfer of UPS Static Transfer Switch from Normal to Alternate (Alt. Path)	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO / NO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical

Evaluation Method: Perform / **Walkthrough** / Discuss

Location: **Plant** / Simulator / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
*** 1.**				11.							
2.				12.							
3.				***13.**							
4.				14.							
*** 5.**				15.							
6.				***16.**							
7.				***17.**							
8.				18.							
9.				19.							
***10.**				20.							

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Title Transfer of UPS Static Transfer Switch from Normal to Alternate (Alt. Path)	No.: JP-OP-315-0262-003 Revision: 2 Page 3

JPM Information

System:

R3100 - Uninterruptible Power Supply

Task:

02A0001105 - Recognize, respond to, and correct loss of Uninterruptible Power Supply (UPS)

References: Required (R) / Available (A)

23.308.01, Uninterruptible Power Supply (UPS) System (R)

Tools and Equipment Required:

None

Initial Conditions:

You are the extra operator on shift.

Initiating Cue(s):

The Control Room LNO directs you to shift UPS A (B) Power Supply from Normal to Alternate using the Static Transfer Switch.

Terminating Cue(s):

UPS A(B) has been transferred back to the normal power supply using the Static Transfer Switch.

Task Standard:

UPS is in service aligned to the Normal Power Supply in accordance with 23.308.01.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 6 - Electrical

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 262002 - Uninterruptable Power Supply (A.C./D.C.)

K/A STATEMENT:

A2. Ability to (a) predict the impacts of UPS bus under voltage; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences

A2.01 Under Voltage..... 2.6 / 2.8

Maintenance Rule Safety Classification:

R3100-05

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

ELEMENT		STANDARD	
CUE:	**Provide Examinee with Cue Sheet and 23.308.01**		
CUE:	**Return Mode switch is in MAN.**		
*** 1.**	[5.1.2.1] Place Return Mode switch in MAN (Mimic Bus).	*** 1.**	Return Mode switch placed in MAN.
CUE:	**Sync Switch is in ON.**		
2.	[5.1.2.2] Verify Sync Switch is in ON.	2.	Verifies Sync Switch is in ON.
CUE:	**Retransfer Blocked light is ON.**		
3.	[5.1.2.3] Verify amber Retransfer Blocked light is ON.	3.	Verifies amber Retransfer Blocked light is ON.
CUE:	**Sync Monitor light is OFF.**		
4.	[5.1.2.4] Verify clear Sync Monitor light is OFF (Mimic Bus).	4.	Verifies clear Sync Monitor light is OFF.
CUE:	**Test switch is in ALT LINE.**		
*** 5.**	[5.1.2.5] Place Test switch to ALT LINE (Mimic Bus).	*** 5.**	Places Test switch to ALT LINE.
CUE:	**Alternate Line light is ON.**		
6.	[5.1.2.6] Verify amber Alternate Line light is ON (Mimic Bus).	6.	Verifies amber Alternate Line light is ON.
CUE:	**Inverter light is OFF.**		
7.	[5.1.2.7] Verify red Inverter light is OFF (Mimic Bus).	7.	Verifies red Inverter light is OFF.
	Alternate Path Begins Here		
CUE:	**Amber REGULATOR FAILURE light is ON, amber Summary Alarm light is ON and the Static Transfer Switch Output voltage (UPS AC VOLTAGE) is reading 100 VAC.**		
CUE:	**Control Room reports the UPS UNIT A/B TROUBLE alarm (3D22) has been received.**		
NOTE:	**Examinee should recognize failure of Alternate Power Supply. This requires UPS to be transferred back to Normal.**		
CUE:	**Alternate Line light is ON.**		
8.	[5.2.2.1] Verify amber Alternate Line light is ON (Mimic Bus).	8.	Verifies amber Alternate Line light is ON.
CUE:	**Return Mode switch is in MAN.**		
9.	[5.2.2.2] Verify or place Return Mode switch in MAN (Mimic Bus).	9.	Verifies Return Mode switch in MAN.
CUE:	**Test switch is in CENTER.**		
***10.**	[5.2.2.3] Verify or place Test switch in CENTER (Mimic Bus).	***10.**	Places Test switch in CENTER.

ELEMENT		STANDARD	
CUE:	**Sync Switch is in ON.**		
11.	[5.2.2.4] Verify Sync Switch is in ON.	11.	Verifies Sync Switch is in ON.
CUE:	**Sync Monitor light is OFF.**		
12.	[5.2.2.5] Verify clear Sync Monitor light is OFF (Mimic Bus).	12.	Verifies clear Sync Monitor light is OFF.
CUE:	**Reset pushbutton is depressed.**		
***13.**	[5.2.2.6] Depress Reset pushbutton (Mimic Bus).	***13.**	Depresses Reset pushbutton.
CUE:	**Red Inverter light is ON.**		
14.	[5.2.2.7] Verify red Inverter light is ON (Mimic Bus).	14.	Verifies red Inverter light is ON.
CUE:	**Alternate Line light is OFF.**		
15.	[5.2.2.8] Verify amber Alternate Line light is OFF (Mimic Bus).	15.	Verifies amber Alternate Line light is OFF.
CUE:	**Return Mode switch is in AUTO.**		
***16.**	[5.2.2.9] Place Return Mode switch in AUTO (Mimic Bus).	***16.**	Places Return Mode switch in AUTO.
CUE:	**Alarm Latch Reset pushbutton is depressed.**		
***17.**	[5.2.2.10] Depress Alarm Latch Reset pushbutton (Mimic Bus).	***17.**	Depresses Alarm Latch Reset pushbutton.
CUE:	**Retransfer Blocked light is OFF.**		
18.	[5.2.2.11] Verify amber Retransfer Blocked light is OFF.	18.	Verifies amber Retransfer Blocked light is OFF.
CUE:	**Summary Alarm light is OFF.**		
19.	[5.2.2.12] Verify amber Summary Alarm light is OFF (Mimic Bus).	19.	Verifies amber Summary Alarm light is OFF.
CUE:	**The Control room acknowledges the report. If asked 3D22 is clear.**		
20.	Inform the Control Room that UPS A (B) has been transferred back to the normal power supply using the Static Transfer Switch.	20.	Control Room is informed that UPS A (B) is aligned to the normal power supply.
CUE:	**End JPM when UPS A(B) has been transferred back to the normal power supply using the Static Transfer Switch.**		

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

Start this JPM at the UPS.

This JPM can be performed on either UPS.

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating 25 amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

N/A

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

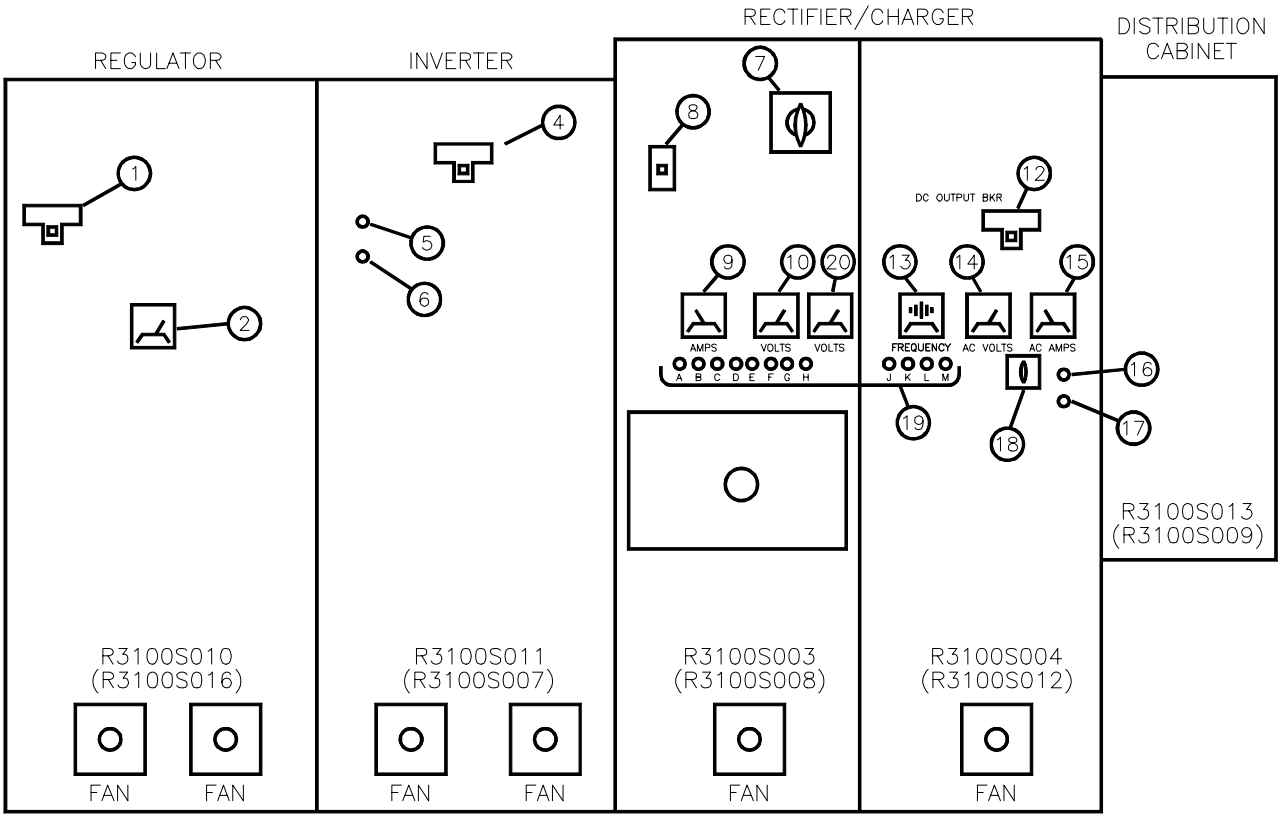
Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

N/A

PANEL COMPONENT DESCRIPTION AND LOCATION



UNIT B PIS NUMBERS IN PARENTHESIS

1. REGULATOR AC INPUT (CIRCUIT BREAKER)
2. REGULATOR AC OUTPUT (METER0–150 VAC)
3. FANS WITH PERMANENT FILTERS
4. INVERTER DC INPUT (CIRCUIT BREAKER)
5. DC FILTER CHARGED (RED LIGHT)
6. DC FILTER CHARGE (TOGGLE SWITCH)
7. MANUAL BYPASS SWITCH
8. RECTIFIER AD INPUT (CIRCUIT BREAKER)
9. RECTIFIER DC OUTPUT (AMP METER, 0–500 AMPS)
10. RECTIFIER DC OUTPUT (METER, 0–300 VDC)
11. MIMIC BUS (SEE ENCLOSURE B)
12. RECTIFIER DC OUTPUT (CIRCUIT BREAKER)
13. FREQUENCY METER
14. AC VOLT METER
15. AC LOAD AMP METER
16. TIMER RESET (TOGGLE SWITCH)
17. INITIATE TIMED EQUALIZE (PUSHBUTTON)
18. SOURCE SELECT SWITCH (CONNECTS AC VOLTMETER AND FREQUENCY METER TO INVERTER OUTPUT, ALTERNATE LINE INPUT OR STATIC TRANSFER SWITCH OUTPUT)
19. ALARM LIGHTS (AMBER)
    a. RECTIFIER IN EQUALIZE
    b. RECTIFIER FAILURE
    c. BREAKER OPEN
    d. LOW DC VOLTAGE
    e. HIGH DC VOLTAGE
    f. REGULATOR FAILURE
    g. INVERTER FAILURE
    h. INVERTER FREQUENCY OUTSIDE TOLERANCE
    j. LOSS OF SYNC SOURVCE
    k. RETRANSFER BLOCKED
    l. ALTERNATE SOURCE FAILURE
    m. STATIC TRANSFER SWITCH FAILURE
20. BATTERY DC OINPUT (VOLTMETER 0–300 VDC, UNIT A ONLY)
21. SYNC (TOGGLE SWITCH)

UPS UNIT

FIGURE 1
ST–OP–315–0062–00
PD00039

JJH

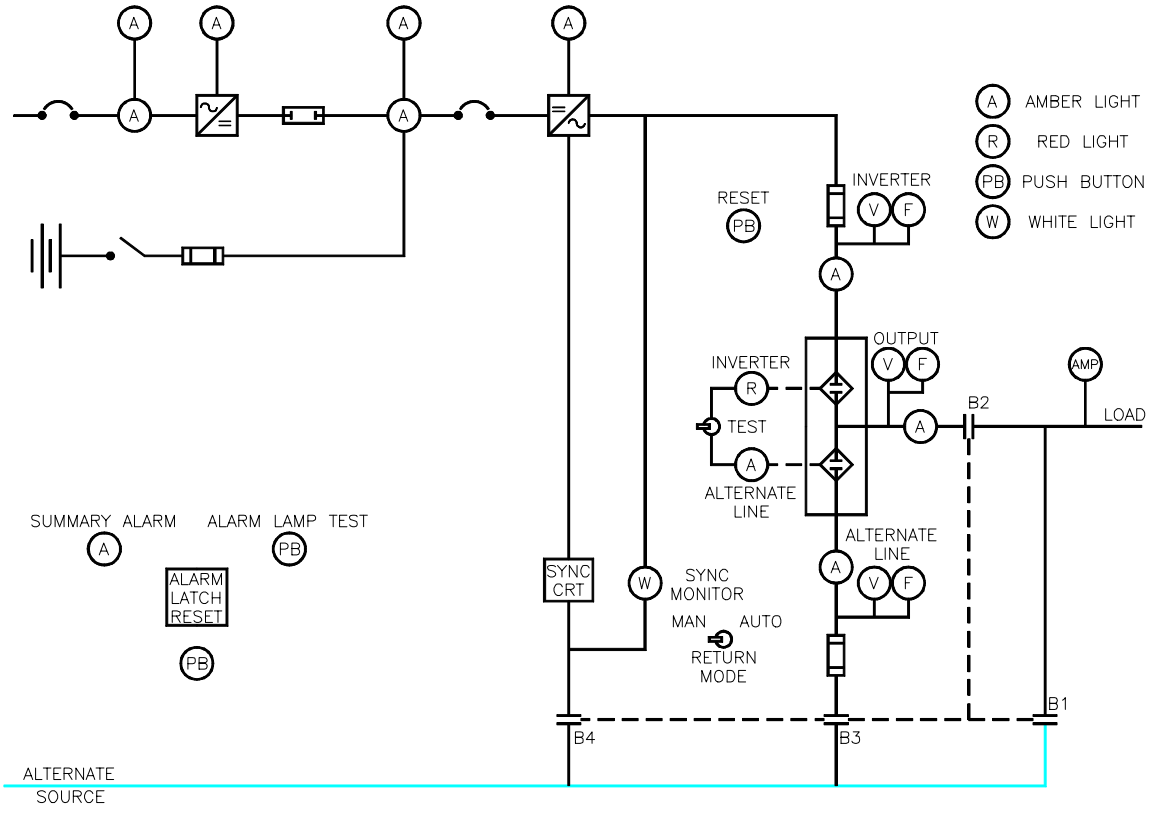


FIGURE 3
ST-OP-315-0062-001
SLD00042

UPS MIMIC BUS DIAGRAM

Cue Sheet: (JP-OP-315-0262-003)

Initial Conditions:

You are the extra operator on shift.

Initiating Cue(s):

The Control Room LNO directs you to shift UPS A (B) Power Supply from Normal to Alternate using the Static Transfer Switch.

Cue Sheet: (JP-OP-315-0262-003)

Initial Conditions:

You are the extra operator on shift.

Initiating Cue(s):

The Control Room LNO directs you to shift UPS A (B) Power Supply from Normal to Alternate using the Static Transfer Switch.

JOB PERFORMANCE MEASURE

Job Position SRO/RO/NO	No. JP-OP-315-0167-005	Revision 0
JPM Title Adjust Chilled Water Temperature Set-point	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO / NO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: Perform / **Walkthrough** / Discuss Stop Time _____

Location: **Plant** / Simulator / Classroom Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
***1.**				***11.**							
***2.**				***12.**							
***3.**				***13.**							
***4.**				***14.**							
***5.**				***15.**							
*** 6.**				***16**							
***7.**				***17**							
*** 8.**				***18**							
***9.**				19							
***10.**											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Title Adjust Chilled Water Temperature Set-point	No.: JP-OP-315-0167-005 Revision: 0 Page 2

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Title Adjust Chilled Water Temperature Set-point	No.: JP-OP-315-0167-005 Revision: 0 Page 3

JPM Information

System:

P4600 - RBCCW Supplemental Cooling System

Task:

04P4600-001 Startup of RBCCW System

References: Required (R) / Available (A)

23.127.01, RBCCW Supplemental Cooling System (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are an extra NO on shift.
- ARP 17D65 RBCCW SCS-1/2 TROUBLE directs verifying proper RBCCW SCS Temp Control IAW 23.127.01, Section 7.2.

Initiating Cue(s):

The CRLNO directs to verify or input 64^0 F setpoint on all three chiller Leaving Chilled Water (LCHW) setpoints IAW step 7.2.2.3 of procedure 23.127.01

Terminating Cue(s):

All three setpoints at 64^0 F.

Task Standard:

Verify proper chilled water loop temperatures.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 8 - Plant Service Systems

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 400000 – Component Cooling Water System

K/A STATEMENT:

A2 Ability to (a) predict the impacts of high/low CCW temperature on the CCWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of:

A2.03 High/Low CCW temperature.....2.9 / 3.0

Maintenance Rule Safety Classification:

P4200-04

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
CUE: Provide the examinee with the Cue Sheet. After explaining how to obtain a controlled copy of the procedure, provide the examinee with a copy of 23.127.01, section 7.2. **CUE: Once candidate has located panel, may go to low dose area and demonstrate following procedural steps.**	
CUE: Display blank	
***1**. [7.2.2.3.a] Depress [ENTER]	***1**. Depresses [ENTER]
CUE: Display reads 9675.	
***2.** [7.2.2.3.b] Depress [9675]	***2**. Depresses 9675
CUE: Display blank	
***3.** [7.2.2.3.c] Depress [ENTER]	***3**. Depresses [ENTER]
CUE: LCD Readout indicates "USER REPORTS…."	
***4**. [7.2.2.3.d] Depress [FEATURE] repeatedly	***4**. Depresses [FEATURE] repeatedly.
CUE: LCD Readout indicates "USER REPORTS….SETPOINTS & STATUS"	
***5**. [7.2.2.3.e] Depress [SECTION] repeatedly	***5.** Depresses [SECTION] repeatedly
CUE: LCD Readout indicates "P03 STH. LCHW SP=65.0 STH. LCHW=67.0"	
***6**. [7.2.2.3.f] Depress [PAGE] repeatedly	***6**. Depresses [PAGE]repeatedly
CUE: Display blank	
***7**. [7.2.2.3.g] Depress [ENTER]	***7**. Depresses [ENTER]
CUE: Display reads 64	
***8**. [7.2.2.3.h] Depress 64	***8**. Depresses 64 on numeric keypad.
CUE: LCD Readout indicates "P03 STH. LCHW SP=64.0 STH. LCHW=67.0"	
***9**. [7.2.2.3.i] Depress [ENTER]	***9**. Depresses [ENTER]".
CUE: LCD Readout indicates "P04 CNTR LCHW SP=65.0 CNTR LCHW=67.0"	
***10**.[7.2.2.3.j] Depress [PAGE] repeatedly	***10**. Depresses [PAGE]repeatedly
CUE: Display blank	
***11.**[7.2.2.3.k] Depress [ENTER]	***11**.Depresses [ENTER]
CUE: Display reads 64	
***12**.[7.2.2.3.l] Depress 64	***12**.Depresses 64 on numeric keypad.
CUE: LCD Readout indicates "P04 CNTR LCHW SP=64.0 CNTR LCHW=67.0"	
***13**.[7.2.2.3.m] Depress [ENTER]	***13** Depresses [ENTER]
CUE: LCD Readout indicates "P05 NRTH LCHW SP=65.0 CNTR LCHW=67.05	
***14**.[7.2.2.3.n] Depress [PAGE] repeatedly	***14**. Depresses [PAGE]repeatedly

CUE: Display blank	
***15**.[7.2.2.3.o] Depress [ENTER]	***15**.Depresses [ENTER]
CUE: Display reads 64	
***16**.[7.2.2.3.p] Depress 64	***16**.Depresses 64 on numeric keypad.
CUE: LCD Readout indicates "P05 NRTH LCHW SP=64.0 NRTH LCHW=67.0"	
***17**.[7.2.2.3.q] Depress [ENTER]	***17** Depresses [ENTER]
CUE: LCD Readout indicates "USER REPORTS….SETPOINTS & STATUS	
***18**.[7.2.2.3.r] Depress [PAGE]	***18** Depresses [PAGE]
CUE: LCD Readout indicates present date and time	
19. [7.2.2.3.s] Depress [CLEAR DATA]	19 Depresses [CLEAR DATA]
CUE: Terminate JPM	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

This is in an area with radiological "Hot Spots". The candidate will need RP permission to enter room. This can be discussed with RP ahead of time and the examiner may then act as RP and give student permission or candidate may call RP.

Once panel is located by the student, the area should be exited and a picture used to demonstrate procedural steps.

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating 25 amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

N/A

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

N/A

Cue Sheet: (JP-OP-315-0167-005)

Initial Conditions:

- You are an extra NO on shift.
- ARP 17D65 RBCCW SCS-1/2 TROUBLE directs verifying proper RBCCW SCS Temp Control IAW 23.127.01, Section 7.2.

Initiating Cue(s):

The CRLNO directs to verify or input 64^0 F setpoint on all three chiller Leaving Chilled Water (LCHW) setpoints IAW step 7.2.2.3 of Procedure 23.127.01 RBCCW Supplemental Cooling System.

Cue Sheet: (JP-OP-315-0167-005)

Initial Conditions:

- You are an extra NO on shift.
- ARP 17D65 RBCCW SCS-1/2 TROUBLE directs verifying proper RBCCW SCS Temp Control IAW 23.127.01, Section 7.2.

Initiating Cue(s):

The CRLNO directs to verify or input 64^0 F setpoint on all three chiller Leaving Chilled Water (LCHW) setpoints IAW step 7.2.2.3 of Procedure 23.127.01 RBCCW Supplemental Cooling System.

Job Position SRO / RO	No. JP-OP-315-0110-408	Revision 0
JPM Title Conduct Control Rod Drive Coupling Integrity Test with Coupling Failure (Alt. Path)	Duration 24 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
*** 1.**				11.							
2.											
3.											
4.											
5.											
*** 6**.											
7.											
*** 8.**											
*** 9.**											
10.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Title Conduct Control Rod Drive Coupling Integrity Test with Coupling Failure	No.: JP-OP-315-0110-408 Revision: 0 Page 3

JPM Information

System:

C1102 – Control Drive and Drive Mechanism

Task:

74311 - Perform actions for Control Rod re-coupling not successful OR Control Rod cannot be verified coupled

References: Required (R) / Available (A)

AOP 20.106.02 (R)

SOP 23.623 (R)

ARPs 3D76 & 3D80 (A)

Tools and Equipment Required:

Marked up 23.623, Attachment 2

Initial Conditions:

- A plant startup is in progress.
- Reactor power level is ~62%.
- You are the P603 operator.

Initiating Cue(s):

The CRS directs you to continue the reactor startup with rods on Post-LPSP Control Rod Pull Sheet A-9/2, RWM-Step 49, from control rod 14-47.

Terminating Cue(s):

Control Rod 14-47 is coupled in accordance with 20.106.02.

Task Standard:

CRD Coupling Integrity Test is performed in accordance with 23.623.

Licensed Operator Exam Information (required for NRC exams)

Safety Function/Category:

1 – Reactivity Control

11 – Abnormal Plant Evolutions

K/A Reference:

K/A SYSTEM: 201003 - Control Rod and Drive Mechanism

K/A STATEMENT:

A2 Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)

A2.02 Uncoupled rod . . . . . 3.7 / 3.8

Maintenance Rule Safety Classification:

B1100-07

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
CUE: Provide examinee with Cue Sheet, Rod Pull Sheet, and marked up 23.623, Attachment 2.	
NOTE: Rod can be continuously withdrawn using Override vs. notching out.	
***1.** [7.3.2.4] Begin withdrawing Control Rod 14-47 from Position 18 to 48 by notching rod, or continuously withdrawing iaw 23.623.	***1.** Rod Movement Control taken to OUT NOTCH. When the settle function is complete, this step is repeated until the rod is at Position 48. OR Rod Out Notch Override taken to OVERRD and Rod Movement Control taken to OUT NOTCH.
NOTE: When rod 14-47 reaches Position 48, the Four-Rod Display indicates blank, annunciators 3D76 and 3D80 alarm, and the rod's DRIFT light indicates on the Full Core Display. **Alternate Path Begins Here**	
CUE: The CRS acknowledges the report.	
2. Respond to 3D76 alarm. Inform CRS of rod overtravel past Position 48.	2. CRS is informed of overtravel. ARP 3D76 is referenced.
3. Verify 3D80, CONTROL ROD DRIFT, is received.	3. 3D80, CONTROL ROD DRIFT, is verified to be in alarm. ARP 3D80 is referenced.
4. Verify Control Rod overtravel at 4-Rod Display by checking that no position number is indicated in window and Full Out light on the Full Core Display is out.	4. 4-Rod Display and Full Core Display is checked for selected rod.
CUE: As CRS announce "Crew Update - Entering Uncoupled/Dropped Control Rod AOP – End of Update"	
5. Recommend CRS enters 20.106.02.	5. Recommends entering 20.106.02.
CUE: The CRS will direct the performance of AOP 20.106.02, Condition C. Inform candidate that Steps C.1 and C.2 of AOP 20.106.02 are complete. Direct candidate to "Perform Step C.3 of AOP 20.106.02"	
***6.** [C.3.a] Insert Control Rod in notch mode until nuclear instrumentation indicates Control Rod is inserting.	***6.** Uncoupled rod is inserted one notch at a time until nuclear instrumentation indicates Control Rod is inserting.
CUE: The SM and SNE give permission to withdraw control rod.	
7. [C.3.b] Obtain permission from the SM and SNE to withdraw Control Rod.	7. Requests permission from the SM and SNE to withdraw Control Rod.
***8.** [C.3.c] Fully withdraw Control Rod in notch mode while observing nuclear instrumentation response.	***8.** Rod Movement Control taken to OUT NOTCH. When the settle function is complete, this step is repeated until the rod is at Position 48.

JPM Title Conduct Control Rod Drive Coupling Integrity Test with Coupling Failure	No.: JP-OP-315-0110-408 Revision: 0 Page 5

ELEMENT	STANDARD
NOTE: The following steps are directed by 20.106.02, step C.3.d, and performed per 23.623.	
***9**. [6.1.2.2.a] Attempt to withdraw Control Rod from Position 48 by notching rod.	***9.** Rod Movement Control taken to OUT NOTCH.
10. [6.1.2.2.b] Verify Control Rod is coupled as follows: 1) Rod settling back to Position 48. 2) Annunciator 3D76, CONTROL ROD OVERTRAVEL, does not alarm.	10. Identifies rod settles back to Position 48. The selected control rod is coupled.
CUE: The CRS acknowledges the report.	
11. Inform CRS that control rod 14-47 re-coupling is successful.	11. CRS is informed that control rod 14-47 re-coupling is successful.
CUE: End the JPM when Control Rod 14-47 is coupled in accordance with 20.106.02.	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Steps**

JPM Title Conduct Control Rod Drive Coupling Integrity Test with Coupling Failure	No.: JP-OP-315-0110-408 Revision: 0 Page 6

Evaluator Notes:

Provide the examinee the pull sheets for the next control rod to be withdrawn to position 48 (LPSP Pull Sheet A-9/2, RWM-Step: 50, marked with rods pulling from 18 to 48) and 23.623 Attachment 2 marked up with current rod pattern.

This JPM can be performed at low power (startup) or at higher power (control rod pattern adjustment). If this JPM is being performed at low power, provide normal pull sheets; if being performed at high power provide rod pattern adjustment sheets.

You will act as the SNE to verify the correct control rod is selected for movement.

The trainee may jump directly to 20.106.02 vs. reviewing ARP 3D76 or 3D80.

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

None

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-16

Malfunctions:

Number	Title	Value	Delay	Ramp
C11MF0233	CONTROL ROD 14-47 UNCOUPLED	ACTIVE	0	0

Remote Functions:

Number	Title	Value	Delay	Ramp
C11RF0398	Re-Initialize NUMAC RWM	RESET	0	0

Override Functions:

Number	Title	Value	Delay	Ramp
None				

Special Instructions:

1. Initialize the simulator to IC-16 (or the selected IC), and place the simulator in RUN.
2. Open and Execute Lesson JP0110-407.lsn, or set the malfunctions as indicated above.
3. Withdraw Control Rods 14-47, 46-47, 46-15, and 14-15 from position 12 to position 18.
4. Place rod select power to “ON”
5. Select Control Rod 14-47
6. After control rod has been inserted following initial coupling check, clear C11MF0233 to allow rod to recouple.

Cue Sheet: (JP-OP-315-0110-408)

Initial Conditions:

- A plant startup is in progress.
- Reactor power level is ~62%.
- You are the P603 operator.

Initiating Cue(s):

The CRS directs you to continue the reactor startup with rods on Post-LPSP Control Rod Pull Sheet A-9/2, RWM-Step 49, from control rod 14-47.

Cue Sheet: (JP-OP-315-0110-408)

Initial Conditions:

- A plant startup is in progress.
- Reactor power level is ~62%.
- You are the P603 operator.

Initiating Cue(s):

The CRS directs you to continue the reactor startup with rods on Post-LPSP Control Rod Pull Sheet A-9/2, RWM-Step 49, from control rod 14-47.

JOB PERFORMANCE MEASURE

Job Position SRO / RO	No. JP-OP-315-0107-002	Revision 1
JPM Title Transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control	Duration 20 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.				***11.**							
2.				***12.**							
3.				13.							
4.											
5.											
*** 6.**											
*** 7.**											
*** 8.**											
9.											
10.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Title Transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control	No.: JP-OP-315-0107-002 Revision: 1 Page 3

JPM Information

System:

N2100 - Reactor Feedwater System

Task:

62073 - Transfer from long cycle cleanup to startup level control

References: Required (R) / Available (A)

23.107, Reactor Feedwater and Condensate (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room LNO.
- Plant startup is in progress. The reactor is critical. Pressurization has just begun.
- Feedwater is in Long Cycle Cleanup mode. Chemistry has reported Condensate and Feedwater chemistry is within the administrative limits.

Initiating Cue(s):

The CRS directs you to transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control per 23.107.

Terminating Cue(s):

Feedwater is in Startup Level Control.

Task Standard:

Feedwater Control is transferred from Long Cycle Cleanup to Startup Level Control per 23.107.

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

Safety Function 2 – Reactor Water Inventory Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 259001 – Reactor Feedwater System

K/A STATEMENT:

A4 Ability to manually operate and/or monitor in the control room:

A4.05 Reactor Water Level ..... 4.0 / 3.9

Maintenance Rule Safety Classification:

N2100-06

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

	ELEMENT		STANDARD
CUE:	**Provide examinee with Cue Sheet.**		
CUE:	**Two condensate pumps are in service. If asked, all sub-steps of step 5.1.2.1 are complete.**		
1.	[5.1.2.2] Place or verify, RPV Startup LCV Mode Switch in START. If C32-K816, FW & RR Flat Panel Display, is available, verify DCS logic is in START.	1.	RPV Startup LCV Mode Switch is verified in START. DCS logic is verified in START.
2.	[5.1.2.3.a] Verify Feedwater Logic white POST SCRAM light is OFF.	2.	Feedwater Logic white POST SCRAM light is verified OFF.
3.	[5.1.2.3.b] Verify Reactor Water Level Set Down white POST SCRAM light is OFF.	3.	Reactor Water Level Set Down white POST SCRAM light is verified OFF.
4.	[5.1.2.4] Place or verify C32-R620, N21-F403 RPV Startup LCV Controller, in MANUAL.	4.	C32-R620, N21-F403 RPV Startup LCV Controller, is placed in MANUAL.
5.	[5.1.2.5] Place or verify, Level Control Mode switch in 1 ELEM. If C32-K816, FW & RR Flat Panel Display, is available, verify DCS logic is in 1 ELEMENT.	5.	Level Control Mode switch is placed in 1 ELEM. DCS logic is verified in 1 ELEMENT.
NOTE:	**This step is performed while verifying that N20-F404 throttles. If N20-F404 fails to throttle, N2000-F618 must be manually throttled to maintain proper flow.**		
*** 6.**	[5.1.2.6] Adjust output of C32-R620, N21-F403 RPV Startup LCV Controller, to 0% (COP H11-P603), while maintaining Condensate flow rate at approximately 9000 gpm, as indicated on N20-R815, Cond To Cond F/D's Flow Recorder.	*** 6.**	Output of C32-R620, N21-F403 RPV Startup LCV Controller, is adjusted to 0% while maintaining Condensate flow rate at approximately 9000 gpm.
*** 7.**	[5.1.2.7] Close N2100-F604, Fw Htr 6N Cond Rtrn to Cndr Vlv, and N2100-F605, Fw Htr 6S Cond Rtrn to Cndr Vlv.	*** 7.**	N2100-F604 and N2100-F605 are closed.
*** 8.**	[5.1.2.8] Open N2100-F601, Fw Htr 6N Outlet Iso Valve, and N2100-F602, Fw Htr 6S Outlet Iso Valve.	*** 8.**	N2100-F601 and N2100-F602 are opened.
CUE:	**Report as NO that disconnect switch MCC 72A-4A Position 4A, is in OFF for N2100-F604.**		
9.	[5.1.2.9] Place disconnect switch MCC 72A-4A, Position 4A, in OFF for N2100-F604, Fw Htr 6N Cond Rtrn to Cndr Vlv.	9.	Directs NO to place disconnect switch MCC 72A-4A, Position 4A, in OFF for N2100-F604.
CUE:	**Report as NO that disconnect switch MCC 72R-2A Position 3C, is in OFF for N2100-F605.**		
10.	[5.1.2.10] Place disconnect switch MCC 72R-2A, Position 3C, in OFF for N2100-F605, Fw Htr 6S Cond Rtrn to Cndr Vlv.	10.	Directs NO to place disconnect switch MCC 72R-2A, Position 3C, in OFF for N2100-F605.

ELEMENT		STANDARD	
NOTE:	**This step is performed while verifying that N20-F404 throttles. If N20-F404 fails to throttle, N2000-F618 must be manually throttled to maintain proper flow.**		
***11.**	[5.1.2.11] Slowly adjust output of C32-R620, N21-F403 RPV Startup LCV Controller, to open N21-F403, RPV Startup LCV, until RPV water level starts to rise, while maintaining Condensate flow rate at approximately 9000 gpm.	***11.**	Output of C32-R620, N21-F403 RPV Startup LCV Controller, is adjusted until RPV water level starts to rise while maintaining Condensate flow rate at approximately 9000 gpm.
***12.**	[5.1.2.12] **WHEN** desired RPV water level is reached (193-201), place C32-R620, N21-F403 RPV Startup LCV Controller, in AUTO.	***12**.	C32-R620, N21-F403 RPV Startup LCV Controller, is placed in AUTO when desired RPV level is reached.
13.	[5.1.2.13] Adjust RPV water level setpoint to maintain desired Reactor Water Level (Level 4 to Level 7).	13.	RPV water level setpoint is adjusted to maintain desired Reactor Water Level (197”).
CUE:	**End JPM when Feedwater is in Startup Level Control.**		

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JPM Title Transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control	No.: JP-OP-315-0107-002 Revision: 1 Page 6

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-06

Malfunctions:

Number	Title	Value	Delay	Ramp

Remote Functions:

Number	Title	Value	Delay	Ramp

Override Functions:

Number	Title	Value	Delay	Ramp

Special Instructions:

1. Initialize the simulator to IC-06 or another IC with Feedwater in Long Cycle Clean-up (i.e. IC-43 Long cycle setup).(xr43.dat file)
2. Place in RUN.
3. Remove Normally Deenergized plaques from N2100-F604 and N2100-F605.
4. **If IC-06 is used must place in Long Cycle Cleanup.**
5. **Establish RWCU blowdown flow of about 60 gpm.**

Cue Sheet: (JP-OP-315-0107-002)

Initial Conditions:

- You are the Control Room LNO.
- Plant startup is in progress. The reactor is critical. Pressurization has just begun.
- Feedwater is in Long Cycle Cleanup mode. Chemistry has reported Condensate and Feedwater chemistry is within the administrative limits.

Initiating Cue(s):

The CRS directs you to transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control per 23.107.

Cue Sheet: (JP-OP-315-0107-002)

Initial Conditions:

- You are the Control Room LNO.
- Plant startup is in progress. The reactor is critical. Pressurization has just begun.
- Feedwater is in Long Cycle Cleanup mode. Chemistry has reported Condensate and Feedwater chemistry is within the administrative limits.

Initiating Cue(s):

The CRS directs you to transfer Feedwater Control from Long Cycle Cleanup to Startup Level Control per 23.107.

JOB PERFORMANCE MEASURE

Job Position SRO/RO	No. JP-OP-315-0129-005	Revision 2
JPM Title On-Load Closure of a Low Pressure Intercept Valve	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
*** 1.**											
*** 2.**											
*** 3.**											
*** 4.**											
*** 5.**											
*** 6.**											
7.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Title On-Load Closure of a Low Pressure Intercept Valve	No.: JP-OP-315-0129-005 Revision: 2 Page 3

JPM Information

System:

N3011 - Turbine Steam

Task:

02N3000003 - Close a turbine control valve with turbine on line

References: Required (R) / Available (A)

23.109, Turbine Operating Procedure (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room LNO.
- The plant is operating normally at 100% power.
- Engineering is standing by #1 LPIV.

Initiating Cue(s):

The CRS directs you to perform On-Load Closure and Restoration of #1 Low Pressure Intercept Valve (N3021-F013A) in accordance with 23.109, Turbine Operating Procedure, for troubleshooting.

Terminating Cue(s):

#1 Low Pressure Intercept Valve (N3021-F013A) reopens to 100%, and cancellation of the test is verified.

Task Standard:

On-Load Closure and Restoration of #1 Low Pressure Intercept Valve (N3021-F013A) is performed in accordance with 23.109, Turbine Operating Procedure.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 3 – Reactor Pressure Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 241000 - Reactor/Turbine Pressure Regulating System

K/A STATEMENT:

A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)

A4.09 Combined intermediate valves (operation) ..... 3.2 / 3.1

Maintenance Rule Safety Classification:

N3012-01

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

ELEMENT		STANDARD	
CUE:	**Provide examinee with Cue Sheet.**		
NOTE:	**Examinee is expected to announce the beginning of the test and associated alarms received to the Control Room (CRS). The examiner should acknowledge all of these announcements.**		
*** 1.**	[7.6.2.1] Place Steam Valve On Load Test Mode Select Switch to 10%.	*** 1.**	Steam Valve On Load Test Mode Select Switch is rotated to the 10% position.
*** 2.**	[7.6.2.2] Momentarily depress SELECT pushbutton for desired Low Pressure Intercept Valve and verify backlight comes ON.	*** 2.**	SELECT pushbutton for #1 LPIV is momentarily depressed. Verifies pushbutton backlight comes ON.
*** 3.**	[7.6.2.3] Depress Steam Valve On Load Test red VALVE TEST pushbutton and verify: a. VALVE TEST light comes ON. b. Selected Low Pressure Intercept Valve closes to 10%, if open. c. Annunciator 4D91, ELECTRIC GOVERNOR TROUBLE, alarms. d. White GOVERNOR FAULT light comes ON.	*** 3**.	Steam Valve On Load Test red VALVE TEST pushbutton is momentarily depressed. Verifies: a. VALVE TEST light comes ON. b. #1 LPIV closes to 10%. c. Annunciator 4D91, ELECTRIC GOVERNOR TROUBLE, alarms. d. White GOVERNOR FAULT light comes ON.
*** 4.**	[7.6.2.4] Depress Steam Valve On Load Test white TRIP SOLENOID A or TRIP SOLENOID B pushbuttons, and verify: a. Selected Low Pressure Intercept Valve closes, if open. b. TRIP SOLENOID A or B light comes ON.	*** 4.**	Steam Valve On Load Test white TRIP SOLENOID A or TRIP SOLENOID B pushbutton is depressed. Verifies: a. #1 LPIV closes. b. White TRIP SOLENOID A (B) light comes ON.
*** 5.**	[7.6.3.1] Depress Steam Valve On Load Test green TRIP RESET pushbutton and verify: a. Selected Low Pressure Intercept Valve opens to 10%. b. White TRIP SOLENOID A (B) light goes OFF.	*** 5.**	Steam Valve On Load Test green TRIP RESET pushbutton is depressed. Verifies: a. #1 LPIV opens to 10%. b. White TRIP SOLENOID A (B) light goes OFF.
*** 6.**	[7.6.3.2] Depress Steam Valve On Load Test white CANCEL TEST pushbutton and verify: a. Cancel Test light comes on. b. Low Pressure Intercept Valve opens to controlling position.	*** 6.**	Steam Valve On Load Test white CANCEL TEST pushbutton is depressed. Verifies: a. White Cancel Test light comes on. b. #1 LPIV opens to 100%.

ELEMENT	STANDARD
7. [7.6.3.3] After a delay, verify: a. White CANCEL TEST light goes OFF. b. Red VALVE TEST light goes OFF. c. Associated Low Pressure Intercept Valve red SELECT light goes OFF. d. White GOVERNOR FAULT light goes OFF. e. Annunciator 4D91, ELECTRIC GOVERNOR TROUBLE, clears.	7. Verifies: a. White CANCEL TEST light goes OFF. b. Red VALVE TEST light goes OFF. c. #1 LPIV red SELECT light goes OFF. d. White GOVERNOR FAULT light goes OFF. e. Annunciator 4D91, ELECTRIC GOVERNOR TROUBLE, clears.
CUE: End JPM when #1 LPIV is fully open and verification is made that test is cancelled.	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-20

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

1. Initialize the simulator to IC-20, and place in **RUN** when ready to begin the JPM.
2. Verify the Steam Valve On Load Test Mode Select Switch is **NOT** in the 10% position.

Cue Sheet: (JP-OP-315-0129-005)

Initial Conditions:

- You are the Control Room LNO.
- The plant is operating normally at 100% power.
- Engineering is standing by #1 LPIV.

Initiating Cue(s):

The CRS directs you to perform On-Load Closure and Restoration of #1 Low Pressure Intercept Valve (N3021-F013A) in accordance with 23.109, Turbine Operating Procedure, for troubleshooting.

Cue Sheet: (JP-OP-315-0129-005)

Initial Conditions:

- You are the Control Room LNO.
- The plant is operating normally at 100% power.
- Engineering is standing by #1 LPIV.

Initiating Cue(s):

The CRS directs you to perform On-Load Closure and Restoration of #1 Low Pressure Intercept Valve (N3021-F013A) in accordance with 23.109, Turbine Operating Procedure, for troubleshooting.

JOB PERFORMANCE MEASURE

Job Position SRO/RO	No. JP-OP-315-0104-007	Revision 3
JPM Title Rapid Power Reduction (Alt Path)	Duration 10 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical Start Time _____

Evaluation Method: **Perform** / Walkthrough / Discuss Stop Time _____

Location: Plant / **Simulator** / Classroom Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.											
*** 2.**											
*** 3.**											
4.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Information

System:

B3100 - Reactor Recirculation System

Task:

23.632.018 - Perform Rapid Power Reduction

References: Required (R) / Available (A)

23.623, Reactor Manual Control System (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the P603 Operator.
- The plant was operating steady state at 100% rated thermal power.
- A plant condition requiring a rapid reduction in power has occurred.

Initiating Cue(s):

The CRS directs you to perform a Rapid Power Reduction in accordance with 23.623.

Terminating Cue(s):

RR MG Set speed has been reduced to ~40% by lowering recirc flow.

Task Standard:

MG Set speed has been reduced to ~40% by lowering recirc flow in accordance with 23.623, section 9.7.

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

1 – Reactivity Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 202001 - Recirculation System

K/A STATEMENT:

A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 thru 45.8)

A4.01 Recirculation pumps .....3.7 / 3.7

Maintenance Rule Safety Classification:

B3100-05

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
CUE: Provide Examinee with CUE SHEET.	
1. [9.7.2.1.a] Initiate a Manual Runback by depressing and releasing the RECIRC MANUAL RUNBACK pushbutton.	*** 1.** Depresses and releases the RECIRC MANUAL RUNBACK pushbutton.
Alternate Path Starts Here	
CUE: If examinee reports failure to runback, acknowledge report. If necessary, ask for a recommendation, then direct him (as CRS) to continue the rapid power reduction.	
*** 2.** [9.7.2.1.b] Verify the following: a. RECIRC MANUAL RUNBACK pushbutton lights. b. Speed decreasing on B31-R621A and/or B31-R621B, North and/or South RR MG Set Gen Speed Controller(s). c. Speed decrease is visible on C32-K816, FW & RR Flat Panel Display, for RR MG Set A and/or B. d. MANUAL RUNBACK is visible on C32-K816, FW & RR Flat Panel Display, for RR MG Set A and/or B. e. 3D126 and/or 3D150, Recirc Sys A and/or B Recirc Flow Limiting.	***2.** Recognizes RECIRC MANUAL RUNBACK pushbutton has failed to function.
NOTE: Examinee may use the manual adjustment of the set point, or manual control of output to control, to complete this step.	
*** 3.** [MOP01 3.28.3] Take manual control of B31-R621A and B31-621B, and lower RR MG Set speed.	*** 3.** Takes manual control of B31-R621A and B31-621B, and lowers RR MG Set speed to value listed on placard on panel for Manual Runback
4. [9.7.2.1.b] Verify the following: a. Speed decreasing on B31-R621A and/or B31-R621B, North and/or South RR MG Set Gen Speed Controller(s). b. Speed decrease is visible on C32-K816, FW & RR Flat Panel Display, for RR MG Set A and/or B.	4. Verifies indication that Recirc MG Sets have properly run back.
CUE: Terminate JPM when RR MG Set Controllers have been manually lowered to ~40% speed.	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____ *** Critical Step**

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

#3 Speed Limiter will lower recirc pump speed to the 37% speed setpoint on Loss of Heater Drains.

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-20 or any full power IC.

Malfunctions:

Number	Title	Value	Delay	Ramp
None				

Remote Functions:

Number	Title	Value	Delay	Ramp
None				

Override Functions:

Number	Title	Value	Delay	Ramp
P603_A317_1	Recirc Manual Runback Switch	0	0	0

Special Instructions:

1. Initialize the simulator, and place in **RUN**.
2. Open and execute Lesson **JP0104-007**.lsn.

Cue Sheet: (JP-OP-315-0104-007)

Initial Conditions:

- You are the P603 Operator.
- The plant was operating steady state at 100% rated thermal power.
- A plant condition requiring a rapid reduction in power has occurred.

Initiating Cue(s):

The CRS directs you to perform a Rapid Power Reduction in accordance with 23.623.

Cue Sheet: (JP-OP-315-0104-007)

Initial Conditions:

- You are the P603 Operator.
- The plant was operating steady state at 100% rated thermal power.
- A plant condition requiring a rapid reduction in power has occurred.

Initiating Cue(s):

The CRS directs you to perform a Rapid Power Reduction in accordance with 23.623.

JOB PERFORMANCE MEASURE

Job Position RO	No. JP-OP-315-0141-412	Revision 2
JPM Title Shift RHR from Torus Cooling/Spray Mode to LPCI Injection Mode (Alt Path)	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: Normal / **Alternate Path /** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.											
2.											
* 3.											
*** 4.**											
5.											
*** 6.**											
7.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Information

System:

E1100 - Residual Heat Removal System

Task:

02E1100003 - Operate RHR in the Low Pressure Coolant Injection Mode, Manual Operation

References: Required (R) / Available (A)

23.205,Residual Heat Removal System

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room LNO.
- A LOCA has occurred.
- Division 2 RHR is operating in the Torus Cooling and Torus Spray modes IAW 29.100.01 Sheet 2, Primary Containment Control and 23.205, Residual Heat Removal System.
- Division 1 RHR is not available.
- RPV water level was being maintained with CRD IAW 29.100.01 Sheet 1, RPV Control, but additional injection is now required.

Initiating Cue(s):

The CRS directs you to shift Div 2 RHR from Torus Cooling/Spray mode to the LPCI Injection mode using section 8.6 and 9.4 of 23.205..

Terminating Cue(s):

E1150-F028B is closed, and RPV level is rising.

Task Standard:

Division 2 RHR is operating in LPCI injection mode in accordance with 23.205.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 2 - Reactor Water Inventory Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 203000 - RHR/LPCI: Injection Mode

K/A STATEMENT:

A4. Ability to manually operate and/or monitor in the control room:

A4.09 System Flow .....4.1 / 4.0

Maintenance Rule Safety Classification:

E1100-03

Maintenance Rule Risk Significant? (Yes or No)

No

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
CUE: Provide the examinee with the Cue Sheet.	
NOTE: The examinee may elect to secure Torus Cooling/Spray in accordance with Sections 9.6 and 8.6 of SOP 23.205, although the only step critical to completing the assigned task will be to shut E1150-F028B. The following steps are included for this contingency. **Completion of steps 3 and 4 below will satisfy completion of the steps necessary for the alternate path.**	
1. [9.6.2.8.] Close E1150-F027B, Div 2 RHR Torus Spray Iso.	1. Depresses E1150-F027B CLOSE pushbutton, and observes red light OFF and green light ON.
Alternate Path Begins Here	
2. [8.6.2.1] Throttle closed E1150-F024B, Div 2 RHR Torus Clg Iso	2. Depresses E1150-F024B CLOSE pushbutton. Observes that valve does not operate and reports same to CRS.
CUE: If examinee seeks guidance, then ask for a recommendation. The examinee should recommend closing E1150-F028B before shutting off the pump, and should also realize that it will not be necessary to S/D the pump. Direct the examinee to perform the recommended action(s).	
NOTE: Examinee may elect to not close E1150-F028B at this time. When RPV pressure Is less than pump discharge pressure and LPCI is not injecting candidate should realize E1150-028B needs closed and inform CRS. Direct closing E1150-F028B	
3. [8.6.2.4] Place Keylock switch for E1150-F028B, Div 2 RHR Torus Iso Vlv, in OPER.	3. Verifies keylock switch for E1150-F028B to OPER, and observes annunciator 2D37, Div II RHR Torus Sp Val F028B Key Sw Operate Pos, alarms.
*** 4.** [8.6.2.5] Close E1150-F028B, Div 2 RHR Torus Iso Vlv.	*** 4.** Depresses E1150-F028B CLOSE pushbutton, and observes red light OFF and green light ON.
NOTE: **The examinee should elect to not shut down the pump and proceed to section 9.4. The remaining steps of section 8.6 are not necessary to complete the task. If the pumps are shut down, then restarting them becomes a critical step.**	
5. Recognizes and Reports 2D27 REACTOR PRESSURE LOW.	5. Reports REACTOR PRESSURE LOW.
Alternate Path Begins Here	
*** 6**. Identifies DIV 2 RHR not aligned for injection and aligns system.	*** 6.** OPENS E1150F15B.
7. Recognizes and Reports DIV 2 RHR is injecting	7. Reports DIV 2 RHR is injecting.
CUE: Terminate the JPM when RHR is injecting RPV level is increasing.	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

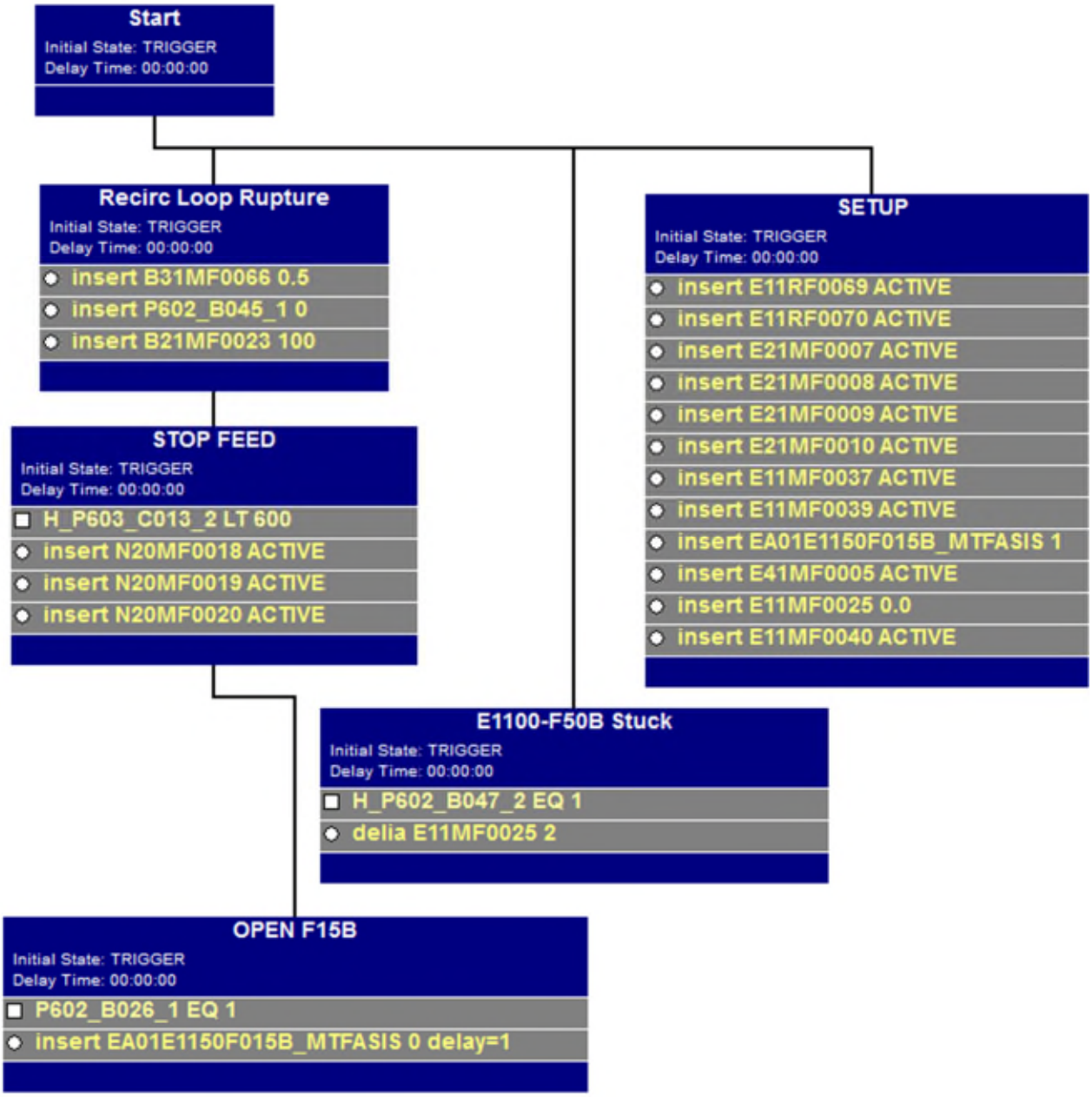
Reference

Response:

Simulator Setup

IC#:

IC-45



Special Instructions:

1. Initialize simulator to desired IC-45 RHR_LPCI place in **RUN**.
2. Load and execute lesson **JP0141-412**.
3. Verify **Division 2 RHR in Torus Cooling and Torus Spray** modes.(Only 1 RHR Pump running)
4. When cue is given for the JPM, or as determined by the examiner, place the simulator in **RUN**.

Cue Sheet: (JP-OP-315-0141-412)

Initial Conditions:

- You are the Control Room LNO.
- A LOCA has occurred.
- Division 2 RHR is operating in the Torus Cooling and Torus Spray modes IAW 29.100.01 Sheet 2, Primary Containment Control and 23.205, Residual Heat Removal System.
- Division 1 RHR is not available.
- RPV water level was being maintained with CRD IAW 29.100.01 Sheet 1, RPV Control, but additional injection is now required.

Initiating Cue(s):

The CRS directs you to shift Div 2 RHR from Torus Cooling/Spray mode to the LPCI Injection mode.

Initial Conditions:

- You are the Control Room LNO.
- A LOCA has occurred.
- Division 2 RHR is operating in the Torus Cooling and Torus Spray modes IAW 29.100.01 Sheet 2, Primary Containment Control and 23.205, Residual Heat Removal System.
- Division 1 RHR is not available.
- RPV water level was being maintained with CRD IAW 29.100.01 Sheet 1, RPV Control, but additional injection is now required.

Initiating Cue(s):

The CRS directs you to shift Div 2 RHR from Torus Cooling/Spray mode to the LPCI Injection mode.

JOB PERFORMANCE MEASURE

Job Position SRO / RO	No. JP-OP-315-0058-001	Revision 2
JPM Title Restore 480V ESF Bus 72B to its Normal Power Source - Dead Bus Transfer	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.											
2.											
***3.**											
***4.**											
5.											
***6.**											
7.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Title Restore 480V ESF Bus 72B to its Normal Power Source - Dead Bus Transfer	No.: JP-OP-315-0058-001 Revision: 2 Page 2

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Information

System:

R1400 - Switchgear

Task:

02R1102025 - Restore 480V ESF(EDG) Bus to its Normal Power Source - Dead Bus Transfer

References: Required (R) / Available (A)

23.321, Engineered Safety Systems 480V Auxiliary Electrical Distribution Systems (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room LNO.
- The plant is in Mode 4.
- 480V ESF Bus 72B is being powered from 480V ESF Bus 72C.
- R1400-S022A, Div 1 Bus 72B 4160/480V Transformer, was removed from service for cleaning.
- Bus 64B Pos B12 is now closed.
- All pre requisites are complete for restoring ESF Bus 72B to its Normal Source – Dead Bus Transfer

Initiating Cue(s):

- The CRS directs you to restore 480V ESF Bus 72B to its Normal Power Source - Dead Bus Transfer.
- The pre-job brief is complete.

Terminating Cue(s):

480V ESF Bus 72B is powered from 480V ESF Bus 72B Transformer with Bus 72B position 1C and Bus 72C position 1C are OPEN.

Task Standard:

480V Bus 72B is powered from 480V Bus 72B Transformer per 23.321, section 6.7.4.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safe6 - Electrical ty Function Number and Description from NUREG 1123

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 262001 - A.C. Electrical Distribution

K/A STATEMENT:

A.4 Ability to manually operate and/or monitor in the control room:

A.4.01 All breakers and disconnects ..... 3.4 / 3.7

Maintenance Rule Safety Classification:

R1400-01

Maintenance Rule Risk Significant? (Yes or No)

Yes

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUSITES: Bus 72B is powered from 72C, and 72B position 1B is OPEN.	
CUE: Provide the examinee with the Cue Sheet.	
CUE: If requested, repeat initial conditions given that all pre requisites are complete for restoring ESF Bus 72B to its Normal Source – Dead Bus Transfer	
1. [6.7.4.2.1] Close or verify closed Bus 64B Pos B12 and verify ESF Bus 72B Transformer is energized.	1. Verifies Bus 64B Pos B12 is closed and ESF Bus 72B Transformer is energized.
2. [6.7.4.2.2] Open all 480V ESF Bus 72B load breakers.	2. Places the CMC switches for the following 480V ESF Bus 72B load breakers in OPEN: • 72B position 2A • 72B position 2B • 72B position 2D • 72B position 3A • 72B position 3B • 72B position 4A • 72B position 4B • 72B position 4C
***3.** [6.7.4.2.3] Open 480V ESF Bus 72B position 1C.	***3.** Places CMC switch for 480V ESF Bus 72B position 1C in OPEN and verifies breaker indicates open.
***4**. [6.7.4.2.4] Close 480V ESF Bus 72B position 1B.	***4.** Places CMC switch for 480V ESF Bus 72B position 1B in CLOSE and verifies breaker indicates closed.
5. [6.7.4.2.5] Verify 480V ESF Bus 72B is energized as follows: • Bus 72B POWER ON light is ON. • Div 1 480V ESF Bus Volt Meter indicates approximately 120V AC when selected to Bus 72B.	5. Verifies 480V ESF Bus 72B is energized, checking: • Bus 72B POWER ON light is ON. • Div 1 480V ESF Bus Volt Meter indicates approximately 120V AC when selected to Bus 72B.
***6**. [6.7.4.2.6] Open 480V ESF Bus 72C position 1C.	***6.** Places the CMC switch for 480V ESF Bus 72C position 1C in OPEN and verifies breaker indicates open.
7. [6.7.4.2.7] Close 480V ESF Bus 72B load breakers as necessary.	7. Requests direction from CRS to close 480V ESF Bus 72B load breakers as necessary.
CUE: Terminate JPM when 72B is powered from 72B Transformer, and 72C position 1C and 72B position 1C are OPEN.	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

System Specific Notes and Cues:

Breakers 72B position 1C and 72C position 1C are interlocked to remain open when the buses are energized. When the CMC switch is placed in CLOSE, the breaker indicates TRIPPED and remains OPEN. When the breaker's Pull to Close latch is operated, the breaker will CLOSE, and the TRIPPED light goes out.

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the Cover Sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-1, 2, or 3

Malfunctions:

Number	Title	Value	Delay	Ramp
None				

Remote Functions:

Number	Title	Value	Delay	Ramp
RBDKR1400S023_1C_BKRTF_CLOSE	Breaker Fails Closed	TRUE	0	0
RBDFR1400S022_1C_BKRTF_CLOSE	Breaker Fails Closed	TRUE	0	0

Override Functions:

Number	Title	Value	Delay	Ramp
None				

Special Instructions:

1. Initialize the simulator to the desired IC and place in **RUN**.
2. Open and Execute Lesson **JP0058-001**.lsn.
3. Place the CMC Switch for Bus 72C position 1C in CLOSE, then trigger the first remote function (RBDKR1400S023_1C_BKRTF_CLOSE).
4. Place the CMC Switch for Bus 72B position 1C in CLOSE, then trigger the second remote function (RBDFR1400S022_1C_BKRTF_CLOSE).
5. Place the CMC Switch for Bus 72B position 1B in OPEN.
6. Transfer RPS A to Alternate.
7. Acknowledge all alarms.

Cue Sheet: (JP-OP-315-0058-001)

Initial Conditions:

- You are the Control Room LNO.
- The plant is in Mode 4.
- 480V ESF Bus 72B is being powered from 480V ESF Bus 72C.
- R1400-S022A, Div 1 Bus 72B 4160/480V Transformer, was removed from service for cleaning.
- Bus 64B Pos B12 is now closed.
- All pre requisites are complete for restoring ESF Bus 72B to its Normal Source – Dead Bus Transfer

Initiating Cue(s):

- The CRS directs you to restore 480V ESF Bus 72B to its Normal Power Source - Dead Bus Transfer.
- The pre-job brief is complete.

Cue Sheet: (JP-OP-315-0058-001)

Initial Conditions:

- You are the Control Room LNO.
- The plant is in Mode 4.
- 480V ESF Bus 72B is being powered from 480V ESF Bus 72C.
- R1400-S022A, Div 1 Bus 72B 4160/480V Transformer, was removed from service for cleaning.
- Bus 64B Pos B12 is now closed.
- All pre requisites are complete for restoring ESF Bus 72B to its Normal Source – Dead Bus Transfer

Initiating Cue(s):

- The CRS directs you to restore 480V ESF Bus 72B to its Normal Power Source - Dead Bus Transfer.
- The pre-job brief is complete.

JOB PERFORMANCE MEASURE

Job Position RO	No. JP-OP-802-4101-445	Revision 2
JPM Title SRM/IRM Overlap Verification and SRM Detector Withdrawal during Reactor Startup	Duration 15 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.											
*** 2.**											
3.											
4.											
*** 5.**											
*** 6.**											
7.											
8.											
*** 9.**											
10.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Title SRM/IRM Overlap Verification and SRM Detector Withdrawal during Reactor Startup	No.: JP-OP-802-4101-445 Revision: 2 Page 3

JPM Information

System:

215004 - Source Range Monitoring System

Task:

02C5111010 - Perform Source Range Monitoring/Intermediate Range Monitoring/Average Power Range Monitoring Overlap verification.

References: Required (R) / Available (A)

GOP 22.000.02, Plant Startup To 25% Power (R)

23.602, Source Range Monitoring System (R)

24.603.02, SRM/IRM/APRM Overlap Verification (R)

Tools and Equipment Required:

Rod pull sheet and reactivity maneuver plan

Initial Conditions:

- You are an extra reactor operator assigned to the MCR.
- Reactor Startup is in progress per GOP 22.000.02, Plant Startup To 25% Power.
- The Reactor is critical with a 300-400 second period
- The P603 will range the IRMs and maintain Rector Period for this evolution.

Initiating Cue(s):

The CRS directs you to verify SRM/IRM overlap per 24.603.02, SRM/IRM/APRM Overlap Verification, and then fully withdraw SRM detectors. Your will be responsible for driving the SRM detectors and completing the 24.603.02. Coordinate with the P603 as necessary.

Terminating Cue(s):

JPM may be terminated when overlap has been verified and proper withdrawal of the SRMS detectors is in progress.

Task Standard:

SRM detectors are fully withdrawn after completing SRM/IRM overlap verification and without generating an automatic reactor trip.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 7 - Instrumentation

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 215004 – Source Range Monitoring System

K/A STATEMENT:

A4 Ability to manually operate and/or monitor in the Control Room

A4.07 Verification of proper functioning/operability..... 3.4 / 3.6

Maintenance Rule Safety Classification:

N/A

Maintenance Rule Risk Significant? (Yes or No)

N/A

PERFORMANCE EVALUATION

Start Time _____

ELEMENT		STANDARD	
CUE:	Provide examinee with Cue Sheet and required procedures and forms.		
NOTE:	The following steps are continuous action steps from GOP 22.000.02, Plant Startup To 25% Power and are provided for reference purposes. Examinee should range IRMs as needed.		
1.	[5.2.12] Commence withdrawing the SRM Detectors as necessary to maintain count rate between 1 x 10^2 to 1 x 10^5 cps in accordance with 23.602, "Source Range Monitoring System."	1.	Maintains SRM count rate between 1 x 10^2 cps and 1 x 10^5 cps.
*** 2.**	[5.2.18] Verify SRM/IRM Overlap in accordance with 24.603.02, "SRM/IRM/APRM Overlap Verification," prior to fully withdrawing the SRM detectors.	*** 2.**	Verifies SRM/IRM Overlap prior to fully withdrawing the SRM detectors.
NOTE:	The following steps are taken from surveillance test procedure 24.603.02, SRM/IRM/APRM Overlap Verification and must be completed prior to fully withdrawing SRM detectors.		
3**.**	[5.1.3] Verify at least a ½ decade overlap between all operable IRM and operable SRM channels, prior to fully withdrawing SRMs from the core, by verifying the following conditions are met: 1. All operable SRM Channels read below 3 X 10^4 CPS 2. All operable IRM Channels show increasing FLUX level. 3. All operable IRM Channels are above the downscale trip.	3.	Verifies the following conditions: 1. All operable SRM Channels read below 3 X 10^4 CPS 2. All operable IRM Channels show increasing FLUX level. 3. All operable IRM Channels are above the downscale trip.
4.	[5.1.4] Record test personnel.	5.	Records name in 24.603.02.
NOTE:	The following steps are taken from procedure 23.602, Source Range Monitoring System. It is possible to move all four SRM Detectors in one direction simultaneously, but preferred method is to move a maximum of two detectors at one time.		
*** 5.**	[5.2.1] Depress and release Power On switch.	*** 5.**	Depresses and releases Power On switch, and observes green Power ON pushbutton illuminates.
NOTE:	Step 5.2.4 of 23.602 is not applicable due to plant conditions. Steps 5.2.2 through 5.2.8 will be repeated as necessary to maintain SRM count rate until SRM detectors are fully withdrawn.		
*** 6.**	[5.2.2] Select SRM Detectors to be moved by depressing and releasing respective SRM Select switch and monitor count rate on other detectors.	*** 6**.	Depresses and releases respective SRM Select switch, and observes associated White SELECT pushbutton illuminates.
7.	[5.2.3] Verify Retract Permit lights for desired SRMs are ON.	7.	Verifies green RETRACT PERMIT light remains illuminated.

ELEMENT		STANDARD	
NOTE:	Steps 5.2.5 and 5.2.6 have been incorporated into one JPM step.		
8.	Position SRM detectors as needed to maintain SRM count rate between 1×10^2 cps and 1×10^5 cps: [5.2.5] To withdraw SRM Detectors, depress and hold DRIVE OUT pushbutton until desired SRM position is reached. [5.2.6] To insert SRM Detectors, depress DRIVE IN pushbutton. When desired SRM Position is reached, depress DRIVE IN pushbutton to stop SRM drive motion.	8.	Maintains SRM count rate between 1×10^2 cps and 1×10^5 cps: Associated pushbutton (DRIVE OUT or DRIVE IN) is illuminated when depressed. White IN light extinguishes when detector is not fully inserted. White OUT light illuminates when detector is fully withdrawn.
*** 9.**	[5.2.7] Depress and release SRM Select switch for SRM Detectors that were moved.	*** 9.**	Depresses and releases SRM Select switch for SRM Detectors that were moved, and observes associated White SELECT pushbutton extinguishes.
10.	[5.2.8] Prior to moving other SRM Detectors, monitor log count rate for detectors that were moved and ensure indication has steadied out with respect to position of detector and power level at that position.	10.	Monitors log count rate for detectors that were moved, and ensures indication has steadied out.
CUE:	JPM may be terminated when overlap has been verified and proper withdrawal of the SRMS detectors is in progress.		

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-5

Malfunctions:

Number	Title	Value	Delay	Ramp

Remote Functions:

Number	Title	Value	Delay	Ramp

Override Functions:

Number	Title	Value	Delay	Ramp

Special Instructions:

1. Establish conditions such that the reactor just critical with a 300-400 second period, SRMs reading between 1 X 10^3 and 1 X 10^4 CPS, and IRMs downscale.
2. Place SRM and IRM Recorders to HI SPEED.
3. Simulator operator may need to manipulate control rods to maintain reactor period.
4. This JPM will require a surrogate to perform P603 duties, I.E. range IRM Switches as needed to prevent ½ scrams and allow overlap verification, as well as any rod manipulations.

Cue Sheet: (JP-OP-802-4101-445)

Initial Conditions:

- You are an extra reactor operator assigned to the MCR.
- Reactor Startup is in progress per GOP 22.000.02, Plant Startup To 25% Power.
- The Reactor is critical with a 300-400 second period
- The P603 will range the IRMs and maintain Rector Period for this evolution

Initiating Cue(s):

The CRS directs you to verify SRM/IRM overlap per 24.603.02, SRM/IRM/APRM Overlap Verification, and then fully withdraw SRM detectors. Your will be responsible for driving the SRM detectors and completing the 24.603.02. Coordinate with the P603 as necessary.

Initial Conditions:

- You are an extra reactor operator assigned to the MCR.
- Reactor Startup is in progress per GOP 22.000.02, Plant Startup To 25% Power.
- The Reactor is critical with a 300-400 second period
- The P603 will range the IRMs and maintain Rector Period for this evolution

Initiating Cue(s):

The CRS directs you to verify SRM/IRM overlap per 24.603.02, SRM/IRM/APRM Overlap Verification, and then fully withdraw SRM detectors. Your will be responsible for driving the SRM detectors and completing the 24.603.02. Coordinate with the P603 as necessary.

JOB PERFORMANCE MEASURE

Job Position SRO/RO	No. JP-OP-315-0166-002	Revision 2
JPM Title Restore RB HVAC to Operation Following Automatic Isolation	Duration 10 minutes*	Page 1

*2 times Duration for ILO Exams

Examinee: NRC SRO / RO

Evaluator: _____

JPM Type: **Normal** / Alternate Path **/** Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss

Location: Plant / **Simulator** / Classroom

Start Time _____

Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY											
Element	S	U	Comment	Element	S	U	Comment	Element	S	U	Comment
1.				11.							
2.				12.							
3.				13.							
4.				14.							
5.											
***6.**											
*** 7.**											
***8**											
*** 9.**											
10.											

OPERATOR FUNDAMENTALS OBSERVATION				
Monitor operator fundamentals during the JPM set. Rate each area based on the criteria by placing a checkmark in the appropriate column. Indicate the comment number associated with the observation.				
Operator Fundamental	**Meets all Expectations**	**Opportunity for Improvement**	**Does not meet Expectations**	**Comment Number**
Monitoring				
Control				
Conservatism				
Teamwork				
Knowledge				

OVERALL EVALUATOR COMMENTS:

_____ **PASS** _____ **FAIL**

Evaluator Signature / Date: _____ /

JPM Observation Criteria

Fundamental	Meets all Expectations	Opportunity for Improvement	Does not meet Expectations
Monitoring	Equipment status monitored at proper frequency, using multiple means if available. Understood which indications were critical.	Some monitoring was performed but undue focus on task or lack of system knowledge prevented ideal monitoring.	Did not recognize key equipment status indicators, too much focus on single indications and ignored total system status.
Control	Task preview used to prepare for job. Aware of control bands and maintained them. Configuration control maintained.	Adequate control of system maintained throughout task but some improvements could be made such as better manual control or greater depth of knowledge for anticipating system response.	No anticipation of results of actions. Unaware or control bands or not able to maintain them. Lack of knowledge of how to control system parameters.
Conservatism	Low threshold for identification of problems. Questioning attitude. Uses “stop when unsure” if needed. Sensitive to nuclear safety.	Some opportunities existed to question before proceeding, High focus on task completion without consideration for other system affects.	Proceeds even when unsure with unanswered questions. High threshold for problem conditions.
Teamwork	Routinely communicates system status changes to the team. Communicates actions before taking them.	Communicated most status and actions. Some improvement would be warranted.	Routinely takes action without informing the team.
Knowledge	Able to anticipate system response based on solid system knowledge. Good working knowledge of generic fundamentals to predict and monitor system response.	Plant, system, or generic fundamental knowledge has some gaps.	Unable to predict system response, unsure of generic fundamentals concepts related to plant operation. Only relied on procedure for operating knowledge.

JPM Information

System:

T4100 - Heating, Ventilating and Air Conditioning (RBHVAC)

Task:

02T4100001 - Startup the Reactor Building Heating Ventilation and Air Conditioning system.

References: Required (R) / Available (A)

23.404, Standby Gas Treatment System (A)
23.426, Reactor Building Heating Ventilation and Air Conditioning (R)

Tools and Equipment Required:

SS-1 Printout

Initial Conditions:

- You are the Control Room LNO.
- An automatic shutdown and isolation of RB HVAC occurred.
- The cause of the actuation signal has since cleared.
- Proper operation of the Reactor Building Exhaust Plenum Radiation Monitor has been verified by verifying normal status for Channel 1 on the SS1. Completion and Independent Verification of normal status for RB SPING has been documented in the unit log

Initiating Cue(s):

The CRS directs you to return RB HVAC to service.

Terminating Cue(s):

RB HVAC is in operation.

Task Standard:

RB HVAC is in operation in accordance with 23.426.

Licensed Operator Exam Information (Required for NRC Exams Only)

Safety Function:

Safety Function 9 - Radioactivity Release

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 28800 Plant Ventilation System

K/A STATEMENT:

A.4 Ability to manually operate and/or monitor in the control room

A4.01 Start and Stop Fans ..... 3.1 / 2.9

Maintenance Rule Safety Classification:

N/A

Maintenance Rule Risk Significant? (Yes or No)

N/A

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
CUE: Provide examinee Cue Sheet.	
CUE: Step 5.1.2.1 is complete.	
1. [5.1.2.1] Obtain a SS-1 printout or verify locally proper operation of the Reactor Building Exhaust Plenum Radiation Monitor by verifying normal status for Channel 1, and document completion of Independent Verification of normal status for RB SPING.	1. Verified by Initial Conditions.
CUE: Initiating logic has been verified reset.	
2. [5.1.2.2.a] If recovering from an Automatic initiation of Reactor Building Ventilation Isolation condition, verify initiating logic has been reset.	2. Verifies initiating logic is reset.
3. [5.1.2.2.b] Disarm or Verify Disarmed Division 1 and 2 Manual Isolation Trip pushbuttons.	3. Arming collar is rotated to Dis-Armed, and annunciator 8D25 reset.
4. [5.1.2.2.c] Depress Division 1 and 2 Manual Isolation RESET pushbuttons.	4. Depresses RESET pushbuttons.
5. [5.1.2.2.d] Verify green Division 1 and 2 Reactor Building Isolate RESET lights come ON.	5. Verifies white TRIPPED light OFF and the green RESET light ON.
*** 6**. [5.1.2.3] Select desired T4100-C004, (C005, C006) RB East (Center, West) Exhaust Fan: a. Place its four-position mode switch in a position corresponding to appropriate T4100-C001, (C002, C003) RB East (Center, West) Supply Fan. b. Ensure no other switches are selected to that supply fan.	*** 6.** Positions exhaust fans CMC switches to correspond with the associated supply fans to be started, and ensures no other exhaust fan CMC switches are selected for the supply fans to be started.
*** 7**. [5.1.2.4] Place appropriate T4100-C001, (C002, C003) RB East (Center, West) Supply Fan in AUTO.	*** 7.** Places selected supply fans CMC switches placed in AUTO.

ELEMENT	STANDARD
*** 8**. [5.1.2.5] Start desired T4100-C004, (C005, C006) RB East (Center, West) Exhaust Fan and verify the following: a.T4100-C004, (C005, C006) RB East (Center, West) Exhaust Fan starts and Exhaust Secondary Isolation Dampers open. b. Respective Exhaust Fan Discharge Damper begins to open, after a 20 second time delay. c. After approximately seven seconds for first fan, and after approximately two seconds for remaining fans: • Selected T4100-C001, (C002, C003) RB East, (Center, West) Supply Fan auto starts and • Secondary Containment Supply Isolation Dampers open. d. Twenty seconds after T4100-C001, (C002, C003) RB East, (Center, West) Supply Fan starts the respective Supply Fan Discharge Damper begins to open. e. T4100-F029, RBHVAC Intake Air Damper, opens. f. Respective Discharge Dampers for the Exhaust and Supply Fan travel to the full open position. g. NO FLOW indicating lights go OFF.	*** 8**. Places selected exhaust fan CMC switch in RUN, and verifies proper system operation.
*** 9.** [5.1.2.6] When flows have stabilized, start a second set of Reactor Building Ventilation Supply and Exhaust Fans.	*** 9**. Places selected exhaust fan CMC switch placed in RUN and verifies proper system operation.
10. [5.1.2.7] Monitor Reactor Building differential pressure for Division 1 and 2 on T41-R800A(B), Div 1(2) CR and RB Diff Press Rec. a. Maintain Reactor Building pressure at a normal reading of minus 0.25 inches H2O (minus 0.125 inches to minus 0.5 inches) differential pressure (dP).	10. Monitors Reactor Building differential pressure to ensure -0.125 inches to -0.5 inches is maintained.
NOTE: The following sub-steps are used to start RB Booster Exhaust Fans and are from section 5.6, excluding steps 5.6.2.2 and 5.6.2.3, which have no applicability.	
11. [5.6.2.1] Place the following switches in AUTO (H11-P808): • T4100-C015, RB Sample Sink Bstr Exh Fan • T4100-C016, RB CA Equip Room Bstr Exh Fan	11**.** Places T4100-C015 and T4100-C016 CMC switches in AUTO.

ELEMENT	STANDARD
12. [5.6.2.4] Check operation of Booster Fans by the following alarms are clear: • 8D33, RB CONTAM'D EQUIP STRGE RM EXHAUST FAN NO FLOW • 8D34, REAC BLDG H2O SAMP STA EXHAUST FAN NO FLO	12. Verifies Annunciators 8D33 and 8D34 are not in alarm.
13. [5.1.2.9] Direct an operator to Rotate Reactor Building Exhaust Fan Trip Alarm Reset pushbutton collar to ON to restore alarm to service (RB5-A15).	13. Reactor Building Exhaust Fan Trip Alarm Reset pushbutton collar rotated to ON
CUE: **Report as field operator (RB Rounds) that Reactor Building Exhaust Fan Trip Alarm Reset pushbutton collar is rotated to ON.**	
14. Inform CRS that RB HVAC is in operation.	14. Informs CRS that RB HVAC is in operation.
CUE: Terminate JPM when examinee reports that RB HVAC is in operation.	

_____ SATISFACTORY _____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

FAILURE TO WEAR ALL PPE REQUIRED FOR TASK PERFORMANCE WILL RESULT IN FAILURE OF THIS JPM.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

System Specific Notes and Cues:

All exhaust fan four-position Mode switches must be in the appropriate position for its corresponding supply fan prior to starting any exhaust fan. Otherwise a system trip will result when the successive exhaust fans are started or their mode switches repositioned. Do not select the same supply fan with more than one exhaust fan.

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

Any IC may be used.

Malfunctions:

Number	Title	Value	Delay	Ramp

Remote Functions:

Number	Title	Value	Delay	Ramp

Override Functions:

Number	Title	Value	Delay	Ramp

Special Instructions:

1. Manually start Division 1 of SGTS using Manual Isolation Pushbutton per section 5.4 of 23.404.
2. Verify shutdown and isolation of the RBHVAC system per section 5.4 of 23.404. Ensure the following:
    a. Trip reset
    b. RB vent fans in off
    c. RB booster fans in off

Cue Sheet: (JP-OP-315-0166-002)

Initial Conditions:

- You are the Control Room LNO.
- An automatic shutdown and isolation of RB HVAC occurred.
- The cause of the actuation signal has since cleared.
- Proper operation of the Reactor Building Exhaust Plenum Radiation Monitor has been verified by verifying normal status for Channel 1 on the SS1. Completion and Independent Verification of normal status for RB SPING has been documented in the unit log.

Initiating Cue(s):

The CRS directs you to return RB HVAC to service.

Cue Sheet: (JP-OP-315-0166-002)

Initial Conditions:

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