

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are an extra NLO.
2. Both Units are at 100% power.
3. Maintenance has recently been performed on 2PR09J CC HX Outlet Radiation Monitor.
4. An attempt was made to start 2PR09J from the Control Room and failed.
5. Further discussion/investigation determined that there might be a problem with the alignment of the monitor.

INITIATING CUES:

The US has directed you to start the 2PR09J locally per BOP AR/PR-1. The US has verified the Monitor Data Base as correct for 2PR09J.

JOB PERFORMANCE MEASURE

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JOB PERFORMANCE MEASURE

Rev. 1, 6/01/2006

TASK TITLE: Perform Local Start of CC HX Outlet Radiation Monitor (2PR09J)

JPM No.: IP i

TPO No: 4C.AR-03

K&A No.: 073 G2.1.30

K&A IMP: 3.9/3.4

EXAMINEE: _____

DATE: ___/___/___

The Examinee: PASSED _____ this JPM

TIME STARTED: _____

FAILED _____

TIME FINISHED: _____

EVALUATION METHOD: PERFORM _____

SIMULATE _____

LOCATION: IN PLANT x

MATERIALS:

- 1. Copy of BOP AR/PR-1.
- 2. Key CAT60 or a picture of the RM-80 'Motherboard'

GENERAL REFERENCES:

- 1. BOP AR/PR-1, Rev. 14, Startup of Skid Mounted Process Radiation Monitors.

TASK STANDARDS:

- 1. Locally startup 2PR09J per BOP AR/PR-1.
- 2. Demonstrates the use of good Core Work Practices (CWP).

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- 5. Further discussion/investigation determined that there might be a problem with the alignment of the monitor.

INITIATING CUES:

The US has directed you to start the 2PR09J locally per BOP AR/PR-1. The US has verified the Monitor Data Base as correct for 2PR09J.

CRITICAL ELEMENTS: (*) F.3.a.1, F.3.a.2, F.3.a.4

APPROXIMATE COMPLETION TIME: 15 minutes

PERFORMANCE CHECKLIST

STANDARDS

SAT

UNSAT

N/A

RECORD START TIME _____

- o Refer to BOP AR/PR-1 and determine step F.3.a is the appropriate step for startup of 2PR09J.

- o Locate and Open, BOP AR/PR-1 and determine step F.3.a is the appropriate step.

0

0

0

Cue: (if asked) The 'M' line-ups are complete.

- *F.3.a.1). Verify the Hand/Off/Auto switch is in the Off position.

At _2PR09J:

0

0

0

Cue: Hand/Off/Auto switch is in the 'OFF' position.

- o VERIFY/PLACE the HAND/OFF/AUTO switch in the OFF position.

- * F.3.a.2). Place the local main power disconnect switch in the ON position.

At 2PR09J:

0

0

0

Cue: Disconnect switch is in the 'DOWN' position

- PLACE the LOCAL MAIN POWER DISCONNECT Switch in the ON position.

Cue: (after the disconnect is on) Disconnect switch is in the 'UP' position

- F.3.a.3). Check the status of the circuits inside the RM-80 cabinets.

At 2PR09J, Inside the RM-80 cabinet:

0

0

0

Cue: The Green GO LED is flashing.

- o GREEN 'GO' LED is FLASHING.

Cue: The Red NO GO LED is off.

- o RED 'NO GO' LED is OFF.

Cue: The Red LOSS OF COUNTS LED is off.

- o RED 'LOSS OF COUNTS' LED is OFF.

<u>PERFORMANCE CHECKLIST</u>	<u>STANDARDS</u>	<u>SAT</u>	<u>UNSAT</u>	<u>N/A</u>
* F.3.a.4). Place the sample pump control switch in the Auto position. Cue: <i>HAND/OFF/AUTO switch for the sample pump is in AUTO position.</i>	At 2PR09J: • VERIFY/PLACE the HAND/OFF/AUTO switch for the Sample Pump in the AUTO position.	0	0	0
F.3.a.5). Check if Sample Pump is running. Note: If the Sample pump is running use actual indications on the PR skid. Cue: (if the skid is running) Indications are as you see them at the skid. Cue: (if the skid is NOT running) The GREEN light above the switch is lit and there is ~5 gpm flow indicated. Cue: (if asked) U-2 NSO reports the flow light is lit on 2PR09J.	At 2PR09J: ◦ Check if the sample pump is running ◦ Determines step F.3.a.6) is not required	0	0	0
F.3.a.7). Check instrument available light is on at the RM-80 door. Cue: <i>Instrument available light is lit.</i>	At 2PR09J, On the door of the RM-80: ◦ Check the INSTRUMENT AVAILABLE light is ON	0	0	0
F.3.a.8). Check that the monitor status is normal operating condition. Cue: <i>U-2 NSO reports that the 2PR09J is operating properly.</i>	◦ CHECK that the Monitor Status is NORMAL OPERATING CONDITION	0	0	0

PERFORMANCE CHECKLIST

STANDARDS

SAT

UNSAT

N/A

F.3.a.9). Complete the Electrical lineup per BOP AR/PR-E_.

- Complete the electrical line up per BOP AR/PR-E4/E5/E6.

0

0

0

Cue: Electrical lineup is being completed by another operator.

Cue: (if required) This JPM is completed

RECORD STOP TIME _____

COMMENTS:

Exelon Nuclear

Job Performance Measure

Parallel DC Busses (one bus de-energized)

JPM Number: DC06a

Revision Number: 00

Date: 04/30/08

Developed By: Robert Peterson 04/30/08
Instructor Date

Validated By: _____ 05/01/08
SME or Instructor Date

Review By: _____ _____
Operations Representative Date

Approved By: _____ _____
Training Department Date

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- MB/MM_ 1. Task description and number, JPM description and number are identified.
- MB/MM_ 2. Knowledge and Abilities (K/A) references are included.
- MB/MM_ 3. Performance location specified. (in-plant, control room, or simulator)
- MB/MM_ 4. Initial setup conditions are identified.
- MB/MM_ 5. Initiating and terminating cues are properly identified.
- MB/MM_ 6. Task standards identified and verified by SME review.
- MB/MM_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- MB/MM_ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
 Procedure Rev. 13 Date 05/11/04
- MB/MM_ 9. Pilot test the JPM:
 - a. verify cues both verbal and visual are free of conflict, and
 - b. ensure performance time is accurate.
- _____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- _____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

Robert Peterson	04/30/08
SME/Instructor	Date

	05/01/08
SME/Instructor	Date

SME/Instructor	Date

Revision Record (Summary)

1. **Revision 00, revised from DC06, Rev 5, to incorporate Alternate Path for DC 111 de-energized.**

INITIAL CONDITIONS

1. DC Bus 111 is DEENERGIZED with battery output breaker AF-2 OPEN for battery cable repairs.
2. DC Bus 211 is energized.
3. The SM has given permission to perform BOP DC-7.
4. Unit 1 is in MODE 3.
5. All prerequisites and precautions for BOP DC-7 are met.
6. U-2 Turbine Building EO has been briefed and is standing by DC 211 to follow your instructions.
7. The pre-job brief is complete and the following item was discussed:
 - a. A first check is required.
 - b. No out of the ordinary precautions or conditions exist.

INITIATING CUE

The Unit 1 & 2 NSO's requests you to cross-tie DC 111 and 211 busses IAW BOP DC-7.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

- * Denotes critical steps. (8, 9, 10)
- Denotes critical elements of a critical step.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section at the bottom of the page. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	<u>INSTRUCTORS NOTE</u> This step should be performed for both the 111 and 211 chargers; the candidate may verify Output Breaker AF-2 OPEN in lieu of checking DC 111 charger (which is not connected to the battery).				
1.	Battery charger DC 111 <u>NOT</u> in equalize mode	Step F.1.a ENSURE DC 111 battery charger is NOT in the equalize mode by verifying the following: Float/Equalize switch is in the FLOAT position. Equalize Timer is OFF.	—	—	—
CUE:	(IF ASKED: BATTERY OUTPUT BREAKER AF-2 IS OPEN.) DC 111 SWITCH IN FLOAT POSITION AND TIMER IS OFF				
2.	Battery charger DC 211 <u>NOT</u> in equalize mode	Step F.1.a ENSURE DC 211 battery charger is NOT in the equalize mode by verifying the following: Float/Equalize switch is in the FLOAT position. Equalize Timer is OFF			
CUE:	U-2 TB EO REPORTS DC 211 SWITCH IN FLOAT POSITION AND TIMER IS OFF				

NOTE
Alternate Path begins here with DC 111 NOT energized.

3.	Ensure 111 and 211 bus voltage differential is less than 20 volts IF BOTH busses are loaded AND ENERGIZED.	Step F.1.b Step is N/A with DC 111 DE-ENERGIZED.	—	—	—
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<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
CUE:	BUS 111 VOLTAGE IS 0 VOLTS. (IF ASKED:) U-2 TB EO REPORTS BUS 211 VOLTAGE IS 131 VOLTS				
4.	Open all load breakers on DC 111.	Step F.1.c With DC 111 DE-ENERGIZED, OPEN all load breakers on the DC 111, BF1 (front cabinet) and BR1 (rear cabinet).	—	—	—
CUE:	DC BUS 111 LOAD BREAKERS ARE OPEN ON BF1 AND BR1.				

NOTE

IF a ground condition exists, consider using BOP DC-15. IF the battery has no charger available, ground isolation must be done expeditiously in order to meet the 20 VDC Bus Voltage differential limit.

5.	Check grounds on bus 111 and 211 and verify that neither bus has a ground greater than 100 volts.	Step F.1.d ENSURE neither bus has a ground greater than 100 volts unless Shift Manager approval obtained.	—	—	—
CUE:	111 GROUNDS INDICATED 0 VOLTS 211 GROUNDS ARE +7 & -2 VOLTS				
6.	Notify Control Room of intent to close 111/211 cross-tie breaker.	Step F.1.e NOTIFY the Control Room of the impending crosstie breaker closure.	—	—	—
CUE:	NSO'S ACKNOWLEDGE IMPENDING BREAKER CLOSURE				
7.	Notify the Shift Manager to initiate applicable LCOAR's.	Step F.1.f NOTIFY the Shift Manager to INITIATE BOL 8.4 (Mode 1-4)	—	—	—
CUE:	SM ACKNOWLEDGES ENTERING BOL 8.4				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
<p>NOTE Steps F.1.g and F.1.h may be done in any order. The breaker located at the DC Bus which is to be isolated from its charger and/or battery and charger <u>should</u> be closed last.</p>					

*8.	At 125 V DC distribution center 211, Unlock and Close breaker DF1, Bus 211 tie breaker to bus 111 & verify annunciator 2-21-D7 in alarm	<p>Step F.1.h At 125V DC Distribution Center 211, UNLOCK and CLOSE breaker DF1, Bus Tie to 111 breaker, and CHECK annunciator 2-21-D7, DC BUS 211 TIE BRKR TO BUS 111 CLOSE/TRIP, in alarm.</p>	—	—	—
CUE:	U-2 TB EO REPORTS BREAKER DF1 IS UNLOCKED AND CLOSED WITH ANNUNCIATOR 2-21-D7, DC BUS 211 TIE BRKR TO BUS 111 CLOSE/TRIP, IN ALARM				
*9.	At 125 V DC distribution center 111, Unlock and Close breaker DF1, Bus 111 tie breaker to bus 211 & verify annunciator 1-21-D7 in alarm.	<p>Step F. 1. g At 125V DC Distribution Center 111, UNLOCK and CLOSE breaker DF1, Bus Tie to 211 breaker, and CHECK annunciator 1-21-D7, DC BUS 111 TIE BRKR TO BUS 211 CLOSE/TRIP, in alarm.</p>	—	—	—
CUE:	BREAKER DF1 IS UNLOCKED AND CLOSED WITH ANNUNCIATOR 1-21-D7, DC BUS 111 TIE BRKR TO BUS 211 CLOSE/TRIP, IN ALARM.				
*10.	Close all load breakers on DC 111, cabinets BF1 and BR1.	<p>Step F.1.i CLOSE all load breakers that were opened in step F.1.c.</p>	—	—	—
CUE:	ALL LOAD BREAKERS ARE CLOSED IN CABINET BF1 AND BR1.				

JPM Stop Time: _____

Operator's Name: _____

Job Title: EO NSO SRO

JPM Title: Parallel DC Buses

JPM Number: DC06a

Revision Number: 00

K/A: APE058, Loss of DC Power, AA1.01, Ability to operate and/or monitor the following as they apply to the Loss of DC Power: Cross-tie of the affected DC bus with the alternate supply

Imp Factor: 3.4/3.5

Suggested Testing Environment: In Plant

Actual Testing Environment: Simulator Control Room In-Plant

Testing Method: Simulate Perform
Alternate Path: Yes No
SRO Only: Yes No

Time Critical: Yes No

Estimated Time to Complete: 30 minutes **Actual Time Used:** _____ minutes

References: BOP DC-7 rev.13

EVALUATION SUMMARY:

Were all the Critical Elements performed satisfactorily? Yes No

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory Unsatisfactory

Comments: _____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ Date: _____

INITIAL CONDITIONS

8. DC Bus 111 is DEENERGIZED with battery output breaker AF-2 OPEN for battery cable repairs.
9. DC Bus 211 is energized.
10. The SM has given permission to perform BOP DC-7.
11. Unit 1 is in MODE 3.
12. All prerequisites and precautions for BOP DC-7 are met.
13. U-2 Turbine Building EO has been briefed and is standing by DC 211 to follow your instructions.
14. The pre-job brief is complete and the following item was discussed:
 - c. A first check is required.
 - d. No out of the ordinary precautions or conditions exist.

INITIATING CUE

The Unit 1 & 2 NSO's requests you to cross-tie DC 111 and 211 busses IAW BOP DC-7.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are a Non-Licensed Operator.
2. The unit has just tripped in conjunction with an electrical fire in the unit's Remote Shutdown Panel.
3. The 2A AF pump is OOS for maintenance and the 2B AF pump did not automatically start, and will not manually start with the MCR switch.

INITIATING CUES:

The Shift Manager has just directed you to initiate a local emergency start of the 2B AF pump using 2BOA ELEC-5, Attachment D.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

2. You are a Non-Licensed Operator.
2. The unit has just tripped in conjunction with an electrical fire in the unit's Remote Shutdown Panel.
3. The 2A AF pump is OOS for maintenance and the 2B AF pump did not automatically start, and will not manually start with the MCR switch.

INITIATING CUES:

The Shift Manager has just directed you to initiate a local emergency start of the 2B AF pump using 2BOA ELEC-5, Attachment D.

JOB PERFORMANCE MEASURE Rev. 4, 5/19/2006

TASK TITLE: Local Emergency Start of 2B AFW Pump (364') JPM No.: Inplant k

TPO No: 4D.OA-35 K&A No.: 061 A2.04 K&A IMP. 3.4 / 3.8

EXAMINEE: _____ DATE: ___/___/___

The Examinee: PASSED _____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM _____ SIMULATE _____

LOCATION: IN PLANT X

MATERIALS:

Copy of 2BOA ELEC-5, Attachment D, AF Pump

GENERAL REFERENCES:

1. 2BOA ELEC-5, Local Emergency Control Of Safe Shutdown Equipment (Rev. 100)
2. 2BOA ELEC-5, Attachment D, Diesel Driven Auxiliary Feedwater Pump Local Start. (Rev. 100)

TASK STANDARDS:

Correctly perform the actions required for 2B AF Pump Local Emergency Start.

TASK CONDITIONS:

1. You are a Non-Licensed Operator.
2. The unit has just tripped in conjunction with an electrical fire in the unit's Remote Shutdown Panel.
3. The 2A AF pump is OOS for maintenance and the 2B AF pump did not automatically start, and will not manually start with the MCR switch.

INITIATING CUES:

The Shift Manager has just directed you to initiate a local emergency start of the 2B AF pump using BOA ELEC-5, Attachment D.

CRITICAL ELEMENTS: (*) 9 & 10

APPROXIMATE COMPLETION TIME: 10 minutes

PERFORMANCE CHECKLIST

STANDARDS

SAT

UNSAT

N/A

RECORD START TIME _____

1. Locate the 2B AF pump. On 383' Aux Bldg: 0 0 0

Note: Provide the Candidate with a copy of 2BOA ELEC-5, Attachment D.
o LOCATE 2B AF pump.

NOTE

JPM steps 2 and 3 may be performed in any order

2. Verify/Start associated Aux Lube Oil Pump. 0 0 0

Cue: Aux Lube Oil Pump CS is in the 'START' position.
o VERIFY/START 2B Aux Lube Oil Pump.

3. Verify/Start Gearbox Lube Oil Pump. 0 0 0

Cue: Gearbox Lube Oil Pump CS is in the 'START' position.
o VERIFY/START Gearbox Lube Oil Pump.

4. Place ENGINE START Switch to MAN. At 2AF01J: 0 0 0

Cue: ENGINE START Switch is in MAN.
o PLACE ENGINE START Switch to MAN.

5. Check Air Box Tripped annunciator NOT LIT. At 2AF01J: 0 0 0

Cue: Air Box Trip Annunciator is NOT LIT.
o CHECK Diesel Air Box Trip reset.

<u>PERFORMANCE CHECKLIST</u>	<u>STANDARDS</u>	<u>SAT</u>	<u>UNSAT</u>	<u>N/A</u>
6. Momentarily depress the RESET button.	At 2AF01J:	0	0	0
Cue: The RESET button was depressed and released.	<ul style="list-style-type: none"> o DEPRESS and RELEASE the Reset button. 			

NOTE

Alternate path initiated in the following step.

7. Depress the 2B AF Pump START pushbutton.	At 2AF01J:	0	0	0
Cue: The engine does NOT crank.	<ul style="list-style-type: none"> o DEPRESS the Start button. o VERIFY the engine starts. 			

8. Try to start the 2B AF pump with the other battery bank.		0	0	0
Cue: The 'other' battery bank is selected (A or B depending on current selection)	<ul style="list-style-type: none"> o SELECT other battery bank 			

NOTE: Located on 2AF01J

Cue: The Reset pushbutton has been depressed and released.	<ul style="list-style-type: none"> o DEPRESS and RELEASE the Reset button. 			
Cue: The Engine does NOT start.	<ul style="list-style-type: none"> o DEPRESS the Start button. 			

*9. Place Engine Start switch to AUTO.	At 2AF01J:	0	0	0
Cue: Engine Start switch is in AUTO.	<ul style="list-style-type: none"> • PLACE Engine Start switch to AUTO. 			

<u>PERFORMANCE CHECKLIST</u>	<u>STANDARDS</u>	<u>SAT</u>	<u>UNSAT</u>	<u>N/A</u>
*10. Start the 2B AF pump at Emergency Control panel 2AF03J.		0	0	0
NOTE: U2 – 364 M18, by the U0 CC pump	o LOCATE panel 2AF03J			
Cue: <i>The Remote Emergency Start switch is in START</i>				
Cue: <i>The Run light is LIT</i>	<ul style="list-style-type: none"> • PLACE Remote Emergency Start switch in START o VERIFY Run light LIT 			
11. Monitor 2B AF pump operation.		0	0	0
Cue: <i>AF-7T1 will be completed by another NLO who will monitor the pump.</i>	o PERFORM BOP AF-7T1			
Cue: <i>This JPM is complete.</i>				

RECORD STOP TIME _____

COMMENTS: