

Job Performance Measure "A"

Facility: **Vogtle**

Task No: N/A

Title: Perform Control Rod Operability Test

JPM No: V-LO-JP-14410-HL17

K/A Reference: 001A2.17 RO 3.3 SRO 3.8

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

NOTE: For time considerations, the students may be allowed to "pre-brief" this JPM and allowed to review 14410-1 prior to starting the JPM.

Read to the examinee:

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

Initial Conditions: Unit 1 is at 100% power. 14410-1, "Control Rod Operability Test" is to be performed. All prerequisites and initial conditions have been verified.

Initiating Cue: The SS has directed you to perform 14410-1 for CBA, CBB, CBC and CBD. Begin with CBA. Another licensed operator will perform 14410-1 for the Shutdown Banks. Complete Data Sheet 1 of 14410-1 for the Control Banks, and also complete section 7, (Evaluation and Review).

Initial positions for all Control Banks have been recorded on Data Sheet 1 of 14410-1.

Task Standard: Candidate completes 14410-1 for CBA and manually trips reactor per AOP 18003-C guidance when two rods are dropped and performs IOAs of 19000-C, "Reactor Trip Or Safety Injection."

Required Materials: 14410-1, "Control Rod Operability Test" Ver.19.1. Section 4.0 and Control Rod initial positions recorded on Data Sheet 1.

General References: None

Time Critical Task: No

Validation Time: 10 minutes

SIMULATOR SETUP:

Simulator Setup:

1. Reset to IC # 211 for HL-17 NRC Exam

Simulator Setup from Scratch:

1. Reset to IC # 14 (100%, MOL)
2. Insert malfunction RD13A on Trigger 1
3. Insert malfunction RD13B on Trigger 1 with 10 sec delay

Setup time: 5 minutes

Performance Information

Critical steps denoted with an asterisk

Step 5.0 TEST STARTED

DATE

TIME

MODE

Standard: Candidate records DATE, TIME, and MODE.

Comment:

Candidate reviews NOTES prior to step 5.1.1:

NOTES

- This test is applicable to each control bank not fully inserted.
- A reactor startup or shutdown, moving rods at least 10 steps, will satisfy this surveillance. The following instructions are written for the normal, all-banks-withdrawn condition.

Standard: Candidate reviews NOTES.

Comment:

Step 5.1.1 Record the INITIAL Group Step Counter and Individual Rod Position Indicator readings for the control bank being tested on Data Sheet 1.

Standard: All initial Control Bank positions have been previously recorded on Data Sheet 1 from the Initiating Cue.

Comment:

Step 5.1.2 Record the initial IPC Bank Demand readings for the control bank being tested on Data Sheet 1.

Standard: All initial Control Bank IPC Band Demand positions have been previously recorded on Data Sheet 1 from the Initiating Cue.

Comment:

Step *5.1.3 Place ROD BANK SELECTOR SW 1-HS-40041 to the individual bank position for the control bank being tested.

Standard: Candidate places 1-HS-40041 in CBA and initials step for CBA.

CUE: If peer check is requested, “Peer Check request noted.”

Comment:

NOTES

- QMCB Annunciator ALB10-D06 ROD DEV may energize in the next step when rods are inserted 10 steps.
- QMCB Annunciator ALB10-C04 ROD BANK LO LIMIT will energize in the next step if rod insertion to 10 steps above the RIL occurs.

Standard: Candidate reviews NOTES prior to step 5.1.4.

Comment:

Step *5.1.4 Using ROD MOTION SWITCH 1-HS-40040, insert the control bank being tested at least 10 steps as indicated on group step counters.

Standard: Candidate inserts Rods a minimum of 10 steps and initials step for CBA.

CUE: If peer check is requested, “Peer Check request noted.”

Comment:

Step 5.1.5 Check RODS IN light is lit and a change in position occurs for each control rod being tested on the DRPI Display Panel.

Standard: Candidate observes RODS IN light and DRPI change for all rods and initials step for CBA.

Comment:

Step 5.1.6 Record the TEST Group Step Counter and Individual Rod Position Indicator readings of control bank being tested on Data Sheet 1.

Standard: Candidate records readings for group 1 and 2 step counters on Data Sheet 1 and individual DRPI readings Data Sheet 1 and initials step for CBA.

Comment:

Step 5.1.7 Record the test IPC Bank Demand reading for the control bank being tested on Data Sheet 1.

Standard: Candidate records IPC Bank Demand readings on Data Sheet 1 and initials step for CBA.

Comment:

Step *5.1.8 Using ROD MOTION SWITCH 1-HS-40040, withdraw the control bank being tested to the INITIAL position recorded on Group Step Counter(s) in Step 5.1.1 or as required by plant conditions.

Standard: Candidate withdraws CBA to 228 steps on group step counters and initials step for CBA.

CUE: If peer check is requested, “Peer Check request noted.”

CUE: If rods are withdrawn >228 steps and SS approval requested, “Return CBA to 228 steps.”

Comment:

Step 5.1.9 Check RODS OUT light is lit and individual control rod movement occurs on the DRPI Display Panel.

Standard: Candidate observes RODS OUT light and DRPI indication changes and initials step for CBA.

Comment:

CAUTIONS

- If energized, ALB10-C04 should reset when rods are withdrawn at, or just prior to, 228 steps. In the following step, rods should NOT be withdrawn greater than 228 steps.
- SS approval shall be obtained prior to exceeding 228 steps.

Standard: Candidate reviews cautions prior to step 5.1.10.

Comments:

Step 5.1.10 IF ALB10-C04 ROD BANK LO LIMIT energized when rods were inserted AND did NOT reset, when rods were withdrawn to the ARO position, perform the following:

- a. WITHDRAW rods until the alarm resets (228 steps shall NOT be exceeded without SS approval).

Standard: Candidate determines step is N/A and N/A placed in CBA initial block.

Comment:

Step 5.1.10 b. WHEN ALB10-C04 has reset, INSERT rods back to the ARO position.

Standard: Candidate determines step is N/A and N/A placed in CBA initial block.

Comment:

Step 5.1.11 Record the AS LEFT Group Step Counter and Individual Rod Position Indicator readings of the control bank being tested on Data Sheet 1.

Standard: Candidate records readings on Data Sheet 1. See page 15 for example.

Comment:

Step 5.1.12 Record final IPC Bank Demand reading for the control bank being tested on Data Sheet 1.

Standard: Candidate records readings on Data Sheet 1. See page 15 for example.

Comment:

Step 5.1.13 Based on a change (SAT) or no change (UNSAT) of position on DRPI for each rod in the bank for a change of at least 10 steps on group step counters, record Satisfactory (SAT) or Unsatisfactory (UNSAT) by initialing appropriate space on Data Sheet 1.

Standard: Candidate initials SAT space on Data Sheet 1. See page 15 for example.

Comment:

Step 5.1.14 Repeat Section 5.1 until all required Control Banks have been tested.

Standard: Candidate initials step and returns to Step 5.1.1.

Comment:

For Control Bank B

Sep 5.1.1 Record the INITIAL Group Step Counter and Individual Rod Position Indicator readings for the control bank being tested on Data Sheet 1.

Standard: All initial Control Bank positions have been previously recorded on Data Sheet 1 from the Initiating Cue.

Comment:

Step 5.1.2 Record the initial IPC Bank Demand readings for the control bank being tested on Data Sheet 1.

Standard: All initial Control Bank IPC Band Demand positions have been previously recorded on Data Sheet 1 from the Initiating Cue.

Comment:

Step *5.1.3 Place ROD BANK SELECTOR SW 1-HS-40041 to the individual bank position for the control bank being tested.

Standard: Candidate places 1-HS-40041 in CBB and initials step for CBB.

CUE: If peer check is requested, "Peer Check request noted."

Comment:

NOTES

- QMCB Annunciator ALB10-D06 ROD DEV may energize in the next step when rods are inserted 10 steps.
- QMCB Annunciator ALB10-C04 ROD BANK LO LIMIT will energize in the next step if rod insertion to 10 steps above the RIL occurs.

Standard: Candidate reviews NOTES prior to step 5.1.4.

Comment:

Step 5.1.4 Using ROD MOTION SWITCH 1-HS-40040, insert the control bank being tested at least 10 steps as indicated on group step counters.

Standard: Candidate inserts Rods.

CUE: If peer check is requested, “Peer Check request noted.”

NOTE to Simulator operator: Insert Trigger 1 after rod motion is initiated.

Comment:

Candidate observes two rods dropped.

Standard: Candidate observes DRPI indication for rods H6 and H10 rod bottom light lit and the following alarms:

ALB10-C02 POWER RANGE CHANNEL DEVIATION
(Will alarm and subsequently clear if acknowledged)
ALB10-D06 ROD DEV
ALB10-E05 ROD AT BOTTOM
ALB10-F05 TWO OR MORE RODS AT BOTTOM

Comment:

Annunciator response procedure 17010-1 performed for window F05, TWO OR MORE RODS AT BOTTOM

1.0 **PROBABLE CAUSE**

1. Two or more dropped rods.
2. Loss of 120V AC power to Data A and Data B cabinets.

2.0 **AUTOMATIC ACTIONS**

NONE

NOTE

The alarm is enabled when the shutdown banks are fully withdrawn and control bank A is more than 12 steps off the bottom.

3.0 **INITIAL OPERATOR ACTIONS**

Go to 18003-C, "Rod Control System Malfunction".

4.0 **SUBSEQUENT OPERATOR ACTIONS**

NONE

5.0 **COMPENSATORY OPERATOR ACTIONS**

NONE

NOTE to examiner: The candidate may also enter 18003-C directly as symptoms are met.

Standard: Candidate going to 18003-C, "Rod Control System Malfunction" OR immediately tripping the reactor is acceptable.

Comment:

18003-C, "Rod Control System Malfunction" entered.

Standard: Candidate enters procedure and selects Section A.

Comment:

Step A1 Stop any load changes in progress.

Standard: Candidate checks Main Turbine at Set Load light lit and MWs steady.

Comment:

Step A2 Check the following:

a. DRPI - AVAILABLE.

Standard: DRPI LED display lit.

Comment:

Step A2 b. Only one Rod dropped by observing DRPI.

Standard: Candidate determines two rods dropped and goes to the RNO column.

Comment:

***Step A2 RNO Trip the Reactor and Go to 19000 C, E 0 REACTOR TRIP OR SAFETY INJECTION.**

Standard: Candidate trips reactor using either the A panel or C panel Reactor Trip handswitch and performs Immediate Operator Actions (IOAs) of 19000-C. Critical time of twice validation time (10 minutes) equal to 20 minutes.

Step 1 Checks Reactor trip:
 Rod Bottom Lights - **LIT**
 Reactor Trip and Bypass Breakers - **OPEN**
 Neutron Flux – **LOWERING**

Step 2 Check Turbine trip:
 All Turbine Stop Valves - **CLOSED.**

Step 3 Check power to AC Emergency Busses:
 Both busses –energized

Step 4 Check if SI is actuated:
 Any SI annunciator – **LIT. NO**
 SI ACTUATED BPLB window – **LIT. NO**

Step 4 RNO Check if SI is required:
 If one or more of the following conditions has occurred:

 PRZR pressure \leq 1870 psig. **NO**
 Steam line pressure \leq 585 psig. **NO**
 Containment pressure \geq 3.8 psig. **NO**
 Automatic alignment of ECCS equipment. **NO**

CUE: When IOAs complete, “Another operator will perform 19000-C,”Reactor Trip or Safety Injection”.

Comment:

Terminating cue: Student returns initiating cue sheet.

Verification of Completion

Job Performance Measure No. V-NRC-JP-14410-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

DATA SHEET 1 - CONTROL ROD OPERABILITY TEST

Sheet 1 of 3

CONTROL BANK	POSITION (STEPS)			MOVEMENT	
	INITIAL	TEST	AS LEFT	SAT	UNSAT
<u>CBA</u>					
Group 1 Step Counter	<u>228</u>	<u>218</u>	<u>228</u>		
DRPI H6	<u>228</u>	<u>216</u>	<u>228</u>	INITIALS	_____
DRPI H10	<u>228</u>	<u>216</u>	<u>228</u>	INITIALS	_____
Group 2 Step Counter	<u>228</u>	<u>218</u>	<u>228</u>		
DRPI F8	<u>228</u>	<u>216</u>	<u>228</u>	INITIALS	_____
DRPI K8	<u>228</u>	<u>216</u>	<u>228</u>	INITIALS	_____
IPC Bank Demand	<u>228</u>	<u>218</u>	<u>228</u>	INITIALS	_____
<u>CBB</u>					
Group 1 Step Counter	<u>228</u>	_____	_____		
DRPI F2	<u>228</u>	_____	_____	_____	_____
DRPI B10	<u>228</u>	_____	_____	_____	_____
DRPI K14	<u>228</u>	_____	_____	_____	_____
DRPI P6	<u>228</u>	_____	_____	_____	_____
Group 2 Step Counter	<u>228</u>	_____	_____		
DRPI B6	<u>228</u>	_____	_____	_____	_____
DRPI F14	<u>228</u>	_____	_____	_____	_____
DRPI P10	<u>228</u>	_____	_____	_____	_____
DRPI K2	<u>228</u>	_____	_____	_____	_____
IPC Bank Demand	<u>228</u>	_____	_____	_____	_____
<u>CBC</u>					
Group 1 Step Counter	_____	_____	_____		
DRPI H2	_____	_____	_____	_____	_____
DRPI B8	_____	_____	_____	_____	_____
DRPI H14	_____	_____	_____	_____	_____
DRPI P8	_____	_____	_____	_____	_____
Group 2 Step Counter	_____	_____	_____		
DRPI F6	_____	_____	_____	_____	_____
DRPI F10	_____	_____	_____	_____	_____
DRPI K10	_____	_____	_____	_____	_____
DRPI K6	_____	_____	_____	_____	_____
IPC Bank Demand	_____	_____	_____	_____	_____

Initial Conditions: Unit 1 is at 100% power. 14410-1, "Control Rod Operability Test" is to be performed. All prerequisites and initial conditions have been verified.

Initiating Cue: The SS has directed you to perform 14410-1 for CBA, CBB, CBC and CBD. Begin with CBA. Another licensed operator will perform 14410-1 for the Shutdown Banks. Complete Data Sheet 1 of 14410-1 for the Control Banks, and also complete section 7, (Evaluation and Review).

Initial positions for all Control Banks have been recorded on Data Sheet 1 of 14410-1.