

Job Performance Measure "A"

Facility: **Vogle**

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 The following instructions are written for the normal, all-banks-withdrawn condition.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>	<u>INITIALS</u>	_____
DRPI H10	<u>228</u>	<u>216</u>	<u>228</u>	<u>INITIALS</u>	_____
Group 2 Step Counter	<u>228</u>	<u>218</u>	<u>228</u>		
DRPI F8	<u>228</u>	<u>216</u>	<u>228</u>	<u>INITIALS</u>	_____
DRPI K8	<u>228</u>	<u>216</u>	<u>228</u>	<u>INITIALS</u>	_____
IPC Bank Demand	<u>228</u>	<u>218</u>	<u>228</u>	<u>INITIALS</u>	_____
<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.

Job Performance Measure "A" Alternate

Facility: **Vogle**

Task No: V-LO-TA-09028

Task Title: Perform Manual Makeup with Loss of Boric Acid Flow

JPM No: V-NRC-JP-13009-HL17

K/A Reference: 004A4.12 3.8 / 3.3

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

NOTE: For time considerations, the Candidates may be allowed to "pre-brief" this JPM and allowed to review 13009-1 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: VCT level is 32%. Current RCS Boron concentration is 917 ppm and BAST concentration is 7000 ppm.

Initiating Cue: The SS has directed you to perform a Manual Make-up per 13009-1 to raise VCT to 50%. There are no recent make-ups in the log.

Task Standard: Candidate initiates manual makeup to raise VCT level and stops the makeup when the Boric Acid flow stops.

Required Materials: 13009-1, "CVCS Reactor Makeup Control System Ver. 48.0

General References: None

Time Critical Task: No

Validation Time: 10 minutes (After Simulator entry.)

SIMULATOR SETUP:

Simulator Setup:

Reset to IC # 219 for HL-17 NRC Exam

NOTE for Setup: Adjust pot for slight dilution and re-snap.

Simulator Setup from Scratch:

1. Reset to IC-14 (MOL 100%)
2. Ensure Boric Acid transfer pump 1 is in AUTO /Pump 2 STOP
3. Lower VCT level to 32% and allow VCT pressure to stabilize
4. Insert the following on Trigger 1:
 - Annunciator ALB36D01 480V MCC 1ABD TROUBLE to ON
 - Override light A-LO_HS0276A_Y to OFF
 - Override light A-LO_HS0276A_G to OFF
 - Override light A-LO_HS0276A_R to OFF
 - Override HS-276A to STOP with 1 sec delay
 - Override HS-277A to STOP
5. Override HS-276A to STOP
6. Freeze the simulator
7. Ensure RCS boron status board is marked **RCS 917 ppm BAST 7000 ppm**
8. **RESET INTEGRATORS SETPOINT TO ZERO, MUST BE DONE EACH RESET.**

Note to simulator operator:

After each reset, go to run to allow VCT Hi/Lo pressure to alarm and clear (less than 30 secs) and then go back to freeze.

Setup time: 3 minutes

Performance Information

Critical steps denoted with an asterisk

Candidate refers to 13009-1, CVCS Reactor Makeup Control System, section 4.6, Manual Makeup.

Standard: Candidate selects section 4.6 manual makeup.

Comment:

CAUTIONS

If Manual Makeup is being performed to maintain VCT level when letdown is being diverted, letdown should not exceed 75 gpm.

BAST concentration is inaccurate until sampled following batching. Temperature and power should be closely monitored following manual makeup to the VCT with the BAST concentration inaccurate.

Standard: Candidate reviews CAUTIONS prior to step 4.6.1 and determines they are not applicable to current conditions.

Comment:

Step 4.6.1 Manual Makeup at 100 GPM Total Flow.

Standard: Candidate chooses section.

Comment:

NOTE

Volumetric change in VCT is equal to 19.2 gallons per percent change in level.

Standard: Candidate reviews NOTE prior to step 4.6.1.1

Comment:

***Step 4.6.1.1 Set TOTAL MAKEUP Integrator 1-FQI-0111 to the desired amount of Total Makeup Water.**

Standard: Candidate sets 1-FQI-0111 to 340 to 348 gallons (19.2 gallons / % X 18% = 345.6 gallons) by depressing the gray pushbutton under the digit to be changed to toggle the reading up or down. The red pushbutton will reset reading to all zeros. Note: Pot was adjusted off slightly upon setup.

Comment:

CAUTION

Digital counters and thumbwheel settings on BORIC ACID TO BLENDER Integrator 1-FQI-0110 read in tenth-gallon increments.

Standard: Candidate reviews CAUTION prior to step 4.6.1.2.

Comment:

Step 4.6.1.2 Set BORIC ACID TO BLENDER Integrator 1-FQI-0110 to the amount of boric acid as follows:

- a. Calculate volume of boric acid using the following calculation.

$$\text{Gallons of Boric Acid} = \frac{\text{Total M/U} \times \text{RCS Cb}}{\text{BAST Cb}}$$

Standard: Candidate calculates 43 - 46 gallons (346 X 917 / 7000).

Comment:

Step 4.6.1.2 b. Review logs for recent make-ups to confirm calculated volume of Boric Acid is appropriate.

Standard: N/A

Comment:

NOTE

Minor adjustments from the calculated boric acid volume and recent makeup data may be required based on burnup, plant conditions, and desired RCS temperature response.

Standard: Candidate reviews NOTE prior to step 4.6.1.2 c.

Comment:

***Step 4.6.1.2c. Adjust Boric Acid to Blender Integrator 1-FQI-0110 to the desired volume based on plant conditions and desired reactivity response.**

Standard: Candidate sets integrator to calculated volume of 43 - 46 gals by depressing the gray pushbutton under the digit to be changed to toggle the reading up or down. The red pushbutton will reset reading to all zeros.

Comment:

Step 4.6.1.3 Adjust BORIC ACID Flow Controller 1-FIC-0110 pot setting using the following Formula and verify controller is in AUTO:

$$1\text{-FIC-0110 pot setting} = \frac{\text{RCS Cb} \times 25}{\text{BAST Cb}}$$

Standard: Candidate calculates $(917 \times 25 / 7000) = 3.275$ and adjusts 1-FIC-0110 pot to the correct setting (3.26 to 3.30).

Comment:

Step *4.6.1.4 Place VCT MAKEUP CONTROL 1-HS-40001B in STOP.

Standard: Candidate places 1-HS-40001B to STOP

Green Light - ON
Red Light - OFF

Comment:

Step *4.6.1.5 Place VCT MAKEUP MODE SELECT 1-HS-40001A in MAN.

Standard: Candidate places 1-HS-40001A to MAN, one click clockwise.

Comment:

Step 4.6.1.6 Verify the following:

- BA TO BLENDER 1-HS-0110A in AUTO.
- RX MU WTR TO BA BLENDER 1-HS-0111A in AUTO.
- One Boric Acid Transfer Pump in AUTO or START.
- One Reactor Makeup Water Pump in AUTO or START.
- Verify TOTAL MAKEUP Flow controller 1-FIC-0111 is in AUTO with pot set for 100 gpm (approximately 6.25) total flow rate.

Standard: Candidate verifies:

1-HS-0110A in AUTO
1-HS-0111A in AUTO
One BA Transfer Pump in AUTO (placing in START is acceptable)
One Reactor MU Water Pump in AUTO (placing in START is acceptable)
1-FIC-0111 in AUTO set at ~ 6.25

NOTE: This is the normal setup for these components.

Comment:

NOTE

While letdown is configured for 120 gpm, the preferred flow path for Manual Makeup is through 1-FV-0110B BLENDER OUTLET TO CHARGING PUMPS SUCT. The design capacity of the VCT spray nozzles would be challenged with 120 gpm letdown in service and the addition of the makeup flow upstream of the VCT (1X6AH04-00024). This could prevent makeup from reaching the desired flow rate. Thus, 1-FV-0111B should only be used if 1-FV-0110B is not available.

Standard: Candidate reads note.

Comment:

CAUTION

With either Blender Outlet valve handswitch in the open position, an automatic isolation will not occur due to a Boric Acid and/or Total Makeup Flow Deviations.

Standard: Candidate reads caution. It is applicable to this evolution.

Comment:

Step *4.6.1.7 Opens one of the following valves:

Blender Outlet to Charging Pumps Suction 1-FV-0110B

OR

Blender Outlet to VCT 1-FV-0111B

Standard: Places either 1-FV-0110B or 1-FV-0111B to open.

Red light – ON
Green light - OFF

Comment:

NOTES

- Manual makeup can be stopped at any time by placing 1-HS-40001B in STOP.
- VCT level should be maintained between 30 and 87 percent. (1-LIC-0185 Controller pot should normally be set to 8.7.)
- VCT Pressure 1-PI-115 should be maintained between 20 and 45 psig.

Standard: Candidate reads notes.

Comment:

Step *4.6.1.8 Place VCT MAKEUP CONTROL 1-HS-40001B in START and perform the following.

- Verify Boric Acid Transfer Pump is running.
- Verify Reactor Makeup Water Pump is running.
- Verify Boric Acid to Blender 1-FV-0111A throttles open to provide the correct flow of boric acid.
- Verify Reactor MU Water to Blender 1-FV-0111A throttles open to provide total flow.
- If desired, control Boric Acid Flow controller 1-FIC-0110 by adjusting pot OR using up/down pushbuttons to control boric acid at the desired flowrate.

Standard: **Candidate places 1-HS-40001B to START.**

Candidate verifies bulleted items above work as desired.

NOTE to examiner: Bulleted items above should work as designed.

Note to Simulator operator: After items verified,
IF BATP #1 in service insert Trigger 1
BATP #2 is overridden to STOP.

Comment:

***Step 4.6.1.9** **Monitors counters on Boric Acid to Blender Integrator 1-FQI-0110 and Total Makeup Integrator 1-FQI-0111 and perform the following:**

- WHEN counter on 1-FQI-0110 BORIC ACID TO BLENDER Integrator reaches its setpoint, verify 1-FV-0110A BORIC ACID TO BLENDER is closed.
- WHEN counter on 1-FQI-0111 TOTAL MAKEUP Integrator reaches its setpoint, verify 1-FV-0111A REACTOR MAKEUP WATER TO BLENDER is closed.

Note to Simulator operator: If candidate attempts to start other BAT pump it will not start.

Standard: Candidate places 1-HS-40001B to STOP after BAT pump trip and prior to Blender and Total Makeup Integrators have reached their setpoint.

Comment:

Candidate reports failure to Shift Supervisor.

Standard: Candidate reports failure to Shift Supervisor.

CUE: When failure is reported, “The SS desires Maintenance to troubleshoot before proceeding.”

Terminating cue: Candidate returns initiating cue sheet.

Verification of Completion

Job Performance Measure No. V-NRC-JP-13009-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: _____

Initial Conditions: VCT level is 32%. Current RCS Boron concentration is 782 ppm and BAST concentration is 7000 ppm.

Initiating Cue: The SS has directed you to perform a Manual Make-up per 13009-1 to raise VCT to 50%. There are no recent make-ups in the log.

Job Performance Measure "B"

Facility: **Vogtle**

Task No: V-LO-TA-37009

Task Title: Transfer ECCS Pumps To Cold Leg Recirculation

JPM No: V-NRC-JP-19013-HL17

K/A Reference: 006A4.05 RO 3.9 SRO 3.8

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

THIS IS A TIME CRITICAL JPM

Initial Conditions: A large break LOCA has occurred.

Initiating Cue: The SS has directed you to, "Transfer the ECCS pumps to cold leg recirculation using 19013-C".

Task Standard: Determines Cold Leg recirculation flow path **NOT** available per 19013-C, Attachment A and a transition is required to 19111-C, Loss of Emergency Coolant Recirculation. (FSAR time allows 6.5 minutes from RWST Lo-Lo level set-point to the closure of RHR discharge to CCP suction valves (HV-8804A & B) to ensure an available suction source to all ECCS pumps).

Required Materials: 19013-C, "Transfer to Cold Leg Recirculation" Ver. 29.0.

General References: VEGP-FSAR-6, Table 6.3.2-7

Time Critical Task: Yes

Validation Time: 6 minutes

SIMULATOR SETUP:

Simulator Setup:

1. Reset to IC # 212 for HL-17 NRC Exam.

Simulator Setup from Scratch:

If new setup is required, then perform the following:

1. Reset to IC 14 (MOL 100%).
2. Override HV-8812A to the **OPEN** position.
3. Override HV-8811B to the **SHUT** position.
4. Insert malfunction RC03C at 100% (DBA LOCA)
5. Trip all RCPs
6. Reset SI
7. Allow simulation to run until RWST is 28% or after CNMT Emergency Sump levels are \geq 14 inches, set RF: TK02 = 28% (RWST)
8. Ensure HV-8811A is **FULL OPEN**
9. Acknowledge/Reset alarms
10. Freeze Simulator

Setup time: 18 minutes

Performance Information

Critical steps denoted with an asterisk

START TIME FOR TIME CRITICAL _____

Reviews NOTES prior to step 1 regarding FRP implementation, steps 1 – 12 performance without delay, and RWST inventory time limits.

Standard: N/A

Comment:

Reviews CAUTION prior to step 1 regarding offsite power loss after SI reset.

Standard: N/A

Comment:

Step 1 Verifies SI reset.

Standard: Candidate verifies BPLP window 1.5 (white Auto SI blocked light) - ON

BPLP window 1.4 (red SI Actuated light) - OFF

Comment:

Step 2 Checks CNMT Emergency Sump levels \geq 13.5 inches.

Standard: Candidate checks both LI-764 and LI-765 \geq 13.5 inches
(should be ~ 60+ inches)

Comment:

Step # 3 Initiate **ATTACHMENT A** to align ECCS Pumps to the Cold Leg
Recirculation flow path and continue with Step 4.

**CUE: “The SS will continue with step 4 while you
perform Attachment A”.**

Standard: Candidate initiates ATTACHMENT A.

Comment:

**ATTACHMENT A
COLD LEG RECIRCULATION VALVE ALIGNMENT**

- Step 1 Check CCW cooling for RHR heat exchangers.
- a. CCW pumps - 2 running in each train.
 - b. CCW pumps discharge pressures and flows - NORMAL.
 - c. NSCW cooling for CCW heat exchangers:
 - NCSW Pumps - TWO RUNNING EACH TRAIN.
 - NSCW CLG TOWER Fans - FOUR IN AUTO EACH TRAIN.

Standard: Candidate determines the following:

2 CCW **and** 2 NSCW pumps per train

Red lights - ON
Green lights - OFF
Amber lights - OFF

CCW pressures – in green bands (PI-1874 and PI-1875 ~ 90 psig).

CCW flows – in green bands (FI-1876 and FI-1877 ~ 9500 gpm).

NSCW Cooling Tower Fans, all 8 hand switches in AUTO.

Comment:

Step 2 Align RHR Pump A flow path:

a. Check RHR Pump A - RUNNING.

Standard: Candidate checks HS-0620:

Red light - ON,
Green light - OFF
Amber light - OFF

Comment:

Step 2.b Check CNMT SUMP TO RHR PMP-A SUCTION HV-8811A - OPEN.

Standard: Candidate checks HS-8811A: Red light - ON,
Green light - OFF.

Comment:

Step 2.c Close RWST TO RHR PMP-A SUCTION HV-8812A.

Standard: Attempts to close HV-8812A by turning hand switch counter clockwise to
the left.
Candidate determines HV-8812A will **NOT** close.

Red light remains - ON
Green light remains - OFF

Comment:

***Step 2.c RNO - IF HV-8812A will not close, THEN stop RHR Pump A.**

Standard: Candidate places RHR pump A hand switch HS-0620 to STOP.

Green light - ON
Red light - OFF
Amber light - OFF

Goes to step 3.

Comment:

Step 3 Align RHR Pump B flow path:

a. Check RHR Pump B – RUNNING.

Standard: Candidate checks HS-0621:

Red light - ON
Green light - OFF
Amber light - OFF

Comment:

Step 3.b Check CNMT SUMP TO RHR PMP-B SUCTION HV-8811B – OPEN.

Standard: Candidate determines HV-8811B is CLOSED.

Green light - ON
Red light - OFF

Comment:

RNO *Step 3.b **IF HV-8811B is NOT open, THEN perform the following:**

- 1. Stop RHR Pump B.**

STOP TIME FOR TIME CRITICAL_____

Standard: Candidate places RHR pump B hand switch HS-0621 to STOP. (FSAR time allows 6.5 minutes from RWST Lo-Lo level set-point to the closure of RHR discharge to CCP suction valves (HV-8804A & B) to ensure an available suction source to all ECCS pumps).

Green light - ON
Red light - OFF
Amber light - OFF

Comment:

RNO 3.b.2 **Close RWST TO RHR PMP-B SUCTION HV-8812B.**

Standard: Candidate places places HS-8812B to the CLOSE position.

Green light - ON
Red light - OFF

Comment:

RNO 3.b.3 Open HV-8811B.

Standard: Attempts to open HV-8811B by placing rotating hand switch clock wise to open.

Candidate Determines HV-8811B will **NOT** open.

Red light remains - OFF
Green light remains - ON

Comment:

RNO 3.b.4 Start RHR Pump B.

Standard: Does **NOT** start RHR pump B which has no suction source.

NOTE: If candidate starts RHR pump B, the step would become critical and be evaluated as **UNSAT**.

CUE: If SS is notified No RHR pumps available, "SS acknowledges the report."

Comment:

RNO 3.b.5 Go to Step 3.d.

Standard: Goes to step 3.d.

Comment:

Step 3.d Check RHR PMP-B TO COLD LEG 3&4 ISO VLV HV-8809B – OPEN.

Standard: Candidate checks HS-8809B:

Red light - ON
Green light - OFF

Comment:

Step 3.e Check RHR Heat Exchanger B flow indicator FI-619A - GREATER THAN 500 GPM.

Standard: Candidate determines on FI-0619A that RHR flow is < 500 gpm (~ 0 gpm).

Comment:

RNO *Step 3.e IF no RHR Pump is delivering CNMT Sump water to its discharge header, THEN go to 19111-C, ECA-1.1 LOSS OF EMERGENCY COOLANT RECIRCULATION.

Standard: Candidate determines a transition to 19111-C is required and informs the SS.

CUE: “The SS will initiate 19111-C, ECA-1.1 Loss of Emergency Coolant Recirculation”. Another operator will perform the actions of 19111-C”.

Comment:

Terminating cue: Student returns initiating cue sheet

Verification of Completion

Job Performance Measure No. V-LO-JP-19013-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: _____

THIS IS A TIME CRITICAL JPM

Initial Conditions: A large break LOCA has occurred.

Initiating Cue: The SS has directed you to, "Transfer the ECCS pumps to cold leg recirculation using 19013-C".

Job Performance Measure "C"

Facility: Vogtle

Task No: V-LO-TA-37011

Task Title: Depressurize RCS to Reduce Break Flow to Ruptured Steam Generator-Normal Pressurizer Spray Not Available and 1st PORV block valve fails to open. (Alternate Path)

JPM No: V-NRC-JP-19030-HL17

K/A Reference: 038EA1.04 RO 4.3 SRO 4.1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: A tube rupture has occurred on SG-1. The crew has transitioned from 19000-C, "E-0 Reactor Trip or Safety Injection" to 19030-C, "E-3 Steam generator Tube Rupture." Steps 1 through 33 of 19030-C have been performed. Normal pressurizer spray was not available.

Initiating Cue: The SS has directed you to "Depressurize the RCS beginning with EOP 19030-C step 34."

Task Standard: RCS depressurized using a PORV to at or slightly below ruptured SG pressure per EOP 19030-C.

Required Materials: EOP 19030-C Ver. 37.1, "Steam Generator Tube Rupture". All steps marked up to step 34.

General References: None

Time Critical Task: No

This JPM is reuse from Exam 2011-301. The JPM number was V-LO-JP-19030-007.

Validation Time: 11 minutes

SIMULATOR SETUP:

Simulator Setup:

1. Reset to IC # 213 for HL-17 NRC Exam.

Simulator Setup from Scratch:

1. Reset to IC # 14 (100% MOL).
2. Override: PIC-455B to "CNT DN."
3. Override: PIC-455C to "CNT DN."
4. Override HV-8145 Aux Spray to close.
5. Insert malfunction SG01A at 50%.
6. Initiate manual Rx Trip and SI.
7. Throttle AFW flow to ~ 200gpm per SG.
8. Verify ruptured SG level > 10% NR.
9. Perform 19030 steps 1 through 33.
10. Insert Override HS-8000G to Block
11. Insert Override HS-8000H to Block
12. Ack/Reset alarms.
13. Freeze simulator

Setup time from scratch: 20 minutes

Performance Information

Critical steps denoted with an asterisk and bolded.

***Step 34** **Depressurize RCS using a PRZR PORV to refill PRZR:**

- a. **Arm one available train of COPS and check PRZR PORV Block Valve – OPEN.**

NOTE to simulator operator: After candidate arms COPS, remove the override from the other train of COPS.

Standard: The candidate recognizes that the PRZR PORV Block Valve did not OPEN.

Comment:

Step 34.a RNO

Open PRZR PORV Block Valve.

Standard: The candidate recognizes that the PRZR PORV Block Valve did not remain open when handswitch released.

Comment:

***Step 34.a Arm one available train of COPS and check PRZR PORV Block Valve – OPEN.**

Standard: The candidate now arms the opposite train of COPS and checks the Block Valve OPEN. If the candidate does not use the second PORV and goes to Auxiliary Spray , then performance is unsatisfactory.

NOTE to examiner: The candidate may block the first train of COPS before arming the opposite train.

CUE: If asked, "SS desires the COPS train placed in Block."

Comment:

***Step 34.b Open one PRZR PORV.**

Standard: The candidate opens one PRZR PORV.

Comment:

Step 34.c Go To Step 37.

Standard: The candidate goes to Step 37.

Comment:

Step 37 Check if ANY of the following conditions are satisfied:

BOTH of the following:

- RCS pressure – LESS THAN RUPTURED SG(s) PRESSURE.
- PRZR level – GREATER THAN 9% [37% ADVERSE.]

OR

- RCS Subcooling – LESS THAN 24°F [38 °F ADVERSE.]

OR

- PRZR level – GREATER THAN 75% [52% ADVERSE.]

Standard: The candidate monitors these parameters until one of the criteria is satisfied.

Comment:

***Step 38 Terminate RCS depressurization:**

- a) Verify Normal PRZR Spray valve(s) – CLOSED.
- b) Verify PRZR PORV(s) – CLOSED.**
- c) Block COPS.**
- d) Check Auxiliary Spray – IN SERVICE.

Standard: The candidate checks Normal PRZR Spray valves CLOSED.
The candidate shuts the open PORV.
The candidate blocks both trains of COPS.

Note to Examiner: One train of COPS may have been previously blocked prior to arming the opposite train.

The candidate checks auxiliary spray NOT IN SERVICE.

Comment:

Step 39 Check RCS pressure – RISING.

Standard: Candidate notes that RCS pressure is RISING.

Comments:

**Terminating Cue: “Another operator will continue this
procedure.”**

Verification of Completion

Job Performance Measure No. V-NRC-JP-19030-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: _____

Initial Conditions: A tube rupture has occurred on SG-1. The crew has transitioned from 19000-C, "E-0 Reactor Trip or Safety Injection" to 19030-C, "E-3 Steam generator Tube Rupture." Steps 1 through 33 of 19030-C have been performed. Normal pressurizer spray was not available.

Initiating Cue: The SS has directed you to "Depressurize the RCS beginning with EOP 19030-C step 34."

Job Performance Measure "D"

Facility: Vogtle

Task No: V-LO-TA-16001

Task Title: Start an RCP at NOPT-ALT path

JPM No: V-NRC-JP-13003-HL17

K/A Reference: 003A2.02 RO 3.7 SRO 3.9

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 13003-1 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: Plant is in mode 3 at NOPT. RCP #2 was tagged out to perform a balance shot.

Maintenance is complete, the standby alignment has been verified.

RCP #2 has been hand-rotated, and visual inspection performed.

All personnel are out of Containment.

All remaining RCPs are in service.

Initiating Cue: The SS has directed you to "Start RCP # 2 using 13003-1, "Reactor Coolant Pump Operation".

Task Standard: Start an RCP per 13003-1, then shutdown per 13003-1 on failure of #1 seal.

Required Materials: SOP 13003-1, "Reactor Coolant Pump Operation" Ver. 45.0.
ARP 17008-1, "ARP for ALB08 on Panel 1A2 on MCB" Ver.18.0

General References: None

Time Critical Task: No

Validation Time: 15 minutes

SIMULATOR SETUP:

Simulator Setup:

1. Reset to IC # 214 for HL-17 NRC Exam.

Simulator Setup from Scratch:

1. Reset to IC # 4 (ready to pull critical).
2. Reset Hi Flux at Shutdown Alarm setpoints.
3. Unblock Hi Flux At Shutdown Alarms.
4. Open both breakers for RCP 2.
5. Insert Malfunction RP06B on Trigger 1 with a final value of 18.6% with a 10 sec ramp.
6. Establish stable plant conditions.
7. Ack/Reset alarms.
8. Freeze simulator.

Setup time from scratch: 10 minutes

Performance Information

Critical steps denoted with an asterisk and bolded.

Candidate reviews 13003-1

Standard: Candidate reviews 13003-1 precautions and limitations and selects section 4.1.2.

Comment:

Step 4.1.2 Starting an RCP.

Standard: Candidate chooses section.

Comment:

Step 4.1.2.1 When starting RCP 1, verify RCS pressure LESS than 1800 psig.

Standard: Candidate determines step is not applicable.

CUE: If CV is requested, "CV request noted."

Comment:

CAUTION

Following outages when all RCPs have been stopped, the potential exists that low boron concentration water may have accumulated in an RCS loop. This could result in a loss of core shutdown margin if this low boron water is injected into the core.

Standard: Candidate reads caution and determines it is not applicable.

Comment:

Step 4.1.2.2 WHEN starting the first RCP, Refer to 12001-C or 12002-C as appropriate to determine whether special actions are needed to assure adequate shutdown margin will be maintained during start of the idle pump.

Standard: Candidate determines step is not applicable.

Comment:

NOTE

The following steps should be repeated for each RCP to be started.

Standard: The candidate reads note.

Comment:

Step 4.1.2.3 Verify the RCP has been aligned to STANDBY per 11003-1, "Reactor Coolant Pump Alignment."

Standard: Candidate determines this step is complete from initial conditions.

CUE: If asked, "Refer to initial conditions".

Comment:

Step 4.1.2.4 IF in MODE 3 (Tavg greater than or equal to 350°F), Go to Step 4.1.2.7.

Standard: The candidate goes to step 4.1.2.7.

Comment:

NOTE

Step 4.1.2.7 is to be performed only if SGBD cannot be placed in service or SGBD temperature instrumentation for the RCP to be started is inoperable.

- 4.1.2.7 IF Steam Generator blowdown CANNOT be placed in service OR any loop SGBD TI is NOT available, perform the following:
- a. **Measure** the Steam Generator metal surface temperature with a contact pyrometer (Measure skin temperature on the lower handhole or other similar location on the lower shell.)
 - b. **Verify** the difference between Steam Generator skin temperature and RCS Tc for the RCP to be started is $\leq 10^{\circ}\text{F}$.
 - c. **Record** the measured Temperature difference for the RCP to be started in the Control Room Log (or the UOP in progress).
 - d. **Record** the Pyrometer ID number in the Control Room Log.

Standard: This step is N/A, SGBD is in service.

Comment:

***Step 4.1.2.8 Start the RCP Oil Lift Pump for the associated RCP to be started.**

Standard: The candidate places 1HS-0556 to START and releases and verifies:

Red light - ON
Green light - OFF
Blue light - ON after a short delay

Comment:

Step 4.1.2.9 IF maintenance was performed on the RCP to be started OR the RCP has been shutdown for an extended outage, perform the following:

- a. Visually inspect the applicable RCP by checking the following items:
 - No visible oil leaks.
 - Pump free from obstructions.
 - No excess external seal leakage.
 - The oil level in the RCP Oil Drain Tank is less than 1 inch in the sight glass to be able to collect any subsequent leakage during operation.
- b. The applicable RCP **SHOULD** be hand-rotated and verified that free rotation and proper seal parameters are met.
- c. Obtain Engineering concurrence PRIOR to start of ANY RCP that will not hand rotate.

Standard: The candidate determines this step completed from initial conditions.

CUE: If asked, “Refer to initial conditions”.

Comment:

Step 4.1.2.10 Establish the required conditions for starting an RCP as listed in Table 1.

TABLE 1 - RCP PRESTART CONDITIONS

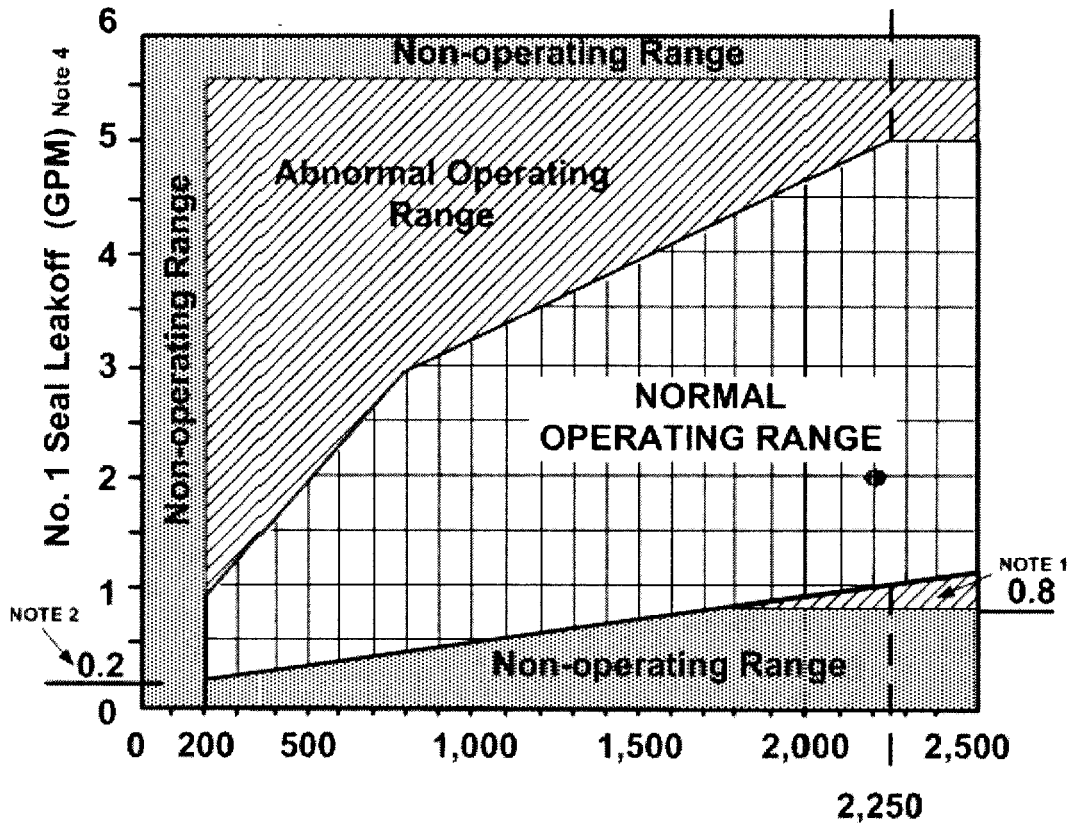
ITEM	REQUIRED VALUE
Number 1 Seal Flow	8-13 gpm
Number 1 Seal Leakoff	Within Figure 2
Number 1 Seal DP	>200 psid
Standpipe Level - ALB08: A02-D02, A03-D03	No Alarm
Upper & Lower Oil Rsvr Lvl - ALB11: A05-D05, A06-D06	*No Alarm
ACCW Total Flow from RCP - ALB04: D02 1) Lube Oil & Motor Coolers - ALB04: A03-D03 2) Thermal Barrier Heat Exchanger - ALB04: A05-D05	**No Alarm **No Alarm
ACCW Temperature At RCP 1) Lube Oil & Motor Coolers - ALB04: A04-D04 2) Thermal Barrier Heat Exchanger - ALB61: A01	**No Alarm **No Alarm
VCT Pressure	>18 psig

* An RCP start is permitted at the discretion of the Unit Shift Supervisor, if the actual level is not decreasing.

** With Westinghouse and Operations management approval, RCPs may be started without ACCW flow to perform 30 second and 1 minute air sweeps per 13001-1, "Reactor Coolant System Filling and Venting" or to verify proper rotation following electrical maintenance (less than 1 minute). General Manager approval will be required for starting RCPs without ACCW for any other operation. RCP operation without ACCW cooling for more than 10 minutes is prohibited.

FIGURE 2

NO. 1 SEAL NORMAL OPERATING RANGE



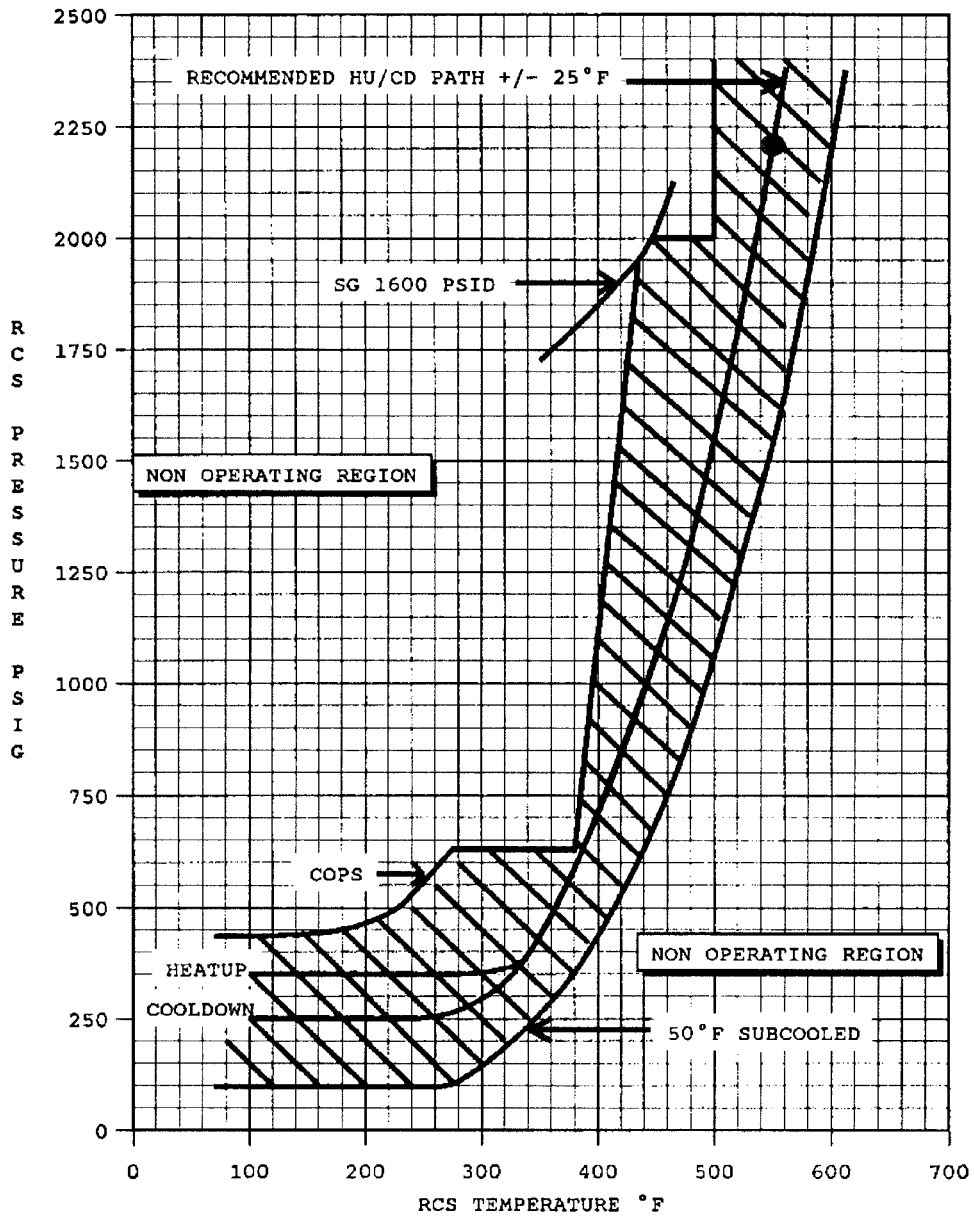
No. 1 Seal Differential Pressure (PSI) NOTE 3

1. If the No. 1 seal leak rates are outside the normal (1.0-5.0 gpm) but within the operating limits ((0.8-5.5 gpm), continue pump operation. VERIFY that seal injection flow exceeds No. 1 seal leak rate for the affected RCP. Closely monitor pump and seal parameters and contact Engineering for further instructions.
2. Minimum startup requirements are 0.2 gpm at 200 PSID differential across the No. 1 seal. For startups at differential pressures greater than 200 PSID, the minimum No. 1 seal leak rate requirements are defined in the NO. 1 SEAL NORMAL OPERATING RANGE (e.g., at 1000 psi differential pressure, do not start the RCP with less than 0.5 gpm).
3. No.1 Seal Differential Press = RCS WR Press – VCT Press.
4. Per Westinghouse Technical Bulletin ESBU-TB-93-01-R1, total #1 seal leakoff is the sum of #1 seal leakoff and #2 seal leakoff. #1 seal leakoff is read directly at the MCB and #2 seal leakoff can be obtained from instrumentation in Containment.

Standard: The candidate verifies all conditions are met.

Comment:

Step 4.1.2.11 Verify the RCS conditions are acceptable for RCP operation per the RCS Pressure-Temperature Curve in the UOPS.



Standard: The candidate verifies condition in acceptable range.

Comment:

Step 4.1.2.12 Verify NO vibration alarms for the associated RCP to be started.

Standard: The candidate verifies alarms ALB08-E04, ALB08-E05, and ALB08-F05 are clear.

Comment:

CAUTION

An RCP shall NOT be started if its associated Steam Generator secondary water temperature is greater than 10°F above its RCS loop temperature.

Standard: The candidate reads caution and determines RCP can be started.

Comment:

Step 4.1.2.13 Verify the RCP Oil Lift Pump has been running for at least two minutes.

Standard: The candidate verifies condition met.

Comment:

Step 4.1.2.14 IF starting the first RCP with a bubble in the Pressurizer, perform the following to minimize Pressurizer surge line temperature changes:

- a. Raise flow through the in-service RHR heat exchanger to establish a slightly lowering trend in RCS temperature,
- b. Lower charging flow to establish a slightly lowering trend in Pressurizer level.

Standard: The candidate reads step and determines it not applicable.

Comment:

Step 4.1.2.15 Verify personnel clear of RCP to be started.

Standard: Candidate reads step and determines it is met.

CUE: If asked , “Refer to initial conditions”.

Comment:

NOTE

If an RCP (or RCP motor) will be started without ACCW cooling, per limitation 2.1.6, RCP parameters, especially bearing temperatures, should be monitored closely while the pump is running.

Standard: Candidate reads step and determines it is not applicable.

Comment:

***Step 4.1.2.16 Start the RCP by placing the RCP 1E Control Switch in START and then placing the RCP Non-1E Control Switch in START:**

<u>RCP</u>	<u>1E Control Switch</u>	<u>Non-1E Control Switch</u>
Loop 2	1-HS-0496A	1-HS-0496B

Standard: 1) Candidate places 1-HS-0496A to START and releases and verifies:

Green light - OFF
Amber light - OFF
Red light - ON

2) Candidate places 1-HS-0496B to START and releases and verifies:

Green light - OFF
Amber light - OFF
Red light – ON

NOTE: Proper sequence and closure of both handswitches are critical.

NOTE to Simulator Operator: Insert Trigger 1 after both switches are placed in Start.

Comment:

ALB08-B05 RCP 2 CONTROLLED LKG HI/LO FLOW alarms

Standard: Candidate responds to alarm using 17008-1 for window B05.

NOTE to examiner: The candidate may go directly to 13003-1 section 4.2.1 for seal abnormality if they diagnose the seal abnormality. If this occurs go to step 4.2.1.1 on page 13.

Comment:

NOTE

RCP 2 No. 1 seal water leakoff high range flow may be monitored using computer point F0160.

Standard: Candidate reads note.

Comment:

17008-1 step 1 Observe seal injection flow and seal leakoff flow, as well as excess letdown temperature and pressure for indication of an actual seal anomaly.

Standard: Candidate checks indications and determines an actual seal anomaly is present due to hi #1 seal leakoff flow.

Comment:

17008-1 step 2 IF a seal problem is indicated, Go To 13003-1, "Reactor Coolant Pump Operation".

Standard: Candidate goes to 13003-1 and selects section 4.2.1.

Comment:

13003-1

Step 4.2.1.1 IF the Plant Computer is available, trend the computer data points listed in Table 2.

Standard: Candidate determines IPC is available and trends points.

CUE: When candidate checks IPC points, “Another operator will continue with trending points per table 2”.

Comment:

Step 4.2.1.2 IF the Plant Computer is NOT available, perform the following:

- a. Monitor the QMCB indication listed in Table 2 at least hourly for the next 8 hours.
- b. IF NO further seal degradation exists after 8 hours, consult with the Shift Supervisor (SS) for less frequent monitoring.

Standard: Candidate marks step N/A.

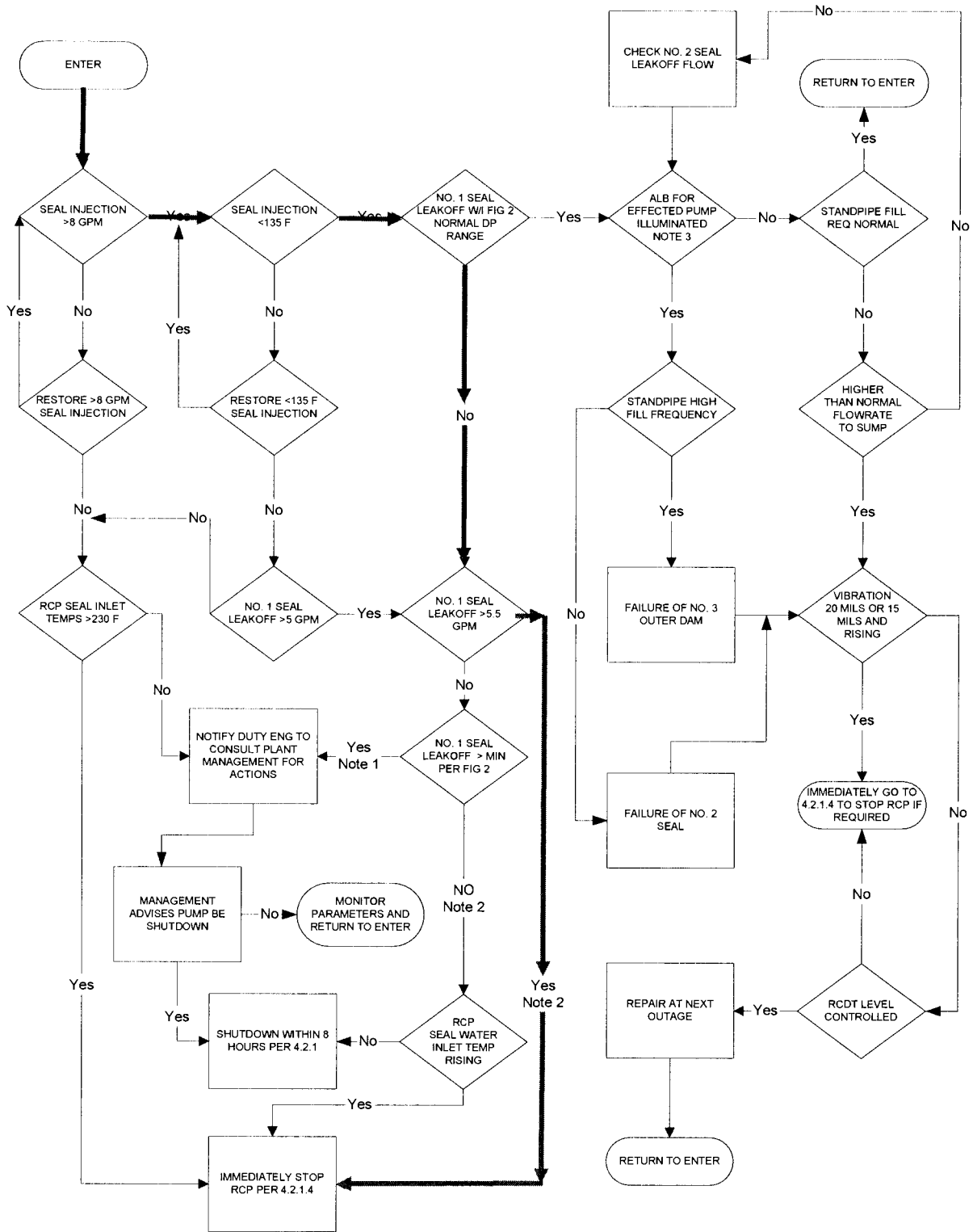
Comment:

Step 4.2.1.3 Monitor the No. 1 seal for further degradation using Figure 1 and RCP Trip Criteria as follows:

- a. Evaluate the monitored indications using Figure 1, "RCP Seal Abnormalities Tree."

Standard: Candidate goes to Figure 1 and evaluates as highlighted. Figure 2 on the next page indicates the approximate point the candidate should determine as a decision on figure 1.

FIGURE 1 - RCP SEAL ABNORMALITIES DECISION TREE



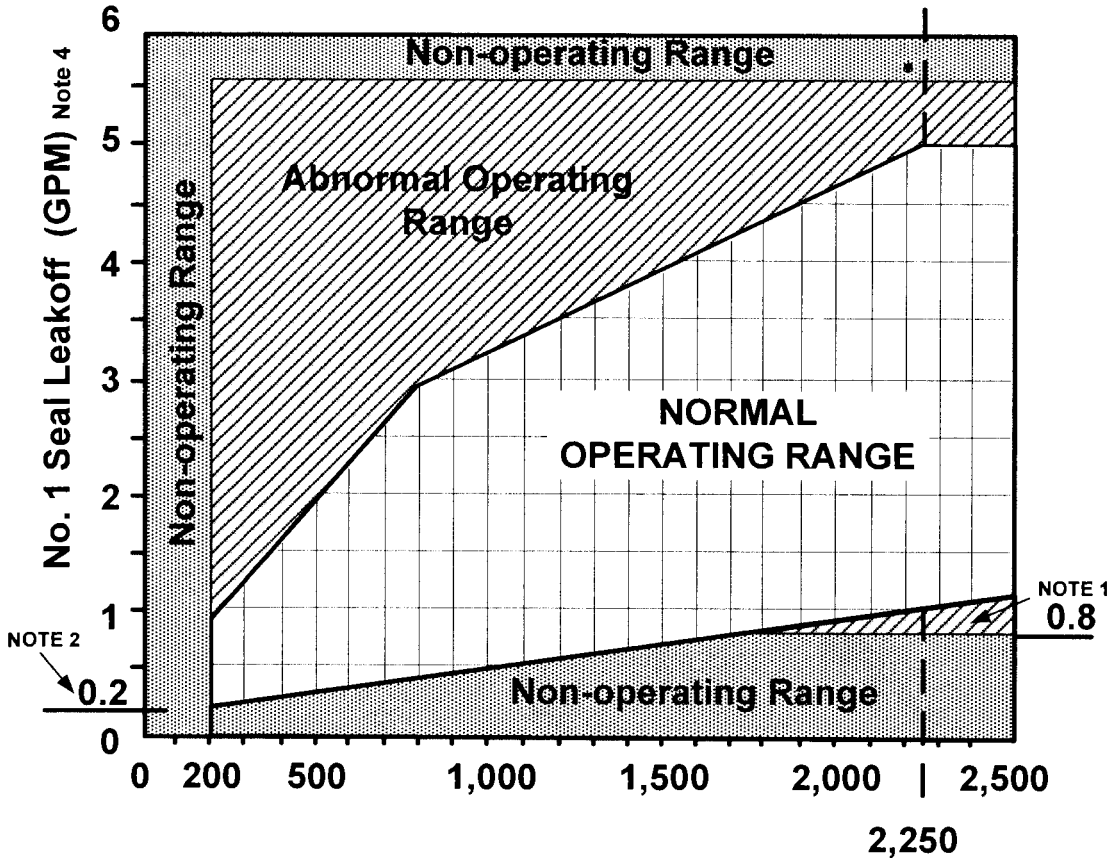
Note 1: Abnormal Operating Range of Figure 2

Note 2: Non-operating Range of Figure 2

Note 3: ALB08 A-04, B-04, C-04 or D-04

FIGURE 2

NO. 1 SEAL NORMAL OPERATING RANGE



No. 1 Seal Differential Pressure (PSI) NOTE 3

1. If the No. 1 seal leak rates are outside the normal (1.0-5.0 gpm) but within the operating limits ((0.8-5.5 gpm), continue pump operation. VERIFY that seal injection flow exceeds No. 1 seal leak rate for the affected RCP. Closely monitor pump and seal parameters and contact Engineering for further instructions.
2. Minimum startup requirements are 0.2 gpm at 200 PSID differential across the No. 1 seal. For startups at differential pressures greater than 200 PSID, the minimum No. 1 seal leak rate requirements are defined in the NO. 1 SEAL NORMAL OPERATING RANGE (e.g., at 1000 psi differential pressure, do not start the RCP with less than 0.5 gpm).
3. No.1 Seal Differential Press = RCS WR Press – VCT Press.
4. Per Westinghouse Technical Bulletin ESBU-TB-93-01-R1, total #1 seal leakoff is the sum of #1 seal leakoff and #2 seal leakoff. #1 seal leakoff is read directly at the MCB and #2 seal leakoff can be obtained from instrumentation in Containment.

Comment:

***Step 4.2.1.3 b. IF evaluation of the monitored indications using Figure 1 requires immediate pump shutdown, Go to Step 4.2.1.4.**

Standard: Candidate goes to step 4.2.1.4.

Comment:

Step 4.2.1.4. WHEN directed by the SS, perform an RCP shutdown as follows:

- a. Start the RCP Oil Lift Pump for affected RCP, if available.
- b. IF Reactor Power is greater than 15% Rated Thermal Power:
 - (1) Trip the Reactor and initiate 19000-C, "E-0 Reactor Trip Or Safety Injection".
 - (2) WHEN the immediate operator actions of 19000-C are complete, Go to Step 4.2.1.4.d.
- c. IF Reactor Power is less than 15% Rated Thermal Power, initiate 18005-C, "Partial Loss Of Flow."

Standard: Candidate determines a. is done,
b. is Not applicable due to plant conditions
c. must be done

CUE: When SS direction requested, "The SS is not available."

CUE: When 18005-C initiation is determined, "An extra operator will initiate 18005-C".

Comment:

***Step 4.2.1.4.d Stop the RCP by placing the RCP Non-1E Control Switch in STOP and then placing the RCP 1E Control Switch in STOP:**

<u>RCP</u>	<u>Non-1E Control Switch</u>	<u>1E Control Switch</u>
Loop 2	1-HS-0496B	1-HS-0496A

Standard: 1) Candidate places 1-HS-0496B to STOP and releases and verifies:

Green light - OFF
Amber light - OFF
Red light - ON

2)Candidate places 1-HS-0496A to STOP and releases and verifies:

Green light - OFF
Amber light - OFF
Red light - ON

NOTE: Proper sequence and opening of both handswitches are critical.

Comment:

CAUTION

If RCP #1 or #4 is stopped, the associated Spray Valve is placed in manual and closed to prevent spray short cycling.

Step 4.2.1.4e IF RCP #1 OR #4 is stopped, verify its associated spray valve is placed in MANUAL and closed.

- RCP 1: 1-PIC-0455C
- RCP 4: 1-PIC-0455B

Standard: Candidate marks step N/A

Comment:

***Step 4.2.1.4.f** **WHEN the RCP comes to a complete stop (as indicated by reverse flow), close the RCP Seal Leakoff Isolation valve for the affected pump.**

RCP 2: 1-HV-8141B

Standard: Candidate determines reverse flow by observing loop 2 RCS flow meters indicate approximately 15%. Candidate then places 1HS-8141B to CLOSE and verifies the following on the handswitch:

Red light - OFF
Green Light - ON

Comment:

Step 4.2.1.4.g Secure the associated RCP Oil Lift Pump.

Standard: The candidate places 1HS-0556 to STOP and releases and verifies:

Red light - OFF
Green light - ON
Blue light - OFF

Comment:

Step 4.2.1.4 h IF RCP shutdown was due to loss of RCP seal cooling, review Limitation 2.2.11 for recovery action.

Standard: Candidate marks step N/A.

Comment:

Terminating Cue: Candidate returns initiating cue sheet

Verification of Completion

Job Performance Measure No. V-NRC-JP-13003-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: _____

Initial Conditions: Plant is in mode 3 at NOPT. RCP #2 was tagged out to perform a balance shot.

Maintenance is complete, the standby alignment has been verified.

RCP #2 has been hand-rotated, and visual inspection performed.

All personnel are out of Containment.

All remaining RCPs are in service.

Initiating Cue: The SS has directed you to “Start RCP # 2 using 13003-1, “Reactor Coolant Pump Operation”.

Job Performance Measure "D" Alternate

Facility: **Vogtle**

Task No: V-LO-TA-12004

Task Title: Cool Down the RCS Using RHR Train A

JPM No: V-NRC-JP-13011-HL17

K/A Reference: 005A4.01 RO 3.6 SRO 3.4

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

NOTE: For time considerations, the Candidates may be allowed to "pre-brief" this JPM and allowed to review 13011-1 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: A plant cooldown from Mode 4 to Mode 5 is in progress in accordance with UOP 12006-C, Section C.

Train A RHR has been placed in service for cooldown per 13011-1, "Residual Heat Removal System".

RHR Train A Letdown has been established and RHR Train A warm-up is complete.

Initiating Cue: The SS has directed you to initiate full flow to the RCS and cooldown the RCS to 310°F ± 2°F and stabilize RCS temperature within that band.

Task Standard: Candidate initiates full RHR flow to the RCS, cools down the RCS to 310°F and stabilizes RCS temperature.

Required Materials: 13011-1, "Residual Heat Removal System" Ver. 69.0. Section 4.3 performed through step 4.3.8 for warm-up of RHR Train A. Section 4.5 for placing RHR letdown in service is also completed. These steps will be initiated off by an exam team member.

General References: None

Time Critical Task: No

Validation Time: 12 minutes

SIMULATOR SETUP:

Simulator Setup:

Reset to IC # 220 for HL-17 NRC Exam
(SNAP # TO BE DETERMINED LATER)

Simulator Setup from Scratch:

1. Reset to 21 (BOL mode 4)
2. Ensure both trains of CCW in service
3. Set RF RH01A1 to NORMAL
4. Set RF RH01A2 to NORMAL
7. Set RF RH07C to IN
9. Adjust steam dumps to obtain a 0 deg F/hr cooldown rate if necessary
10. Set RF SI10 A to Rkout
11. Set RF RH2 and place RHR letdown in service.
12. Set potentiometer for FIC-0618 to 3.2
13. Perform section 4.3 through step 4.3.8
14. Ack/Reset alarms
15. Freeze simulator

Note to Simulator Operator: Remove green dots from Train A QEAB annunciators.

Setup time: 3 minutes

Performance Information

Critical steps denoted with an asterisk

Step 4.3.9 WHEN RHR warm up is completed, initiate full flow to the RCS as follows:

NOTES

- >3200 gpm indicated flow ensures >3000 gpm actual flow for all temperatures.
- 3000 gpm RHR flow is required for Mode 6.

Standard: Candidate reads notes.

Comment:

CAUTION

If the RCS is under vacuum, a minimum flow rate of about 1200 gpm for 3 minutes is needed to refill the voided section of RHR discharge piping. 1500 gpm should NOT be exceeded during the refill period. Flow rates are to be adjusted very slowly any time flow is being increased due to possible water hammer concerns.

Standard: Candidate reads caution again and it still does not apply.

Comment:

***Step 4.3.9 a. Throttle open the RHR HEAT EXCH BYPASS for Train A using 1-FIC-618A to the desired flow rate (nominally 3000 gpm).**

Standard: Candidate depresses the UP arrow pushbutton on 1-FIC-618A until flow is approximately 3000 gpm on 1FI-0618A.

Comment:

Step 4.3.9 b. Verify the RHR PMP-A MINIFLOW ISO VLV 1-FV-0610 closes.

Standard: Candidate verifies 1HS-0610 GREEN Light - ON
RED Light - OFF

Comment:

CAUTION

The RHR Heat Exchanger Train A Bypass Flow Controller Potentiometer should be set for a minimum flow of 3000 gpm (Pot setting: 3.6 for 3000 gpm, 4.1 for 3200 gpm) prior to placing controller in AUTO. The potentiometer setting for the desired flow rate (gpm) is approximately equal to $(\text{Desired Flow}/5000)^2 \times 10$.

Standard: Candidate reads caution.

Comment:

***Step 4.3.9 c. Sets RHR Heat Exchanger Train A Bypass Flow Controller Potentiometer to 3.6 (3000 gpm) or 4.1 (3200 gpm).**

Place the RHR TRN-A HEAT EXCH BYPASS Flow Controller 1-FIC-0618A in AUTO if desired.

NOTE to examiner: The snap has the pot set at 3.2 which is set too low. The candidate will be required to manipulate to pot to the correct setpoint.

Standard: Candidate verifies potentiometer set for 3.6 or 4.1 and depresses the AUTO/MAN pushbutton and verifies the AUTO portion of the light illuminates.

Comment:

NOTE

During Solid Plant conditions, only 1-PIC-0131 should be used for letdown flow control and 1-HV-0128 should remain in the FULL OPEN position.

Standard: Candidate reads note

Comment:

Step 4.3.9 d. Adjust the LOW PRESSURE LETDOWN Controller 1-PIC-0131 and/or LETDOWN FROM RHR Control Valve 1-HC-0128 as required to maintain desired letdown flow.

Standard: Candidate adjusts 1-HC-128 as necessary to maintain 100 gpm flow on 1-FI-0132C. 1-PIC-0131 may be also adjusted to control flow.

Comment:

***Step 4.3.9 e. Slowly throttle RHR TRN A HEAT EXCH OUTLET using 1-HIC-606A to establish desired RCS cooling.**

CUE: If asked, “Refer to initial conditions”.

Standard: Candidate depresses and releases the UP arrow pushbutton on 1-HIC-606A in increments allowing 1-FIC-0618A to adjust to maintain 3000 gpm and monitors cooldown rate and RCS cold leg temperatures to verify cooldown rate is rising.

Candidate stabilizes RCS temperature at $315^{\circ}\text{F} \pm 2^{\circ}\text{F}$

Comment:

Step 4.3.10 IF RCS cooling using both RHR trains is desired, place the second train in service:

IF RHR B is in STANDBY READINESS, use Section 4.4.

IF RHR B is NOT in STANDBY READINESS, use Section 5.3.

CUE: If asked, “Refer to initial conditions”.

Standard: Candidate determines both trains are not desired.

Comment:

Step 4.3.11 Establish RCS Cool down per 12006 C, "Unit Cool down To Cold Shutdown."

CUE: Another operator will perform the Unit Cooldown to Cold Shutdown.

Standard:

Comment:

Terminating cue: Candidate returns initiating cue sheet

Verification of Completion

Job Performance Measure No. V-NRC-JP-13011-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: _____

Initial Conditions: A plant cooldown from Mode 4 to Mode 5 is in progress in accordance with UOP 12006-C, Section C.

Train A RHR has been placed in service for cooldown per 13011-1, "Residual Heat Removal System".

RHR Train A Letdown has been established and RHR Train A warm-up is complete.

Initiating Cue: The SS has directed you to initiate full flow to the RCS and cooldown the RCS to $310^{\circ}\text{F} \pm 2^{\circ}\text{F}$ and stabilize RCS temperature within that band.

Job Performance Measure "E"

Facility: **Vogtle**

Task No: V-LO-TA-37003B

Task Title: Transfer AFW Pump Suction to Condensate Storage Tank 2

JPM No: V-NRC-JP-13610-HL17

K/A Reference: 061G2.1.23 4.3 / 4.4

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: A reactor trip has occurred due to a feed water transient. A crane has impacted the CST 1 manway causing leakage. CST 1 level is 14%.

Initiating Cue: The SS has directed you to switch to alternate CST by initiating 13610-1, "AUXILIARY FEEDWATER SYSTEM".

Task Standard: Student transfers AFW pump suction to CST 2 with miniflows realigned to CST 2.

Required Materials: 13610-1,"Auxiliary Feedwater System" Ver. 49.0

General References: None

Time Critical Task: No

Validation Time: 10 minutes

SIMULATOR SETUP:

Simulator Setup:

1. Reset to IC # 215 for HL-17 NRC Exam.

Simulator Setup from Scratch:

1. Reset to IC # 14 (100% MOL).
2. Initiate manual Rx Trip
3. Throttle AFW flow to ~ 200 gpm per SG.
4. Isolate Demin makeup performing the following:

Place 1HS-5158 to CLOSE
Place 1HS-5162 to CLOSE

Note: Step 5 must be complete prior to doing step 6 or CST 1 will not override.

5. Drain CST 2 to 69% by performing the following:
 - a. Set Remote function. TK04a to 68%
 - b. Set Remote function TK04b to ON
 - c. When CST 2 indicates Set Remote function TK04b to Off
6. Drain CST 1 to 14% by performing the following:
 - a. Set Remote function. TK03a to 14%
 - b. Set Remote function TK03b to ON
 - c. When CST 2 indicates Set Remote function TK03b to Off
7. Acknowledge/reset alarms

8. Freeze the simulator
Setup time: 10 minutes

Performance Information

Critical steps denoted with an asterisk

Section 4.4.1 to transfer AFW suction to CST 2 selected.

Standard: Candidate selects section 4.4.1.

Comment:

NOTE

Independent Verifications performed in this Section should be documented on Checklist 3.

Standard: Candidate reads note.

Comment:

NOTE

Comply with the requirements of Technical Specification LCO 3.7.6 when in MODE 1, 2, and 3.

Standard: Candidate reads note.

Comment:

Step 4.4.1.1 To transfer Train A Motor Driven Auxiliary Feedwater Pump to CST-2, perform the following:

- *a. Open CST-2 SPLY TO MDAFW PMP-A 1-HV-5119 using 1HS-5119A. (IV Required)**

Standard: Candidate opens 1HV-5119 and signs "Performed By" space on Checklist 3.

Cue: IF CV requested, "CV request is noted."

Cue: IF IV requested, "IV is completed."

Comment:

Step 4.4.1.1.b. Unlock and Close MDAFW 3 SUCT FROM CST 1 1-HV-5095. (IV Required)

Standard: Candidate directs SO to unlock and close 1HV-5095.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.1 c. Unlock, open, and relock AFW MDAFW PUMP A RECIRC TO CST-2 1-1302-U4-185. (IV Required)

Standard: Candidate directs SO to unlock and open and relock 1-1302-U4-185.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.1.d. Unlock, close, and relock AFW MDAFW PUMP A RECIRC TO CST-1 1-1302-U4-180. (IV Required)

Standard: Candidate directs SO to unlock and close and relock 1-1302-U4-180.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.2 To transfer Train B Motor Driven Auxiliary Feedwater Pump to CST-2, perform the following:

***a. Open CST-2 SPLY TO MDAFW PMP-B 1-HV-5118 using 1-HS-5118A.
(IV Required)**

Standard: Candidate OPENS 1-HV-5118 and signs "Performed By" space on Checklist 3.

Cue: IF CV requested, "CV request is noted."

Cue: IF IV requested, "IV is completed."

Comment:

Step 4.4.1.2 .b. Unlock and Close MDAFW 2 SUCT FROM CST 1 1-HV-5094. (IV Required)

Standard: Candidate directs SO to unlock and close 1HV-5094.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.2. c. Unlock, open, and relock AFW MDAFW PUMP B RECIRC TO CST-2
1-1302-U4-184. (IV Required)

Standard: Candidate directs SO to unlock, open and relock 1-1302-U4-184.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.2. d. Unlock, close, and relock AFW MDAFW PUMP B RECIRC TO CST-1
1-1302-U4-181. (IV Required)

Standard: Candidate directs SO to unlock, close and relock 1-1302-U4-181.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.3 To transfer Train C Turbine Driven Auxiliary Feedwater Pump to CST-2, perform the following:

***a. Open CST-2 SPLY TO TDAFW 1-HV-5113 using 1-HS-5113A. (IV Required)**

Standard: Candidate OPENS 1-HV-5113 and signs "Performed By" space on Checklist 3.

Cue: IF CV requested, "CV request is noted."

Cue: IF IV requested, "IV is completed."

Comment:

Step 4.4.1.3. b. Unlock and Close TDAFW PMP SUCT FROM CST 1 1-HV-5093. (IV Required)

Standard: Candidate directs SO to unlock and close 1HV-5093.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.3 c. Unlock, open, and relock AFW TDAFW PUMP RECIRC TO CST-2
1-1302-U4-183. (IV Required)

Standard: Candidate directs SO to unlock, open and relock 1-1302-U4-183.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Step 4.4.1.3 d Unlock, close, and relock AFW TDAFW PUMP RECIRC TO CST-1
1-1302-U4-182. (IV Required)

Standard: Candidate directs SO to unlock, close and relock 1-1302-U4-182.

NOTE to examiner: Candidate will call or page Clearance and Tagging or directly to Outside Area Operator for manipulation of valve. Also, for the IV request and confirmation.

Comment:

Terminating cue: Student returns initiating cue sheet. Student informs SS that transfer of AFW pump suction to CST 2 is complete.

Verification of Completion

Job Performance Measure No. V-NRC-JP-13610-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: _____

Initial Conditions: A reactor trip has occurred due to a feed water transient. . A crane has impacted the CST 1 manway causing leakage. CST 1 level is 14%.

Initiating Cue: The SS has directed you to switch to alternate CST by initiating 13610-1, "AUXILIARY FEEDWATER SYSTEM".

Job Performance Measure "F"

Facility: Vogtle

Task No: V-LO-TA-29013

Task Title: Dilute Containment With Service Air

JPM No: V-NRC-JP-13130-HL17

K/A Reference: 028A4.01 RO 4.0 SRO 4.0

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: A LOCA has occurred on Unit 1. The crew is performing 19010-C. The TSC has requested that the Hydrogen concentration of the Containment atmosphere be reduced.

Initiating Cue: The SS has directed you to "Dilute the Containment hydrogen concentration using service air per 13130-1".

Task Standard: Containment dilution using service air is properly initiated per 13130-1.

Required Materials: 13130-1, "Post Accident Hydrogen Control" Ver. 19.0.

General References: None

Time Critical Task: No

This JPM is a repeat from Exam 2010-301. The JPM number was V-NRC-JP-13130-001.

Validation Time: 10 minutes

SIMULATOR SETUP:

Simulator Setup: Reset to IC #216 for HL-17 NRC Exam.

Simulator Setup from Scratch:

1. Reset to IC # 14 (MOL 100%)
2. Insert malfunction RC05C at 50% (Hot Leg Break).
3. Throttle AFW flow to 600 gpm.
4. Use Remote Function ED08 to set CNMT H₂ at 4.5%.
5. Use Remote Function ED07 to override CNMT H₂.
6. Trip RCPs.
7. Verify RCS pressure rising.
8. Reset SI.
9. Stop RHR pumps.
10. Place both CNMT H₂ monitors in service per 13130-1.
11. Ack/Reset alarms.
14. Freeze simulator

Setup time from scratch: 20 minutes

Performance Information

Critical steps denoted with an asterisk and bolded.

Candidate determines that 13130-1, "Post-Accident Hydrogen Control" is applicable.

Standard: Candidate selects 13130-1, section 4.4.2 for "Diluting Containment Hydrogen Concentration Using The Service Air System".

Comment:

NOTE: Note stating Containment design pressure is 52 psig.

CAUTION: Do not perform this section if containment pressure is greater than 40 psig unless so directed by the Emergency Director.

Standard: Candidate reviews NOTE and CAUTION prior to step 4.4.2.1 and determines that they are not applicable.

Comment:

Step *4.4.2.1 Reset CIA by taking the following hand switches to RESET and observe ALB06-E06 extinguished.

- **1HS-40120**
- **1HS-40122**

Standard: Candidate rotates 1HS-40120 to the RESET position.

Candidate rotates 1HS-40122 to the RESET position.

Candidate verifies annunciator ALB06-E06 orange window light is OFF.
(CNMT ISO PHASE A ACTUATION)

Comment:

Step *4.4.2.2 **Open SERVICE AIR CNMT HDR ISOL 1-HV-9385 as follows:**

- a. **Place 1-HS-9385A on Main Control Room Panel QPCP to OPEN.**

- b. **Hold 1-HS-9385B on Panel QPCP in OPEN until 1-HV-9385 is fully open.**

NOTE to examiner: The candidate must manipulate the hand switches in the proper sequence stated above or the valve will not open. It is a single valve with a dual hand switch.

Standard: Candidate manipulates HV-9385 in proper sequence to open the valve.

- a. 1-HS-9385A rotated to OPEN first.

- b. 1HS-9385B rotated to OPEN and HELD until valve opens.

- c. HV-9385, red light LIT, green light OFF.

Comment:

Step *4.4.2.3 Open one SERVICE AIR CNMT POST LOCA PURGE valve using its Control Switch on QPCP.

1-HV-9380A

OR

1-HV-9380B

Standard: Candidate rotates either 1-HV-9380A or 1-HV-9380B to the open position.

1-HV-9380A red light LIT, green light OFF

OR

1-HV-9380B red light LIT, green light OFF.

Note: Not critical to open both valves.

Note to Simulator Operator: Start ramping H2 concentration to < 3.5% in preparation for step 4.4.2.8.

Comment:

Step 4.4.2.4 Check Service Air Header 1-PI-9377 and Instrument Air Dryer to SCS Equipment 1-PI-9361 pressures on Main Control Room Panel QMCB.

Standard: Candidate checks Service and Instrument air pressures on referenced instruments.

Comment:

Step 4.4.2.5 IF air pressures fall to 80 psig or less, SERVICE AIR DRYER SUPPLY OUTLET ISO 1-PV-9375 isolates service air to dryers; restore purge air flow as follows:

- a. Reset 1-PV-9375 per 13710-1 to restore Service Air Supply.
- b. Throttle Service Air Dryer Bypass Valve 1-2401-U4-551, as necessary to maintain air pressure 1-PI-9377 and 1-PI-9361 greater than 85 psig.

Standard: Candidate determines header pressure has remained above 80 psig and this step is not applicable.

1-PI-9377, Service Air Header pressure remain > 80 psig.

1-PI-9361 Instrument Air Header pressure remains > 80 psig.

Comment:

Step 4.4.2.6 Monitor containment hydrogen concentration through sampling and per Section 4.2.1 and/or 4.2.2 of this procedure.

CUE: “An extra RO will initiate monitoring of H2 concentration, the SS will notify Chemistry to begin sampling”.

Standard: Candidate informs SS of necessity for sampling.

Comment:

Step 4.4.2.7 Monitor containment pressure 1-PI-0934, 1-PI-0935, 1-PI-0936, and 1-PI-0937.
IF, containment pressure rises to 40 psig OR to the value specified by the Emergency Director, terminate dilution per step 4.4.2.8.

CUE: After Candidate observes Containment pressure < 40 psig, “30 minutes have passed and you are at step 4.4.2.8”.

Standard: Candidate observes Containment pressure is < 40 psig on Containment pressure instruments.

Comment:

***Step 4.4.2.8 WHEN containment hydrogen concentration falls to 3.5%, terminate dilution as follows:**

CUE: “H2 concentration is now reading 3.0%”.

- a. **Close SERVICE AIR CNMT HDR ISOL 1-HV-9385 using either 1-HS-9385A or 1-HS-9385B on Control Room Panel QPCP.**
- b. **Verify closed both Service Air Containment Post-LOCA Purge Valves using their Control Switches on Panel QPCP:**
 - (1) **1-HV-9380A**
 - (2) **1-HV-9380B**

Standard: Candidate closes 1-HV-9385 and 1-HV-9380A and/or 1-HV-9380B as applicable.

Comment:

Step 4.4.2.9 Periodically monitor containment hydrogen concentration and repeat this section as required to maintain the concentration below 4.0%.

CUE: **“The SS will direct another operator to monitor containment H2 concentration”.**

Standard: N/A

Comment:

Terminating cue: Candidate returns initiating cue sheet and / or informs SS that the Containment has been diluted with Service Air per 13130-1.

Verification of Completion

Job Performance Measure No. V-NRC-JP-13130H-L17

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: _____

Initial Conditions: A LOCA has occurred on Unit 1. The crew is performing 19010-C. The TSC has requested that the Hydrogen concentration of the Containment atmosphere be reduced.

Initiating Cue: The SS has directed you to “Dilute the Containment hydrogen concentration using service air per 13130-1”.

NRC Job Performance Measure "G"

Facility: **Vogtle**

Task No: V-LO-TA-11007

Task Title: Returning ESF Bus from Diesel Generator to Normal Supply

JPM No: V-NRC-JP-13427-HL17

K/A Reference: 062 A4.07 RO 3.1 SRO 3.1

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance _____

Actual Performance _____

Classroom _____

Simulator _____

Plant _____

Read to the examinee:

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

Instructions:

Students should be pre-briefed to save simulator time for this JPM.

Initial Conditions:

The Normal Feeder Breaker to 1BA03 was tripped by actuation of a faulty overcurrent relay. DG1B automatically started and reenergized the bus. The faulty relay has been repaired and the OAO has reset the RESET FROM LOCA/LOSP pushbutton locally.

Initiating Cue:

The Shift Supervisor has directed you to Parallel Normal Incoming Source (RAT "B") to 1BA03 and then discontinue parallel operation by removing DG1B from 1BA03 using 13427B-1, "4160V AC Bus 1BA03 1E Electrical Distribution System".

Task Standard: RAT 1B paralleled to 1BA03 and DG1B removed from bus.

Required Materials: 13427B-1, "4160V AC Bus 1BA03 1E Electrical Distribution System"
13145B-1, "Diesel Generator Train B"

Time Critical Task: No

Validation Time: 20 minutes

SIMULATOR SETUP:

Reset to IC # 14 (Snap to 217 for HL-17 NRC Exam)

1. Reset to IC14 (MOL 100%)
2. Open normal supply feeder breaker to 1AA02 (1BA03)
3. Secure AFW pumps after DG ties on bus
4. Reset DG emergency start (RF DG07A/B)
5. Ack/Reset alarms
6. Freeze simulator

Setup time: 5 minutes

Performance Information

Critical steps denoted with an asterisk

Section 4.2.2 of 13427B-1, "4160V AC Bus 1BA03 1E Electrical Distribution System", selected for paralleling Normal incoming source to 1BA03.

4.2.2 Paralleling Normal Incoming Source (RAT or SAT) To 4160V AC Bus 1BA03 Being Supplied From DG 1B

Standard: 13427B-1 selected and opened to Section 4.2.2.

Comment:

CAUTION

Placing two sync switches to ON position at the same time will blow PT fuses. A sync scope meter indication of 12 o'clock may indicate a sync switch is ON.

4.2.2.1 IF it is desired to Parallel the 1B DG to:

The SAT, THEN applicable sections of 13418B-1, "Standby Auxiliary Transformer Unit One Train B Operations" should be performed PRIOR to continuing with this section.

OR

IF it is desired to Parallel the 1B DG to the RAT, THEN applicable sections of 13415-1, "Reserve Auxiliary Transformers" should be performed PRIOR to performing this section.

CUE: "The applicable sections of 13415-1 have been performed"

Standard: The DG will be paralleled to RAT 1B and NOT to the SAT.

Comment:

4.2.2.2 Verify Breakers 1BA03-19 and 1BA0305 Synchronizing switches are OFF:

- 1BA0319 SYNCHRONIZING SWITCH OFF
- 1BA0305 SYNCHRONIZING SWITCH OFF

Standard: Removable handles are inserted into the Sync Switch holes to verify switches are off.

Comment:

***4.2.2.3 Place the BRKR 1BA0301 SYNCHRONIZING SWITCH to ON.**

Standard: Removable handle inserted into 1BA0301 Sync Switch and placed to ON.

Comment:

CAUTION

4160V Incoming Line Voltage should be between 4025V and 4326V prior to paralleling the bus being carried by the DG to the grid to ensure bus voltage will remain less than 4326V and greater than 4025V while loading. If required, coordinate as necessary with the PCC to establish these conditions.

4.2.2.4 Check Normal Incoming Source voltage between 4025V and 4326V.

- a. IF NOT, coordinate with PCC to establish Normal Incoming Source voltage between 4025V and 4326V.

Standard: ~ 4160 volts reading on Train B System Voltmeter.

Comment:

NOTE

It may be necessary to adjust DG speed slightly in order to verify the next step.

4.2.2.5 Check that the Sync Scope needle is rotating AND that the Synchronizing Lights are bright at 6 o'clock position AND dark at the 12 o'clock position.

Standard: Train B Synchroscope is rotating. Lights are bright at 6 o'clock position and dark at 12 o'clock position.

Comment:

4.2.2.6 IF the DG is running from an emergency start, verify it has been reset from LOCAL/LOSP per 13145B-1.

CUE: "Refer to Initial Conditions"

Standard: Step read and initial conditions noted.

Comment:

***4.2.2.7 IF in the UNIT Mode, place the DSL GEN 1B UNIT/PARALLEL Switch 1HS-4452B momentarily to PARALLEL position and check the blue UNIT MODE/FAST START light is not lit.**

Standard: 1HS-4452B turned clockwise to the Para/Slow Start position. Blue Unit Mode Fast Start light lit. (Located above DG Loading Set Pot)

Comment:

***4.2.2.8 Using the DG 1B VOLTAGE CONTROL pushbutton, adjust DG voltage by momentarily depressing the RAISE OR LOWER pushbutton until it is slightly higher than the Normal Incoming Source voltage.**

Standard: Uses voltage control pushbuttons until DG Voltmeter reads slightly higher than Normal Incoming Voltage. (Normal Incoming Voltmeter is top left gauge-left of Synchroscope).

Comment:

NOTE

Since the Normal Incoming Source frequency, (the grid), cannot be adjusted, the following steps will increase DG frequency to slightly greater than grid frequency to ensure the DG picks up load when the Normal Incoming Breaker is closed.

***4.2.2.9 WHILE observing the Sync Scope, adjust DG speed using the DG 1B SPEED CONTROL pushbuttons (RAISE OR LOWER) until the Sync Scope needle is rotating slowly in the counterclockwise (Slow) direction [greater than 10 seconds per revolution].**

Standard: Uses Speed Control pushbuttons (next to Unit/Parallel switch) to adjust Sync Scope until rotation is counterclockwise with > 10 second rotation.

Comment:

4.2.2.10 Set DSL GEN 1B LOADING SET PT CONTROL 1SE-4916 to the current DG load.

Pot setting is calculated using the following formula:

$$\frac{D/GLOAD[kW]}{700} = \text{LOAD POT SETTING}$$

Standard: DG Loading Pot set properly.

Comment:

4.2.2.11 Review Precaution 2.1.1 on indication and operation of the synchroscope prior to proceeding.

Standard: Precaution 2.1.1 read. (shown below)

2.1 PRECAUTIONS

2.1.1 When paralleling two AC sources, the following guidelines must be followed:

- a. The speed of rotation of the sync scope should be relatively slow (at least 10 seconds per revolution), indicating the frequencies of the two sources are close to each other.
- b. Normally, when paralleling two AC sources, the incoming breaker should be closed as close as possible to the 12 o'clock position to minimize the phase difference between the two sources. The slower the sync scope is rotating, the closer to the 12 o'clock position the sync scope needle should be before trying to close the breaker. In all cases, the breaker should be closed as close as possible to the 12 o'clock position on the 11 o'clock side of the sync scope.
- c. Since grid frequency cannot be adjusted, to prevent motoring the Diesel Generator, its frequency is adjusted to slightly higher than grid frequency causing the sync scope to rotate counterclockwise. The breaker should be closed as close to the 12 o'clock position as possible. (It is preferred for the breaker to close slightly on the 11 o'clock side of 12 rather than the 1 o'clock side because it produces less of a transient on the DG to attain synchronization with the grid, however, the intent is to close the incoming breaker at the 12 o'clock position.)

Comment:

*4.2.2.12 WHEN the Sync Scope needle reaches 12 o'clock, close NORM INCM BRKR 1BA0301.

CUE: “When asked, CV has been noted.”

Standard: Sync Scope at 12 o'clock, closes in breaker 1BA0301.

Comment:

4.2.2.13 Place BRKR 1BA0301 SYNCHRONIZING SWITCH to OFF.

Standard: Places 1BA0301 Sync Scope to OFF.

Comment:

4.2.2.14 Record DG data required by 11885B-1, "DG 1B Operating Log."

CUE: “OAO will record operating data”

Standard: OAO noted as taking operating data.

Comment:

4.2.2.15 If desired, continue Parallel Operation of the DG, per Step 4.2.1.19.

CUE: “DG1B will be removed from bus”

Standard: Noted that DG1B will be removed from bus and continues with next step.

Comment:

4.2.2.16 WHEN it is desired to discontinue Parallel Operation, refer to:
Section 4.2.4 to remove the Normal Incoming Source from the Bus.

OR

Section 4.2.5 to remove the DG from the Bus.

Standard: Section 4.2.5, “Discontinue Parallel Operation By Removing The DG 1B From Bus 1BA03”, selected.

Comment:

NOTES

- As DG load is adjusted, DG voltage should be adjusted concurrently to maintain kVAR loading positive (Out) and no more than half the kW load.
- The DG should be loaded/unloaded in increments of approximately 1000kW and 500kVAR in time increments of approximately 5 minutes between load changes.
- DSL GEN 1B LOADING SET PT CONTROL 1SE-4916 has a range of 10% [1.00] to 110% [11.00] D/G LOAD which corresponds to 700kW to 7700kW.
- 13145B-1 should be reviewed for shutdown of the DG and aligning for automatic operation after DG is removed from the bus.

CAUTION

With the DG paralleled to the bus, depressing the DG SPEED CONTROL pushbuttons [RAISE or LOWER] will shift the span of the DSL GEN 1B LOADING SET PT CONTROL and the pot settings will no longer reflect 10% to 110% load. This shift can be nulled by using the RAISE or LOWER pushbuttons to match DG load with current pot setting. Discontinuing parallel operation will automatically reset any bias that may have occurred.

- 4.2.5.1 IF Load is greater than 3000 kW:
- a. Lower load in increments of 1000 kW and 500 kVAR in time increments of 5 minutes to 3000 kW using DSL GEN 1B LOADING SET PT CONTROL 1SE-4916.
 - b. Concurrently lower kVAR load to maintain kVAR loading positive (Out) and NO more than half the kW load using DG 1B VOLTAGE CONTROL pushbuttons.

NOTE TO EXAMINER: Load is lowered in 5 minute increments. If desired for time compression, cue the following for each increment:

CUE: “Five minutes have elapsed”

Standard: 1SE-4916 Load Set Pot setting is lowered to reduce kW load to 3000 kW in 1000 kW increments. Voltage Control LOWER pushbutton is depressed to reduce kVAR load to no more than half the kW load and to maintain positive (out).

Comment:

CAUTION

DG operation at low loads should be minimized. The following steps must be performed without delay.

4.2.5.2 WHEN load has been stable at 3000 kW for 5 minutes OR IF Load was less than 3000 kW in the previous step, continue load reduction to minimum:

- a. Lower load to 700 kW using DSL GEN 1B LOADING SET PT CONTROL 1SE-4916.
- b. Concurrently lower kVAR loading to 200 to 300 kVARs positive (out) using DG 1B VOLTAGE CONTROL pushbuttons.

Standard: 1SE-4916 Load Set Pot setting is lowered to reduce kW load to 700 kW. Voltage Control LOWER pushbutton is depressed to reduce kVAR load to 200 to 300 kVARs positive (out).

Comment:

* 4.2.5.3 WHEN minimum load is attained, open DG 1B OUTPUT BRKR 1BA0319 using handswitch 1HS-1BA0319.

Standard: DG1B output breaker is opened using 1HS-1BA0319.

Comment:

4.2.5.4 Check DG1B OUTPUT BRKR 1BA0319 OPEN by observing green light lit on handswitch 1HS-1BA0319.

Standard: Green light is lit and red light is not lit on 1HS-1BA0319.

Comment:

NOTE

The DG must idle for 30 seconds after UNIT/PARALLEL Switch is placed in UNIT to verify Governor Slow Start timer can time out and permit DG to Fast Start after shutdown. If DG is shutdown before the UNIT/PARA Switch has been placed in UNIT, DG will be INOPERABLE from the time it is shutdown until 30 seconds after the UNIT/PARA Switch has been placed in UNIT.

4.2.5.5 Momentarily place DSL GEN 1B UNIT/PARALLEL switch 1HS-4452B to UNIT and check that the blue UNIT MODE/FAST START light is lit.

Standard: 1HS-4452B momentarily placed in the UNIT position and the blue UNIT MODE/FAST START light is lit.

Comment:

4.2.5.6 WHEN DG has operated in UNIT Mode for 30 to 45 seconds, shutdown DG1B per 13145B-1, "Diesel Generators" and align for automatic operation.

CUE: "An extra operator will shutdown DG1B per 13415B-1 and align for automatic operation"

Standard: Candidate addresses step.

Comment:

Terminating cue: Student returns initiating cue sheet.

Verification of Completion

Job Performance Measure No: V-NRC-JP-13427-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: _____

Initial Conditions: The Normal Feeder Breaker to 1BA03 was tripped by actuation of a faulty overcurrent relay. DG1B automatically started and reenergized the bus. The faulty relay has been repaired and the OAO has reset the RESET FROM LOCA/LOSP pushbutton locally.

Initiating Cue: The Shift Supervisor has directed you to Parallel Normal Incoming Source (RAT "B") to 1BA03 and then discontinue parallel operation by removing DG1B from 1BA03 using 13427B-1, "4160V AC Bus 1BA03 1E Electrical Distribution System".

Job Performance Measure "H"

Facility: **Vogtle**

Task No: V-LO-TA-23005

Task Title: Manually Align CRI due to smoke entering MCR air intakes

JPM No: V-NRC-JP-13301-HL17

K/A Reference: 067AA1.05 RO 3.0 SRO 3.1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: A large brush fire is causing smoke to enter the control room through the outside air intakes resulting in a concern for Control Room habitability.

Initiating Cue: The SS has directed you to "Manually actuate control room isolation per 13301-C, "CBCR Normal HVAC and Emergency Filtration System".

Task Standard: Manually align CR HVAC for CRI in accordance with 13301-C Section 4.4.1.

Required Materials: 13301-C, "CBCR Normal HVAC and Emergency Filtration System" Ver. 28.3

17050-1, Annunciator Response Procedures for ALB50 on QHVC Panel Ver. 19.1

General References: None

Time Critical Task: No

Validation Time: 10 minutes

SIMULATOR SETUP:

Snapped to IC # 218 for HL-17 NRC Exam.

If new setup is required, then perform the following:

1. Reset to IC 14 (MOL 100%).
2. Insert override annunciator ALB50B02 to ON.
3. Acknowledge/Reset alarms.
4. Freeze simulator

Setup time: 3 minutes

Performance Information

Critical steps denoted with an asterisk

Annunciator Response 17050-1 Window B02 for CR OSA Smoke Detected (If Referenced)

NOTE

If Control Room isolation is initiated, the system must be restored to normal prior to purging the Control Room of smoke.

1. Analyze the situation and if necessary, initiate a Control Room isolation per 13301-C, "Control Building Control Room Normal And Essential HVAC System."
2. Dispatch an operator to investigate the source of the smoke.
3. IF toxic gas concentration is greater than allowable limits OR IF detected odor is considered a personnel safety hazard, THEN:
 - a. Evacuate non-essential control room personnel to a safe area.
 - b. Direct all essential control room personnel to don breathing apparatus.

Standard: The candidate may reference this ARP or go directly to 13301-C.

Comment:

Refers to procedure 13301-C and determines section 4.4.1 should be performed.

Standard: Candidate selects Section 4.4.1.

Comment:

NOTES

- This section is written using Unit 1 and Common component designations. Unit 2 designations are shown in parenthesis.
- If the TRAIN B CR FLTR UNIT SUPPLY FAN fails to start on actuation, the Train A Fan will start after a 30 second time delay.
- The TSC Air Filtration System will automatically start on manual initiation of Control Room Isolation.

ALB05-D05 GROUP 4 MONITOR LIGHT COMP OFF NORM
ALB39-D05 480V SWGR ANB30 TROUBLE
ALB50-B03 CR HI/LO DIFF PRESS

CUE: If expected alarms reported to OATC, “OATC is notified.”

Standard: Candidate reads notes and expected annunciators.

Comment:

***Step 4.4.1.1 To manually initiate Control Room Isolation, place either CR ISO MANUAL ACTUATION Switch in ACTUATE:**

TRAIN A

TRAIN B

1-HS-12195A [A4]

1-HS-12196A [A6]

Standard: Candidate rotates one or both hand switches clockwise to the ACTUATE position and determines that the actuation occurs.

Green lights – OFF
Red lights – ON

NOTE to the Examiner: The following alarms will alarm on the actuation:

ALB50-B03	CR HI/LO DIFF PRESS	immediately
ALB50-A03	CR NORM SPLY FANS LO AIR FLOW	delayed 30 seconds
ALB53-C07	CHLR TRN A EVAP WTR HI/LO TEMP	delayed 2 minutes
ALB53-C08	CHLR TRN B EVAP WTR HI/LO TEMP	

Comment:

Step 4.4.1.2 Verify that TRAIN B CR FLTR UNIT LEAD SUPPLY AIR FAN starts.

TRAIN B

1-1531-N7-002 [B10]

Standard: Candidate verifies Train B filter unit running.

Red light - ON
Green light - OFF
Amber light - OFF

Comment:

Step 4.4.1.3 Verify that TRAIN A CR FLTR UNIT STANDBY SUPPLY AIR FAN does NOT start:

TRAIN A

1-1531-N7-001 [B8]

Standard: Candidate verifies standby air fan does not start.

Checks green light remains - ON

Red light remains - OFF

Amber light remains - OFF

Comment:

Step 4.4.1.4 Verify that both KIT TOIL + CONF RM EXH ISO DMPRs close:

TRAIN A

TRAIN B

A-HV-12162 [D6]

A-HV-12163 [D7]

Standard: Candidate verifies both dampers in CLOSED position.

Green lights - ON

Red lights - OFF

Comment:

Step 4.4.1.5 Verify that both CR NORM AIR SUPPLY ISO DMPRs close:

TRAIN A

1-HV-12146 [C6]

TRAIN B

1-HV-12147 [C7]

Standard: Candidate verifies both dampers in CLOSED position.

Green light - ON

Red light - OFF

Comment:

Step 4.4.1.6 Verify that both CR NORM AIR RTN ISO DMPRs close:

TRAIN A

1-HV-12149 [E6]

TRAIN B

1-HV-12148 [E7]

Standard: Candidate verifies both dampers in CLOSED position.

Green light - ON

Red light - OFF

Comment:

Step 4.4.1.7 Verify that the CR FILTER UNIT OUTLET AIR DMPR on the running train is open:

TRAIN B

1-HV-12129 [C11]

Standard: Candidate verifies damper open.

Red light - ON

Green light - OFF

Comment:

Step 4.4.1.8 Verify that the CR RTN FAN INLET AIR DMPR on the running train is open:

TRAIN B

1-HV-12131 [D10]

Standard: Candidate verifies damper open.

Red light - ON

Green light - OFF

Comment:

Step 4.4.1.9 Verify that the CR NORMAL HVAC UNIT INTAKE ISO DMPR on the running train is closed:

TRAIN B

A-HV-12152 [B7]

Standard: Candidate verifies damper closed.

Green light - ON

Red light - OFF

Comment:

Step 4.4.1.10 Verify that the CR NORM AC UNIT SUPPLY FANS, A-1531-A7-001 [C4] and A-1531-A7-002 [C5], shut down.

Standard: Candidate verifies both AC units shutdown.

Green lights - ON

Amber lights - ON

Red lights - OFF

Comment:

Step 4.4.1.11 Verify that the CR NORM AC UNIT EXH FAN, A-1531-B7-009 [D4] and A-1531-B7-010 [D5], shut down.

Standard: Candidate verifies both exhaust units shutdown.

Green lights - ON

Red lights - OFF

Comment:

Step 4.4.1.12 Verify that the KITCH TOILET AND CONF RM EXH FAN, A-HS-12164 in the Shift AA's Office, stops.

CUE: When Candidate indicates need to verify status, “The Control Building Operator reports A-HS-12164’s green light is lit and the fan has stopped.”

Standard: Candidate determines Kitchen Toilet and Conference room exhaust fan is stopped.

Comment:

NOTE

If it is necessary to isolate outside air to the Control Room in the next step, both the Unit 1 and Unit 2 dampers should be shut.

Standard: Candidate reads note.

Comment:

***Step 4.4.13** **IF Control Room outside air is restricted for Control Room habitability due to smoke or toxic gas intake, THEN close the CR OUTSIDE AIR SUPPLY DAMPERS for BOTH Units:**

UNIT 1

1-HS-12114 [E8]
1-HS-12115 [E10]

UNIT 2

2-HS-12114
2-HS-12115

Standard: Candidate rotates both hand switches counterclockwise to the CLOSE position and releases. Candidate verifies the handswitch indication as follows:

Green lights - ON
Red lights - OFF

Candidate indicates that the Unit 2 Valves must be closed on the Unit 2 QHVC panel.

CUE: When candidate indicates need to shut unit 2 dampers, "Unit 2 UO has shut 2HV-12114 and 2HV-12115."

Comment:

Step 4.4.1.14 Verify proper operation of the TSC Air Filtration System per 13303-C, "Technical Support Center And Central Alarm Station HVAC Systems."

CUE: When candidate indicates need to verify operation, "Another operator will verify proper operation of the TSC Air Filtration System."

Standard: Candidate addresses step.

Comment:

Step 4.4.1.15 Verify proper Essential Chiller operation.

**CUE: Another operator will verify proper operation of the
ESF Chiller.**

Standard: Candidate addresses step.

Comment:

Terminating cue: Student returns initiating cue sheet.

Verification of Completion

Job Performance Measure No. V-NRC-JP-13301-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: _____

Initial Conditions: A large brush fire is causing smoke to enter the control room through the outside air intakes resulting in a concern for Control Room habitability.

Initiating Cue: The SS has directed you to “Manually actuate control room isolation per 13301-C, “CBCR Normal HVAC and Emergency Filtration System”.

Job Performance Measure "I"

Facility: **Vogtle**

Task No: V-LO-TA-60025

Task Title: **Establish RWST Gravity Drain Through RHR Pumps to RCS Hot Legs**

JPM No: V-NRC-JP-18019-HL17

K/A Reference: 025G2.1.20 RO 4.6 SRO 4.6

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

Read to the examinee:

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

Initial Conditions: During mid-loop operations, Unit 2 experienced a loss of all AC power to the 1E buses. The crew is attempting to align the RWST for gravity drain to the RCS. There is an inter systems LOCA on the "B" RHR train.

The RCS is at 0 psig and the Reactor Vessel head removed.

Initiating Cue: The SS has directed you to "Perform AOP 18019-C Attachment A, to align Train A for gravity drain at the greatest possible flowrate." Flow paths using the cold legs are **UNAVAILABLE**.

Task Standard: RWST Gravity Drain aligned through RHR.

Required Materials: 1) AOP 18019-C Ver. 29.0
2) RWP and required dosimetry.

This JPM is a reuse from Exam 2011-301. The JPM number was V-NRC-JP-18019-003.

General References: None

Time Critical Task: No

Validation Time: 12 minutes

Performance Information

Critical steps denoted with an asterisk

ATTACHMENT A: RWST GRAVITY DRAIN TO RCS

NOTE

This attachment should not be used if an ECCS pump is available.

Standard: Determines ECCS pump not available due to loss of all AC power to 1E busses.

Comment:

ATTACHMENT A: RWST GRAVITY DRAIN TO RCS

CAUTION

An RCS pressure of 35 psig allows no RWST to RCS gravity drain.

Step 1: Check RCS pressure – LESS THAN 35 psig.

Standard: Determines RCS pressure < 35 psig.

Comment:

Step 2: Verify at least one of the following RCS Vent Paths:

- a RV head removed.
- b..... other conditions that are NOT applicable.

Standard: Determines RV head off from initial conditions.

Comment:

NOTES

- It is desirable to gravity drain to a closed cold leg using Section A or B.
- If a closed cold leg is unavailable, Section C or D should be performed for gravity drain to a hot leg.
- Gravity drain paths through the RHR loops are preferable since these can achieve the greatest flow rate.

Standard: Student reads note.

Comment:

Step 3: If desired to gravity drain from RWST through RHR pumps to cold legs, then go to Section A of this attachment.

Standard: Student determines Section A should not be used due to flow path to cold legs not available.

Comment:

Step 4: If desired to gravity drain from RWST through SI pumps to cold legs, then go to Section B of this attachment.

Standard: Determines Section B should not be used due to a closed cold leg being unavailable from initiating cue.

Comment:

Step 5: IF desired to gravity drain from RWST through RHR pumps to hot legs,
THEN Go to Section C of this attachment.

Standard: Determines Section C should be used.

Comment:

ATTACHMENT A
SECTION C: RWST GRAVITY DRAIN THROUGH
RHR PUMPS TO HOT LEGS

NOTE to examiner: This valve is inaccessible, the path of ingress should be to the closest point allowed by radiological conditions. Use attached pictures or flow loop valve for student to indicate valve position and describe operation. The first three pictures are for this valve. (Closed)

***C1. Locally throttle open the following RWST TO RHR PMP-A SUCTION VALVE.**

2-HV-8812A (AB-D22)

Standard: Locates valve and determines current position is closed based on valve position indicator.

Throttles open 2-HV-8812A (AB-D22).

NOTE to examiner: The student should indicate he would depress the manual lever down to engage the handwheel and turn the handwheel counterclockwise.

Comment:

NOTE to examiner: This valve is inaccessible, the path of ingress should be to the closest point allowed by radiological conditions. Use attached pictures or flow loop valve for student to indicate valve position and describe operation. The fourth and fifth pictures are for this valve. (Open)

***C2. Locally close the following RHR PMP-A TO COLD LEG ISO VLV valve:**

2-HV-8809A (AB-A103)

Standard: Locates valve and determines current position is open based on valve position indicator.

Determines valve position then closes valve 2-HV-8809A (AB-A103).

NOTE to examiner: The student should indicate he would depress the manual lever down to engage the handwheel and turn the handwheel clockwise.

Comment:

C3. Verify RHR PMP-A SUCTION FROM HOT LEG LOOP isolation valve open:

CUE: “The RHR Suction from hot leg loop isolation valves have been verified open.”

Standard: None.

Comment:

C4. RV level may be maintained by throttling valves in Step C1 or by cycling valves in Step C3.

Standard: Valves are left open to achieve greatest flow per initial conditions.

Comment:

Terminating cue: Student returns initiating cue sheet

Verification of Completion

Job Performance Measure No. V-NRC-JP-18019-HL17

Examinee's Name:

Examiner's Name:

Date Performed:

Number of Attempts:

Time to Complete:

Question Documentation:

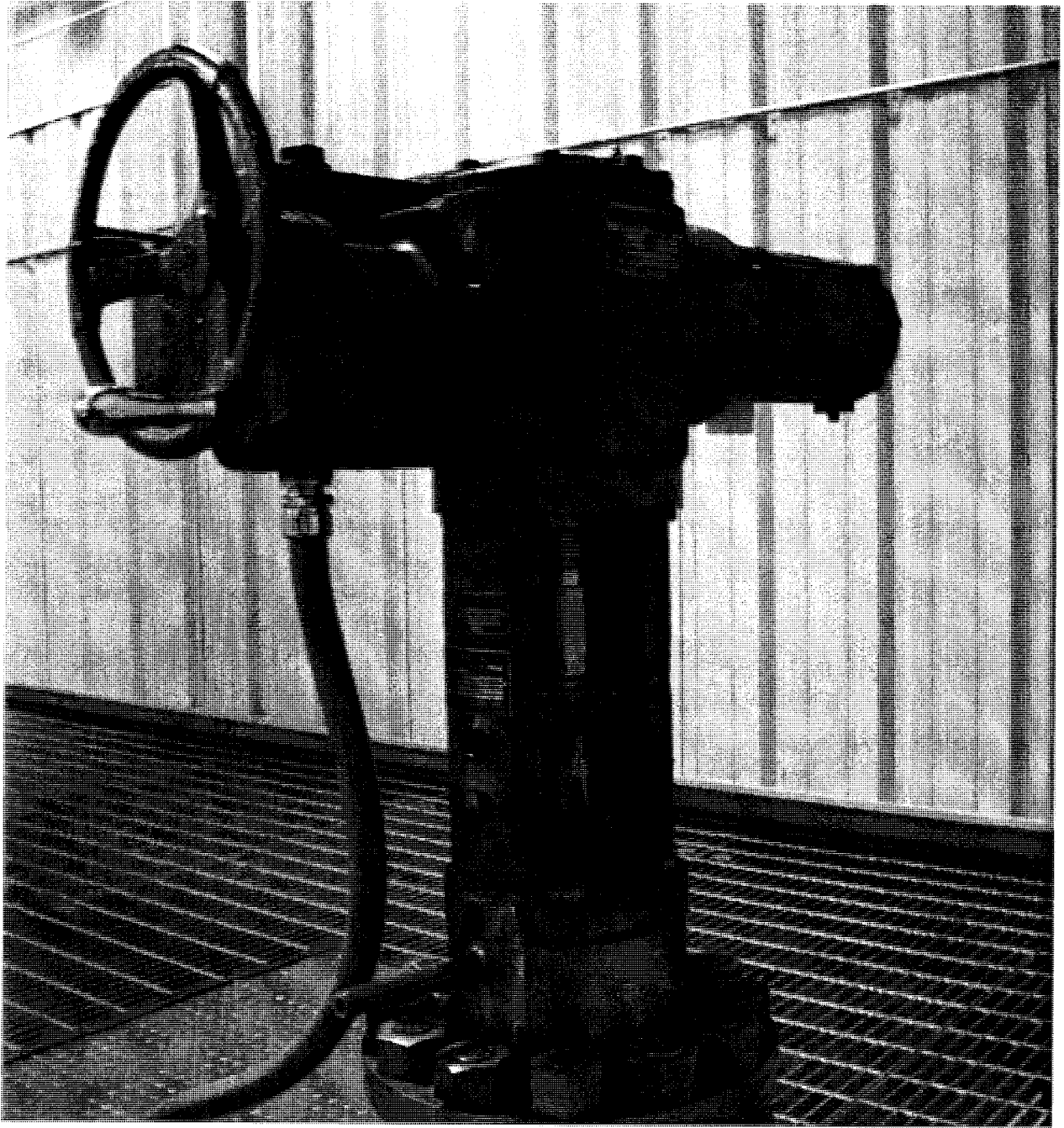
Question: _____

Response: _____

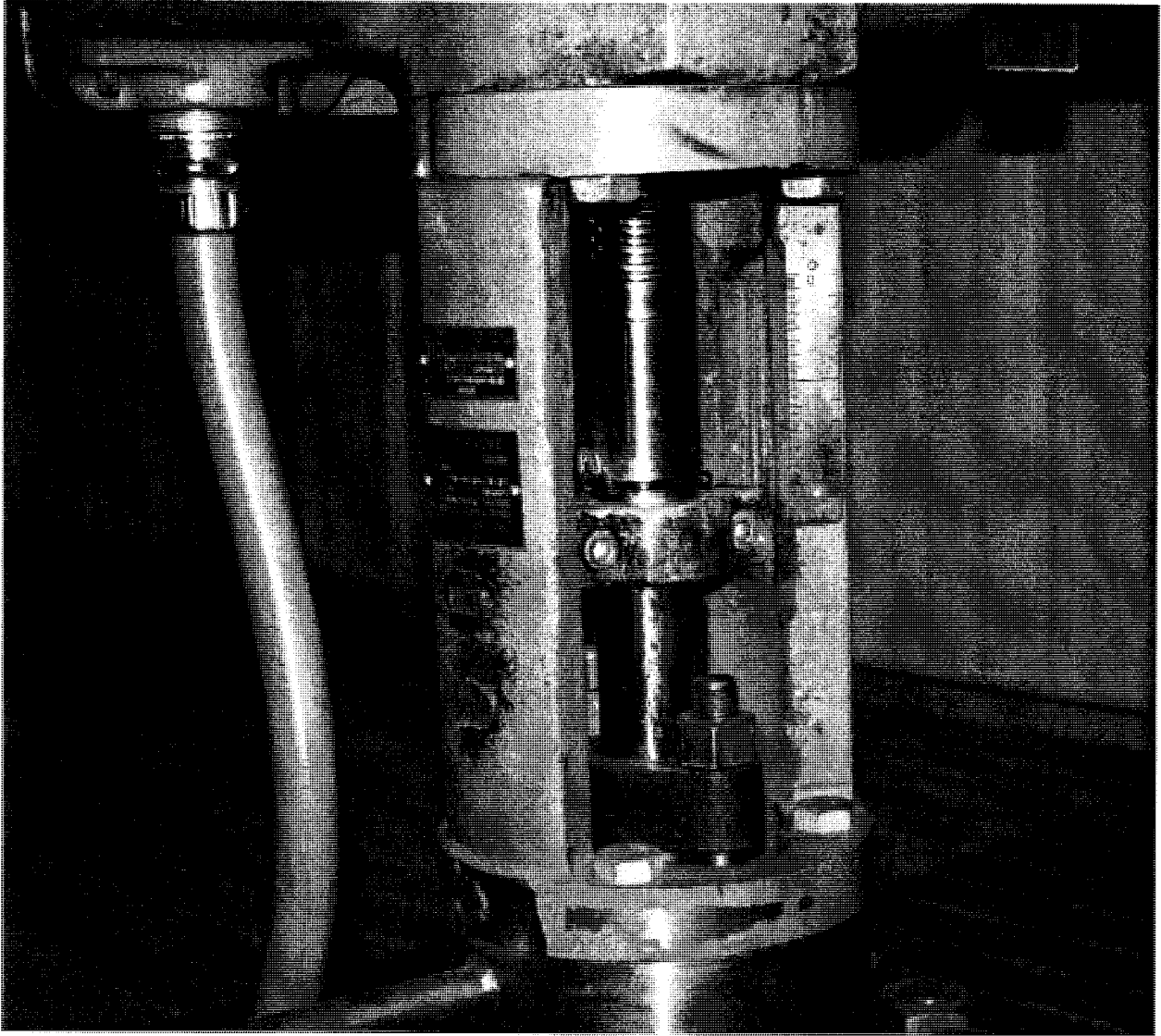
Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

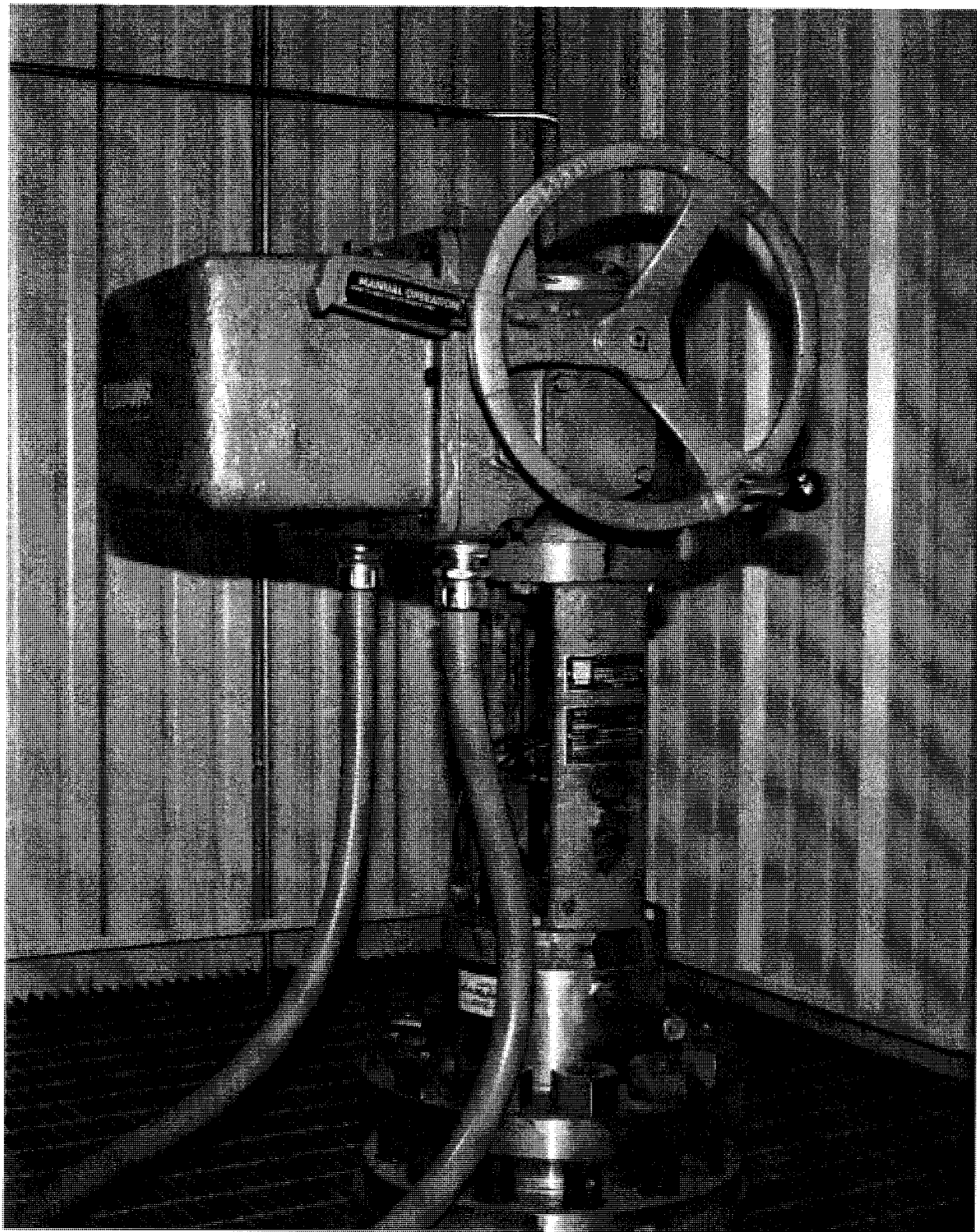
MOV PICTURES



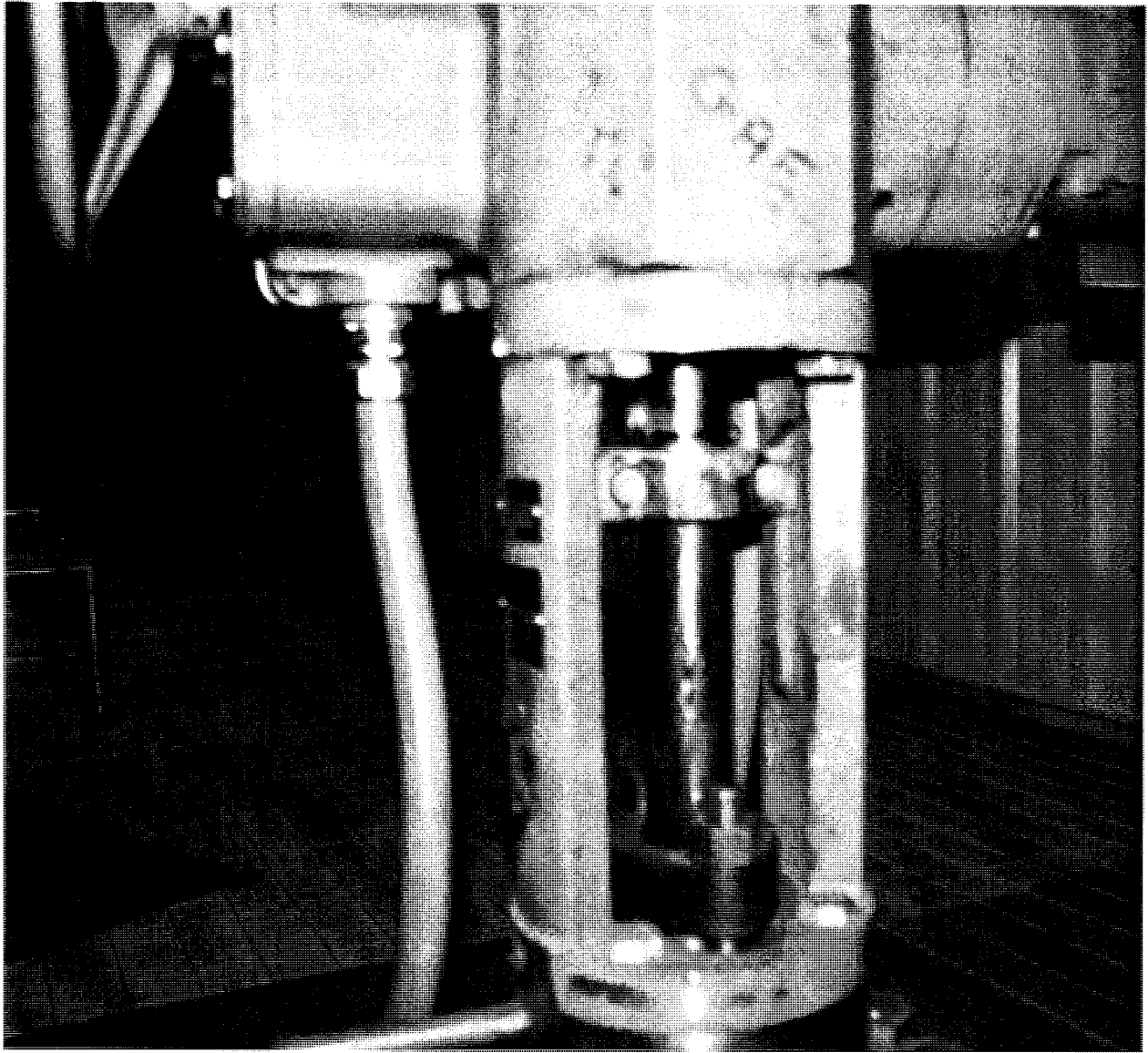
Picture 1



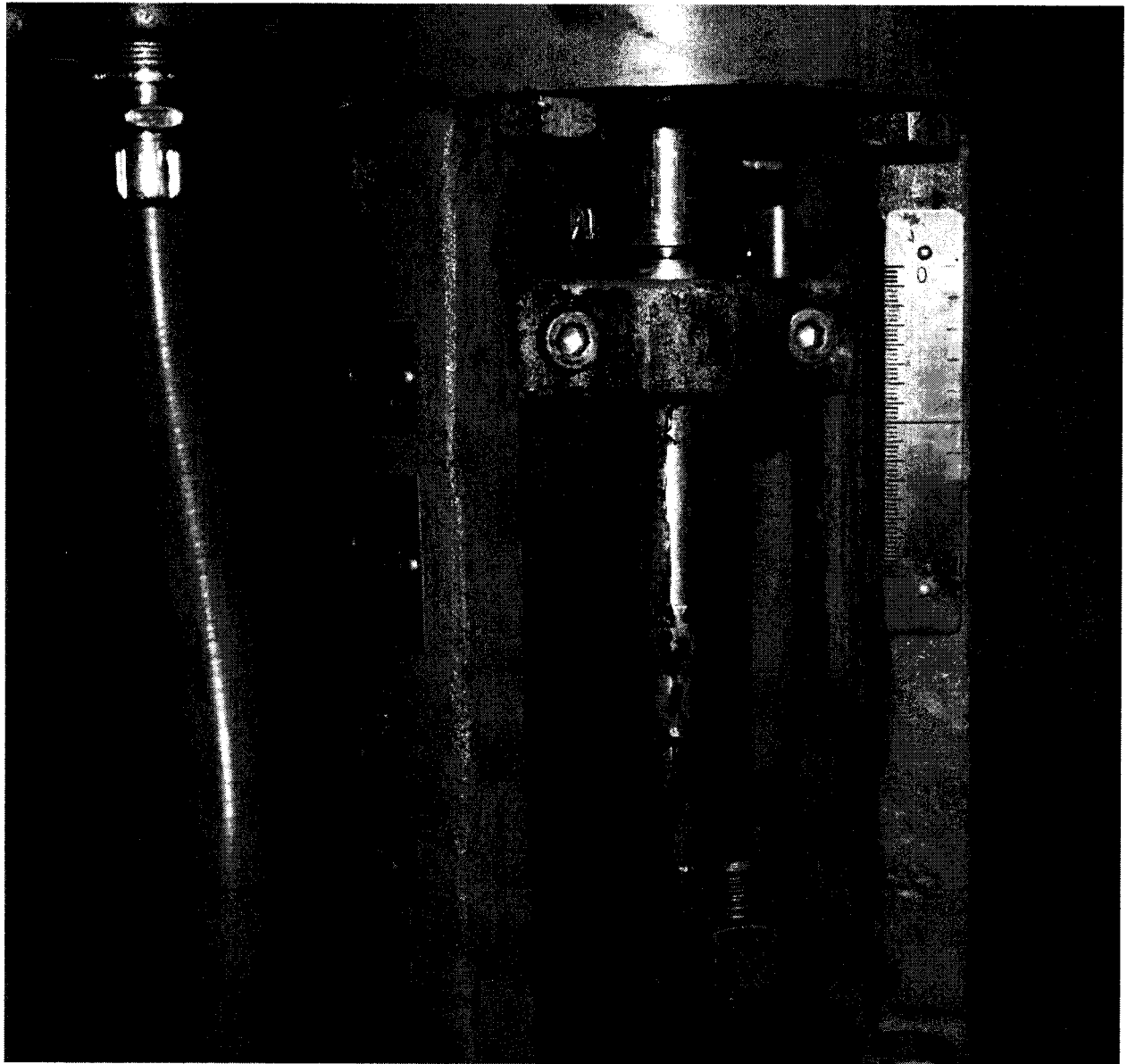
Picture 2



Picture 3



Picture 4



Picture 5

Initial Conditions: During mid-loop operations, Unit 2 experienced a loss of all AC power to the 1E buses. The crew is attempting to align the RWST for gravity drain to the RCS. There is an inter systems LOCA on the "B" RHR train.

The RCS is at 0 psig and the Reactor Vessel head removed.

Initiating Cue: The SS has directed you to "Perform AOP 18019-C Attachment A, to align Train A for gravity drain at the greatest possible flowrate." Flow paths using the cold leg are UNAVAILABLE.

Job Performance Measure "J"

Facility: **Vogtle**

Task No: V-LO-TA-60047 Establish Local Control of 1E Switchgears

Task Title: Align local controls per 18038-2.

JPM No: V-NRC-JP-18038-HL17

K/A Reference: 068AA1.21 RO 3.9 SRO 4.1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

NOTE to the Examiner: This JPM should begin at the Unit 2 Shutdown Panel A.

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 2 Control Room has been evacuated due to a fire and the crew is performing 18038-2, "Operation From Remote Shutdown Panels."

The crew is at minimum shift manning.

You are the operator at Shutdown Panel A.

The Safe Shutdown SO is manning Shutdown Panel C.

The SS is manning Shutdown Panel B.

Local control is established at all Shutdown Panels.

Initiating Cue: The SS has directed you to: "Perform steps 17 through 19 of AOP 18038-2."

Task Standard: All Transfer switches on 2AA02 and 2BA03 placed in LOCAL, stop RCPs and isolate letdown when no ACCW pump is running.

Required Materials: 18038-2, "Operation From Remote Shutdown Panels" Ver 25.2

General References: None

Time Critical Task: No

Validation Time: 20 minutes

Performance Information

Critical steps denoted with an asterisk and bolded.

***Step 17. Place all transfer switches on 2AA02-00 (CB-A16) to LOCAL.**

Note to the Examiner: All handswitch lights will be off. Candidate may place switches in local in any order. The order listed below is top to bottom, left to right.

Standard: Candidate aligns switches (turns handle clockwise) and verifies associated breaker control switch indications illuminate as follows:

HS-2AA0219B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0219A GREEN light ON.”**

HS-2AA0205B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0205A RED light ON.”**

HS-2AA0201B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0201A GREEN light ON.”**

HS-2AA0210B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0210A RED light ON.”**

HS-2AA0220B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0220A RED light ON.”**

HS-2AA0221B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0221A RED light ON.”**

HS-2AA0222B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0222A RED light ON.”**

Comment:

***Step 18. Place all transfer switches on 2BA03-00 (CB-A15) to LOCAL.**

Note to the Examiner: All handswitch lights will be off. Candidate may place switches in local in any order. The order listed below is top to bottom, left to right.

Standard: Candidate aligns switches (turns handle clockwise) and verifies associated breaker control switch indications illuminate as follows:

HS-2BA0319B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0319A GREEN light ON.”**

HS-2BA0301B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0301A RED light ON.”**

HS-2BA0305B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0305A GREEN light ON.”**

HS-2BA0304B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0304A RED light ON.”**

HS-2BA0306B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0306A RED light ON.”**

HS-2BA0309B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0309A RED light ON.”**

HS-2BA0318B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0318A RED light ON.”**

Comment:

Note to the Examiner: The control switches on the front of the breaker cubicles provide breaker indication only. It has control function only with the breaker in the TEST position.

Step 19 Verify at least one ACCW Pump RUNNING (approximately 62 amps):

2AA02-15

-OR-

2BA03-20

Cue: When the candidate states he/she is looking at the ammeter on 2AA02 cubicle 15, indicate 0 amps.

Cue: When the candidate states he/she is looking at the ammeter on 2BA03 cubicle 20, indicate 0 amps.

Cue: If candidate looks at cubicle breaker test switch lights, Provide, "RED light OFF GREEN light ON."

Cue: If candidate attempts to close either breaker using the cubicle breaker test switch, provide, "nothing happened."

Standard: The candidate determines no ACCW pumps running and goes to RNO of step 19.

Comment:

***Step 19 RNO a. Stop all RCPs**

NOTE to examiner: All transfer switches will be in LOCAL and flags matched with component status. This was done in previous steps of 18038-2 per initial conditions.

Standard: The candidate returns to Shutdown Panel A and stops RCPs 1 and 4 by:

**Cue: When asked about RCP handswitch indications before manipulation, 2HS-495F and 2HS-495D (RCP #1), provide
“RED light ON, GREEN light OFF.”**

Placing 2HS-495D (Non 1E HS) and/or 2HS-495F (1E HS) for RCP 1 to STOP and release.

RED lights - OFF
GREEN lights - ON

**Cue: When asked about RCP handswitch indications after manipulation, 2HS-495F and 2HS-495D (RCP #1), provide
“RED light OFF, GREEN light ON.”**

**Cue: When asked about RCP handswitch indications before manipulation, 2HS-498F and 2HS-498D (RCP #4), provide
“RED light ON, GREEN light OFF.”**

Placing 2HS-498D (Non 1E HS) and/or 2HS-498F (1E HS) for RCP 4 to STOP and release.

RED lights - OFF
GREEN lights - ON

**Cue: When asked about RCP handswitch indications after manipulation, 2HS-498F and 2HS-498D (RCP #4), provide
“RED light OFF, GREEN light ON.”**

Standard: Contacts SS at Shutdown Panel B to have RCPs 2 and 3 stopped.

**Cue: If candidate goes to Shutdown Panel B provide,
“The SS is operating this Shutdown panel, what do you need?”**

Cue: When SS is contacted and told to stop RCPs 2 and 3 provide, “RCPs 2 and 3 are stopped.”

Comment:

***Step 19 RNO b. Isolate letdown by closing LETDOWN ISOLATION VLV
UPSTREAM 2-LV-460 (Shutdown Panel A) and LETDOWN
ISOLATION VLV DOWNSTREAM 2-LV-459 (Shutdown Panel A.)**

Standard: The candidate is at Shutdown Panel A and isolates letdown by closing at least one of the following valves:

**Cue: When asked about 2HS-459B and 2HS-460B
handswitches indication before manipulation, provide
“RED lights ON, GREEN lights OFF.”**

Placing 2HS-459B to CLOSE
RED light - OFF
GREEN light - ON

**Cue: When asked about handswitch 2HS-459B indication,
after switch taken to CLOSE, provide
“RED light OFF, GREEN light ON.”**

Placing 2HS-460B to CLOSE
RED lights-OFF
GREEN lights-ON

**Cue: When asked about 2HS-460B handswitch indication,
after switch taken to CLOSE, provide
“RED light OFF, GREEN light ON.”**

Comment:

Terminating Cue: The Candidate returns initiating cue sheet.

Verification of Completion

Job Performance Measure No. V-NRC-JP-18038-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: _____

Initial Conditions: Unit 2 Control Room has been evacuated due to a fire and the crew is performing 18038-2, "Operation From Remote Shutdown Panels."

The crew is at minimum shift manning.

You are the operator at Shutdown Panel A.

The Safe Shutdown SO is manning Shutdown Panel C.

The SS is manning Shutdown Panel B.

Local control is established at all Shutdown Panels.

Initiating Cue: The SS has directed you to: "Perform steps 17 through 19 of AOP 18038-2."

Job Performance Measure "J"

Facility: **Vogle**

Task No: V-LO-TA-60047 Establish Local Control of 1E Switchgears

Task Title: Align local controls per 18038-2.

JPM No: V-NRC-JP-18038-HL17

K/A Reference: 068AA1.21 RO 3.9 SRO 4.1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance _____

Classroom _____ Simulator _____ Plant _____

NOTE to the Examiner: This JPM should begin at the Unit 2 Shutdown Panel A.

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 2 Control Room has been evacuated due to a fire and the crew is performing 18038-2, "Operation From Remote Shutdown Panels."

The crew is at minimum shift manning.

You are the operator at Shutdown Panel A.

The SS is manning Shutdown Panel B.

Local control is established at all Shutdown Panels.

Initiating Cue: The SS has directed you to: "Perform steps 17 through 19 of AOP 18038-2."

Task Standard: All Transfer switches on 2AA02 and 2BA03 placed in LOCAL, stop RCPs and isolate letdown when no ACCW pump is running.

Required Materials: 18038-2, "Operation From Remote Shutdown Panels" Ver 25.2

General References: None

Time Critical Task: No

Validation Time: 20 minutes

Performance Information

Critical steps denoted with an asterisk and bolded.

***Step 17. Place all transfer switches on 2AA02-00 (CB-A16) to LOCAL.**

Note to the Examiner: All handswitch lights will be off. Candidate may place switches in local in any order. The order listed below is top to bottom, left to right.

Standard: Candidate aligns switches (turns handle clockwise) and verifies associated breaker control switch indications illuminate as follows:

HS-2AA0219B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0219A GREEN light ON.”**

HS-2AA0205B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0205A RED light ON.”**

HS-2AA0201B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0201A GREEN light ON.”**

HS-2AA0210B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0210A RED light ON.”**

HS-2AA0220B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0220A RED light ON.”**

HS-2AA0221B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0221A RED light ON.”**

HS-2AA0222B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2AA0222A RED light ON.”**

Comment:

***Step 18. Place all transfer switches on 2BA03-00 (CB-A15) to LOCAL.**

Note to the Examiner: All handswitch lights will be off. Candidate may place switches in local in any order. The order listed below is top to bottom, left to right.

Standard: Candidate aligns switches (turns handle clockwise) and verifies associated breaker control switch indications illuminate as follows:

HS-2BA0319B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0319A GREEN light ON.”**

HS-2BA0301B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0301A RED light ON.”**

HS-2BA0305B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0305A GREEN light ON.”**

HS-2BA0304B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0304A RED light ON.”**

HS-2BA0306B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0306A RED light ON.”**

HS-2BA0309B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0309A RED light ON.”**

HS-2BA0318B placed in LOCAL.

**Cue: When done, provide,
“Handswitch HS-2BA0318A RED light ON.”**

Comment:

Note to the Examiner: The control switches on the front of the breaker cubicles provide breaker indication only. It has control function only with the breaker in the TEST position.

Step 19 Verify at least one ACCW Pump RUNNING (approximately 62 amps):

2AA02-15

-OR-

2BA03-20

Cue: When the candidate states he/she is looking at the ammeter on 2AA02 cubicle 15, indicate 0 amps.

Cue: When the candidate states he/she is looking at the ammeter on 2BA03 cubicle 20, indicate 0 amps.

Cue: If candidate looks at cubicle breaker test switch lights, Provide, "RED light OFF GREEN light ON."

Cue: If candidate attempts to close either breaker using the cubicle breaker test switch, provide, "nothing happened."

Standard: The candidate determines no ACCW pumps running and goes to RNO of step 19.

Comment:

***Step 19 RNO a. Stop all RCPs**

NOTE to examiner: All transfer switches will be in LOCAL and flags matched with component status. This was done in previous steps of 18038-2 per initial conditions.

Standard: The candidate returns to Shutdown Panel A and stops RCPs 1 and 4 by:

**Cue: When asked about RCP handswitch indications before manipulation, 2HS-495F and 2HS-495D (RCP #1), provide
“RED light ON, GREEN light OFF.”**

Placing 2HS-495D (Non 1E HS) and/or 2HS-495F (1E HS) for RCP 1 to STOP and release.

RED lights - OFF
GREEN lights - ON

**Cue: When asked about RCP handswitch indications after manipulation, 2HS-495F and 2HS-495D (RCP #1), provide
“RED light OFF, GREEN light ON.”**

**Cue: When asked about RCP handswitch indications before manipulation, 2HS-498F and 2HS-498D (RCP #4), provide
“RED light ON, GREEN light OFF.”**

Placing 2HS-498D (Non 1E HS) and/or 2HS-498F (1E HS) for RCP 4 to STOP and release.

RED lights - OFF
GREEN lights - ON

**Cue: When asked about RCP handswitch indications after manipulation, 2HS-498F and 2HS-498D (RCP #4), provide
“RED light OFF, GREEN light ON.”**

Standard: Contacts SS at Shutdown Panel B to have RCPs 2 and 3 stopped.

**Cue: If candidate goes to Shutdown Panel B provide,
“The SS is operating this Shutdown panel, what do you need?”**

Cue: When SS is contacted and told to stop RCPs 2 and 3 provide, “RCPs 2 and 3 are stopped.”

Comment:

***Step 19 RNO b. Isolate letdown by closing LETDOWN ISOLATION VLV
UPSTREAM 2-LV-460 (Shutdown Panel A) and LETDOWN
ISOLATION VLV DOWNSTREAM 2-LV-459 (Shutdown Panel A.)**

Standard: The candidate is at Shutdown Panel A and isolates letdown by closing at least one of the following valves:

**Cue: When asked about 2HS-459B and 2HS-460B
handswitches indication before manipulation, provide
“RED lights ON, GREEN lights OFF.”**

Placing 2HS-459B to CLOSE
RED light - OFF
GREEN light - ON

**Cue: When asked about handswitch 2HS-459B indication,
after switch taken to CLOSE, provide
“RED light OFF, GREEN light ON.”**

Placing 2HS-460B to CLOSE
RED lights-OFF
GREEN lights-ON

**Cue: When asked about 2HS-460B handswitch indication,
after switch taken to CLOSE, provide
“RED light OFF, GREEN light ON.”**

Comment:

Terminating Cue: The Candidate returns initiating cue sheet.

Verification of Completion

Job Performance Measure No. V-NRC-JP-18038-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: _____

Initial Conditions: Unit 2 Control Room has been evacuated due to a fire and the crew is performing 18038-2, "Operation From Remote Shutdown Panels."

The crew is at minimum shift manning.

You are the operator at Shutdown Panel A.

The SS is manning Shutdown Panel B.

Local control is established at all Shutdown Panels.

Initiating Cue: The SS has directed you to: "Perform steps 17 through 19 of AOP 18038-2."

NRC Job Performance Measure "K"

Facility: **Vogtle**

Task No: V-LO-TA-12004

Task Title: Placing the RHR 25kVA Inverter 1DD116 in Service

JPM No: V-NRC-JP-13405-HL17

K/A Reference: 063G2.1.30 RO 4.4 SRO 4.0

Examinee: _____

NRC Examiner: _____

Facility Evaluator: _____

Date: _____

Method of testing:

Simulated Performance _____

Actual Performance _____

Classroom _____

Simulator _____

Plant _____

Read to the examinee:

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

Initial Conditions: Unit 1 is in Mode 4 and preparing for cooldown and entry into Mode 5. The operators are preparing to place RHR Train "A" in service for continued cooldown. 1DD1B is already in service.

Initiating Cue: The Shift Supervisor has directed you to place RHR loop inlet isolation inverter 1DD116 in service and energize 1-HV-8702A starting with step 4.4.3 of 13011-1, Residual Heat Removal System.

Task Standard: Loop 4 RHR 1-HV-8702A energized from associated inverter 1DD116.

Required Materials: 13011-1, "Residual Heat Removal System"
13405-1, "125V DC 1E Electrical Distribution System"

Time Critical Task: No

Validation Time: 10 minutes

Performance Information

Critical steps denoted with an asterisk

Step 4.4.3 of 13011-1, "Residual Heat Removal System", selected.

Step 4.4.3 Restore power to RHR PMP-B SUCTION FROM HOT LEG LOOP 4 Inlet Isolations and air to RHR System Flow Control Valves as follows:

- a. If shutdown, place Inverter 1DD116 in service per 13405-1, "125V DC 1E ELECTRICAL DISTRIBUTION SYSTEM."

Standard: Refers to 13405-1, "125V DC 1E Electrical Distribution System", section 4.1.11 for placing 1DD116 in service.

Comment:

Step 4.1.11 Placing the RHR 25kVA Inverter 1CD115 or 1DD116 in Service

NOTE

Inverters 1CD115 and 1DD116 are NOT analyzed loads for batteries 1CD1B and 1DD1B respectively in MODES 1, 2, or 3. Inverter 1CD115 and 1DD116 may be placed in service in MODES 1, 2, or 3 for pre-outage testing, however they should be attended while in service. In the event of an emergency condition or a condition that requires 1CD115 and 1DD116 be left unattended in MODES 1, 2, or 3, 1CD115 and 1DD116 must be removed from service in accordance with Section 4.3.2.

Standard: Section 4.1.11 chosen and Note is read.

Comment:

4.1.11.1 To place 1CD1I5 in service, perform the following:

Standard: All sub-steps of 4.1.11 are N/A for 1CD1I5. Proceeds to step 4.1.11.2 for 1DD1I6.

Comment:

4.1.11.2 To place 1DD1I6 in service, perform the following:

- a. Verify the 125V DC Battery 1DD1B in service per Section 4.1.2.4 of this procedure.

CUE: If asked, “Refer to initial conditions”

Standard: Battery 1DD1B already in service per initial conditions.

Comment:

4.1.11.2 b. Verify the following:

- Inverter 1DD1I6 DC Input Breaker Open.
- Inverter 1DD1I6 AC Output Breaker Open.

Note to examiner: Breaker switches indicate Down position when open.

Standard: Verifies Inverter DC Input and AC Output breakers open.

Comment:

4.1.11.2 c. In the Main Control Room, install the Annunciator card associated with ALB34-F07 and check ALB34-F07 illuminates.

CUE: “SS reports ALB34-F07 annunciator card is installed and alarm is illuminated”

Standard: Annunciator card installed and alarm illuminated.

Comment:

***4.1.11.2 d. Close Inverter 1DD1I6 DC Switchgear Breaker:**
1DD1-08 HS-1DD1-08

Standard: Simulates closing HS-1DD108, by turning Handswitch clockwise. Breaker located on 125V dc switchgear 1DD1 in same room as inverter.

CUE: “HS-1DD108 indicates Red Flag with Red Light lit, Green Light off”

Comment:

NOTES

- The Precharge light must be lit for ≈ 5 seconds OR DC voltage as read on the Inverter DC Voltmeter must be reading ≈ 125 VDC and stable for ≈ 5 seconds, to allow closing the DC INPUT Breaker. The 5 seconds will allow time to fully charge the capacitor bank.
- The Precharge Pushbutton has a strong spring and will require a firm push to operate.
- If using the Precharge light above, and it extinguishes prior to closing the DC INPUT Breaker, Step 4.1.11.2.e will need to be repeated.
- If the inverter has just been shutdown, wait at least 60 seconds before restarting the inverter.

-
- *4.1.11.2 e. Press the Precharge Pushbutton, and maintain depressed for at least five seconds after the Precharge light illuminates OR the inverter DC Voltmeter is stable at ~ 125 VDC, then release.

CUE: “Indicate Precharge light lit if Precharge Pushbutton is held for five seconds OR indicate that DC Input voltmeter indicates ~ 125 VDC”

Standard: Precharge light illuminated and 125 VDC indicated on DC Input Voltmeter.

Comment:

-
- *4.1.11.2 f. Close the inverter DC INPUT Breaker (within 3 seconds after releasing the Precharge Pushbutton).

CUE: “If performed correctly, Indicate DC INPUT Breaker in close (UP) position”

Note to examiner: Breaker switches indicate UP position when closed.

Standard: DC Input Breaker in closed position.

Comment:

4.1.11.2 g. Check proper inverter operation by observing approximately 480 VAC on the INVERTER OUTPUT Voltmeters and 60 Hz on the INVERTER OUTPUT frequency meter.

CUE: *“Indicate ~ 480 VAC on Inverter Output Voltmeters and 60 Hz on Inverter Output frequency meter”*

Standard: Inverter indicates ~ 480 VAC and 60 Hz.

Comment:

*4.1.11.2 h. Close the INVERTER OUTPUT Breaker.

CUE: *“Indicate Inverter Output Breaker in close position”*

Standard: Inverter output breaker closed.

Comment:

4.1.11.2 i. MOMENTARILY press the PRESS TO RESET ALARMS pushbutton.

CUE: *“All alarm lights are as you see them”*

Standard: Simulate lifting cover and Alarm reset pushbutton depressed.

Comment:

4.1.11.2 j. Check ALB34-F07 extinguishes.

CUE: “SS reports ALB34-F07 alarm is clear”

Standard: Control Room alarm window is clear.

Comment:

Step 4.4.3 of 13011-1, “Residual Heat Removal System”

4.4.3 b. Install the annunciator card associated with ALB34-E07 and check ALB34-E07 illuminates.

CUE: “SS reports ALB34-E07 annunciator card is installed and alarm is illuminated”

Standard: Alarm card installed and illuminated.

Comment:

*4.4.3 c. At 1DD1I6N unlock and close disconnect for 1-HV-8702A.

CUE: “Indicate starter input breaker is in close position”

Note to Examiner: Disconnect is locked with a company “B” lock. Discussion of key check out from C & T may be appropriate.

Standard: Simulation of placing Disconnect in on (Handle up) position. (Disconnect located on wall in same room as inverter).

Comment:

4.4.3 d. Check ALB34-E07 extinguishes.

CUE: *“SS reports ALB34-E07 alarm is clear”*

Standard: Control Room alarm window is clear.

CUE: *“Extra operator will perform the rest of section 4.4”*

Comment:

Terminating cue: Student returns initiating cue sheet.

Verification of Completion

Job Performance Measure No: V-NRC-JP-13405-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: _____

Initial Conditions: Unit 1 is in Mode 4 and preparing for cooldown and entry into Mode 5. The operators are preparing to place RHR Train "A" in service for continued cooldown. 1DD1B is already in service.

Initiating Cue: The Shift Supervisor has directed you to place RHR loop inlet isolation inverter 1DD1I6 in service and energize 1-HV-8702A starting with step 4.4.3 of 13011-1, Residual Heat Removal System.