REGION II

INITIAL LICENSE EXAMINATION

JOB PERFORMANCE MEASURE

CRO-111

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Withdrawal of Safety Rod Group 1 to 50%

Alternate Path:

Yes

Facility JPM #:

New

K/A Rating(s):

System: 001
K/A: G2.2.2
Rating: 4.6/4.1

Task Standard:

Begin withdrawal Of Safety Rod Group 1 To 50% and manually trip the reactor when CRD temperature limits are exceeded per OMP 1-18.

Preferred Evaluation Location:

Simulator __X___ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

OP/1/A/1105/019 (Rev 020) (Control Rod Drive System) Encl. 4.3 (Withdrawal Of Safety Rod Group 1 To 50%)
OMP 1-18 (Rev 030) Implementation Standards During Abnormal and Emergency Events

Validation Time: 10 min. **Time Critical:** No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

RECALL Snap 205

IMPORT CRO-111 Simulator files

Go To **RUN**

FIRE Timer 1 when CRD Group 1 withdrawal begins

Tools/Equipment/Procedures Needed

OP/1/A./1105/019 (Control Rod Drive System) Encl. 4.3 (Withdrawal Of Safety Rod Group 1 To 50%)

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 startup in progress

OP/1/A/1102/001 (Controlling Procedure For Unit Startup) Enclosure 4.13 CRD Patch Verification in progress

Tc = 342°F

RCS pressure = 567 psig

INITIATING CUE

The Control Room SRO directs you to withdraw CRD Group 1 to 50% per OP/1/A/1105/019 (Control Rod Drive System) Enclosure 4.3 (Withdrawal Of Safety Rod Group 1) beginning at Step 2.1.

The OSM has determined it is NOT desired to latch CRD Groups 2 thru 7 at this time.

START TIME: _____

STEP 1: STANDARD: COMMENTS:	Step 2.1 Perform the following: (R.M.) Ensure RUN is ON. Ensure SINGLE SELECT SWITCH to ALL. Determine control rod speed switch is selected to RUN by observing light indication on the Diamond. Determine SINGLE SELECT SWITCH is selected to ALL on the Diamond. Continue to Step 2.2	___ SAT ___ UNSAT
STEP 2: STANDARD: COMMENTS:	Step 2.2 and 2.2.1 Perform latch and PI alignment of CRD Groups, as follows: **WHILE** CRDs are moving, monitor the following indications: • CRD position • Appropriate ranged NIs • Startup Rate As CRDs are withdrawn monitor the above indications. Continue to Step 2.2.2	___ SAT ___ UNSAT

CRITICAL STEP

NOTE: When LATCH AUTO is selected, the following automatically occurs:
- Group/Rod inserts to latch rods (CRD TRAVEL "In" light ON)
- Group/Rod withdraws to test for latching (CRD TRAVEL "Out" light ON)
- Group/Rod inserts (CRD TRAVEL "In" light ON)
- RPI resets.
- Group In Limit light on Diamond will momentarily extinguish then illuminate.

STEP 3: Step 2.2.2
Perform Latch and PI alignment of Group 1, as follows: (R.M.)

A. Ensure GROUP SELECT SWITCH to 1.

B. Ensure only Group 1 CONTROL ON lights are ON. (PI panel) {9}

C. Select LATCH AUTO.

D. **WHEN** Auto Latch is complete:
- Verify LATCH AUTO is OFF.
- Verify Group 1 0% lights are ON. (PI Panel)
- Verify Group 1 API/RPI indications agree. (PI Panel)

___ SAT

___ UNSAT

NOTE: The Reactor is manually tripped prior to the Shutdown Bypass automatic RPS trip on Unit Startup. For this reason, only Group 1 is required to be latched during a Unit Startup when RCS pressure < 2100 psig.

STANDARD: Rotate GROUP SELECT SWITCH to 1.

Determine that only Group 1 CONTROL ON lights are "ON" on the PI panel.

Depress the LATCH AUTO pushbutton.

WHEN Auto Latch is complete:
- Verify LATCH AUTO is OFF.
- Verify Group 1 0% lights are ON. (PI Panel)
- Verify Group 1 API/RPI indications agree using the position switch on the PI Panel.

Continue to Step 2.2.3

COMMENTS:

STEP 4: Step 2.2.3
IF RCS pressure < 2100 psig, perform **one** of the following:
- Go To Step 2.3.
- Perform the remainder of enclosure to latch Groups 2 thru 7.

___ SAT

STANDARD: **Go To** Step 2.3.

Continue to Step 2.3

___ UNSAT

COMMENTS:

STEP 5:	Step 2.3 Select FAULT RESET.	**CRITICAL STEP**
STANDARD:	Depress the FAULT RESET pushbutton located on the diamond. Continue to Step 2.4	___ SAT
COMMENTS:		___ UNSAT
STEP 6:	Step 2.4 Select Group 1, as follows: (R.M.) • Ensure GROUP SELECT SWITCH to 1. • Ensure only Group 1 CONTROL ON lights are ON. (PI panel)	
STANDARD:	Determine the GROUP SELECT SWITCH is selected to 1. Determine that only Group 1 CONTROL ON lights are "ON" on the PI panel. Continue to Step 2.5	___ SAT ___ UNSAT
COMMENTS:		
STEP 7:	Step 2.5 Begin Group 1 withdraw to 50%. (R.M.)	**CRITICAL STEP**
STANDARD:	Begin Group 1 withdrawal to 50% using the Joy Stick located on the Diamond.	___ SAT
ALTERNATE PATH:	**As rods are withdrawn, CRD temperatures will begin to increase.**	___ UNSAT
COMMENTS:		
STEP 8:	OMP 1-18 Attachment A Step 1.17 Initiate a manual reactor trip if any of the following conditions exist: • Two or more CRDM stator temperatures > 180°F	**CRITICAL STEP**
STANDARD:	When two or more CRD temperatures exceed 180°F then manually trip the reactor.	___ SAT
COMMENTS:		___ UNSAT
	END OF TASK	

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
3	This step is required to latch group 1 control rods.
5	This step is required to withdraw group 1 control rods.
7	This step is required to withdraw group 1 control rods.
8	This step is required to trip the reactor when CRD temperature limits are exceeded.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 startup in progress

OP/1/A/1102/001 (Controlling Procedure For Unit Startup) Enclosure 4.13 CRD Patch Verification in progress

Tc = 342°F

RCS pressure = 567 psig

INITIATING CUE

The Control Room SRO directs you to withdraw CRD Group 1 to 50% per OP/1/A/1105/019 (Control Rod Drive System) Enclosure 4.3 (Withdrawal Of Safety Rod Group 1) beginning at Step 2.1.

The OSM has determined it is NOT desired to latch CRD Groups 2 thru 7 at this time.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-207

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Pressure makeup to Core Flood Tank

Alternate Path:

No

Facility JPM #:

CRO-55

K/A Rating(s):

System: 006
K/A: A1.13
Rating: 3.5/3.7

Task Standard:

Follow OP/1/A/1104/001 (Core Flooding System) to increase CFT pressure

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

OP/1/A/1104/001 (Core Flooding System), rev 073

Validation Time: 10 minutes

Time Critical: NO

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS

1. **RECALL** Snap 206
2. **IMPORT** files for CRO- 207
3. Go to **RUN**

Tools/Equipment/Procedures Needed

OP/1/A/1104/001 (Core Flooding System) Enclosure 4.7 (Pressure Makeup To CFTs Using Nitrogen) Rev. 73

READ TO OPERATOR

DIRECTION TO TRAINEE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 is operating at 100% power

Core Flood Tank low pressure statalarm is actuated

OP/1/A/1104/001 (Core Flooding System) Enclosure 4.7 (Pressure Makeup To CFTs Using Nitrogen) is in progress

INITIATING CUES

The CR SRO directs you to complete the pressurization of the affected CFT by pressurizing to ≈ 605 psig beginning at step 2.1 of Enclosure 4.7

START TIME: _____

STEP 1: Step 2.1 Notify operator to open 1N-137 (CFTs Supply). (A-2-Hallway) STANDARD: Direct non-licensed operator to take a radio, open 1N-137, communicate when the valve is open, and standby for further instruction. ***Booth cue: Inform student that 1N-137 is OPEN and you are standing by for further instructions.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 2: Step 2.2 **IF** required to increase pressure in 1A CFT: STANDARD: Determine that 1A CFT is has low pressure by observing either: The computer point for Core Flood Tank "A" on the Operator Aid Computer. **OR** "1A" Core Flood Tank pressure gauge located on 1VB2. Continue to step 2.2.1 COMMENTS:	___ SAT ___ UNSAT
NOTE: TS 3.6.3 Condition 'B' requires penetration flow path to be isolated within one hour. A check valve with flow secured through the valve is considered operable. STEP 3: Step 2.2.1 Enter Technical Specification 3.6.3 Condition 'A' and 'B'. STANDARD: Notify the CR SRO to enter Technical Specification 3.6.3 Condition 'A' and 'B'. ***Cue: Inform candidate that step 2.2.1 is complete and signed off*** COMMENTS:	___ SAT ___ UNSAT

STEP 4:	~~Step 2.2.2~~ Open 1N-298 (N2 FILL CORE FLOOD TANK 1A). STANDARD: Open 1N-298 the "1A" Core Flood Tank nitrogen fill valve, located on 1VB2. Verify RED OPEN indicating light lit; Green CLOSE light off. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 5:	Step 2.2.3 **IF** 1N-128 (CFT 1A Supply) is closed due to 1N-298 leaks past seat, throttle 1N-128 (CFT 1A Supply) for a rate of ≤ 100 psig per 15 minutes (≈ 6.6 psig/min). (A-4-409) STANDARD: Determine 1N-128 is NOT closed. Continue to Step 2.2.4. ***Cue: If asked, inform candidate that 1N-128 is not closed.*** COMMENTS:	___ SAT ___ UNSAT
STEP 6:	Step 2.2.4 Monitor 1A CFT pressure. STANDARD: Observe computer point or pressure gauge for "1A" Core Flood Tank on 1VB2 and verify Core Flood Tank pressure is increasing. COMMENTS:	___ SAT ___ UNSAT

STEP 7:	~~Step 2.2.5~~ **IF AT ANY TIME** ES actuation occurs, close 1N-298 (N2 FILL CORE FLOOD TANK 1A).	___ SAT
STANDARD:	Determine ES actuation has not occurred by observing: Statalarm Panel 1SA-1 Alarm 10 and 11 on rows A thru D NOT in alarm	___ UNSAT
COMMENTS:		
STEP 8:	Step 2.2.6 **WHEN** pressurization of 1A CFT complete, close 1N-298 (N2 FILL CORE FLOOD TANK 1A).	**CRITICAL STEP** ___ SAT
STANDARD:	Close the 1N-298 located on 1VB2 when Core Flood Tank pressure is approximately 605 psig (595 psig to 615 psig). Verify CFT pressure stops increasing.	___ UNSAT
COMMENTS:		
	END TASK	

STOP TIME: _____

CRITICAL STEP EXPLANATIONS

STEP #	EXPLANATION
1	Valve must be opened to pressurize CFT.
4	Required to pressurize the CFT.
8	Required to prevent over pressurizing the CFT.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 is operating at 100% power

Core Flood Tank low pressure Statalarm is actuated

OP/1/A/1104/001 (Core Flooding System) Enclosure 4.7 (Pressure Makeup To CFTs Using Nitrogen) is in progress

INITIATING CUES

The CR SRO directs you to complete the pressurization of the affected CFT by pressurizing to ≈ 605 psig beginning at step 2.1 of Enclosure 4.7

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-302

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Perform 1RC-66 (PORV) Stroke Test

Alternate Path:

Yes

Facility JPM #:

CRO-101

K/A Rating(s):

System: 010
K/A: A4.03
Rating: 4.0/3.8

Task Standard:

Perform 1RC-66 (PORV) Stroke Test per procedure and close 1RC-4 when 1RC-66 fails to close.

Preferred Evaluation Location:

Simulator __X___ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

PT/1/A/0201/004 (Rev 009) (1RC-66 Stroke Test)

Validation Time: 10 min. **Time Critical:** No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

RECALL Snap 202

PLACE "T/O Sheet CR Tags" on Component Drain and QT pump switches.

Tools/Equipment/Procedures Needed

PT/1/A/0201/004 [1RC-66 (PORV) Stroke Test]
Stopwatch

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 RCS pressure is at approximately 40 psig (Low Range Cooldown Pressure)

The Quench Tank is aligned in recirc per OP/1/A/1104/017 (QT Operation)

A steam bubble has been established in the Pressurizer

PT/1/A/0201/004, 1RC-66 Stroke Test is in progress.

INITIATING CUE

The CRSRO directs you are to complete PT/1/A/0201/004 (1RC-66 Stroke Test) beginning at Step 12.4.

Note: Prior to the JPM, a brief will be held with the candidate to explain the role of the "extra RO" and the operation of the stop watch.

START TIME: _____

STEP 1:	Step 12.4 Verify operability of 1RC-4 (PRZ RELIEF BLOCK) as follows: • Close 1RC-4 (PRZ RELIEF BLOCK). • Open 1RC-4 (PRZ RELIEF BLOCK).	
STANDARD:	Close 1RC-4 by rotating the switch to close and verifying that the green close light illuminates and the red open light goes out. Open 1RC-4 by rotating the switch to open and verifying that the green close light goes out and the red open light illuminates. Continue to Step 12.5	___ SAT ___ UNSAT
COMMENTS:		
NOTE: • Quench Tank pressure change should be minimal during PORV operation. • If Quench Tank High Pressure alarm is received, Pressurizer Steam Bubble may be inadequate.		
STEP 2:	Step 12.5 and 12.5.1 Open 1RC-66 (PORV) as follows: • Record O1A1568 "RC-66 RELIEF OUTLET TEMP": _____ °F Continue to Step 12.5.2	___ SAT
STANDARD:	Refer to the OAC and record O1A1568 "RC-66 RELIEF OUTLET TEMP": _____ °F Continue to Step 12.5.2	___ UNSAT
COMMENTS:		
STEP 3:	Step 12.5.2 Position the 1RC-66 SETPOINT SELECTOR to "OPEN".	**CRITICAL STEP**
STANDARD:	Candidate rotates the 1RC-66 SETPOINT SELECTOR to "OPEN". Continue to Step 12.5.3	___ SAT ___ UNSAT
COMMENTS:		

	CRITICAL STEP
NOTE: • 1RC-66 remains open when the "OPEN PERMIT" Pushbutton is released until 1RC-66 SETPOINT SELECTOR position is changed to "LOW". • It is permissible to leave 1RC-66 open while recording stroke time on Valve Data Sheet. STEP 4: Step 12.5.3 Simultaneously perform the following: • Depress the 1RC-66 "OPEN PERMIT" pushbutton. • Start stopwatch. STANDARD: Depresses the 1RC-66 "OPEN PERMIT" pushbutton. Continue to Step 12.5.4 **Note: The "extra RO" will operate the stopwatch.** COMMENTS:	___ SAT ___ UNSAT
STEP 5: Step 12.5.4 When PORV flow monitor indicates flow, stop stopwatch. STANDARD: The "extra RO" will operate the stopwatch. Continue to Step 12.5.5 COMMENTS:	___ SAT ___ UNSAT
STEP 6: Step 12.5.5 Record open stroke time on Valve Data Sheet. STANDARD: The "extra RO" will record the stroke time on the Valve Data Sheet. Continue to Step 12.5.6 COMMENTS:	___ SAT ___ UNSAT

STEP 7:	Step 12.5.6 Simultaneously perform the following: • Select "LOW" on 1RC-66 SETPOINT SELECTOR. • Start Stopwatch. STANDARD: Rotate the 1RC-66 SETPOINT SELECTOR to "LOW" on 1UB1. Continue to Step 12.5.7 **ALTHERNATE PATH: 1RC-66 will NOT close.** COMMENTS:	___ SAT ___ UNSAT
STEP 8:	Step 12.5.7 Perform EITHER: • **WHEN** PORV flow monitor indicates no flow, stop stopwatch. • **IF** 1RC-66 (PORV) fails to close, immediately close 1RC-4 (PRZ RELIEF BLOCK). STANDARD: Determine 1RC-66 did not close and close 1RC-4 by rotating the switch to the closed position and verifying that the red open light goes out and the green close light illuminates. COMMENTS: **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
3	This step is required to open 1RC-66
4	This step is required to open 1RC-66
8	This step is required to stop flow through 1RC-66.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 RCS pressure is at approximately 40 psig (Low Range Cooldown Pressure)

The Quench Tank is aligned in recirc per OP/1/A/1104/017 (QT Operation)

A steam bubble has been established in the Pressurizer

PT/1/A/0201/004, 1RC-66 Stroke Test is in progress.

INITIATING CUE

The CRSRO directs you are to complete PT/1/A/0201/004 (1RC-66 Stroke Test) beginning at Step 12.4.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-405

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Align ECCS Suction to the Emergency Sump

Alternate Path:

Yes

Facility JPM #:

CRO-096

K/A Rating(s):

System: BW/E08
K/A: EA1.1
Rating: 4.0/3.7

Task Standard:

Enclosure 5.12, ECCS Suction Swap to RBES is properly completed to align ECCS to the Emergency sump.

Preferred Evaluation Location:

Simulator __X___ In-Plant _____

Preferred Evaluation Method:

Perform __X__Simulate _____

References:

EP/1/A/1800/01, (Rev 038A) LOCA CD
Enclosure 5.12 (Rev 038A) (ECCS Suction Swap to RBES) of the EOP

Validation Time: 15 minutes **Time Critical:** NO

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS

1. **Recall** 204
2. **Import** files for CRO-405
3. **Go** to run
4. Timer 3 will lower BWST Level to < 15' if needed at step 4
5. Timer 4 will lower BWST Level to < 9' if needed at step 5
6. Timer 4 will lower BWST Level to < 6' if needed at step 7

Tools/Equipment/Procedures Needed

Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP

READ TO OPERATOR

DIRECTION TO TRAINEE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

A large break LOCA has occurred which is depleting the BWST.

INITIATING CUES

The Control Room SRO directs you to Align ECCS Suction to the Emergency Sump per Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP.

START TIME: _____

STEP 1:	Step 1 Start both of the following: • 1A LPI Pump • 1B LPI Pump	
STANDARD:	Locates control switches for 1A and 1B LPI Pumps on 1UB2 and observes red ON lights are illuminated and pump amps indicated. Continue to Step 2	___ SAT ___ UNSAT
COMMENTS:		
STEP 2:	Step 2 Verify either: • LPI FLOW TRAIN A plus LPI FLOW TRAIN B ≥ 3400 gpm • Only one LPI header is operating, **AND** flow in that header is ≥ 2900 gpm	
STANDARD:	Candidate should determine that step is met by observing LPI FLOW TRAIN A plus LPI FLOW TRAIN B is ≥ 3400 gpm. Flow gauges are located on 1UB2. Continue to Step 3	___ SAT ___ UNSAT
COMMENTS:		
STEP 3:	Step 3 **GO TO** Step 52	
STANDARD:	GO TO Step 52. Continue to Step 52	___ SAT
COMMENTS:		___ UNSAT

STEP 4:	Step 52 **WHEN** ~~BWST level is~~ ≤ 15', **THEN** stop all HPI pumps.	**CRITICAL STEP**
STANDARD:	Locates the BWST level gauges on 1UB2. The candidate determines level to be ≤ 15'. or May obtain BWST level from the OAC (Operator Aid Computer), at 1UB1, 1UB2, or STA monitor. or ICCM monitors on 1UB1. Candidate places control switch for any operating HPI pump in the TRIP or PTL position and observes all HPI pumps are not operating by the red ON lights not illuminated. Continue to Step 53 ***Cue: If needed, inform candidate that using time compression BWST level will be lowered to < 15' and RB level will be increased.***	___ SAT ___ UNSAT
COMMENTS:		
NOTE RB level of ≥ 2' is expected when BWST level reaches 9'.		
STEP 5:	Step 53 **WHEN** BWST level ≤ 9', **AND** RB level is rising, **THEN** continue procedure.	
STANDARD:	Observes BWST level < 9 feet on gauges on 1UB2 or from the OAC (1UB1, 1UB2, or STA monitor) or the ICCM monitors on 1UB1. Continue to Step 54 ***Cue: If needed, inform candidate that using time compression BWST level will be lowered to < 9' and RB level will be increased.***	___ SAT ___ UNSAT
COMMENTS:		

STEP 6:	Step 54 ~~Simultaneously~~ open ~~the following~~: • 1LP-19 (1A RB Suction) • 1LP-20 (1B RB Suction)	**CRITICAL STEP**
STANDARD:	Candidate locates the control switch for 1LP-19 ('1A' RX. BLDG. SUCTION) on 1UB2 and rotates the switch in the OPEN direction. Observes red OPEN light comes on, and green CLOSED light goes off. Then locates the control switch for 1LP-20 ('1B' RX. BLDG. SUCTION) on 1UB2 and rotates the switch in the OPEN direction. Observes red OPEN light comes on, and green CLOSED light goes off. Continue to Step 55	___ SAT ___ UNSAT
COMMENTS:		
STEP 7:	Step 55 **IAAT** BWST level ≤ 6', **THEN** perform Steps 56 – 59.	
STANDARD:	Candidate verifies BWST level ≤ 6' using: BWST level gauges on 1UB2. BWST level from the OAC, at 1UB1, 1UB2, or STA monitor. ICCM monitors on 1UB1. When BWST level is ≤ 6' go to the IAAT step and then perform Steps 56 through 59 Continue to Step 56	___ SAT ___ UNSAT
Cue:	***If needed, inform candidate that using time compression BWST level will be lowered to < 6' and RB level will be increased.***	
COMMENTS:		
STEP 8:	Step 56 Verify 1LP-19 open. (1A RB Suction)	
STANDARD:	Locates the control switch for 1LP-19 on 1UB2 and observes red OPEN light is illuminated. Continue to Step 57	___ SAT ___ UNSAT
COMMENTS:		

STEP 9:	Step 57 ~~Verify 1LP-20 open. (1B RB Suction)~~	
STANDARD:	Locates the control switch for 1LP-20 on 1UB2 and observes red OPEN light is illuminated. Continue to Step 58	___ SAT ___ UNSAT
COMMENTS:		
STEP 10:	Step 58 Simultaneously close the following: • 1LP-21 (1A LPI BWST Suction) • *1LP-22 (1B LPI BWST Suction)	***CRITICAL STEP**
STANDARD:	The candidate locates the control switch for 1LP-21 on 1UB2 and rotates it in the CLOSE direction.	___ SAT
ALTERNATE PATH: 1LP-21 will not close.		
	The candidate then locates the control switch for 1LP-22 on 1UB2 and rotates it in the CLOSE direction. Observes green closed light on and red open light off. Candidate recognizes that 1LP-21 did not close by observing green closed light off and red open light on. Continue to Step 58 RNO	___ UNSAT
COMMENTS:		
STEP 11:	Step 58 **RNO** **IF** 1LP-21 fails to close, **THEN** perform the following: • Stop 1A LPI PUMP. • Stop 1A RBS PUMP.	**CRITICAL STEP**
STANDARD:	Locates LPI Pump "A" control on 1UB2 and turns pump switch to "off". Red light is observed off and white light on. Locates RB Spray Pump "A" control on 1UB2. MANUAL pushbutton for ES channel 7 is depressed. RB Spray Pump "A" switch is rotated to the OFF position. Green OFF light is lit and the red RUN light is off. Continue to Step 59	___ SAT ___ UNSAT
COMMENTS:		

STEP 12:	Step 59 ~~Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST).~~	**CRITICAL STEP**
STANDARD:	An operator is dispatch to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST).	___ SAT
	Booth cue: An operator has been dispatched to close 1LP-28.	___ UNSAT
	Cue: Inform candidate task is complete and another RO will continue with this task.	
	COMMENTS:	
	END TASK	

STOP TIME: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
4	Protects HPI pumps
6	Aligns LPI Pump suction to Reactor Building Emergency Sump.
10	Secures LPI Pump suction from the BWST.
11	1A LPI and 1A RBS pumps are secured to prevent damage.
12	Close 1LP-28 (BWST Isolation) - Isolates suction from the BWST.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

A large break LOCA has occurred which is depleting the BWST.

INITIATING CUES

The Control Room SRO directs you to Align ECCS Suction to the Emergency Sump per Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-407

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Establish EFDW flow through Startup valves

Alternate Path:

Yes

Facility JPM #:

CRO-015

K/A Rating(s):

System: APE-054
K/A: AA2.04
Rating: 4.2/4.3

Task Standard:

EFDW flow is established to the affected header through the startup valve.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

EOP Rule 3 (Rev 038A), (Loss of Main or Emergency FDW)
EOP Rule 7 (Rev 038A), (SG Feed Control)
EOP Enclosure 5.27 (Rev 038A), (Alternate Methods for Controlling EFDW Flow)

Validation Time: 10 minutes **Time Critical:** NO

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS

1. **Recall** Snap 207
2. **Import** files for CRO-407
3. Go to **RUN**

Tools/Equipment/Procedures Needed

EOP Rule 3, Loss of Main and Emergency Feedwater

EOP Encl 5.27, Alternate Methods for Controlling EFDW Flow

READ TO OPERATOR

DIRECTION TO TRAINEE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

The reactor has just tripped from 25% power

Immediate Manual Actions are complete

INITIATING CUES

The SRO directs you to perform a Symptoms Check

START TIME: _____

STEP 1:	Performs a Symptom Check	
STANDARD:	Performs Symptom Check and determines that there are no symptoms to report but will perform Rule 3 due to a loss of Main Feedwater	___ SAT
	Cue: CR SRO acknowledges performing Rule 3 due to a Loss of Main Feedwater.	
COMMENTS:		___ UNSAT
STEP 2:	Rule 3: Step 1 Verify loss of Main FDW/EFDW is due to Turbine Building Flooding.	
STANDARD:	Observes that TB Flooding is NOT occurring by 2SA-18/A-11 (Turbine BSMT Water Emergency High Level) NOT illuminated. (OP/2/A/6102/018)	___ SAT
	Candidate will perform RNO step and **GO TO** step 3.	___ UNSAT
COMMENTS:		
STEP 3:	Rule 3: Step 3 **IAAT NO** SGs can be fed with FDW (Main/CBP/Emergency), **AND** any of the following exist: • RCS pressure reaches 2300 psig **OR** NDT limit • Pzr level reaches 375" [340" acc] **THEN PERFORM** Rule 4 (Initiation of HPI Forced Cooling).	___ SAT
STANDARD:	Candidate determines rule 4 is not required.	
	Continue to Step 4.	___ UNSAT
COMMENTS:		
STEP 4	Rule 3: Step 4 Start operable EFDW pumps, as required, to feed all intact SGs.	
STANDARD:	Observes MD EFDWP & TD EFDWP running with switch lights on and normal discharge pressure.	___ SAT
	Continue to Step 5.	
COMMENTS:		___ UNSAT

STEP 5:	Rule 3: Step 5 Verifies that any EFDW Pump is operating.	
STANDARD:	Checks MD EFDWP & TD EFDWP switch lights are on and Pumps have normal discharge pressure. Continue to Step 6.	___ SAT
COMMENTS:		___ UNSAT
STEP 6:	Rule 3: Step 6 **GO TO** step 37.	
STANDARD:	**GO TO** step 37.	___ SAT
COMMENTS:		___ UNSAT
STEP 7:	Rule 3: Step 37 **IAAT** an EFDW valve **CANNOT** control in AUTO, **OR** manual operation of EFDW valve is desired to control flow/level, **THEN** perform Steps 38 - 42.	
ALTERNATE PATH		___ SAT
STANDARD:	Determines that 1FDW-315 is NOT controlling properly (1A SG level is < 30" and decreasing). Concludes that 1FDW-315 has failed closed. Continue to Step 38.	___ UNSAT
COMMENTS:		
STEP 8:	Rule 3: Step 38 Place EFDW valve in MANUAL.	
STANDARD:	Place 1FDW-315 in MANUAL by depressing the A/M pushbutton on the Moore controller. Continue to Step 39.	___ SAT
COMMENTS:		___ UNSAT

STEP 9:	Rule 3: Step 39 Control EFDW flow with EFDW valve in MANUAL.	
STANDARD:	Determine that 1FDW-315 will NOT control in MANAUL. Perform **RNO, GO TO** Step 41. Continue to step 41	___ SAT ___ UNSAT
COMMENTS:		
STEP 10:	Rule 3: Step 41 Notify CR SRO that Encl 5.27 (Alternate Methods for Controlling EFDW Flow) is being initiated.	
STANDARD:	Removes Encl. 5.27 from EOP and initiates.	___ SAT
Cue: CR SRO acknowledges entry into Enclosure 5.27.		
COMMENTS:		___ UNSAT
STEP 11:	Encl 5.27: Step 1 Identify the failure: 1FDW-315 has Failed CLOSED [**GO TO** Step 2]	
STANDARD:	Candidate determines the next procedural step from table in Step 1. Continue to Step 2.	___ SAT
COMMENTS:		___ UNSAT
STEP 12:	Encl 5.27: Step 2 Verify 1A MD EFDWP is operating	
STANDARD:	Candidate verifies 1A MD EFDWP is operating. Verify red light on and green light off and normal discharge pressure. Continue to Step 3.	___ SAT
COMMENTS:		___ UNSAT

STEP 13:	Encl 5.27: Steps 3 Stop 1A MD EFDWP	**CRITICAL STEP**
STANDARD:	Candidate places switch to OFF. Verify red light off and white light illuminated. Continue to Step 4.	___ SAT
COMMENTS:		___ UNSAT
STEP 14:	Encl 5.27: Step 4 Verify 1B MD EFDWP is operating.	
STANDARD:	Candidate verifies 1B MD EFDWP is operating. Verify red light on and green light off and normal discharge pressure. Continue to Step 5.	___ SAT
COMMENTS:		___ UNSAT
STEP 15:	Encl 5.27: Step 5 Place 1 TD EFDW Pump in PULL TO LOCK	**CRITICAL STEP**
STANDARD:	Candidate places the U1 TD EFDW Pump in PULL to LOCK and verifies red light is out and green light is lit. Continue to Step 6.	___ SAT
COMMENTS:		___ UNSAT
STEP 16:	Encl 5.27: Step 6 Place 1FDW-35 in HAND and set demand to 0%	**CRITICAL STEP**
STANDARD:	Candidate places 1FDW-35 in HAND and uses toggle switch to reduce demand to 0%. Continue to Step 7.	___ SAT
COMMENTS:		___ UNSAT

STEP 17:	Encl 5.27: Step 7 Close 1FDW-33	**CRITICAL STEP**
STANDARD:	Candidate closes SU Control Block Valve (1FDW-33) and verifies red light is out and green light is lit. Continue to Step 8.	___ SAT
COMMENTS:		___ UNSAT
STEP 18:	Encl 5.27: Step 8 Verify 1A MD EFDWP will be used.	
STANDARD:	Candidate determines that the 1A MD EFDWP will be used. Continue to Step 9.	___ SAT
	Cue: If candidate asks if 1A MD EFDWP will be used, inform him that the CR SRO directs using the 1A MD EFDWP.	___ UNSAT
COMMENTS:		
STEP 19:	Encl 5.27: Step 9 Open 1FDW-374	**CRITICAL STEP**
STANDARD:	Candidate locates and opens 1FDW-374 and observes green closed light off and red open light on. Continue to Step 10.	___ SAT
COMMENTS:		___ UNSAT
STEP 20:	Encl 5.27: Step 10 Verify the following: • 1FDW-36 closed • 1FDW-38 open	
STANDARD:	Candidate locates and closes 1FDW-36 and observes green closed light on and red open light off on 1VB3 or uses OAC indication. Candidate locates and opens 1FDW-38 and observes green closed light off and red open light lit on 1VB3 or uses OAC indication. Continue to Step 11.	___ SAT ___ UNSAT
COMMENTS:		

STEP 21: Encl 5.27: Step 11 Start 1A MD EFDWP STANDARD: Candidate places 1A MD EFDWP switch to RUN and verifies pump start by observing white light is off and red light is lit and proper discharge pressure. Continue to Step 12. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
NOTE: Flow from the TD EFDWP through a S/U control valve should be read on the FDW SU FLOW gauge. Flow from MD EFDWP through a S/U control valve should be read on the MDEFWP DISCH FLOW gauge. STEP 22: Encl 5.27: Step 12 Verify either of the following exists: • HPI Forced Cooling is maintaining core cooling • CBP Feed providing SG feed STANDARD: Candidate determines that neither condition is met and goes to the RNO. Continue to Step 12 **RNO**. COMMENTS:	___ SAT ___ UNSAT
STEP 23: Encl 5.27: Step 12 **RNO** **IF** any SG is being fed, **THEN** perform the following: • Throttle 1FDW-35 to establish 100 gpm. • Throttle 1FDW-35 to obtain desired SG level per Rule 7 (SG Feed Control) Notify CR SRO of SG Feed Status (**not critical**) STANDARD: Candidate throttles 1FDW-35 to attain ~ 100 gpm flow initially on MD EFWP DISCH FLOW gauge or OAC EFW graphic, then throttles 1FDW-35 as necessary to establish ~ 25" XSUR (per Rule 7 table 4) Rule 7 Table 4 specifies the level to establish when using EFDWP is 30" (use MFDW setpoint if feeding via S/U CVs). The MFDW setpoint (i.e. when using the S/U CVs) is 25". **Note: The candidate does not need to establish this level to complete the JPM. 1FDW-35 must be open and SG level increasing.** COMMENTS: **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
13	This step is required to ensure the valves will operate.
15	This step is required to ensure the valves will operate.
16	This step is required to align the MD EFDWP to the S/U header.
17	This step is required to align the MD EFDWP to the S/U header.
19	This step is required to align the MD EFDWP to the S/U header.
21	This step is required to start the 1A MD EFDWP and provide a SG feed source.
23	This step is required to establish flow to the 1A SG.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

The reactor has just tripped from 25% power

Immediate Manual Actions are complete

INITIATING CUES

The SRO directs you to perform a Symptoms Check

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-503

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Perform EOP Encl 5.35 (Containment Isolation)

Alternate Path:

Yes

Facility JPM #:

New

K/A Rating(s):

System: 103
K/A: G2.1.23
Rating: 4.3/4.4

Task Standard:

Perform EOP Encl 5.35 (Containment Isolation) correctly.

Preferred Evaluation Location:

Simulator ___X___ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

EOP Encl 5.35 (Rev 038A) (Containment Isolation)

Validation Time: 10 min. **Time Critical:** No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

RECALL Snap 203

IMPORT Simulator files for CRO-503

Tools/Equipment/Procedures Needed

EOP Encl 5.35 (Containment Isolation)

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 reactor trips from 100% power due to a spurious Main Turbine trip

RCS leak of 190 gpm occurs as result of the trip

EOP LOCA CD tab is in progress

INITIATING CUE

The CR SRO directs you to perform EOP Encl 5.35 (Containment Isolation)

START TIME: _____

STEP 1: Step 1
Verify Encl 5.1 (ES Actuation) is in progress or complete.

STANDARD: Determine ES has NOT actuated and perform the RNO step.

Continue to Step 1 RNO 1.

COMMENTS:

___ SAT

___ UNSAT

STEP 2: Step 1 RNO 1.
1. Close the following ES operated RB isolation valves:

***CRITICAL STEP**

√	ES Chan 1	√	ES Chan 2
	1HP-3*		1HP-5
	1HP-4		
	1GWD-12		1GWD-13
	1LWD-1		1LWD-2
	1CS-5		1CS-6
	1PR-1		1PR-2
	1PR-6		1PR-3
			1PR-4
			1PR-5
	1PR-7*		1PR-8*
	1PR-9*		1PR-10*
	1RC-5		1RC-7
	1RC-6		
	1FDW-105		1FDW-106
	1FDW-107		1FDW-108
			1FDW-103
			1FDW-104

___ SAT

___ UNSAT

STANDARD: The above valves are closed.

ALTERNATE PATH: 1HP-4 will NOT close.

Continue to Step 1 RNO 2.

COMMENTS:

STEP 3: STANDARD: COMMENTS:	Step 1 RNO 2. 2. **IF** 1HP-3 fails to close, **THEN** close 1HP-1 Observe that 1HP-3 is closed with red light off and green light on. Continue to Step 1 RNO 3.	___ SAT ___ UNSAT
STEP 4: STANDARD: COMMENTS:	Step 1 RNO 3. 3. **IF** 1HP-4 fails to close, **THEN** close 1HP-2 Determine 1HP-4 is open by observing red open light on and green closed light off. Position 1HP-2 switch in closed position and verify green closed light on and red open light off. Continue to Step 2	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 5: STANDARD: COMMENTS:	Step 2 Verify all RCPs off. Determine that all RCPs are operating by observing red on light lit and RCP amps indicate normal. Perform **RNO**. **GO TO** Step 5	___ SAT ___ UNSAT
STEP 6: STANDARD: COMMENTS:	Step 5 Rotate switches to the closed position for the following components. • 1LPSW-1054 • 1LPSW-1055 • 1LPSW-1061 • 1LPSW-1062 Rotate the above switches to the closed position located on 1VB3. Continue to Step 6	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 7:	Step 6 Verify the following components indicate closed. • 1LPSW-1054 • 1LPSW-1055 • 1LPSW-1061 • 1LPSW-1062	___ SAT
STANDARD:	Verify the above valves indicate closed by observing the green closed light is lit located on 1VB3. Continue to Step 7	___ UNSAT
COMMENTS:		
STEP 8:	Step 7 **EXIT** this enclosure.	___ SAT
STANDARD:	Exit the enclosure.	
COMMENTS:		___ UNSAT
	END OF TASK	

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
2	This step is critical to isolate the Reactor Building.
4	This step is critical as it since 1HP-4 is failed open 1HP-2 isolates this pathway.
6	This step is critical to isolate the Reactor Building.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 reactor trips from 100% power due to a spurious Main Turbine trip

RCS leak of 190 gpm occurs as result of the trip

EOP LOCA CD tab is in progress

INITIATING CUE

The CR SRO directs you to perform EOP Encl 5.35 (Containment Isolation)

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-603

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Perform A Manual Start Of Keowee Hydro Unit 1

Alternate Path:

No

Facility JPM #:

CRO-106

K/A Rating(s):

System: 062
K/A: A4.07
Rating: 3.1/3.1

Task Standard:

Keowee Hydro Unit 1 is manually started and synchronized to the 230 KV switchyard.

Preferred Evaluation Location:

Simulator ___X___ In-Plant _____

Preferred Evaluation Method:

Perform ___X___ Simulate _____

References:

OP/0/A/1106/019 (Rev 086) (Keowee Hydro At Oconee), Encl 4.3 (KHU-1 Manual Startup)

Validation Time: 15 min. **Time Critical:** No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

RECALL IC-41

Tools/Equipment/Procedures Needed

OP/0/A/1106/019 (Keowee Hydro At Oconee)

- Limits and precautions
- Encl 4.3 (KHU-1 Manual Startup)

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Keowee Unit 1 is aligned to the Overhead.

Keowee Unit 1 is to be manually started and tied to the grid.

This is NOT an emergency.

OP/0/A/1106/19, Enclosure 4.3 (KHU-1 Manual Startup) is in progress

INITIATING CUE

The CR SRO directs you to continue with a manual start of Keowee Unit 1, and tie it to the grid with no load, per OP/0/A/1106/19, Enclosure 4.3 beginning at Step 2.1.

START TIME: _____

STEP 1:	Step 2.1 Place UNIT 1 MASTER SELECTOR in "MAN". STANDARD: UNIT 1 MASTER SELECTOR switch positioned to "MAN". Continue to Step 2.2 COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 2:	Step 2.2 Place UNIT 1 SYNC 230 KV selector in "MAN". STANDARD: UNIT 1 SYNC 230 KV selector switch positioned to "MAN". Continue to Step 2.3 COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 3:	Step 2.3 **IF** this is **NOT** an emergency situation, notify Keowee operator to activate the Tailrace Rising Water Alarm Test button on CB-5. STANDARD: Determine this is not an emergency situation and notify Keowee Operator to activate the Tailrace Rising Water Alarm Test button on CB-5. ***Booth cue: Keowee operator (Casey Holder) reports Tailrace Rising Water Alarm Test button on CB-5 is active.*** Continue to Step 2.4 COMMENTS:	___ SAT ___ UNSAT
STEP 4:	Step 2.4 Place **AND** hold UNIT 1 LOCAL MASTER switch to "START" position for > 10 seconds until KHU starts. STANDARD: UNIT 1 LOCAL MASTER switch held in the "START" position for >10 seconds and verifies that the Turb 1 Gate Position increases on 2AB3. Continue to Step 2.5 COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 5:	Step 2.5 **WHEN** TURBINE 1 GATE POSITION indicator settles out: • Momentarily place EXCITER STOP/START to "START". • Verify EXCITER STOP/START Red START light ON, Green STOP light OFF.	**CRITICAL STEP**
STANDARD:	Candidate observes that the TURBINE 1 GATE POSITION has settled out and then: • Momentarily place EXCITER STOP/START to "START". • Observes EXCITER STOP/START Red START light ON, Green STOP light OFF and GEN FREQ is about 60 HZ and Keowee 1 Output volts is about 13.8 KV. Continue to Step 2.6	___ SAT ___ UNSAT
COMMENTS:		
STEP 6:	Step 2.6 **IF** required, synchronize KHU-1 to the grid: 2.6.1 Make the following adjustments concurrently as required: • Using UNIT 1 AUTO VOLTAGE ADJUSTER, match KEOWEE 1 LINE VOLTS with KEOWEE 1 OUTPUT VOLTS when 13.8 KV SYNCHROSCOPE pointer is vertical. • Adjust KHU-1 Generator speed with UNIT 1 SPEED CHANGER MOTOR until slow clockwise rotation of 13.8 KV SYNCHROSCOPE is established. 2.6.2 **WHEN** 13.8 KV SYNCHROSCOPE pointer is ≈ 5° before reaching vertical, close ACB 1 KEOWEE 1 GENERATOR BKR.	**CRITICAL STEP** ___ SAT ___ UNSAT
STANDARD:	2.6.1 Determine that KHU-1 is required to be synced to the grid and make the following adjustment: • UNIT 1 AUTO VOLTAGE ADJUSTER manipulated to match KEOWEE 1 LINE VOLTS with KEOWEE 1 OUTPUT VOLTS when 13.8 KV SYNCHROSCOPE pointer is vertical. • KHU-1 Generator speed adjusted with UNIT 1 SPEED CHANGER MOTOR until slow clockwise rotation of 13.8 KV SYNCHROSCOPE is established. 2.6.2 ACB 1 KEOWEE 1 GENERATOR BKR switch is taken to close when the 13.8 KV SYNCHROSCOPE pointer is ≈ 5° before vertical, and observes the red close light lit and the white open light off. Continue to Step 2.7	
COMMENTS:		

CAUTION: KHU-1 load should **NOT** be reduced below indicated zero (0) MWs.

STEP 7: Step 2.7
IF required, perform the following concurrently:

- Adjust load to zero (0) MWs with UNIT 1 SPEED CHANGER MOTOR.
- Adjust MVARS to zero (0) with UNIT 1 AUTO VOLTAGE ADJUSTER.

STANDARD: UNIT 1 AUTO VOLTAGE ADJUSTER manipulated to obtain ≈ zero (0) MVARS.

KHU-1 Generator speed manipulated to obtain ≈ zero (0) MWs.

COMMENTS:

___ SAT

___ UNSAT

END TASK

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
1	This step is required to manually start KHU-1.
2	This step is required to manually start KHU-1.
4	This step is required to start KHU-1.
5	This step is required to excite the KHU-1 generator.
6	This step is required to synchronize KHU-1 to the grid.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Keowee Unit 1 is aligned to the Overhead.

Keowee Unit 1 is to be manually started and tied to the grid.

This is NOT an emergency.

OP/0/A/1106/19, Enclosure 4.3 (KHU-1 Manual Startup) is in progress

INITIATING CUE

The CR SRO directs you to continue with a manual start of Keowee Unit 1, and tie it to the grid with no load, per OP/0/A/1106/19, Enclosure 4.3 beginning at Step 2.1.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-901

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Place the Reactor Building Purge In Operation

Alternate Path:

No

Facility JPM #:

CRO-100

K/A Rating(s):

System: 029
K/A: A2.03
Rating: 2.7/3.1

Task Standard:

RB Purge is placed in operation correctly per the procedure.

Preferred Evaluation Location:

Simulator ___X___ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

OP/1/A/1102/014 (Rev 042) RB Purge System

PT/0/A/0230/001 (Rev 159) Radiation Monitor Check

Validation Time: 15 min.

Time Critical: No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

RECALL Snap 201

Tools/Equipment/Procedures Needed

OP/1/A/1102/014 Encl. 4.1
PT/0/A/0230/001 (Radiation Monitor Check) Encl 13.2 (Unit 1 Process Monitor Setpoints)
Gaseous Release Permit

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 Plant Conditions:

- RCS temperature = 104°F
- RCS pressure = 36 psig
- No GWD or LWD releases are in progress
- RB Hatch is CLOSED
- Continuous release is NOT in progress
- RB Purge startup is in progress using OP/1/A/1102/014 (RB Purge System), Enclosure 4.1 (RB Purge Release)

INITIATING CUE

The CR SRO directs you to place the RB Purge in operation at 1/3 Station Limit using OP/1/A/1102/014, Enclosure 4.1, starting at Step 3.5.

START TIME: _____

STEP 1:	Step 3.5 Record Recommended Release Rate: **1.01 E7** cfm.	
STANDARD:	Record Recommended Release Rate on the procedure. Continue to Step 3.6	___ SAT
COMMENTS:		___ UNSAT
STEP 2:	Step 3.6 Perform the following: 3.6.1 Circle required approval level for release(s), including this one: All Releases at Station in Progress including this one — Approval Level 1/3 Station Limit - 1 GWR in progress — SRO 1/3 Station Limit - 2 GWRs in progress — OSM 1/3 Station Limit - 3 GWRs in progress — OSM 2/3 Station Limit - 1 GWR in progress — OSM 3.6.2 Document approval for release: _____ _____ Release Approver Date	___ SAT
STANDARD:	Determine that "1/3 Station Limit - 1 GWR in progress" applies and the required approval level is an SRO. Continue to Step 3.7	___ UNSAT
	Cue: When asked, state that Dean Porter (OSM) has approved this release.	
COMMENTS:		
	NOTE: During RB purge, vent stack radiation monitors should be operable.	
STEP 3:	Step 3.7 **IF** Unit Vent Stack RIA(s) are inoperable, refer to SLC 16.11.3.	___ SAT
STANDARD:	Determine that the Unit Vent Stack RIA(s) are NOT inoperable. Continue to Step 3.8	___ UNSAT
COMMENTS:		

STEP 4:	Step 3.8 Perform the following: • Ensure **one** of the following: ➢ 1A RB AUX FAN is Off. ➢ 1B RB AUX FAN is Off. • Ensure "T/O Sheet" Control Room Tag on 1A RB AUX FAN. • Ensure "T/O Sheet" Control Room Tag on 1B RB AUX FAN. • Ensure note on Turnover sheet: "If RB Purge Fan is operating, 1A RB Aux Fan or 1B RB Aux Fan should be off."	***CRITICAL STEP** ___ SAT
STANDARD:	*Secure the 1A or 1B RB AUX FAN and place a "T/O Sheet" Control Room Tag on the 1A and 1B RB AUX FAN control room switches. **Note: Placing tags on the RB Aux Fan switches in NOT critical.** Candidate should state they would place note on Turnover sheet: "If RB Purge Fan is operating, 1A RB Aux Fan or 1B RB Aux Fan should be off." Continue to Step 3.9	___ UNSAT
Cue: If asked as the SRO, inform the candidate that the 1A RB Aux Fan should be secured.		
COMMENTS:		

	NOTE: Completion of Step 3.9 establishes an appropriate vent path during Fuel Movement Operations with any Transfer Tube open per the Shutdown Protection Plan. This prevents FTC and SFP level variations caused by differential pressures between RB and SFP.	**CRITICAL STEP**
STEP 5:	Step 3.9 and 3.9.1 Perform the following: • Open 1PR-1 (RB PURGE OUTLET (RB)).	___ SAT
STANDARD:	Open 1PR-1 by rotating the switch located on 1AB3 to open and verifying that the red open light illuminates and the green closed light goes out. Continue to Step 3.9.2	___ UNSAT
COMMENTS:		

STEP 6:	Step 3.9.2 Open 1PR-2 (RB PURGE OUTLET (PR)).	**CRITICAL STEP**
STANDARD:	Open 1PR-2 by rotating the switch located on 1AB3 to open and verifying that the red open light illuminates and the green closed light goes out. Continue to Step 3.9.3	___ SAT ___ UNSAT
COMMENTS:		
STEP 7:	Step 3.9.3 Ensure closed 1PR-3 (RB PURGE FLOW). (Bailey Controller)	
STANDARD:	Rotate 1PR-3 controller knob until the position indication indicates zero. Continue to Step 3.9.4	___ SAT ___ UNSAT
COMMENTS:		
STEP 8:	Step 3.9.4 Perform the following: **NOTE:** When 1PR-3 (RB PURGE OUTLET SWITCH) is positioned to open, 1PR-3 will remain in the closed position since 1PR-3 Bailey Controller is closed. • Position 1PR-3 (RB PURGE OUTLET SWITCH) to open. • Throttle > 60% open 1PR-3 (RB PURGE FLOW). (Bailey Controller)	**CRITICAL STEP** ___ SAT
STANDARD:	Position 1PR-3 (RB PURGE OUTLET SWITCH) to open on 1VB2. Rotate knob on the Bailey Controller for 1PR-3 until it indicates > 60% open on 1AB3. Continue to Step 3.10	___ UNSAT
COMMENTS:		

STEP 9: Step 3.10

CRITICAL STEP

IF required to operate the RB Purge Fan, perform the following:

3.10.1 Perform **one** of the following:

A. Perform the following:

- Open 1PR-4 (RB PURGE INLET)
- Open 1PR-5 (RB PURGE INLET (PR))
- Open 1PR-6 (RB PURGE INLET (RB))

B. Ensure the following:

- 1PR-4 (RB PURGE INLET) valve position interlock jumpered per
- IP/0/A/0161/004 (Outage Interlock Bypass For Purge Isolation Valves)
- 1PR-5 (RB PURGE INLET (PR)) valve position interlock jumpered per IP/0/A/0161/004 (Outage Interlock Bypass For Purge Isolation Valves)
- 1PR-6 (RB PURGE INLET (RB)) valve position interlock jumpered per IP/0/A/0161/004 (Outage Interlock Bypass For Purge Isolation Valves)
- Open RB Equipment Hatch

___ SAT

___ UNSAT

NOTE: Starting/Stopping RB Purge may cause SFP level changes. Entry into AP/1&2/A/1700/35 not required if SFP level changes are evaluated and stabilizes as expected.

3.10.2 Start RB Purge Fan.

Note: The RB Purge fan has a 20 second delay to allow dampers to operate.

3.10.3 Ensure 1PR-3 (RB PURGE FLOW) (Bailey Controller) adjusted to < recommended release rate.

STANDARD: Open 1PR-4, 5, and 6 by rotating the switches located on 1AB3 to open and verifying that the red open lights are illuminated and the green closed lights go out.

Start RB Purge Fan by placing the switch located on 1AB3 to start and verifying that the red on light illuminates.

Adjust 1PR-3 (RB PURGE FLOW) (Bailey Controller) < recommended release rate as read on Chessell Misc. System Recorder 1 located on 1VB1.

Continue to Step 3.11

COMMENTS:

STEP 10:	Step 3.11 Perform the following: • Record "Begin GWR _____" in Unit Log. • Record GWR start information on Enclosure 4.2 (RB Purge Sample Request).	
STANDARD:	Record "Begin GWR _____" in Unit Log. Record GWR start information on Enclosure 4.2 (RB Purge Sample Request).	___ SAT
	Cue: Another RO will complete this release.	___ UNSAT
COMMENTS:		
	END OF TASK	

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
4	This step is required to prevent tripping 1XR incoming feeder breaker.
5	This step is required to establish RB Purge flow.
6	This step is required to establish RB Purge flow.
8	This step is required to establish desired RB Purge flow.
9	This step is required to start the RB Purge fan.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 Plant Conditions:

- RCS temperature = 104°F
- RCS pressure = 36 psig
- No GWD or LWD releases are in progress
- RB Hatch is CLOSED
- Continuous release is NOT in progress
- RB Purge startup is in progress using OP/1/A/1102/014 (RB Purge System), Enclosure 4.1 (RB Purge Release)

INITIATING CUE

The CR SRO directs you to place the RB Purge in operation at 1/3 Station Limit using OP/1/A/1102/014, Enclosure 4.1, starting at Step 3.5.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

NLO-427

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Reset An Emergency Feedwater Pump Turbine

Alternate Path:

No

Facility JPM #:

NLO-027

K/A Rating(s):

System: 061
K/A: A2.04
Rating: 3.4/3.8

Task Standard:

Emergency Feedwater Pump Turbine reset correctly by procedure

Preferred Evaluation Location:

Simulator _____ In-Plant ___X___

Preferred Evaluation Method:

Perform _____ Simulate __X__

References:

Rule 3 (Loss of Main or Emergency FDW), rev 38A

EOP Enclosure 5.26 (Manual Start of TDEFDWP), rev 38A

Validation Time: 8 min.

Time Critical: No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

NONE

Tools/Equipment/Procedures Needed

EOP Enclosure 5.26 (Manual Start of TDEFDWP)

READ TO OPERATOR

DIRECTIONS TO CANDIDATE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 3 Reactor has tripped from 100% power.

A loss of all 4160V power has occurred.

Unit 3 TD EFDW Pump is tripped.

Rule 3 is in progress.

INITIATING CUE

Control Room Supervisor directs you to perform EOP Enclosure 5.26 (Manual Start of TDEFDWP) to manually reset Unit 3 TD EFDW Pump.

START TIME: _____

STEP 1: Step 1 Verify TDEFDWP trip device tripped. STANDARD: Candidate determines from the Initial Conditions that Unit 3 TD EFDW pump is tripped. ***Cue: If the candidate asks for local indications for Unit 3 TD EFDW pump being tripped, inform him/her that "the latch block is in the down position, the spring plate is in the down position, and the hand trip lever is in the down position".*** COMMENTS:	___ SAT ___ UNSAT
STEP 2: Step 2 Notify CRO to place TDEFDWP switch in PULL TO LOCK. STANDARD: Candidate notifies Unit 3 control room using radio/phone to place Unit 3 TD EFDW pump in PULL TO LOCK. ***Cue: Indicate to candidate that Unit 3 TD EFDW pump is in PULL TO LOCK.*** COMMENTS:	___ SAT ___ UNSAT
STEP 3: Step 3 Push reset lever toward turbine shaft until engaged: STANDARD: Candidate pushes the reset lever towards the turbine shaft to ensure it is engaged. ***Cue: Indicate to candidate that the reset lever is engaged.*** COMMENTS:	___ SAT ___ UNSAT
STEP 4: Step 4 Rotate spindle fully clockwise. STANDARD: Candidate rotates 3MS-94 spindle fully clockwise until it reaches a hard stop. ***Cue: Indicate to candidate that the spindle is in its full clockwise position.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 5: Step 5 Rotate spindle fully counter-clockwise. STANDARD: Candidate observes spring plate in its full up position. ***Cue: Indicate to candidate that the spindle is in its full counter-clockwise position.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 6: Step 6 Rotate spindle ¼ turn clockwise. STANDARD: Candidate rotates spindle ¼ turn clockwise. ***Cue: Indicate to candidate that the spindle is ¼ turn from full counterclockwise position.*** COMMENTS:	___ SAT ___ UNSAT
STEP 7: Step 7 Notify CRO to place TDEFDWP switch in RUN: STANDARD: Candidate notifies Unit 3 CRO by phone/radio to place Unit 3 TD EFDW pump switch in RUN: ***Cue: Indicate to candidate that Unit 3 TD EFDW pump switch is in the RUN position.*** COMMENTS:	___ SAT ___ UNSAT
STEP 8: Step 8 Verify 3MS-93 (TD EFDWP Steam Supply Trip Valve) closed STANDARD: Candidate locates 3MS-93 and determines the valve is open. ***Cue: Indicate to candidate using 3MS-93 position indicator that the valve is open.*** Candidate refers to the RNO column and goes to Step 11 COMMENTS:	___ SAT ___ UNSAT

STEP 9: Step 11 Verify TDEFDWP running STANDARD: Candidate observes indications such as turbine shaft rotating, discharge pressure, and hydraulic oil pressure to determine that it is operating. ***Cue: Indicate to candidate that Unit 3 TD EFDW pump is operating.*** COMMENTS:	___ SAT ___ UNSAT
STEP 10: Step 12 EXIT this enclosure STANDARD: Candidate exits the enclosure ***Cue: Indicate to candidate that this task is complete.*** COMMENTS: **END TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
4	This step is required to reset 1MS-94
5	This step is required to reset 1MS-94

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 3 Reactor has tripped from 100% power.

A loss of all 4160V power has occurred.

Unit 3 TD EFDW Pump is tripped.

Rule 3 is in progress.

INITIATING CUE

Control Room Supervisor directs you to perform EOP Enclosure 5.26 (Manual Start of TDEFDWP) to manually reset Unit 3 TD EFDW Pump.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

NLO-710

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Place the Reactor Building Hydrogen Analyzer In Service

Alternate Path:

No

Facility JPM #:

NLO-010

K/A Rating(s):

System: 028
K/A: A4.03
Rating: 3.1/3.3

Task Standard:

Reactor Building Hydrogen Analyzer is placed in service by procedure within 90 minutes.

Preferred Evaluation Location:

Simulator _____ In-Plant __X__

Preferred Evaluation Method:

Perform _____ Simulate __X__

References:

EP/1/A/1800/00, (rev 38A) EOP Enclosure 5.2, "Placing RB Hydrogen Analyzers in Service"

Validation Time: 10 minutes **Time Critical:** No

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Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS

None

Tools/Equipment/Procedures Needed

Enclosure 5.2, "Placing RB Hydrogen Analyzers in Service" Enclosure of EP/1/A/1800/001

NOTE: Student is expected to know that this procedure is pre-staged at the Hydrogen Analyzers and be able to locate the procedure. (Not Critical)

READ TO OPERATOR

DIRECTION TO TRAINEE

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

A LOCA has occurred on Unit 1.

Engineered Safeguards Channels 1 and 2 have actuated.

Enclosure 5.1 (ES Actuation) of the EOP is being completed.

The RB Hydrogen Analyzers are aligned in the standby mode.

INITIATING CUES

The Control Room SRO directs you to place the RB Hydrogen Analyzers in service on Unit 1 per EOP Enclosure 5.2 "Placing RB Hydrogen Analyzers in Service".

START TIME: _____

NOTE	***CRITICAL STEP**
Hydrogen analyzer (RP) panels are located in A-6-602, Vent Equipment Rm, col Q73 West.	

STEP 1: Step 1

At 1A H2 ANALYZER (RP), perform the following:

- Ensure POWER ON light is on.
- Position H2 DUAL RANGE SW to H2 0 -10% Range.
- Position FUNCTION SELECTOR switch to SAMPLE.
- Depress the OFF button for the following:
  - __ 1PR-83 (BYP TO POST AC 1SV220)
  - __ 1PR-86 (BYP TO POST AC 1SV221)

___ SAT

___ UNSAT

STANDARD: Red "Power On" light on remote panel is verified to be ON at the Remote RB Hydrogen Analyzer Panel (Train "A").

Cue: Red power on light is illuminated.

H2 DUAL RANGE Sw. on the Remote Panel is verified to be positioned to the "0-10%" scale.

Cue: Point to the H2 Dual Range switch "0-10%" position and state switch is in this position.

*FUNCTION SELECTOR SWITCH on the Remote Panel is verified to be positioned in the "SAMPLE" position.

Cue: Point to the Function Selector Switch "Sample" position and state switch is in this position.

At the remote panel, the "OFF" button is pushed for the following valves:

Train A

- PR-83 (Bypass to Post Accident Sample Panel)
- PR-86 (Bypass from Post Accident Sample Panel)

Cue: PR-83 and PR-86 indicate off.

COMMENTS:

STEP 2: Step 2 At 1B H2 ANALYZER (RP), perform the following: • Ensure POWER ON light is on. • Position H2 DUAL RANGE SW to H2 0 -10% Range. • Position FUNCTION SELECTOR switch to SAMPLE. • Depress the OFF button for the following: __ 1PR-89 (BYP TO POST AC 1SV222) __ 1PR-92 (BYP TO POST AC 1SV223) STANDARD: Red "Power On" light on remote panel is verified to be ON at the Remote RB Hydrogen Analyzer Panel (Train "A"). ***Cue: Red power on light is illuminated.*** H2 DUAL RANGE Sw. on the Remote Panel is verified to be positioned to the "0-10%" scale. ***Cue: Point to the H2 Dual Range switch "0-10%" position and state switch is in this position.*** *FUNCTION SELECTOR SWITCH on the Remote Panel is verified to be positioned in the "SAMPLE" position. ***Cue: Point to the Function Selector Switch "Sample" position and state switch is in this position.*** At the remote panel, the "OFF" button is pushed for the following valves: • PR-89 (Bypass to Post Accident Sample Panel) • PR-92 (Bypass from Post Accident Sample Panel) ***Cue: PR-89 and PR-92 indicate off.*** COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 3: Step 3 Notify Control Room to perform the following: • Open 1PR-81 and 1PR-84 • Open 1PR-87 and 1PR-90 STANDARD: Unit 1Control Room personnel are notified to open 1PR-81 & 1PR-84 and 1PR-87 & 1PR-90 to align the Reactor Building Hydrogen Analyzer to the Reactor Building. ***Cue: After notification has been made, indicate to student that the red OPEN indication lights for 1PR-81 & 1PR-84 and 1PR-87 & 1PR-90 located at the Remote Panel, are ON.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

NOTE

When ANALYZE is selected, the indication will go up scale, possibly causing a HIGH HYDROGEN ALARM in the Analyzer Panel, the Remote Panel, and the Control Room. It should return down scale to the correct reading in ≈ 3 minutes.

CRITICAL STEP

STEP 4: Step 4

___ SAT

At 1A H2 ANALYZER (RP), perform the following:

- Position SAMPLE VALVE SEL SW to PR-71 (TOP OF CONTAINMENT SAMPLE).
- Position OFF / STANDBY / ANALYZE switch to ANALYZE.
- Depress REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel.

___ UNSAT

STANDARD: SAMPLE VALVE SEL. Sw. is positioned to appropriate sample valve:

- PR-71 (Top of Containment Sample) for Train 'A'

Cue: Point to the Sample Valve Selector Switch and state switch is in the PR-71 position.

- OFF/STANDBY/ANALYZE switch is positioned to the "ANALYZE" Mode.

Cue: Point to the Off/Standby/Analyze Switch is in Analyze position. The Hydrogen Concentration Meter reads approximately 3% hydrogen and the Yellow COMMON ALARM Light and Yellow HIGH HYDROGEN ALARM Lights are ON.

- REMOTE SELECTOR Pushbutton is depressed.

Cue: Control is from the remote panel.

TIME COMPRESSION

Cue: Inform candidate that approximately three minutes has elapsed and point to the Hydrogen Concentration Meter indicating 0% hydrogen concentration

COMMENTS:

NOTE

When ANALYZE is selected, the indication will go up scale, possibly causing a HIGH HYDROGEN ALARM in the Analyzer Panel, the Remote Panel, and the Control Room. It should return down scale to the correct reading in ≈ 3 minutes.

CRITICAL STEP

STEP 5: Step 5

___ SAT

___ UNSAT

At 1B H2 ANALYZER (RP), perform the following:

- Position SAMPLE VALVE SEL SW to PR-76 (TOP OF CONTAINMENT SAMPLE).
- Position OFF / STANDBY / ANALYZE switch to ANALYZE.
- Depress REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel.

STANDARD: SAMPLE VALVE SEL. Sw. is positioned to appropriate sample valve:

- PR-76 (Top of Containment Sample) for Train 'B'

Cue: Point to the Sample Valve Selector Switch and state switch is in the PR-76 position.

- OFF/STANDBY/ANALYZE switch is positioned to the "ANALYZE" Mode.

Cue: Point to the Off/Standby/Analyze Switch is in Analyze position. The Hydrogen Concentration Meter reads approximately 3% hydrogen and the Yellow COMMON ALARM Light and Yellow HIGH HYDROGEN ALARM Lights are ON.

- REMOTE SELECTOR Pushbutton is depressed.

Cue: Control is from the remote panel.

TIME COMPRESSION

Cue: Inform candidate that approximately three minutes has elapsed and point to the Hydrogen Concentration Meter indicating 0% hydrogen concentration

COMMENTS:

STEP 6:	Step 6 **IAAT** either RB Hydrogen Analyzer Train indicates < 2.25% Hydrogen, **AND** the meter reading stabilizes, **THEN** push the ALARM RESET pushbutton to reset the COMMON ALARM on appropriate train. __ 1A RB Hydrogen Analyzer Train __ 1B RB Hydrogen Analyzer Train	___ SAT
STANDARD:	ALARM RESET Pushbutton is depressed.	___ UNSAT
	Cue: If the candidate asks, indicate that the Hydrogen reading is ≈ 0 percent on both hydrogen meters.	
	Cue: Indicate to student that the Yellow Alarm Lights are out after the ALARM RESET Pushbutton is depressed.	
	COMMENTS:	
STEP 7:	Step 7 **WHEN** HIGH HYDROGEN alarm has been reset on both 1A and 1B RB Hydrogen Analyzer Trains, **THEN** notify Unit 1 Control Room that both 1A and 1B Hydrogen Analyzer Trains are in service.	___ SAT
STANDARD:	Phone/radio is located and control room personnel are notified that the RB Hydrogen Analyzers are in service.	___ UNSAT
	Cue: Control room acknowledges 1A and 1B Hydrogen Analyzers are in service.	
	COMMENTS:	
STEP 6:	Step 8 **EXIT** this enclosure.	___ SAT
STANDARD:	Procedure is exited.	
	COMMENTS:	___ UNSAT
	END TASK	

STOP TIME: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
1	The 3-position switch must be selected to sample.
2	Open the block valves to the hydrogen analyzer.
3	Start the Analyzer pump and the sampling process

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

A LOCA has occurred on Unit 1.

Engineered Safeguards Channels 1 and 2 have actuated.

Enclosure 5.1 (ES Actuation) of the EOP is being completed.

The RB Hydrogen Analyzers are aligned in the standby mode.

INITIATING CUES

The Control Room SRO directs you to place the RB Hydrogen Analyzers in service on Unit 1 per EOP Enclosure 5.2 "Placing RB Hydrogen Analyzers in Service".

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

NLO-801

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Secure the operating chiller and start standby Chiller.

Alternate Path:

No

Facility JPM #:

New

K/A Rating(s):

System: BW/E02
K/A: EA1.1
Rating: 4.0/3.6

Task Standard:

The operating chiller is secured and standby chiller is started.

Preferred Evaluation Location:

Simulator _____ In-Plant ___X___

Preferred Evaluation Method:

Perform _____ Simulate __X__

References:

AP/1-2/A/1700/036, (rev 008) Degraded Control Room Area Cooling, Enclosure 5.1 (Actions For High Control Room Temperature)

OP/1/A/6101/006 (rev 036) Alarm Response Guide 1SA-06

Validation Time: 15 min. **Time Critical:** No

==========

Candidate: _____ Time Start: _____
NAME Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

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Comments

SIMULATOR OPERATOR INSTRUCTIONS

NONE

Tools/Equipment/Procedures Needed

AP/1-2/A/1700/036, Enclosure 5.1 Complete through step 27

Completed step 27 data table

READ TO OPERATOR

DIRECTIONS TO STUDENT

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS

Unit 1 is at 100%.

The 'A' Chiller is in service.

The 'B' Chiller is ready for auto start.

1SA-06/E-10 (AH Chiller Compressor Panel A/B Trouble) was received due to a Cycling Shutdown on low water temperature.

The 'A' Chiller has automatically restarted.

AP/1-2/A/1700/036 (Degraded Control Room Area Cooling) Enclosure 5.1 (Actions for High Control Room Temperature) is complete through step 27.

INITIATING CUE

Continue AP/1-2/A/1700/036, Enclosure 5.1 starting at step 28.

START TIME: _____

STEP 1:	Step 28 Verify values obtained in Step 27 are within the range specified. Candidate reviews Step 27 data table and recognizes "Chilled Leaving" and "Approach Temperature" are out of required band and performs step 28 RNO.	**CRITICAL** ___ SAT ___ UNSAT
STANDARD:		
COMMENTS:		
STEP 2:	Step 28 RNO: Notify CR SRO of the following: __ Data outside range. __ Consult with System Engineer to determine if swap of chillers is desired.	___ SAT
STANDARD:	Candidate reports approach temperature is out of band to the System Engineering and/or Control Room SRO.	___ UNSAT
	Cue: Systems Engineering and the Control Room SRO directs swapping chillers.	
COMMENTS:		
STEP 3:	Step 29 IAAT it is desired to swap to the stand-by chiller, THEN GO TO Step 36.	___ SAT
STANDARD:	Candidate goes to step 36.	___ UNSAT
COMMENTS:		

STEP 4: Step 36 Verify both of the following: • A Chiller in operation • B Chiller available to be started STANDARD: Candidate determines from initial conditions the 'A' chiller is running and 'B' chiller available to be started. ***Cue: If candidate questions alignment of compressors and looks at compressor display then inform the candidate of the following:*** • ***'A' chiller is running, display reads "System Run – Leaving Temp Control"*** • ***'B' chiller not running, display reads "System Ready To Start"*** COMMENTS:	___ SAT ___ UNSAT
STEP 5: Step 37 Verify the following for the B Chiller: • Oil level visible in either of the upper sight glasses located at the north end of the separator • Evaporator refrigerant pressure is 75 - 200 psig • Condenser refrigerant pressure is 75 - 200 psig. STANDARD: Candidate determines oil level visible in either of the upper sight glasses located at the north end of the separator. Candidate simulates using the key pad on the compressor control panel (2^{nd} pushbutton from the top on the left side of the control panel labeled 'Refrigerant Pressures') to display refrigerant pressures and ensures Evaporator refrigerant pressure is 75 - 200 psig and Condenser refrigerant pressure is 75 – 200 psig. **Note: DO NOT ALLOW the candidate to depress any of the pushbuttons on the compressor control panel. Inform the candidate to describe how he/she would monitor refrigerant pressures and then provide the cue below.** ***Cue: Provide Candidate with the following values:*** • ***Oil level is visible in the upper sight glass located at the north end of the separator*** • ***Evaporator refrigerant pressure is 140 psig*** • ***Condenser refrigerant pressure is 140 psig*** COMMENTS:	___ SAT ___ UNSAT

STEP 6: Step 38 Press the STOP/RESET side of the COMPRESSOR switch on the A Chiller. STANDARD: Candidate presses STOP/RESET push button. ***Cue: "The 'A' chiller is NOT running".*** COMMENTS:	**CRITICAL** ___ SAT ___ UNSAT
STEP 7: Step 39 Open the following valves (T-1/K-32): • WC-9 (B Evaporator Inlet) • WC-11 (B Evaporator Outlet) STANDARD: Candidate rotates WC-9 and WC-11 handwheels in the counter-clockwise direction. ***Cue: "WC-9 and WC-11 handwheels are at the fully counter-clockwise position".*** COMMENTS:	**CRITICAL** ___ SAT ___ UNSAT
STEP 8: Step 40 Ensure B CHILLED WATER PUMP CONTROL SW in AUTO. (Located on panel WC-PL-ACCPB at T-1, 8' S of K31) STANDARD: Candidate locates and recognizes the B CHILLED WATER PUMP CONTROL SW is in the AUTO position ***Cue: Point to the B CHILLED WATER PUMP CONTROL SW auto position and state to the candidate the "switch is in this position".*** COMMENTS:	**CRITICAL** ___ SAT ___ UNSAT
STEP 9: Step 41 Close WC-7 (A/B Chilled Water Pump Cross Connect Discharge) (T-1/J-33 W). A Chiller. STANDARD: Candidate rotates WC-7 handwheel in the clockwise direction (valve should already be closed). ***Cue: "WC-7 handwheel is in the fully clockwise position".*** COMMENTS:	**CRITICAL** ___ SAT ___ UNSAT

STEP 10: Step 42 Press the STOP/RESET side of the B Chiller COMPRESSOR switch. STANDARD: Candidate presses STOP/RESET push button. ***Cue: "The STOP/RESET pushbutton is pressed*** COMMENTS:	**CRITICAL** ___ SAT ___ UNSAT
STEP 11: Step 43 Press the START side of the B Chiller COMPRESSOR switch. STANDARD: Candidate presses START push button. ***Cue: "B chiller display indicates Start Sequence Initiated".*** COMMENTS:	**CRITICAL** ___ SAT ___ UNSAT
TIME COMPRESSION: Inform the candidate that 30 seconds has elapsed STEP 12: Step 44 WHEN 30 seconds have passed, THEN verify the following: __ Compressor started __ Chiller Service Water Pump started __ Control Center Display indicates one of the following: • SYSTEM RUN- CURRENT LIMIT IN EFFECT • SYSTEM RUN- LEAVING TEMP. CONTROL STANDARD: Candidate verifies Compressor and chiller Service Water pumps running. Candidate verifies Control Center Display. ***Cue: 'B' Chiller Compressor is running*** ***'B' Chiller Service Water Pump started*** ***Control Center Display indicates SYSTEM RUN – Leaving Temp Control*** **Note: The identification label for the Chiller Service Water Pump actually states "Chiller Condenser Service Water Pump". If the candidate questions this and simulates contacting an SRO, inform him/her that the SRO confirms a soft match (or confirms this is the correct component).** ***Cue: Another operator will continue this task.*** COMMENTS: **END OF TASK**	___ SAT ___ UNSAT

TIME STOP: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
1	This step is critical to identify chiller parameters that are outside their normal bands.
6	This step is critical to stop the 'A' chiller.
7	This step is critical to properly align chiller for operation.
8	This step is critical to properly align chiller for operation.
9	This step is critical to properly align chiller for operation.
10	This step is critical to electrically align the standby chiller for starting.
11	This step is critical to start the standby chiller and satisfy TS requirements.

27. __ Record data for the running chiller by depressing the appropriate Pads.

PAD	PARAMETER	RANGE	VALUE
Chilled Liquid Temperatures	Return	47-56°F	49°F
Chilled Liquid Temperatures	Chilled Leaving	43-46°F	41°F
NOTE • The Display Data keypad is located in the Service row of pads. • The Display Data keypad must be held until the Saturation Temperature Evaporator point is displayed.			
Display Data	Saturation Temperature Evaporator	33-45°F	34°F
NOTE • Approach Temperature equals Chilled Leaving minus Saturation Temperature Evaporator. • If approach Temperature is **NOT** 1 to 5 °F after 1 hour of operation, WR is required for evaluation of Chiller performance.			
No Pad - See NOTE	Approach Temperature	1-5°F	7°F
Refrigerant Pressures	Evaporator	68-76 psig	71 psig
Refrigerant Pressures	Condenser	105-200 psig	145 psig
Oil/Filter Pressures	Differential Oil	25-100 psid	38 psid
NOTE • If Δp gets to 18 psid, WR required to replace filter. • Panel displays warning at 20 psid. • Chiller shutdown at 25 psid.			
Oil/Filter Pressures	Differential Filter	2-18 psid	16 psid
Condenser Liquid Temperatures	Return	≥60°F	72°F
NOTE Full Load AMPs (FLA) is 42 amps.			
% Motor Amps/%Slide Valve	Motor Current	30-100% FLA	64%
% Motor Amps/%Slide Valve	Slide Valve	10-100% FLA	44%

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

Unit 1 is at 100%.

The 'A' Chiller is in service.

The 'B' Chiller is ready for auto start.

1SA-06/E-10 (AH Chiller Compressor Panel A/B Trouble) was received due to a Cycling Shutdown on low water temperature.

The 'A' Chiller has automatically restarted.

AP/1-2/A/1700/036 (Degraded Control Room Area Cooling) Enclosure 5.1 (Actions for High Control Room Temperature) is complete through step 27.

INITIATING CUE

Continue AP/1-2/A/1700/036, Enclosure 5.1 starting at step 28.