REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-112
ATWS WITH FAILURE OF "C" HPIP

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Respond to ATWS with Failure of "C" HPIP.

Alternate Path:

Yes

Facility JPM #:

CRO-108 Modified

K/A Rating(s):

System: BW/E13
K/A: EA 1.1
Rating: 3.4/3.2

Task Standard:

Rule 1 successfully completed in response to ATWS with Failure of "C" HPIP..

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

EP/1/A/1800/001, Rule 1

Validation Time: 5 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 202
2. Import files for CRO-112
3. Place a clean copy of Rule 1 on the front board.
4. Go to RUN when directed by lead examiner.

Tools/Equipment/Procedures Needed:
EOP Rule 1

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 Unit 1 Reactor is operating at 100% power.

INITIATING CUES

The Control Room SRO directs you to perform Immediate Manual Actions (IMAs).

START TIME: _____

STEP 1:	IMAs Step 3.1 Depress REACTOR TRIP pushbutton.	___ SAT
STANDARD:	Candidate performs EOP IMAs from memory (per OMP 1-18) and depresses the REACTOR TRIP pushbutton located on UB1.	___ UNSAT
COMMENTS:		
STEP 2:	IMAs Step 3.2 Verify reactor power < 5% FP and decreasing.	___ SAT
STANDARD:	Candidate performs EOP IMAs from memory and verifies reactor power < 5% and decreasing and determines that reactor power is > 5% on all NIs. Candidate Continues to Step 3.2 **RNO**.	___ UNSAT
COMMENTS:		
STEP 3:	**RNO Step 3.2** **GO TO** Rule 1 (ATWS/Unanticipated Nuclear Power Production).	___ SAT
STANDARD:	Candidate Goes To Rule 1 Step 1.	___ UNSAT
COMMENTS:		

STEP 4: Rule 1 Step 1 Verify any Power Range NI ≥ 5% FP. STANDARD: Candidate verifies any Power Range NI ≥ 5% FP and determines that all Power Range NIs are > 5% FP. COMMENTS:	___ SAT ___ UNSAT
STEP 5: Rule 1 Step 2 Initiate manual control rod insertion to the IN LIMIT. STANDARD: Candidate initiates a manual control rod insertion by depressing the Manual pushbutton on the Diamond control panel and then locks the Control Rod Joystick in the INSERT (forward) position. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 6: Rule 1 Step 3 Notify CR SRO to **GO TO** UNPP tab. STANDARD: Candidate notifies the Control Room SRO to go to the UNPP tab of the EOP. COMMENTS:	___ SAT ___ UNSAT

STEP 7: Rule 1 Step 4 Open the following: __ 1HP-24 __ 1HP-25 STANDARD: Candidate locates 1HP-24 and 1HP-25 on 1UB1 and rotates the switches to the open position. Verify that the GREEN closed lights go OFF and the RED open lights ILLUMINATE. *** As long as one of the two suctions valves is opened the critical step is satisfied** COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 8: Rule 1 Step 5 Ensure only one of the following operating: __ 1A HPI PUMP __ 1B HPI PUMP STANDARD: Candidate ensures either the 1A or 1B HPI pump is operating. **NOTE: The 1A HPI Pump is operating.** COMMENTS:	___ SAT ___ UNSAT
STEP 9: Rule 1 Step 6 Start 1C HPI PUMP. STANDARD: Candidate locates the 1C HPI pump switch on 1UB1 and rotates the switch to the CLOSE position. Candidate notes that the 1C HPI pump did not start (White open light still on, red closed lights still off and no motor amps. Candidate continues to Rule 1 **RNO step 6**. COMMENTS:	___ SAT ___ UNSAT

ALTENATE PATH STEP 10: Rule 1 **RNO step 6** 1. - *Start the standby HPI pump. 2. - **IF** at least two HPI pumps are operating, ***THEN** open 1HP-409 STANDARD: 1. - Candidate locates the 1B HPI pump switch on 1UB1 and rotates the switch to the START position. Candidate notes that the 1B HPI pump WHITE open light indicates OFF, and the RED closed lights are ILLUMINATED. 1B HPIP motor amps are normal (≈ 60 amps). 2. - Candidate notes there are two HPI pumps operating and rotates the 1HP-409 control switch to the open position and notes the RED open light ILLUMINATED, and the GREEN closed light OFF. COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 11: Rule 1 Step 7 Open the following: __ *1HP-26 __ 1HP-27 STANDARD: Candidate locates 1HP-26 and 1HP-27 on 1UB1 and rotates the control switches to the open position. Verify the GREEN closed light indicates OFF and the RED open light is ILLUMINATED. COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 12: Rule 1 Step 8 Dispatch one operator without wearing Arc Flash PPE to open 600V CRD breakers on the following: __ 1X9-5C (U-1 CRD Norm Fdr Bkr) (U1 Equipment Rm) __ 2X1-5B (U-1 CRD Alternate Fdr Bkr) (T-3/Dd-28) STANDARD: Candidate dispatches one operator to open Unit 1 normal and alternate CRD feeder breakers without wearing Arc Flash PPE. Candidate continues to Rule 1 Step 9. COMMENTS:	___ SAT ___ UNSAT

STEP 13:	Rule 1 Step 9 Verify only two HPI pumps operating.	___ SAT
STANDARD:	Candidate verifies two HPI pumps are operating by verifying the RED lights are ILLUMINATED for the 1A and 1B HPI pumps. Verify HPI pump motor amps are normal for the operating HPI pumps.	___ UNSAT
COMMENTS:		
	END OF TASK	

STOP TIME: _____

CRITICAL STEP EXPLANATIONS

STEP #	Explanation
5	Required to initiate a manual control rod insertion and start adding negative reactivity to the core.
7	Required to align emergency boration from the BWST to and add negative reactivity to the core.
10	Required to align flow to the "B" HPI header since the 1C HPI pump failed to start.
11	Opening 1HP-26 is required to initiate flow in the "A" HPI header.

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

INITIAL CONDITIONS

The Unit 1 Reactor is operating at 100% power.

INITIATING CUES

The Control Room SRO directs you to perform Immediate Manual Actions (IMAs).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-214

RCS LEAK WHILE ON DHR

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Respond to RCS Leak While on DHR.

Alternate Path:

Yes

Facility JPM #:

New

K/A Rating(s):

System: APE 025
K/A: AA1.02
Rating: 3.8/3.9

Task Standard:

Respond to RCS Leak While on DHR in accordance with AP/1/A/1700/026 (Loss of Decay Heat Removal), Enclosure 5.12 (RCS Makeup).

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

AP/1/A/1700/026 – Loss of Decay Heat Removal
AP/1/A/1700/002 – Excessive RCS Leakage

Validation Time: 16 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 203
2. Import files
3. Update Boron Status Board: RCS = 2310 ppmB
4. Provide clean copy of Defense In Depth (DID) sheet, Plant Configuration sheet, and AP/26 Encl. 5.12
5. Go to **Run** and acknowledge alarms
6. Go to **FREEZE**
7. GO to **RUN** when directed by lead examiner

Tools/Equipment/Procedures Needed:
AP/1/A/1700/026 (Loss of Decay Heat Removal), Enclosure 5.12 (RCS Makeup)
AP/1/A/1700/002 – Excessive RCS Leakage
Defense In Depth (DID) sheet
Plant Configuration sheet

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 in a normal DHR alignment.

PZR level is being maintained at 180" ± 10".

RCS is vented and the loops are "dropped"

BWST level is 37 feet

HPI is available

AP/2 (Excessive RCS Leakage) was entered and it directed entry into AP/26(Loss of Decay Heat Removal)

AP/2 Encl 5.6 (RCS Makeup) was **NOT** initiated

INITIATING CUE:

The Control Room SRO directs you to restore and maintain Pressurizer level to 170" - 190" using AP/1/A/1700/026 (loss of Decay Heat Removal) Enclosure 5.12 (RCS Makeup).

START TIME: _____

STEP 1: Step 1

IAAT makeup is **NO** longer desired,
THEN GO TO Step 67.

STANDARD: Makeup is desired as directed by Control Room SRO in Initiating Cue.

___ SAT

___ UNSAT

COMMENTS:

NOTE (Step 2)

- Makeup methods listed below are in the order of preference.
- Each method is effective only as long as the limitations listed are met.
- If one source of makeup is **NOT** adequate, try another method.
- It is acceptable to utilize methods in any sequence or in parallel, as needed, however, they are listed in the order of preference.
- If AP/2 (Excessive RCS Leakage) Encl 5.6 (RCS Makeup) is in progress, **GO TO** the Step associated with that makeup method.

STEP 2: Step 2

Utilize the appropriate Step as noted in table below to establish and maintain level within the desired band:

___ SAT

___ UNSAT

Method	Maximum Pressure	Other limitations	GO TO Step
1A Bleed Transfer Pump	**No Requirement**		**3**
HPI Gravity makeup to RCS	RCS vented	HPI Available per DID sheet BWST level > 43'	9
HPI Injection	No Requirement	BWST level > 6' HPI Available per DID sheet	15
BWST makeup to LPI Pump (1LP-21/1LP-22)	RCS vented	BWST level > 6' LPI Pump operating in Normal Mode	26
BWST Recirc Pump	Decay Heat Line Pressure < 100 psig	Unit 1 BWST, Unit 2 BWST, or Unit 1&2 SFP in purification FTC fill/drain **NOT** in progress	34
SF Cooling Pump from Unit 1&2 SFP	Decay Heat Line Pressure < 150 psig	Unit 1&2 SFP in purification with SF Cooling Pump FTC fill/drain **NOT** in progress	51

STANDARD: Given the note above step 2, the candidate chooses the highest order of preference available (1A Bleed Transfer Pump) and proceeds to step 3.

COMMENTS:

STEP 3:	Step 3 Ensure the following: ▪ 1HP-15 in manual ▪ 1HP-15 open. STANDARD: *Candidate ensures 1HP-15 in manual with demand at full open and valve indicates fully open. COMMENTS:	___ SAT ___ UNSAT
STEP 4:	Step 4 Open 1HP-16 STANDARD: Candidate fully opens 1HP-16, rotating its control switch to the open position and observing RED light ON and GREEN light OFF COMMENTS:	___ SAT ___ UNSAT
STEP 5:	Step 5 Start 1A BLEED TRANSFER PUMP. STANDARD: Candidate attempts to start the 1A Bleed Transfer Pump, but it will not start. Candidate then refers to step 5 **RNO** COMMENTS:	___ SAT ___ UNSAT

ALTERNATE PATH STEP 6: Step 5 **RNO** **GO TO** Step 2 STANDARD: Candidate returns to step 2 COMMENTS:	___ SAT ___ UNSAT
STEP 7: Step 2 Utilize the appropriate Step as noted in table below to establish and maintain level within the desired band STANDARD: Candidate determines that the next order of priority available is "HPI Gravity Makeup to RCS" however the table requires BWST level to be > 43 feet. Candidate determines that the BWST does not meet this requirement and proceeds to next option in table ***EXAMINER NOTE: Table is in JPM step 2*** COMMENTS:	___ SAT ___ UNSAT
STEP 7: Step 2 Utilize the appropriate Step as noted in table below to establish and maintain level within the desired band STANDARD: Candidate determines that the next order of priority available is "HPI Injection" and proceeds to step 15 ***EXAMINER NOTE: Table is in JPM step 2*** COMMENTS:	___ SAT ___ UNSAT

STEP 8: Step 15 Verify power on any HPI Pump. STANDARD: Candidate verifies all 3 HPI Pumps have power available. COMMENTS:	___ SAT ___ UNSAT
STEP 9: Step 16 Open the following: • 1HP-24 • 1HP-25 STANDARD: Opens 1HP-24 & 1HP-25 by rotating switches on 1UB1 to the open position and observing RED light illuminated and GREEN light OFF for each. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 10: Step 17 Close the following: • 1HP-409 • 1HP-410 STANDARD: Verifies 1HP-409 and 1HP-410 are closed by observing RED light OFF and GREEN light illuminated for both. (These valves are already closed) COMMENTS:	___ SAT ___ UNSAT

STEP 11: Step 18 Perform the following: ▪ Place 1HP-31 in HAND. ▪ Reduce 1HP-31 demand to 0. STANDARD: Candidate verifies that 1HP-31 is in HAND and demand is zero COMMENTS:	___ SAT ___ UNSAT
STEP 12: Step 19 Perform the following: ▪ Place 1HP-120 in HAND. ▪ Reduce 1HP-120 demand to 0. STANDARD: Candidate verifies that 1HP-120 is in HAND and demand is zero COMMENTS:	___ SAT ___ UNSAT
NOTE: An HPI Pump operating with 1HP-363 open will provide ≈ 35 gpm of makeup through the HPI Pump minimum recirc lines. STEP 13: Step 20 Start 1A or 1B HPI Pump. STANDARD: Candidate starts either 1A or 1B HPI Pump and notes RED running light for pump started. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 14: Step 21 Verify RCS loops dropped. STANDARD: Candidate verifies RCS loops are dropped based on initial conditions given COMMENTS:	___ SAT ___ UNSAT
STEP 15: Step 22 Throttle the following, as necessary without exceeding 475 gpm, to maintain RV level >10" and within previous established level band, if possible: • 1HP-409 • 1HP-410 STANDARD: Candidate throttles 1HP-409 and/or 1HP-410 and stops the Pressurizer level decrease and begins to return Pzr level to 170" to 190" without exceeding 475 gpm. ***EXAMINER CUE: When PZR level is being controlled and has begun returning to 180", inform the candidate that another operator will continue with this procedure.*** COMMENTS: **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
9	Step is necessary to align HPI Injection to the RCS.
13	Step is necessary to provide driving head for HPI Injection flow to the RCS.
15	Step necessary to ensure HPI Injection flow is recovering RCS inventory.

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

INITIAL CONDITIONS:

Unit 1 is in a normal DHR alignment.

PZR level is being maintained at 180" ± 10".

RCS is vented and the loops are "dropped"

BWST level is 37 feet

HPI is available

AP/2 (Excessive RCS Leakage) was entered and it directed entry into AP/26(Loss of Decay Heat Removal)

AP/2 Encl 5.6 (RCS Makeup) was **NOT** initiated

INITIATING CUE:

The Control Room SRO directs you to restore and maintain Pressurizer level to 170" - 190" using AP/1/A/1700/026 (loss of Decay Heat Removal) Enclosure 5.12 (RCS Makeup).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-310

ALIGN POST LOCA BORON DILUTION FLOW PATH.

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Align Post LOCA Boron Dilution Flow Path.

Alternate Path:

YES

Facility JPM #: CRO-073 and CRO-074

Modified

K/A Rating(s):

System: EPE 011
K/A: EA1.11
Rating: 4.2/4.2

Task Standard:

Post LOCA Boron Dilution valve line-up is accomplished when 1LP-105, 1LP-2, and 1LP-1 are open.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

EP/1/A/1800/001 – EOP LOCA CD Tab

Validation Time: 12 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 204
2. Import files for CRO-310
3. Go to **RUN** to allow files to take affect
4. Go to **FREEZE**
5. Go to **RUN** when directed by lead examiner

Tools/Equipment/Procedures Needed:
EP/**1**/A/1800/001 – EOP LOCA CD Tab pages 5 and 7 of 59

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 on Unit 1.

RCPs have been secured.

HPI has been secured.

1XS2-F3D (1LP-104 Bkr (Post LOCA Boron Dilute)) has been closed

An operator has been dispatched and has manned the SSF control room.

LOCA CD Tab has been completed up to step 22

INITIATING CUE:

The SRO directs you to line-up the normal Post LOCA Boron dilution flow path on Unit 1 beginning with step 22 of the EOP LOCA CD Tab.

START TIME: _____

STEP 1: Step 22 **WHEN** breaker for 1LP-104 is closed, **THEN** open 1LP-104. STANDARD: The student located the control switch for LP-104 on VB2 in the unit 1 control room and rotates the switch in the OPEN direction. He then observes red "OPEN" indication is ON and the green "CLOSED" indication is OFF. COMMENTS:	___ SAT ___ UNSAT
STEP 2: Step 23 Notify operator at SSF to open 1LP-103 (Post LOCA Boron Dilute). STANDARD: SSF operator notified ***BOOTH/ EXAMINER NOTE: Valve will remain closed to simulate line blockage in the normal Post LOCA Boron Dilute line.*** COMMENTS:	___ SAT ___ UNSAT
STEP 3: Step 24 Verify 1LP-103 (Post LOCA Boron Dilute) is open. STANDARD: Candidate verifies the SSF operator observes red "OPEN" indication is ON and the green "CLOSED" indication is OFF for 1LP-103. ***Cue: 1LP-103 indicates OPEN.*** COMMENTS:	___ SAT ___ UNSAT

STEP 4: Step 25 Verify flow through Post LOCA Boron Dilution valves by checking flow switch indication. ***EXAMINER NOTE: There is a flow indicator on VB2 named FLOW/NO FLOW POST LOCA BORON DILUTION, NORM PATH (LP-103 & LP-104). Red = FLOW and Green = No Flow.*** STANDARD: Candidate observes the red "FLOW" light is OFF and the green "NO FLOW" light is ON, indicating no flow. COMMENTS:	___ SAT ___ UNSAT
ALTERNATE PATH STEP 5: Step 25 **RNO** Notify the TSC to provide guidance on use of the Alternate Post LOCA Boron Dilution flow path. STANDARD: Candidate notifies the SRO that the RNO is applicable ***CUE: The SRO has consulted with the TSC and directs you to perform steps 27 and 28 to align the Alternate Post LOCA Boron Dilution flow path.*** ***Examiner NOTE: Provide the candidate with a copy of Page 7 of 59 of the LOCA CD tab which contains the steps to be performed.*** COMMENTS:	___ SAT ___ UNSAT

STEP 6: Step 27 Dispatch an operator to the Equipment Room to perform the following: • Close 1XS1-F5D (1LP-105 Bkr (Post LOCA Boron Dilute To LPI Suct)). • Close 1XS1-F5C (1LP-2 Bkr (RC Return Blk)). • Close 1XS1-F4D (1LP-1 Bkr (RCS LPI Isol Vlv)). STANDARD: Candidate dispatches operator to the Equipment Room. ***BOOTH CUE: Fire Timer 1 and inform the candidate that by using time compression breakers 1XS1-F5D, 1XS1-F5C, and 1XS1-F4D are closed. IF the candidate provides incorrect breaker nomenclature, repeat exactly what is directed by the candidate and only close those breakers that were correctly addressed.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 7: Step 28 **WHEN** breakers for the following are closed: • 1LP-105 • 1LP-2 • 1LP-1 **THEN** open the following: A. 1LP-105 B. 1LP-2 C. 1LP-1 ***BOOTH CUE: Report to the CR that the breakers are closed for 1LP-105, 1LP-1, and 1LP-2*** STANDARD: Candidate confirms the breakers for 1LP-105, 1LP-1, and 1LP-2 are closed by observing the green "CLOSED" indication ON and the red "OPEN" indication OFF for all three valves (indicates valves have power available). Candidate then opens all three valves by rotating their respective control switches in the open direction and observing the red "OPEN" indication ON and the green "CLOSED" indication OFF for each valve. ***EXAMINER CUE: Another operator will continue with this procedure.*** COMMENTS: **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
6	Critical to obtain boron dilution flow.
7	Critical to obtain boron dilution flow.

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

INITIAL CONDITIONS:

A Large Break LOCA has occurred on Unit 1.

RCPs have been secured.

HPI has been secured.

1XS2-F3D (1LP-104 Bkr (Post LOCA Boron Dilute)) has been closed

An operator has been dispatched and has manned the SSF control room.

LOCA CD Tab has been completed up to step 22

INITIATING CUE:

The SRO directs you to line-up the normal Post LOCA Boron dilution flow path on Unit 1 beginning with step 22 of the EOP LOCA CD Tab.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-401A
FOLLOWING A LOSS OF ALL FDW, FEED A DRY SG WITH THE TDEFDWP

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Following a loss of all FDW, Feed a Dry SG with the TD EFDWP

Alternate Path:

No

Facility JPM #:

CRO-401 modified

K/A Rating(s):

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

Task Standard:

EFDW flow is established to the both SGs and the candidate has initiated a cooldown of the RCS to Tc < 550°F.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

EP/1/A/1800/001 Rule 3, (Loss of Main or Emergency FDW)
EP/1/A/1800/001 Rule 7, (SG Feed Control)

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** Snap 206
2. **IMPORT** files for CRO-401A
3. Activate Timer 1
4. Go to **RUN** and allow timer to take effect.
5. Place simulator in **Freeze.** Remaining in RUN during board walkdown may allow RCS pressure to increase to 2300 psig and require RULE 4 which is NOT the intent of this JPM
6. Go to **RUN** when directed by examiner.

Tools/Equipment/Procedures Needed:

EOP Rule 3, (Loss of Main or Emergency FDW)
EOP Rule 7, (SG Feed Control)

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:

Loss of Main and Emergency Feedwater has occurred

RULE 3 is in progress and complete up to Step 22

The Unit 1 TDEFDW pump has just been locally started.

INITIATING CUES:

The SRO directs you to complete RULE 3 beginning at Step 22.

START TIME: _____

STEP 1: Rule 3 Step 22 **WHEN** either exists: • Operator is in position at 1FDW-313 • Unit 1 TD EFDW PUMP has been manually started **THEN** continue. STANDARD: Candidate recognizes the WHEN step has been met. COMMENTS:	___ SAT ___ UNSAT
STEP 2: Rule 3 Step 23 **IAAT** an operator is in position at 1FDW-313, **AND** Unit 1 TD EFDW PUMP is **NOT** operating, **THEN** notify the operator to open the following: • 1FDW-313 (1A EFDW LINE DISCH TO 1A S/G X-CONN) • 1FDW-314 (1B EFDW LINE DISCH TO 1B S/G X-CONN) STANDARD: Candidate recognizes that an operator is in NOT in position at 1FDW-313 and the Unit 1 TD EFWP is operating, so he goes to the **RNO** step. ***EXAMINER CUE: If asked, an operator is not yet in place at 1FDW-313.*** COMMENTS:	___ SAT ___ UNSAT
STEP 3: Rule 3 Step 23 **RNO** **GO TO** Step 24 STANDARD: Candidate proceeds to Step 24. COMMENTS:	___ SAT ___ UNSAT

STEP 4: Rule 3 Step 24
Verify either exists:

- HPI Forced Cooling is maintaining core cooling
- CBP feed providing SG feed

STANDARD: Candidate recognizes that neither of the above conditions are met and proceeds to Step 24 **RNO.**

COMMENTS:

___ SAT

___ UNSAT

NOTE

Begin opening EFDW control valve when this step is reached. Flow to the SG will begin as soon as alternate unit valve is off closed seat. **(N/A for this JPM plant conditions)**

100 gpm could cause overcooling if adequate decay heat levels do **NOT** exist

CRITICAL STEP

___ SAT

___ UNSAT

STEP 5: Rule 3 Step 24 **RNO**

1. Establish a maximum of 100 gpm to each available intact SG using:
   - 1FDW-315 (1A SG)
   - 1FDW-316 (1B SG)

STANDARD: Candidate establishes a maximum of 100 gpm FW flow to each SG.

COMMENTS:

CRITICAL STEP

STEP 6: Rule 3 Step 24 **RNO**

2. **WHEN** heat transfer is observed,
   THEN feed and steam SGs as necessary to stabilize Tc.

STANDARD: Once heat transfer is observed (SG pressure & temperature increasing) candidate stops the temperature increase by adjusting FDW flow rate along with TBV position.

EXAMINER NOTE: Heat transfer is observed when SG pressures begin to rise. TBV's are attempting to control pressure at 1010 psig. Since SG pressure is below that the TBV's are closed. When feed is initiated, SG pressure will begin to increase towards 1010 psig (assuming TBV's are left as-is). Once heat transfer is observed, FDW flow can be increased to stabilize Tc.

COMMENTS:

___ SAT

___ UNSAT

STEP 7: Rule 3 Step 24 **RNO** 3. **IF** SSF event in progress, **AND** SSF event occurred while in Mode 1 or 2, **THEN** feed SGs per Rule 7 (SG Feed Control) Table 1 guidance. STANDARD: Candidate determines SSF event not in progress so this step is N/A. ***EXAMINER CUE: If asked, the SSF is not manned and initiation of AP/25 has not been directed.*** COMMENTS:	___ SAT ___ UNSAT
STEP 8: Rule 3 Step 24 **RNO** 4. **IF** SSF event **NOT** in progress **AND** Tc > 550 ^{0}F, **THEN** initiate cool down to ≤ 550°F by feeding and steaming intact SGs at a rate that prevents RCS saturation using either: • TBVs • ADVs STANDARD: Candidate notes that Tc is > 550°F, ensures Tc is no longer increasing, and initiates cooldown to < 550 ^{0}F by slowly increasing FDW and adjusting TBV position. ***EXAMINER NOTE: Candidate will adjust feed rate and/or TBV position as required to establish a controlled cooldown. Tech Spec cooldown rate limits do apply.*** ***EXAMINER CUE: As soon as candidate has control of Tc and begins cooldown toward <550°F, inform him that another operator will continue with this procedure.*** COMMENTS: **END TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
5	Required to initiate EFDW flow to the A & B SGs and critical ≤100 gpm.
6	Required to control T_c to stop heatup and to prevent overcooling when EFDW flow introduced to dry SGs.
8	Required to accomplish a controlled RCS cooldown.

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

INITIAL CONDITIONS:

Loss of Main and Emergency Feedwater has occurred
RULE 3 is in progress and complete up to Step 22
The Unit 1 TDEFDW pump has just been locally started.

INITIATING CUES:

The SRO directs you to complete RULE 3 beginning at Step 22.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-412

Align ECCS Suction with 1LPSW-4 Failed Closed

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Align ECCS Suction to the Emergency Sump

Alternate Path:

Yes

Facility JPM #:

Modified CRO-405

K/A Rating(s):

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

Task Standard:

EP/1/A/1800/001 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/1800/001, LOCA CD tab
Enclosure 5.12 (ECCS Suction Swap to RBES) of the EOP

Validation Time: 20 minutes **Time Critical:** NO

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

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS

1. **Recall** SNAP 205
2. **Import** files for CRO-412
3. **ENSURE** BWST on OAC (SHOWDIG O1P1600)
4. **Go** to run when directed by examiner
5. Timer 3 will lower BWST Level to < 15' if needed at step 4
6. Timer 4 will lower BWST Level to < 9' if needed at step 5
7. 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.

BWST level is 19.0 feet

INITIATING CUES

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

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 <u>all</u> HPI pumps. 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 position and observes <u>all</u> 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.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
<u>NOTE</u> 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.*** COMMENTS:	___ SAT ___ UNSAT

STEP 6: Step 54 Simultaneously open the following: • 1LP-19 (1A RB Suction) • 1LP-20 (1B RB Suction) 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 **Note: The candidate should operate both valves at the same time.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
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 ***Cue: If needed, inform candidate that using time compression BWST level will be lowered to < 6' and RB level will be increased.*** COMMENTS:	___ SAT ___ UNSAT
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 COMMENTS:	___ SAT ___ UNSAT

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 COMMENTS:	___ SAT ___ UNSAT
STEP 10: Step 58 Simultaneously close the following: • 1LP-21 (1A LPI BWST Suction) • 1LP-22 (1B LPI BWST Suction) STANDARD: The candidate locates the control switch for 1LP-21 on 1UB2 and rotates it in the CLOSE direction. Observes green closed light on and red open light off 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. **Note: The candidate should operate both valves at the same time.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 11: Step 59 Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST). STANDARD: An operator is dispatch to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST). Should inform that EDLs are in effect ***Booth cue: An operator has been dispatched to close 1LP-28.*** COMMENTS:	___ SAT ___ UNSAT

STEP 12: Step 60 Verify any are open: • 1LPSW-4 • 1LPSW-5 STANDARD: Determines that 1LPSW-5 is open based on light indications on 1VB2 COMMENTS:	___ SAT ___ UNSAT
STEP 13: Step 61 Verify both are open: • 1LPSW-4 • 1LPSW-5 STANDARD: Determines that 1LPSW-4 is closed based on light indications on 1VB2 and proceeds to RNO column. COMMENTS:	___ SAT ___ UNSAT
STEP 14: Step 61 RNO 1. IF 1LPSW-4 is closed, AND flow exists on LPI FLOW TRAIN B, THEN perform the following: 1. Open 1LPSW-5. 2. *Stop 1A LPI PUMP. 3. *Close 1LP-17. 4. GO TO Step 67. STANDARD: 1. Determines flow exists in LPI Train B 2. Determines that 1LPSW-5 is open based on light indications on 1VB2 3. Uses pump controls on 1UB2 and stops the 1A LPI Pump 4. Uses valve switch on 1UB2 and closes 1LP-17 5. Proceeds to step 67 COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT

STEP 15:	Step 67 IAAT an operating LPI Pump fails, Then perform steps 68-74	
STANDARD:	Determines that the 1B LPI pump is still operating and the 1A LPI Pump was secured by procedure therefore the IAAT is not met and proceeds to step 67 RNO.	___ SAT ___ UNSAT
COMMENTS:		
STEP 16:	Step 67 RNO Go To step 75	
STANDARD:	Proceeds to step 75	___ SAT ___ UNSAT
COMMENTS:		
STEP 17:	Step 75 Open: • 1HP-939 • 1HP-940	
STANDARD:	Locates valve switches on 1UB2 and opens both valves	___ SAT ___ UNSAT
COMMENTS:		
STEP 18:	Step 76 Notify Chemistry to periodically sample LPI discharge for boron concentration.	
STANDARD:	Chemistry is notified to periodically sample LPI discharge for boron concentration	___ SAT ___ UNSAT
COMMENTS:		

STEP 19: Step 77 Close: • 1LP-15 • 1LP-16 STANDARD: Locates valve indications 1UB2 and determines that both valves are already closed. COMMENTS:	___ SAT ___ UNSAT
STEP 20: Step 78 When 1LP-28 is closed, Then continue with this procedure. STANDARD: Waits until notified that 1LP-28 is closed prior to proceeding ***CUE: Another operator will continue with this procedure*** COMMENTS: **END TASK**	___ SAT ___ UNSAT

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.
14	Promotes core cooling by ensuring cooling water available to injection water

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.

BWST level is 19.0 feet

INITIATING CUES

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

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-600

RECOVER FROM SWITCHYARD ISOLATION

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Recover from Switchyard Isolation

Alternate Path:

No

Facility JPM #:

CRO-600

K/A Rating(s):

System: BW/A05
K/A: AA1.1
Rating: 4.3/4.2

Task Standard:

Recovery from Switchyard Isolation is performed correctly including manually synchronizing the overhead Keowee Unit onto the 230 KV Red Bus.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

AP/1/A/1700/011 (Recovery From Loss of Power) Enclosure 5.3

Validation Time: 20 minutes **Time Critical:** NO

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

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

1. **RECALL** Snap 214
2. **IMPORT** files for CRO-600
3. Go to **RUN**
4. At Step 6, use QUICK STRIKE to transfer control of Keowee

Tools/Equipment/Procedures Needed:
AP/1/A/1700/011 (Recovery From Loss of Power) Enclosure 5.3 complete up to step 3

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 switchyard Isolation has occurred
- Unit 1 and Unit 2 reactors have tripped
- Unit 3 remains online at 100% power
- Power has been restored to Unit 1 and Unit 2's Main Feeder Buses from Keowee Unit 1 via the overhead power path
- The TCC has notified Oconee that the 230 KV transmission system voltage and frequency has returned to normal and recovery from switchyard isolation may be initiated.
- AP/1/A/1700/011 (Recovery From Loss of Power) has been entered and Enclosure 5.3 is complete up to step 3

INITIATING CUES:

The SRO in the control room instructs you to utilize Enclosure 5.3 of AP/011 (Recovery From Loss of Power) to recover from the Switchyard Isolation beginning at step 3.

Manual Synchronization of the Overhead KHU onto the 230 KV grid has been directed by the Emergency Coordinator.

TCC has granted permission to connect the KHU to the grid.

START TIME: _____

STEP 1: Step 3

Verify **NO** ES 1 or 2 actuation on any Oconee unit:

- Unit 1
- Unit 2
- Unit 3

STANDARD: Verify ES 1 or 2 has NOT actuated on Unit 1 by observing the RZ modules and/or statalarms. Contact Unit 2 and 3 to determine if ES 1 or 2 has actuated.

Continue to Step 4.

Booth/ Examiner cue: Unit 2 and 3 have not had an ES actuation.

COMMENTS:

___ SAT

___ UNSAT

STEP 2: Step 4

Position all of the following AUTO/MAN transfer switches to MAN:

✓ U1	✓ U2	✓ U3	Transfer Switch
			TA AUTO/MAN
			TB AUTO/MAN

STANDARD: Place the Unit 1 TA and TB AUTO/MAN transfer switches to MAN. Contact Unit 2 and 3 by phone and have them ensure TA and TB AUTO/MAN transfer switches in MAN.

Continue to Step 5.

Booth/Examiner Cue: Unit 2 and 3 TA and TB AUTO/MAN transfer switches are in MANUAL.

COMMENTS:

___ SAT

___ UNSAT

STEP 3: Step 5 Depress all of the following RESET pushbuttons: • *GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 1 RESET • *GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 2 RESET • GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 1 RESET • GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 2 RESET STANDARD: The following RESET pushbuttons are depressed: • GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 1 RESET • GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 2 RESET • GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 1 RESET • GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 2 RESET Continue to Step 6. **Note: Buttons are located on the electrical mimic board.** *** Critical** COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 4: Step 6 Verify the following statalarms are off: • SA-15/A-2 (CHANNEL #1 UNDERFREQUENCY) • SA-15/A-4 (CHANNEL #2 UNDERFREQUENCY) • SA-15/C-1 (CHANNEL #1 UNDERVOLTAGE) • SA-15/C-3 (CHANNEL #2 UNDERVOLTAGE) STANDARD: The above Statalarms are verified to be off. Statalarms are located on SA-15. Continue to Step 7. COMMENTS:	___ SAT ___ UNSAT

STEP 5: Step 7
Notify Keowee Operator to transfer control of both Keowee units to Oconee.

STANDARD: Contact Keowee Operator, by phone, to transfer control of both Keowee units to Oconee.
Continue to Step 8.

BOOTH CUE: Use QUICK STRIKE to transfer control of both Keowee units to Oconee.

EXAMINER NOTE: When both Keowee units are transferred to Oconee, statalarms 2SA-17/E-1 and 2SA-18/E-1 actuate.

COMMENTS:

CRITICAL STEP

___ SAT

___ UNSAT

STEP 6: Step 8
Verify both channels of all Oconee units Main Feeder Bus Monitor Relay Panels reset as indicated by the following statalarms off:

✓ U1	✓ U2	✓ U3	Statalarms
			1(2)(3)SA-15/D-4 (LOAD SHED CHNL A LOGIC INITIATE)
			1(2)(3)SA-14/D-4 (LOAD SHED CHNL B LOGIC INITIATE)
			1(2)(3)SA-15/D-6 (TRANS TO SB CHNL A LOGIC INITIATE)
			1(2)(3)SA-14/D-6 (TRANS TO SB CHNL B LOGIC INITIATE)

STANDARD: Both channels of Oconee unit 1 Main Feeder Bus Monitor Relay Panel is verified reset as indicated by observing the above statalarms off. Contact Unit 2 and 3 and have them verify their alarms are off to verify their Main Feeder Buses are reset.
Continue to Step 9.

Booth/Examiner cue: Unit 2 and 3 Statalarms are off.

COMMENTS:

___ SAT

___ UNSAT

STEP 7: STANDARD: COMMENTS:	Step 9 Verify overhead Keowee unit energizing any Oconee unit MFB Determine that Keowee Unit 1 is energizing Oconee Unit 1 MFBs via the overhead path, by observing Keowee Unit 1 has emergency started and ACB-1 is closed energizing unit 1's MFBs. Continue to Step 10.	___ SAT ___ UNSAT
STEP 8: STANDARD: COMMENTS:	Step 10 **GO TO** Step 23 Candidate goes to Step 23.	___ SAT ___ UNSAT
STEP 9: STANDARD: COMMENTS:	Step 23 Verify Keowee overhead unit is energizing any Oconee unit MFB. Determine that Keowee Unit 1 is energizing Oconee Unit 1 MFBs via the overhead path, by observing Keowee Unit 1 has emergency started and ACB-1 is closed energizing Unit 1's MFBs. Continue to Step 24.	___ SAT ___ UNSAT

STEP 10: Step 24 Notify Emergency Coordinator to determine which of the following is desired: • Manually synchronize overhead Keowee unit onto the 230 KV Red Bus • Disconnect overhead Keowee unit from the 230 KV Yellow Bus and reconnect (dead bus transfer) 230 KV Yellow Bus to the System Grid STANDARD: Refers to candidate Cue sheet and determines that Manual Synchronization is desired. Continue to Step 25. ***Booth/Examiner Cue: If asked, the Emergency Coordinator determines that manually synchronizing the overhead Keowee unit onto the 230 KV Red Bus is desired.*** COMMENTS:	___ SAT ___ UNSAT
STEP 11: Step 25 Verify manual synchronization of the overhead Keowee Unit onto the System Grid via the 230 KV Red Bus is desired. STANDARD: Determine from previous discussion with the Emergency Coordinator and/or Candidate Cue sheet that manual synchronization of the overhead Keowee Unit onto the System Grid via the 230 KV Red Bus is desired. Continue to Step 26. COMMENTS:	___ SAT ___ UNSAT
STEP 12: Step 26 Obtain permission from TCC to connect overhead Keowee unit (230 KV Yellow Bus Supply) to the System Grid. STANDARD: From Candidate Cue sheet determines that permission from TCC has been granted. Continue to Step 27. ***Booth/Examiner Cue: If asked, the TCC gives permission to connect overhead Keowee unit (230 KV Yellow Bus Supply) to the System Grid.*** COMMENTS:	___ SAT ___ UNSAT

STEP 13: Step 27

***CRITICAL STEP**

Perform the following to sync and tie overhead Keowee unit (Yellow Bus Supply) to 230 KV Red Bus:

___ SAT

A. Establish communications with Keowee Operations.

B. Press and hold PCB-8 SYNC push button.

___ UNSAT

C. Make the following adjustments concurrently as required:

1. Adjust overhead Keowee unit SPEED CHANGER MOTOR to establish a slow clockwise rotation of the 230 KV switchyard SYNCHROSCOPE.

2. Utilize overhead Keowee unit AUTO VOLTAGE ADJUSTER to increase/decrease 230 KV switchyard BUS SIDE SYNC POT to match 230 KV switchyard LINE SIDE SYNC POT when the 230 KV switchyard SYNCHROSCOPE pointer is vertical.

D. **WHEN** 230 KV switchyard SYNCHROSCOPE pointer is ≈ 5° before reaching vertical, THEN close PCB-8.

E. Release PCB-8 SYNC push button.

STANDARD: The overhead Keowee unit (Yellow Bus Supply) is synced and tied to the 230 KV Red Bus by:

- Establishing communications with Keowee Operations.

Examiner Cue: ***The second operator is available to depress the PCB-8 SYNC button as directed by the candidate. All other manipulations must be performed by you.***

- Depressing and holding the PCB-8 SYNC push button.
- Adjusting the overhead Keowee unit SPEED CHANGER MOTOR to synchronize overhead Keowee unit to 230 KV Red Bus.
- WHEN synchronization is achieved,
  THEN perform the following:
  - *Close PCB-8 (Red closed light illuminated).
  - Release PCB-8 SYNC push button.

Note: The SYNC CHECK provides only indication, NOT protection against out of phase closure.

EXAMINER CUE: Inform candidate that another operator will continue with this procedure.

COMMENTS:

END TASK

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
3	Reset buttons must be pushed to reset the Switchyard Isolation circuit to allow PCBs to be repositioned.
5	Oconee must have Keowee control to operate any Keowee Unit.
13	Manually syncing of the Keowee Unit is required to put the Oconee axillaries on the switchyard.

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

INITIAL CONDITIONS:

- A switchyard Isolation has occurred
- Unit 1 and Unit 2 reactors have tripped
- Unit 3 remains online at 100% power
- Power has been restored to Unit 1 and Unit 2's Main Feeder Buses from Keowee Unit 1 via the overhead power path
- The TCC has notified Oconee that the 230 KV transmission system voltage and frequency has returned to normal and recovery from switchyard isolation may be initiated.
- AP/1/A/1700/011 (Recovery From Loss of Power) has been entered and Enclosure 5.3 is complete up to step 3

INITIATING CUES:

The SRO in the control room instructs you to utilize Enclosure 5.3 of AP/011 (Recovery From Loss of Power) to recover from the Switchyard Isolation beginning at step 3.

Manual Synchronization of the Overhead KHU onto the 230 KV grid has been directed by the Emergency Coordinator.

TCC has granted permission to connect the KHU to the grid.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-701

Adjust RIA-40 Setpoints

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Adjust RIA-40 Setpoints.

Alternate Path:

No

Facility JPM #:

New

K/A Rating(s):

System: APE 061
K/A: AA2.03
Rating: 3.0/3.3

Task Standard:

RIA-40 setpoint adjusted to allow alarm if SG tube leakage increases.

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

AP/**1**/A/1700/031 – Primary to Secondary Leakage

Validation Time: 18 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 208**

2. **Import** files for CRO-701

3. Go to **RUN** and allow the simulator to **RUN** long enough to ensure the following OAC points are in alarm:
   - Est Total Pri to Sec Leak Rate (15 min avg)
   - 1RIA-59 MS-1A N-16 Mon High Alarm.

4. Go to **FREEZE**

5. Go to **RUN** when directed by lead examiner

Tools/Equipment/Procedures Needed:

AP/**1**/A/1700/031 (Primary to Secondary Leakage) completed up to step 4.49 and Enclosure 5.8 (Resetting 1RIA-40 and OAC Setpoints)

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 at 100% power and is experiencing a SG tube leak of about 13 gpd on the 1A SG.

AP/31 (Primary to Secondary Leakage) is in progress and has been completed up to step 4.49

The latest Primary Chemistry RCS sample shows RCS Xe 133 equivalent corrected to be $3.75E^{-1}$ µCi/ml

INITIATING CUE:

The Control Room SRO directs you to perform step 4.49 of AP/31 (Primary to Secondary Leakage).

START TIME: _____

STEP 1: 4.49

PERFORM Encl 5.8 (Resetting 1RIA-40 and OAC Setpoints) to set the following alarm setpoints:

- 1RIA-40 High - 75 gpd
- 1RIA-40 Alert - 30 gpd
- OAC point O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT) - 30 gpd

STANDARD: Candidate notes setpoints and proceeds to Encl 5.8.

COMMENTS:

___ SAT

___ UNSAT

NOTE:
RCS Xe 133 equivalent corrected is required for this calculation.

STEP 2: Encl 5.8 Step 1

Obtain RCS Xe 133 equivalent corrected from latest available Primary Chemistry RCS sample.

_____(µCi/ml)

STANDARD: Candidate enters $3.75E^{-1}$ or .375 from given initial conditions.

COMMENTS:

___ SAT

___ UNSAT

STEP 3: Encl 5.8 Step 2

Determine 1RIA-40 High setpoint from the following formulas:

$$\text{1RIA-40 High Setpoint (cpm)} = \text{High Leakrate Value (gpd)} \times \frac{\text{RCS Xe 133 eq corr (µCi/ml)}}{100\ ft^3/min} \times \frac{2.71E+3\ (ft^3)(day)(cpm)}{(gal)(min)(\mu Ci/ml)}$$

$$\text{1RIA-40 High Setpoint (cpm)} = \_\_\_\_ gpd \times \frac{\_\_\_\_ \mu Ci/ml}{100\ ft^3/min} \times \frac{2.71E+3\ (ft^3)(day)(cpm)}{(gal)(min)(\mu Ci/ml)} = \_\_\_\_ cpm$$

STANDARD: Candidate enters 75 in gpd block (given in initial conditions) and enters .375 in µCi/ml block (from step 1) and performs calculation which yields an answer of 762 (±1) cpm.

COMMENTS:

CRITICAL STEP

___ SAT

___ UNSAT

STEP 4: Encl 5.8 Step 3

Determine 1RIA-40 Alert setpoint from the following formulas:

CRITICAL STEP

___ SAT

___ UNSAT

$$\text{1RIA-40 Alert Setpoint (cpm)} = \text{Alert Leakrate Value (gpd)} \times \frac{\text{RCS Xe 133 eq corr } (\mu Ci/ml)}{100\ ft^3/min} \times \frac{2.71E+3\ (ft^3)(day)(cpm)}{(gal)(min)(\mu Ci/ml)}$$

$$\text{1RIA-40 Alert Setpoint (cpm)} = \_\_\_\_ gpd \times \frac{\mu Ci/ml}{100\ ft^3/min} \times \frac{2.71E+3\ (ft^3)(day)(cpm)}{(gal)(min)(\mu Ci/ml)} = \_\_\_\_ cpm$$

STANDARD: Candidate enters 30 in gpd block (given in initial conditions) and enters .375 in µCi/ml block (from step 1) and performs calculation which yields an answer of 305 (±1) cpm.

COMMENTS:

STEP 5: Encl 5.8 Step 4

Enter the new 1RIA-40 Alert and High Setpoints in the RIA View Node.

***CRITICAL STEP**

___ SAT

___ UNSAT

STANDARD: Candidate enters new setpoints in RIA View Node as follows:

1. Cursor to RIA-40 and depresses keyboard ENTER key
2. Cursor to ENABLE CONTROLS and depresses keyboard ENTER key.
3. Cursor in ALERT box and depresses numbers pad ENTER.
4. *Enters numerical value 305 and depresses numbers pad ENTER.
5. Cursor in HIGH box and depresses numbers pad ENTER.
6. *Enters numerical value 762 and depresses numbers pad ENTER.

EXAMINER NOTE: Adjusting the above setpoints clears 1RIA-40 statalarms (1SA-8/B-9 and 1SA-8/D10). Candidate may depress the ESC key to return to the main menu. Exact methodology in the above standard is not critical and may be performed from any computer terminal the candidate desires . Critical steps are getting new setpoints of 305 and 762 entered.

COMMENTS:

STEP 6: Encl 5.8 Step 5 Enter the new OAC TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT by performing the following: *A. Enter MVU. *B. Select PRI-LEAK PRIMARY TO SECONDARY LEAKAGE MANUAL INPUTS. *C. Select UPDATE. *D. Select O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT). *E. Enter the new TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT. F. Enter your LAN identification and reason for change. *G. Select SAVE. STANDARD: Candidate enters 30 gpd as new PRI TO SEC LEAKRATE ADMIN LIMIT in accordance with above A – G. ***EXAMINER NOTE: The OAC alarm(s) for 1RIA-40 clears after its next computer point refresh is complete. It also clears 1RIA-40 statalarms (1SA-8/B-9 and 1SA-8/D10)When the new setpoint has been properly saved in "G" above, the OAC will display a message that says "Value Has Been Updated".*** COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 7: Encl 5.8 Step 6 **EXIT** this enclosure. STANDARD: Candidate exits this enclosure, informs the CR SRO that he has completed Enclosure 5.8, and returns cue sheet to examiner. COMMENTS: **END TASK**	___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
3	Accurate calculation required to enter correct number for new setpoint in step 5
4	Accurate calculation required to enter correct number for new setpoint in step 5
5	Setpoint changed correctly gives crew an indication of increased SG tube leakage.
6	Adjusts the OAC alarm setpoint and therefore provides the operator a cue if SGTL size increases

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

INITIAL CONDITIONS:

Unit 1 is at 100% power and is experiencing a SG tube leak of about 13 gpd on the 1A SG.

AP/31 (Primary to Secondary Leakage) is in progress and has been completed up to step 4.49

The latest Primary Chemistry RCS sample shows RCS Xe 133 equivalent corrected to be $3.75E^{-1}$ µCi/ml

INITIATING CUE:

The Control Room SRO directs you to perform step 4.49 of AP/31 (Primary to Secondary Leakage).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

CRO-802

RESPOND TO A FUEL HANDLING ACCIDENT IN THE REACTOR BUILDING

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Respond to a fuel handling accident in the Reactor Building.

Alternate Path:

No

Facility JPM #:

New

K/A Rating(s):

System: APE 036
K/A: AA1.01
Rating: 3.3/3.8

Task Standard:

Containment evacuated and RB purge secured in accordance with direction in AP/**1**/A/1700/009 (Spent Fuel Damage).

Preferred Evaluation Location:

Simulator __X__ In-Plant _____

Preferred Evaluation Method:

Perform __X___ Simulate ____

References:

AP/**1**/A/1700/009 - Spent Fuel Damage

Validation Time: 14 minutes

Time Critical: NO

==========

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

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

1. Recall **SNAP 209**
2. Import files
3. Change NI chart to Source Range
4. Place RB Evacuation Alarm to "Enable"
5. GO TO **RUN**

Tools/Equipment/Procedures Needed:
AP/**1**/A/1700/009 - Spent Fuel Damage

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 in Mode 6 with fuel movement in progress

A fuel assembly was dropped in the Unit 1RB and the CR SRO has announced entry into AP/**1**/A/1700/009 - Spent Fuel Damage

1RIA-49 is in Alarm

INITIATING CUE:

The Control Room SRO directs you to perform AP/**1**/A/1700/009 - Spent Fuel Damage.

START TIME: _____

STEP 1: Step 4.1 Verify affected area is Units 1 & 2 SFP. STANDARD: Candidate notes that the dropped fuel assembly is in the RB, and therefore proceeds to Step 4.1 **RNO** ***EXAMINER NOTE: The dropped fuel assembly caused 1SA-8/B-9 (RM Process Monitor Radiation High) and 1SA-8/E-9 (RM Reactor Building Normal Sump Isolate) to come into alarm. The candidate may note that the Reactor Building Evacuation alarm (1SA-8/E-8) should have also actuated and may choose to actuate it by placing its switch to test at this time. That is acceptable, but is not required until step 3 (step 4.14) below.*** COMMENTS:	___ SAT ___ UNSAT
STEP 2: Step 4.1 **RNO** **GO TO** Step 4.14. STANDARD: Candidate goes to Step 4.14. COMMENTS:	___ SAT ___ UNSAT
STEP 3: Step 4.14 Place REACTOR BUILDING EVACUATION switch to TEST. STANDARD: Candidate places REACTOR BUILDING EVACUATION switch to TEST. ***EXAMINER NOTE: This will actuate the Reactor Building Evacuation Alarm (RBEA) and statalarm 1SA-8/E-8 (RM Reactor Building Evacuation), since 1RIA-49 failed to actuate the RBEA.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

NOTE
Due to relaxed refueling Tech Spec requirements, penetration openings are allowed during fuel movement of fuel that has been sub critical for > 72 hrs. Any open penetrations must be isolated within 30 minutes of fuel damage.

___ SAT

STEP 4: Step 4.15

Notify Containment Closure Coordinator to ensure containment isolated per OP/1/A/1502/009 (Containment Closure Control). {2}

___ UNSAT

STANDARD: Containment Closure Coordinator notified.

EXAMINER CUE: Containment Closure Coordinator notified.

COMMENTS:

STEP 5: Step 4.16

Announce Plant conditions using PA System including areas requiring evacuation.

STANDARD: Candidate announces dropped fuel assembly in RB and entry into AP/09. He should also announce evacuation of the entire RB at this time.

___ SAT

COMMENTS:

___ UNSAT

STEP 6: Step 4.17

Notify the OSM to reference the following:
- Emergency Plan
- NSD-202 (Reportability)

___ SAT

STANDARD: Candidate notifies OSM

___ UNSAT

COMMENTS:

STEP 7: Step 4.18 Start the following: {1} • A Outside Air Booster Fan • B Outside Air Booster Fan STANDARD: Candidate places the A & B Outside Air Booster Fan control switches to the ON position and verifies they both started by observing their RED lights ILLUMINATED. COMMENTS:	___ SAT ___ UNSAT
STEP 8: Step 4.19 Notify Unit 3 to start the following: {1} • 3A Outside Air Booster Fan • 3B Outside Air Booster Fan STANDARD: Candidate notifies Unit 3. COMMENTS:	___ SAT ___ UNSAT
NOTE Stopping the RB purge may cause increase of SFP level if compressed air is open in the RB. STEP 9: Step 4.20 Stop Unit 1 RB Purge Fan. STANDARD: Candidate rotates the Unit 1 RB Purge Fan control switch to the STOP position and verifies GREEN light ILLUMINATED and RED light OFF. COMMENTS:	___ SAT ___ UNSAT

STEP 10: Step 4.21 Close the following: • 1PR-1 • 1PR-2 • 1PR-3 • 1PR-4 • 1PR-5 • 1PR-6 STANDARD: Candidate rotates control switches for 1PR-1, 1PR-2, 1PR-4, 1PR-5, and 1PR-6 to the CLOSE position and verifies each valve closed by observing GREEN light ILLUMINATED and RED light OFF. He also rotates knob for 1PR-3 fully counterclockwise (in the decrease direction) to ensure zero demand (valve closed). ***Examiner Note: Closing either 1PR-1, 1PR-2, OR 1PR-3 AND closing either 1PR-4, 1PR-5, OR 1PR-6 satisfies the Critical Step since it would result in isolating both the intake and discharge flowpaths of the RB Purge.*** COMMENTS:	***CRITICAL STEP** ___ SAT ___ UNSAT
STEP 11: Step 4.22 Notify RP to obtain and evaluate airborne particulate and gaseous samples from the U1 RB atmosphere. STANDARD: Candidate notifies RP COMMENTS:	___ SAT ___ UNSAT

STEP 12: Step 4.23

Monitor the following Rad Monitors for an increase in radiation levels in the affected area:

1RIA-3 (Fuel Transfer Canal Area Monitor)
1RIA-4 (RB Personnel Hatch Area Monitor)
1RIA-47 (RB Particulate)
1RIA-48 (RB Iodine)
1RIA-49 (RB Gas)
1RIA-49A (RB Gas HR).

___ SAT

___ UNSAT

STANDARD: Candidate notes that 1RIA-49 (RB Gas) is in alarm.

EXAMIINER CUE: Inform the candidate that another operator will complete this procedure. If asked, another operator will also perform AP/18 to respond to the RIA alarm(s).

COMMENTS:

END OF TASK

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
3	Necessary to evacuate personnel from the RB to prevent radiation exposure.
10	Necessary to isolate Containment to protect the public.

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

INITIAL CONDITIONS:

Unit 1 is in Mode 6 with fuel movement in progress

A fuel assembly was dropped in the Unit 1RB and the CR SRO has announced entry into AP/**1**/A/1700/009 - Spent Fuel Damage

1RIA-49 is in Alarm

INITIATING CUE:

The Control Room SRO directs you to perform AP/**1**/A/1700/009 - Spent Fuel Damage.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

NLO-300

Swapping In Service Seal Return Coolers

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Swap In Service Seal Return Coolers from 3A to 3B

Alternate Path:

No

Facility JPM #:

New

K/A Rating(s):

System: 002 (SF2)
K/A: A2.01
Rating: 4.3/4.4

Task Standard:

Seal Return Cooler 3B is in service and Seal Return Cooler 3A is isolated

Preferred Evaluation Location:

Simulator _____ In-Plant __X__

Preferred Evaluation Method:

Perform _____ Simulate __X__

References:

AP/3/A/1700/002 Excessive RCS Leakage
AP/3/A/1700/018 Abnormal Release of Radioactivity

Validation Time: 19 minutes

Time Critical: NO

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

Performance Rating: SAT _____ UNSAT _____

Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

None

Tools/Equipment/Procedures Needed:
AP/3/A/1700/002 (Excessive RCS Leakage)

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 #3 is at 100% power

The CR crew has noticed a small RCS leak and has entered AP/3/A/1700/002 (Excessive RCS Leakage).

The CR crew has determined the leak to be in the Aux building and believe it is coming from the in service Seal Return Cooler due to a High Radiation Alarm on 3RIA-42 (RCW).

INITIATING CUES:

The Control Room Supervisor directs you to Swap Seal Return Coolers from 3A in service to 3B in service in accordance with AP/3/A/1700/002 (Excessive RCS Leakage) Enclosure 5.7. (Swapping In Service Seal Return Coolers).

START TIME: _____

STEP 1:	Step 1 Verify it is desired to place the 3B Seal Return Cooler in service **AND** remove 3A Seal Return Cooler from service, STANDARD: Candidate confirms direction to swap Seal Return Coolers from 3A in service to 3B in service COMMENTS:	___ SAT ___ UNSAT
STEP 2:	Step 2 Ensure 3RCW-179 Controller (3HPI-ML-0029) (3B Seal Return Clr Temp Controller) set at 100°F. (A-1-Col P91) STANDARD: Locates controller in hallway on west wall and ensures the temperature setpoint is set at 100°F. COMMENTS:	___ SAT ___ UNSAT
STEP 3:	Step 3 Perform the following (A-1-Waste Disposal Sample Hood Area): • Open 3RCW-177 (3B Seal Return Cooler Inlet). • Open 3RCW-180 (3B Seal Return Cooler Temp Cont Outlet) STANDARD: Ensures both valves are open by rotating their handwheels fully counterclockwise COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 4:	Step 4 Close 3RCW-181 (3B Seal Return Cooler Temp Cont Byp) (A-1-Waste Disposal Sample Hood Area). STANDARD: Closes 3RCW-181 by rotating its handwheel fully clockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 5:	Step 5 Perform the following (A-1-N End LPI Clr Rm): A. Close 3HP-75 (3B Seal Return Clr Inlet). B. Close 3HP-77 (3B Seal Return Clr Outlet). STANDARD: Closes 3HP-75 and 3HP-77 by rotating their handwheels fully clockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 6:	Step 6 Perform the following to drain 3B Seal Return Cooler (A-1-N End LPI Clr Rm): A. Open 3GWD-57 (3B Seal Return Cooler Vent). B. Open 3LWD-228 (RCP Seal Return Cooler B Drain). C. Open 3LWD-461 (RCP Seal Return Cooler Drain Block). STANDARD: Opens 3GWD-57, 3LWD-228, and 3LWD-461 by rotating their handwheels fully counterclockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 7: Step 7 **WHEN** 3B Seal Return Cooler is drained, **THEN** continue. STANDARD: Applicant continues to next step ***EXAMINER CUE: Inform the candidate that HAWT level has stopped increasing.*** ***EXAMINER NOTE: Seal Return Coolers drain to the HAWT. To determine if when the cooler is drained, the candidate would either have to contact the control room to monitor for HAWT level or use the waste disposal panel indication of HAWT level which is located just north of the north exit of the room you are in.*** COMMENTS:	___ SAT ___ UNSAT
STEP 8: Step 8 Perform the following (A-1-N End LPI Clr Rm): • Close 3GWD-57 (3b Seal Return Cooler Vent). • Close 3LWD-228 (RCP Seal Return Cooler B Drain). • Close 3LWD-461 (RCP Seal Return Cooler Drain Block). STANDARD: Closes 1GWD-56, 1LWD-227, and 1LWD-461 by rotating their handwheels fully clockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
NOTE 3B Seal Return Cooler volume is 43 gallons. STEP 9: Step 9 Notify CR to expect LDST to decrease ≅ 1.4" due to filling and venting the 3B Seal Return Cooler. STANDARD: Applicant simulates contacting the CR ***CUE: Once the applicant has simulated making the communication with the CR, inform him/her that the CR has been notified to expect the LDST to decrease ≅ 1.4".*** COMMENTS:	___ SAT ___ UNSAT

STEP 10: Step 10 Open 3HP-75 (3B Seal Return Clr Inlet) (A-1-N End LPI Clr Rm). STANDARD: Opens 3HP-75 by rotating its handwheel fully counterclockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 11: Step 11 Vent 3B Seal Return Cooler using 3GWD-57 (3B Seal Return Cooler Vent) (A-1-N End LPI Clr Rm). STANDARD: Cracks open 3GWD-57 (counterclockwise) until air is removed. When venting complete, rotates 3GWD-57 fully clockwise to the closed position ***CUE: If asked, inform the applicant that the 3B Seal Return Cooler has been vented (if not already described, examiner may ask applicant how he/she would know the cooler was properly vented (HAWT level)).*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 12: Step 12 Open 3HP-77 (3B Seal Return Clr Outlet) (A-1-N End LPI Clr Rm). STANDARD: Opens 3HP-77 by rotating its handwheel fully counterclockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 13: Step 13 Close 3HP-72 (3A Seal Return Cooler Inlet) (A-1-N End LPI Clr Rm). STANDARD: Closes 3HP-72 by rotating its handwheel fully clockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 14: Step 14 Close 3HP-74 (3A Seal Return Cooler Outlet) (A-1-N End LPI Clr Rm). STANDARD: Closes 3HP-74 by rotating its handwheel fully clockwise. COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 15: Step 15 Notify Control Room of the following: • 3A Seal Return Cooler is isolated. • Update Component Boron Concentration Log that 3B Seal Return Cooler placed in service. STANDARD: Applicant simulates contacting the CR ***CUE: Once the applicant has simulated making the communication with the CR, inform them that the CR has been notified that the 3A Seal Return Cooler has been isolated and the 3B Seal Return Cooler is in service.*** COMMENTS:	___ SAT ___ UNSAT
STEP 16: Step 16 Verify it is desired to place the 3A Seal Return Cooler in service, **AND** remove the 3B Seal Return Cooler from service STANDARD: Candidate determines it is NOT desired and refers to RNO which says GO TO Step 31 COMMENTS:	___ SAT ___ UNSAT
STEP 17: Step 31 **WHEN** directed by Control Room, **THEN EXIT** this enclosure. STANDARD: Candidate exits enclosure and returns cue sheet to examiner. COMMENTS:	___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
3	Valves in cooling water supply to the 3B Seal Return Cooler.
4	Completes Valve lineup to valve in cooling water supply to the 3B Seal Return Cooler
5	Necessary to drain the 3B cooler
6	Drains the 3B cooler
8	Secures draining the 3B cooler.
10	Aligns seal return flow to the inlet of the 3B cooler in order to fill & vent the 3B cooler..
11	Venting the 3B Seal Return Cooler
12	Completes alignment of seal return flow through the 3B Seal Return Cooler.
13	Necessary to isolate the 3A Seal Return Cooler.
14	Completes isolation of the 3A Seal Return Cooler.

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

INITIAL CONDITIONS:

Unit #3 is at 100% power

The CR crew has noticed a small RCS leak and has entered AP/3/A/1700/002 (Excessive RCS Leakage).

The CR crew has determined the leak to be in the Aux building and believe it is coming from the in service Seal Return Cooler due to a High Radiation Alarm on 3RIA-42 (RCW).

INITIATING CUES:

The Control Room Supervisor directs you to Swap Seal Return Coolers from 3A in service to 3B in service in accordance with AP/3/A/1700/002 (Excessive RCS Leakage) Enclosure 5.7. (Swapping In Service Seal Return Coolers).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

NLO-605

STARTUP A VITAL BUS INVERTER

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

STARTUP A VITAL BUS INVERTER

Alternate Path:

No

Facility JPM #:

NLO-036

K/A Rating(s):

System: 062 (SF6)
K/A: A3.04
Rating: 2.7/2.9

Task Standard:

Vital Bus Inverter placed in service correctly.

Preferred Evaluation Location:

Simulator _____ In-Plant __X__

Preferred Evaluation Method:

Perform _____ Simulate __X__

References:

OP/2/A/1107/04 Enclosure 4.2 (Startup of Vital Bus Inverters)

Validation Time: 12 minutes **Time Critical:** NO

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

Performance Rating: SAT _____ UNSAT _____ Performance Time: _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

==========

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

None

Tools/Equipment/Procedures Needed:

OP/2/A/1107/04 Enclosure 4.2 (Startup of Vital Bus Inverters)

Picture of the 2DIA inverter

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 #2 is at 100% power

Earlier today the 2DIA Vital Bus Inverter on Unit 2 was shutdown for maintenance.

I&E personnel have just notified the Control Room SRO that they have completed their work on the inverter and it is ready to be returned to service.

All tags have been cleared.

The affected 120VAC Vital Instrumentation Power Panelboard is being supplied by Regulated AC Panelboard 2KRA.

INITIATING CUES:

The Control Room SRO directs you to startup the 2DIA Vital Bus Inverter per OP/2/A/1107/004 Enclosure 4.2.

START TIME: _____

STEP 1: Step 2.1. ***EXAMINER CUE: Once the 2DIA inverter is located, if desired provide the included picture to establish the as-found condition of the inverter.*** **IF** DC power to inverter was isolated, close breaker #33 on associated **2DIA** DC panelboard (**2DIA**, 2DIB, 2DIC, 2DID). ***EXAMINER CUE: DC power to the inverter has not been isolated*** STANDARD: Candidate proceeds to step 2.2 COMMENTS:	___ SAT ___ UNSAT
NOTE Pressing PRECHARGE SWITCH pushbutton charges the inverter input filter capacitors and will cause the PRECHARGE light to come on. When pushbutton is released capacitors will begin to discharge. Closing DC Input breaker should be performed in a timely manner before PRECHARGE light goes off and input filter capacitors discharge. Steps 2.2.1 and 2.2.2 need to be performed prior to placekeeping/signing 2.2.2. This is an exception to standard circle/slash methodology. STEP 2: Step 2.2.1 Press PRECHARGE SWITCH pushbutton and hold for 10 - 12 seconds after PRECHARGE light comes on before releasing. STANDARD: The candidate presses the PRECHARGE SWITCH pushbutton until the PRECHARGE light comes on and keeps the button depressed for an additional 10 - 12 seconds before releasing. **EXAMINER CUE: Indicate to the candidate that the PRECHARGE light is ON. If the pushbutton is not held for an additional 10 – 12 seconds, inform the candidate that the PRECHARGE light is now OFF.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 3: Step 2.2.2 CLOSE the DC INPUT circuit breaker STANDARD: The DC INPUT circuit breaker is CLOSED ***EXAMINER CUE: Indicate to the candidate that the DC INPUT breaker is in the ON position.*** ***EXAMINER NOTE: If the DC INPUT breaker is not closed in a timely manner, the PRECHARGE light will go back OFF and the DC INPUT circuit breaker will trip back open.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 4: Step 2.3 Verify INVERTER OUTPUT volt meter increases to ≅120 Volts. STANDARD: INVERTER OUTPUT voltmeter, AC volts, is observed and verified to indicate approximately 120 volts AC. ***EXAMINER CUE: Indicate to candidate that inverter voltage INCREASES from 0 to 120 volts AC, as indicated on the INVERTER OUTPUT voltmeter.*** COMMENTS:	___ SAT ___ UNSAT
STEP 5: Step 2.4 CLOSE the INVERTER OUTPUT circuit breaker. **STANDARD:** The INVERTER OUTPUT circuit breaker is CLOSED. ***EXAMINER CUE:*** **Indicate to the candidate that the INVERTER OUTPUT breaker is in the ON position.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 6: Step 2.5 VERIFY the IN SYNC light is on. STANDARD: Green IN SYNC. light is verified ON. ***EXAMINER CUE: Indicate to candidate that the IN SYNC light is ON.*** COMMENTS:	___ SAT ___ UNSAT
STEP 7: Step 2.6 POSITION the MANUAL BYPASS SWITCH to the "NORMAL SOURCE" position. STANDARD: Candidate rotates the Manual Bypass Switch from the ALTERNATE SOURCE position to the NORMAL SOURCE position. ***EXAMINER CUE:*** **Indicate to the candidate that the Manual Bypass Switch is in the NORMAL SOURCE position.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 8: Step 2.7 VERIFY the following indications: • INVERTER OUTPUT volt meter ≈ 120 volts • Inverter Output frequency meter 60.6 - 60 - 59.4Hz • INVERTER OUTPUT amp meter increases and stabilizes to match SYSTEM OUTPUT amp meter. STANDARD: The following indications are verified: • INVERTER OUTPUT volts ≈ 120. • INVERTER OUTPUT frequency ≈ 60 Hz. • INVERTER OUTPUT amp meter increases and stabilizes to match SYSTEM OUTPUT amp meter. ***EXAMINER CUE:*** **Provide the following indications to the candidate:** • **INV. OUTPUT volts = 120** • **INV. OUTPUT freq. = 60** • **INV. OUTPUT amps = 30** • **SYS. OUTPUT amps = 30** COMMENTS: **END TASK**	___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
2	Must precharge the capacitors on the DC Bus so there will not be a low voltage when the DC Breaker is closed.
3	Necessary to provide DC input voltage to the inverter.
5	Necessary to apply NORMAL SOURCE voltage up to the Manual Bypass switch.
7	Applies Inverter AC output voltage from the NORMAL SOURCE to the Vital Bus Panelboards (Loads the Inverter).

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

INITIAL CONDITIONS:

Unit #2 is at 100% power

Earlier today the 2DIA Vital Bus Inverter on Unit 2 was shutdown for maintenance.

I&E personnel have just notified the Control Room SRO that they have completed their work on the inverter and it is ready to be returned to service.

All tags have been cleared.

The affected 120VAC Vital Instrumentation Power Panelboard is being supplied by Regulated AC Panelboard 2KRA.

INITIATING CUES:

The Control Room SRO directs you to startup the 2DIA Vital Bus Inverter per OP/2/A/1107/04 Enclosure 4.2.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

NLO-801
HPSW AND LPSW AB FLOOD ISOLATION

CANDIDATE _____

EXAMINER _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Isolate HPSW and LPSW during an AB Flood.

Alternate Path:

Yes

Facility JPM #:

Modified NLO-800

K/A Rating(s):

System: N/A
K/A: BW/A07 AA2.2
Rating: 3.3/3.7

Task Standard:

AP/3/A/1700/030 Encl. 5.1 is used isolate HPSW during an AB flood.
AP/3/A/1700/030 Encl. 5.2 is used isolate LPSW during an AB flood.

Preferred Evaluation Location:

Simulator ___ In-Plant __X___

Preferred Evaluation Method:

Perform ____ Simulate __X__

References:

AP/3/A/1700/030 (Auxiliary Building Flood) Encl. 5.1 and Encl 5.2

.

Validation Time: 16 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:

AP/3/A/1700/030 Encl. 5.1 and Encl. 5.2

READ TO OPERATOR

DIRECTION TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. 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:

All 3 units are at 100% power.

Unit 3 Auxiliary Building flooding is occurring.

The source of flood water has not yet been determined.

INITIATING CUES:

The Control Room Supervisor directs you to perform AP/3/A/1700/030 Encl. 5.1 (HPSW AB Flood Isolation) AND Encl. 5.2 (LPSW AB Flood Isolation).

START TIME: _____

ENCLOSURE 5.1 STEP 1: Step 1 **IAAT** the source of flooding is isolated, **THEN** notify Control Room. STANDARD: The candidate notes the source of flooding is not isolated and proceeds to step 2 **CUE: If asked, flooding is still occurring.** COMMENTS:	___ SAT ___ UNSAT
NOTE Keys for valve locks are available in any Emergency Equipment cabinet. STEP 2: Step 2 Close HPSW-959 (HPSW SUPPLY TO FLOW LIMITER BLOCK VALVE) (T-1/M-21 south, west of RCW Heat Exchangers). STANDARD: The candidate locates and attempts to close HPSW-959. ***Examiner Note: Operators carry Keys to these locks.*** ***Examiner Cue: When the candidate locates and attempts to close HPSW-959, inform candidate that HPSW-959 chain will not move. Candidate proceeds to RNO*** COMMENTS:	___ SAT ___ UNSAT

STEP 3: Step 2 **RNO** Close HPSW-962 (HPSW SUPPLY TO AUX BLDG BLOCK VALVE) (T-1/M-21 south, west of RCW Heat Exchangers). STANDARD: The candidate locates and closes HPSW-962 rotating it in the clockwise direction until it stops. ***Cue: When the candidate indicates that HPSW-962 is closed, inform the candidate that HPSW is fully clockwise and on the hard stop.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 4: Step 3 Notify control Room HPSW isolation is complete. STANDARD: The candidate notifies the control Room HPSW isolation is complete. COMMENTS:	___ SAT ___ UNSAT
STEP 5: Step 4 **EXIT** this enclosure. STANDARD: Candidate EXITS enclosure 5.1 and proceeds to Enclosure 5.2. COMMENTS:	___ SAT ___ UNSAT

ENCLOSURE 5.2 STEP 6: Step 1 **IAAT** the source of flooding is isolated, **THEN** notify Control Room. STANDARD: The candidate notes the source of flooding is not isolated and proceeds to step 2 **CUE: If asked, flooding is still occurring.** COMMENTS:	___ SAT ___ UNSAT
STEP 7: Step 2 Close 3LPSW-844 (AUX BLDG AHU SUPPLY) (T-1/M-46, 6' SE). STANDARD: The candidate locates and closes 3LPSW-844 rotating it in the clockwise direction until it stops. ***Cue: When the candidate indicates that*** 3LPSW-844 ***is closed, inform the candidate that the valve is fully clockwise and on the hard stop.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 8: Step 3 Close 3LPSW-770 (AUX BLDG AHU SUPPLY) (T-1/M-46, 8' S). STANDARD: The candidate locates and closes 3LPSW-770 rotating it in the clockwise direction until it stops.. ***Cue: When the candidate indicates that*** 3LPSW-770 ***is closed, inform the candidate that the valve is fully clockwise and on the hard stop.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 9: Step 4 Open 3LPSW-501 (UNIT 3 AHU RETURN TO STORM DRAINS) (T-1/L-47, W 12' up). STANDARD: The candidate locates and opens 3LPSW-501rotating it in the counter-clockwise direction until it stops. COMMENTS:	___ SAT ___ UNSAT
STEP 10: Step 5 Close 3LPSW-500 (UNIT 3 AHU RETURN TO CCW DISCHARGE) (T-1/L-47, NW 12' up). STANDARD: The candidate locates and closes 3LPSW-500 rotating it in the clockwise direction until it stops. ***Cue: When the candidate indicates that* 3LPSW-500 *is closed, inform the candidate that it is fully clockwise and on the hard stop.*** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 11: Step 6 Notify control Room LPSW isolation is complete. STANDARD: The candidate notifies the control Room LPSW isolation is complete. COMMENTS:	___ SAT ___ UNSAT
STEP 12: Step 7 **EXIT** this enclosure. STANDARD: Candidate EXITS enclosure 5.2 and returns CUE Sheet to examiner.. COMMENTS: **END TASK**	___ SAT ___ UNSAT

STOP TIME: _____

CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
3	Step ensures proper isolation of HPSW leak.
7	Step ensures proper isolation of LPSW leak.
8	Step ensures proper isolation of LPSW leak.
10	Step ensures proper isolation of LPSW leak.

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

INITIAL CONDITIONS:

All 3 units are at 100% power.

Unit 3 Auxiliary Building flooding is occurring.

The source of flood water has not yet been determined.

INITIATING CUES:

The Control Room Supervisor directs you to perform AP/3/A/1700/030 Encl. 5.1 (HPSW AB Flood Isolation) AND Encl. 5.2 (LPSW AB Flood Isolation).