FINAL AS-ADMINISTERED WALKTHROUGH JPMS

FOR THE BRAIDWOOD INITIAL EXAMINATION - OCTOBER 2000

Facility: Braidwood Unit 1 and 2 Date of Examination: 10/23/00
Exam Level (circle one): RO / SRO(I) Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. CVCS / Place Excess L/D in Service with Failure of Cooling to 1A L/D Hx. (N-11) KA 004A4.05	M A S	2
b. Pressurizer Relief Tank / Drain PRT(N-119) KA 007A1.01	M S	5
c. Component Cooling Water System / Swap CC pumps with high current on started pump. (N-140) KA 008A3.01	N A S	8
d. Liquid Radwaste System / Perform a Radwaste Liquid Release Radiation Monitor Valve interlock check. (N-32) KA 068A4.02	D S	9
e. A.C. Electrical Distribution / Establish an at Power Electrical Line up. (N-150) KA 062A4.07	N S	6
f. Residual Heat Removal System / Place RH in recirculation for sampling. (N-139) KA 005K5.09	N S L	4
g. Nuclear Instrumentation System / Source Range Instrument failure in Mode 4. (N-141) KA 015A2.01)	N S L A	7

B.2 Facility Walk-Through

a. CVCS / Local Emergency Boration with Emergency Boration Valve failed closed. (N-89) **Unit 2** (KA APE068AA1.08)	M R	1
b. Service Water System / Emergency Control of 2A SX Pump. (N-67) High PRA (47.2%) **Unit 2** (KA 013A4.01)	D A	4
c. Reactor Protection System / Local Rest of SI. (N-85) **Unit 2** (KA E02EA1.1)	D	7

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

JOB PERFORMANCE MEASURE

TASK TITLE: **Excess Letdown Operation (improper lineup)**

JPM No.: **N-11**

REV: 0

K&A No.: 004A4.05

TASK No.: CV-007

K&A IMP: 3.6/3.1

TRAINEE: _____

DATE: 4/15/98

EVALUATOR: _____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)5,6,11,12,14,16-20**

JPM TIME: _____

CRITICAL TIME: **NA**

APPROX. COMPLETION TIME **10** MINUTES

EVALUATION METHOD:

__X__ PERFORM

_____ SIMULATE

LOCATION:

_____ IN PLANT

__X__ SIMULATOR

GENERAL REFERENCES:

1. BwOP CV-15, Rev. 8E2

MATERIALS: None

TASK STANDARDS:

1. Establish excess letdown.
2. Identify loss of cooling to excess letdown heat exchangers

TASK CONDITIONS:

1. You are the Unit 1 Admin NSO.
2. Unit 1 is at 100% Power, Steady State.
3. All plant systems and controls are normal.

INITIATING CUES:

1. Last shift identified increasing ΔP across the RC filter.
2. The Unit Supervisor directs you to establish excess letdown from all RCS loops to the VCT through the 1A Excess Letdown Heat Exchanger and secure normal letdown per BwOP CV-15 "Excess Letdown Operations" to facilitate investigation of the RC filter.

	PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____					
1.	Refer to BwOP CV-15.	Locate and Open BwOP CV-15. Determine section F.1 is the applicable step.	❑	❑	❑

NOTE

Step F.1 establishes excess letdown flow.

Step F.2 removes excess letdown from service.

2.	Establish excess letdown flow at _PM05J: Verify Rx Power is at least 0.1% below the applicable power limit for plant operating conditions.	Determines that Rx Power is at least 0.1% below the applicable power level.	❑	❑	❑
Cue: Calorimetric Power is 99.85%					
3.	Verify/Open _CV8100, Seal Water Return Cnmt Isolation Valve.	Verifies 1CV8100 is open.	❑	❑	❑
4.	Verify/Open _CV8112, Seal Water Return Cnmt Isolation Valve.	Verifies 1CV8112 is open.	❑	❑	❑
*5.	Open _CC9437A, CC to Exc Ltdn HX Isol Vlv, at _PM06J.	Opens 1CC9437A	❑	❑	❑
*6	Open _CC9437B, CC from Exc Ltdn HX Isol Vlv, at _PM06J.	Opens 1CC9437B	❑	❑	❑
7.	Verify/Close _HCV-CV123, Exc Ltdwn HX Flow Cont Vlv at _PM05J.	Verifies 1HCV-123 is closed.	❑	❑	❑
8.	To direct flow to the VCT, Place _CV8143, Exc Ltdwn to Seal Filter or RCDT Vlv, in the VCT position at _PM05J.	Places 1CV8143 to the VCT position.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
9. If excess letdown is to remain in service for any extended period of time, it may be desirable to direct the seal return flow to the VCT spray nozzles by performing the following, at the Shift Manager discretion: a. Open _CV8482, Seal Water HX Outlet to VCT Isol Vlv. b. Close _CV8484, Seal Water HX Outlet to CV Pp Suct Hdr.	Contacts Shift Manager and determines Seal Return Flow will not be directed to the VCT Spray Nozzles.	❑	❑	❑
Cue: When asked, Shift Manager does not want Seal Return Flow to the VCT nozzles.				
10. To direct flow to the RCDT, Place _CV8143, Exc Ltdwn to Seal Filter or RCDT Vlv, in the RCDT position.	Determines that step is N/A.	❑	❑	❑
*11. Open _RC8037A/B/C/D, Loop Drain Valve, for the desired loop(s).	Opens 1RC8037A/B/C/D	❑	❑	❑
*12. Open _CV8153A/B, Exc Ltdwn HX _A/B Inlet Isol Vlv.	Opens 1CV8153A	❑	❑	❑

CAUTION

RCP Seal Leakoff Flows Must Be Closely Monitored While Establishing Excess Letdown Flow.

13. Slowly open _HCV-CV123, Exc. Ltdwn HX Flow Cont Vlv, as required to obtain the desired flow.	• Slowly opens 1HCV-CV123	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*14. Ensure that excess letdown outlet temperature is <165°F, as indicate on _TI-122A, Exc Ltdwn HX Temp. **Cue: Local Operator reports CC flow through excess letdown is zero (0).** **Unit Supervisor acknowledges report.** **Unit Supervisor directs you to secure excess letdown.**	• Determines temperature can not be controlled <165°F • Closes 1HCV-123 • Notifies the Unit Supervisor • Dispatches operator to investigate local valve lineup **(not critical)** • References 1-7-E2 **(not critical)** - Verify CC valves to and from excess letdown HX are open - 1CC9437A - 1CC9437B	❑	❑	❑
15. Transitions to step F.2	Transitions to step F.2	❑	❑	❑
*16. Remove Excess Letdown from service: Slowly close 1HCV-CV123, Exc Ltdwn HX Flow Cont Vlv.	Ensures 1HCV-CV123 is closed.	❑	❑	❑
*17. Close _CV8153A/B, Exc Ltdwn HX _A/B Inlet Isol Vlv.	Closes 1CV8153A	❑	❑	❑
*18. Close _RC8037A/B/C/D, Loop Drain Valve.	Closes 1RC8037A/B/C/D	❑	❑	❑
*19. Close 1CC9437A, CC to Exc Ltdwn HX Isol Vlv, at _PM06J.	Closes 1CC9437A	❑	❑	❑
*20. Close 1CC9437B, CC to Exc Ltdwn HX Isol Vlv, at _PM06J.	Closes 1CC9437B	❑	❑	❑
21. Verify/Place _CV8143, Exc Ltdwn to Seal Filter or RCDT Vlv, in the VCT position.	Verifies 1CV8143 in the VCT position.	❑	❑	❑

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Unit 1 Admin NSO.

2. Unit 1 is at 100% Power, Steady State.

3. All plant systems and controls are normal.

INITIATING CUES:

1. Last shift identified increasing ΔP across the RC filter.

2. The Unit Supervisor directs you to establish excess letdown from all RCS loops to the VCT through the 1A Excess Letdown Heat Exchanger and secure normal letdown per BwOP CV-15 "Excess Letdown Operations" to facilitate investigation of the RC filter.

JOB PERFORMANCE MEASURE

TASK TITLE: **Drain the Pressuzizer Relief Tank (PRT)**

JPM No.: **N-119**

REV: 2

K&A No.: 007A1.01

TASK No.: RY-008

K&A IMP: 2.9/3.1

TRAINEE:_____

EVALUATOR:_____

DATE:_____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)3,4,6,7**

JPM TIME:_____ MINUTES

CRITICAL TIME: **NA**

APPROX COMPLETION TIME **10** MINUTES

EVALUATION METHOD:

__X__ PERFORM
_____ SIMULATE

LOCATION:

_____ IN PLANT
__X__ SIMULATOR

GENERAL REFERENCES:

1. BwOP RY-4 Rev. 7, Draining the Pressurizer Relief Tank

MATERIALS:

None

TASK STANDARDS:

1. Decrease PRT level to < 80% , but > 69%.
2. Restores PRT Pressure to > 0 psig.

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit is at 100% power.

INITIATING CUES:

1. PRT level has risen to 81% due to inadvertent opening of a PZR PORV last shift. The Unit Supervisor has directed you to return the PRT level to 75% per BwOP RY-4.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

RECORD START TIME _____

Note: Examinee may refer to BwAR 1-12-A7 PRT LEVEL HIGH LOW. Actions here will direct 1) Checking PORVs and Safety Valves NOT open, 2) Drain the PRT per the BwOP, 3) Check RCS leakage. It is not required for the examinee to perform these actions, but is acceptable if he does so. Initiating cues provided the cause for the high level alarm.

1.	Refer to BwOP RY-4, "Draining the PRT".	Locate and Open BwOP RY-4.	❑	❑	❑
	Cue: All Prerequisites have been met.				
2.	Verify/Open at _PM05J, _AOV-RY8033, N2 to PRT Isolation valve.	At 1PM05J, VERIFY: • 1AOV-RY8033 is Open	❑	❑	❑
	Cue: 1AOV-RY8033 is open				
*3.	Verify/Open at _PM11J, _RE1003, RCDT Pumps Discharge Cnmt Isol Vlv.	At 1PM11J, Open: • 1RE1003	❑	❑	❑
	Cue: 1RE1003 is open				
*4.	Open 1AOV-RY8031, PRT Drain Isolation Valve.	At 1PM05J, Open: • 1AOV-RY8031	❑	❑	❑
	Cue: 1AOV-RY8031 is open				
5.	Verify/Start 1RE01PA/B, RCDT Pump.	At 1PM05J: • Verify the 1B RCDT pump automatically started.	❑	❑	❑
		• VERIFY PRT pressure remains > 0 psig on 1PI-469.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

NOTE

The rate at which the PRT is drained is greater than the rate at which N2 is supplied. Verify that the PRT pressure remains above 0 psig as indicated on _PI-469 at _PM05J.

*6.	If PRT pressure reaches approximately 0 psig, Perform the following: Stop _RE01PA/B, RCDT Pump, at _PM05J After PRT pressure is restored to approximately 3 psig, Start the RCDT pump at _PM05J	On 1PM05J: • Monitors PRT pressure indicator 1PI-469 • Determines PRT pressure is close to 0 psig. • Stops draining PRT by stopping the running RCDT pump prior to 0 psig. • Allows PRT pressure to rise to ~3 psig, before restarting RCDT pump.	❑	❑	❑
*7.	Close _AOV-RY8031, Drn Isol Vlv at _PM05J when desired level is reached.	When PRT level is between 69 and 80%, on 1PM05J, Takes control switch for 1AOV-RY8031 to CLOSED.	❑	❑	❑
Cue: PRT Level is 75%.					
8.	Verify/Stop _RE01PA/B when _AOV-RY8031 closes.	On 1PM05J VERIFY RCDT pump stops when 1AOV RY-8031 CLOSES: • 1RE01PA • 1RE01PB	❑	❑	❑

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.

2. The Unit is at 100% power.

INITIATING CUES:

1. PRT level has risen to 81% due to inadvertent opening of a PZR PORV last shift. The Unit Supervisor has directed you to return the PRT level to 75% per BwOP RY-4.

JOB PERFORMANCE MEASURE

TASK TITLE: **Swap Component Cooling Pumps (Faulted)**

JPM No.: N-140 REV: 0

K&A No.: 008A3.01

TASK No.: CC-002 K&A IMP: 3.2/3.0

TRAINEE:_____

EVALUATOR:_____ DATE:_____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)3,4** JPM TIME:_____ MINUTES

CRITICAL TIME: **NA** APPROX COMPLETION TIME **15** MINUTES

EVALUATION METHOD:
__X__ PERFORM
_____ SIMULATE

LOCATION:
_____ IN PLANT
__X__ SIMULATOR

GENERAL REFERENCES:

1BwOP CC-15 "Switching Operating and Standby Component Cooling System Pumps" Rev 8E6

MATERIALS:

1BwOP CC-15 "Switching Operating and Standby Component Cooling System Pumps"

TASK STANDARDS:

Perform Component Cooling Water Pump Switchover.
Recognize faulty standby pump.

TASK CONDITIONS:

1. Unit 1 and Unit 2 are at 100% power steady state.
2. System Engineering has reported that the 1A Component Cooling Water Pump has excessive vibrations.
3. System Engineering has recommended that the 1A Component Cooling Water Pump be secured.
4. You are the Unit NSO

INITIATING CUES:

1. The Unit Supervisor has directed you to start the 1B CC Pump and secure the 1A CC Pump per BwOP CC-15 "Switching Operating and Standby Component Cooling System Pumps".
2. All Component Cooling Water Pumps have been vented.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____				
1. Refer to BwOP CC-15.	Locate and open BwOP CC-15. Reads Precautions, Limitations and Actions.	❑	❑	❑
NOTE To prevent preconditioning, pump casing MUST NOT be vented before an ASME surveillance.				
2. Verify/Vent the pump casing of the CC Pump to be started. **Cue: Local Operator reports that the 1B CC Pump casing has been vented.**	Determines that the pump has been vented per the initiating cue.	❑	❑	❑
CAUTION Starting an additional Component Cooling pump could result in Auto-Closure of _CC685, CC from RCP Thermal Barrier HX Isol Vlv, on High Flow of 231 gpm.				
*3. Start _CC01PA/B or OCC01P Component Cooling Pump. Note: May restart the 1A or the O CC Pump.	Starts the 1B CC Pump and determines that motor current does not decrease to less than 56 amps within 5 seconds. Trips the 1B CC Pump	❑	❑	❑
Cue: *After the candidate trips the 1B CC Pump:* **Unit Supervisor directs you to start the O CC pump.**	Starts the "0" CC Pump	❑	❑	❑
*4. Stop the desired CC pump when system pressure increases and hold the control switch in the Trip position until system pressure stabilizes.	Stops the 1A CC Pump	❑	❑	❑
5. Verify/Open _CC685, CC from RCP Thermal Barrier HX Isol Vlv.	Determines 1CC685 is open.	❑	❑	❑
6. Verify/Clear any RCP CC annunciators/alarms.	Determines RCP CC annunciators are clear.	❑	❑	❑
7. Verify/Clear "CNMT PEN CLG FLOW HIGH/LOW" alarm.	Determines "CNMT PEN CLG FLOW HIGH/LOW" alarm is clear.	❑	❑	❑
8. Review system lineup and C/S position for CC system Tech Spec compliance.	- Notifies Unit Supervisor	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. Unit 1 and Unit 2 are at 100% power steady state.

2. System Engineering has reported that the 1A Component Cooling Water Pump has excessive vibrations.

3. System Engineering has recommended that the 1A Component Cooling Water Pump be secured.

4. You are the Unit NSO.

INITIATING CUES:

1. The Unit Supervisor has directed you to start the 1B CC Pump and secure the 1A CC Pump per BwOP CC-15 "Switching Operating and Standby Component Cooling System Pumps".

2. All Component Cooling Water Pumps have been vented.

JOB PERFORMANCE MEASURE

TASK TITLE: **Prepare/Perform a Liquid Radwaste Release**

JPM No.: **N-32**

REV: 11

K&A No.: 068A4.02

TASK No.: WX-002

K&A IMP: 3.2/3.1

TRAINEE:_____

EVALUATOR:_____

DATE:_____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: **(*) 9,10a,b,d,f,g,13**

JPM TIME:_____ MINUTES

CRITICAL TIME: **NA**

APPROX COMPLETION TIME **16** MINUTES

EVALUATION METHOD:

__X__ PERFORM
_____ SIMULATE

LOCATION:

_____ IN PLANT
__X__ SIMULATOR

GENERAL REFERENCES:

1. BwOP WX-501T1 Rev. 14, Liquid Release Tank 0WX01T Release Form

MATERIALS:

Copy of BwOP WX-501T1, Liquid Release Tank 0WX01T Release Form completed through section D.

TASK STANDARDS:

1. Complete Section E of a Liquid Release Tank Release Form in accordance with BwOP WX-501T1.
2. Correctly operate the RM-11 for setpoint adjustment/testing.

TASK CONDITIONS:

1. You are an extra NSO.
2. Both Units are at 100% power.
3. 0PR01J, 0PR10J, and 0UR-CW032 are operable.

INITIATING CUES:

1. The Unit Supervisor has handed you a 0WX01T liquid release package, completed through section D, and has directed you to complete the release package through Section E, using the low flowrate path.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

RECORD START TIME _____

NOTE

Generally, a low flow release rate should be considered as <130 gpm. Contact Radwaste Supervisor for determination of which release flow path to use based on current conditions, equipment availability, etc.

1.	Contact Radwaste Supervisor for release flow rate path.	Determines from the initiating cue that a low flow release is required.	❑	❑	❑
2.	Circle release flow rate path. Low Flow/High Low	Circles Low Flow	❑	❑	❑

NOTE

Step E.3 is not required if ORE-PR010 is inoperable and AAR 0BwOS RETS 2.1-1a has been initiated.

3.	Obtain and record the values of the following CHAN ITEMS for the 0RE-PR010 (0PS110) from its CHAN ITEM Display on the RM-11 Console. (DEPRESS Grid 1 key, key in 110, DEPRESS SEL key and then depress CHAN ITEMS key).	Obtain and record the High Alarm and Alert Alarm Setpoints for 0RE-PR010 from the RM-11 as follows: • DEPRESS Grid 1 key. • Key in "110". • DEPRESS SEL key. • DEPRESS CHAN ITEMS key. • RECORD Chan Item #9, High Alarm Setpoint. • RECORD Chan Item #10, Alert Alarm Setpoint.	❑	❑	❑

Chan Item #9 8.19 E-6

Chan Item #10 5.73 E-6

NOTE

Step E.4 is not required if 0RE-PR001 is inoperable and AAR 0BwOS RETS 2.1-1a has been initiated.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
4. Obtain and record the values of the following CHAN ITEMS for the 0RE-PR001 (0PS101) from its CHAN ITEM display on the RM-11 Console. (DEPRESS GRID 1 key, key in 101, DEPRESS SEL key and then DEPRESS CHAN ITEMS key).	Obtain and record the High Alarm and Alert Alarm Setpoints for 0RE-PR001 from the RM-11 as follows: • DEPRESS Grid 1 key. • Key in "101". • DEPRESS SEL key. • DEPRESS CHAN ITEMS key. • RECORD Chan Item #9, High Alarm Setpoint. • RECORD Chan Item #10, Alert Alarm Setpoint.	❑	❑	❑

Chan Item #9 1.31 E-4

Chan Item #10 6.56 E-5

NOTE

Step E.5.a is not required if 0RE-PR001, 0RE-PR010, 0UR-CW32, 0RE-PR001 is inoperable and AAR 0BwOS RETS 2.1-1a has been initiated.

5. Verify 0BwOS 0.1-0 daily cannel check is complete on: Rad Monitor 0RE-PR001 Rad Monitor 0RE-PR010 Station Blowdown Monitor Loop 0-CW032 **CUE: As examinee asks for status of surveillances, report they are all completed SAT as of shift 1 today.**	Check rounds to ensure 0BwOS 0.1-0 daily channel check surveillance is complete on the following: • 0RE-PR001 Liquid Radwaste Effluent. • 0RE-PR010 Station Blowdown. • 0-CW032 Station Blowdown Line Monitor Loop.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

NOTE

Steps E.6 and E.7 are not required if 0RE-PR001 is inoperable and AAR 0BwOS RETS 2.1-1a has been initiated.

NOTE

For a release through the low flow rate path COMPLETE Step E.6. If a high flow rate release, PROCEED to Step E.7

NOTE

If the 0PR01J is in HIGH Alarm at this point in the procedure due to high bckground, it will be necessary to reset the HIGH alarm setpoint to a value higher than the background. This will allow the 0AOV-WX896 to open to test the interlock function. Otherwise, Step E.6.f is not required.

6. Verify valve 0AOV-WX896, Release Tank Disch Isolation Valve, automatically closes on high radiation by performing the following steps:

Contact Radwaste to prepare to verify 0AOV-WX896 Auto closes on high radiation as follows:

Verify sufficient blowdown flow is established

- VERIFY sufficient blowdown flow is established (>8000 gpm). ❑ ❑ ❑

Verify/Close 0AOV-WX897, Flow Control Radwaste Effluent Discharge Valve.

- VERIFY/CLOSE 0AOV-WX897. ❑ ❑ ❑

Verify/Close 0AOV-WX890, Release Tk Pp 0WX53P Dsch Isol.

- VERIFY/CLOSE 0AOV-WX890. ❑ ❑ ❑

Verify/Open 0AOV-WX889, Release Tk Pp 0WX01P Dsch Isol.

- VERIFY/OPEN 0AOV-WX889. ❑ ❑ ❑

Verify/Start 0WX01P, Release Tank Pump

- VERIFY/START 0WX01P, Release Tank pump. ❑ ❑ ❑

CUE: As asked, sufficient blowdown flow is established; WX-897 and 890 are CLOSED; WX889 is OPEN; release tank pump is running.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
7. If the 0PR01J is in HIGH alarm, Change the HIGH alarm setpoint to a value higher than background. This will allow the RELEASE TANK DISCHARGE HEADER RADIATION HIGH alarm (Window 77A09 on 0PL01J) to be reset, the 0AOV-WX896 valve to be opened. This can be accomplished as follows:	Determines 0PR01J is not in HIGH alarm.	❑	❑	❑

CAUTION

Some actions possible in the supervisor mode may have serious detrimental effects on system operation. Therefore use caution when in this mode and do not leave the RM-11 console unattended when it is in this mode.

a. Place the RM-11 Console in SUPERVISOR MODE	• N/A
b. SELECT the HIGH alarm setpoint (Channel item 9) to be changed on the 0RE-PR001 (0PS101) CHAN ITEMS display by KEYING in 9 and DEPRESSING the SEL key. (Following this CHAN ITEM 9 should be displayed in reverse characters)	• N/A
c. ENTER a high alarm setpoint using the format XYZ ± AB (i.e. a value of 3.76E-10 would be entered as 376-10) and depress the enter key. The new value will be displayed after a short delay.	• N/A

8. Verify/Clear Release Tank Discharge Header Radiation High Annunciator Window (77A09 on 0PL01J)	Contacts Rad Waste Operator to verify Window 77A09 is clear on 0PL01J.	❑	❑	❑
Cue: High Radiation annunciator is clear.				
*9. Open 0AOV-WX896, Release Tank Discharge Isolation Valve. (The key to operate the 0AOV-WX896 valve control switch must be obtained from the Radwaste Supervisor or Shift Manager).	Contacts Rad Waste Operator to open 0AOV-WX 896 utilizing key from the Shift Manager.	❑	❑	❑
Cue: 0AOV-WX896 is open				

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*10. AUTO Close valve 0AOV-WX896, Release Tank Disch Isolation Valve, by lowering the Liquid Radwaste Effluent monitor 0RE-PR001 HIGH alarm setpoint to a value below the current activity as follows:				
a. PLACE the RM-11 Console in Supervisor Mode	• PLACE the RM-11 console in the SUPERVISOR mode.	❑	❑	❑
b. Select the HIGH alarm setpoint (channel item 9) to be changed on the 0RE-PR001 (0PS101) CHAN ITEMS display by KEYING in 9 and depressing the SEL key. (Following this CHAN ITEM 9 should be displayed in reverse characters.)	• SELECT the HIGH alarm setpoint (channel item #9) to be changed on 0RE-PR001 (0PS101) CHAN ITEMS by keying in 9 and DEPRESSING the SEL key.	❑	❑	❑
c. Record the current activity reading **Current activity setting_____**	• Record the current activity reading.	❑	❑	❑
d. Enter a new HIGH alarm setpoint below the current activity value (from the upper right corner of the display) using the format XYZ ± AB for XYZ E ± AB (i.e. a value of 3.76E-10 would be entered as 376-10).	• ENTER a new HIGH alarm setpoint below the current activity value.	❑	❑	❑
e. Record the new HIGH alarm setpoint that was entered. (Channel item 9). **New activity setting_____**	• RECORD the new HIGH alarm setpoint that was entered.	❑	❑	❑
f. Depress the ENTER key.	• DEPRESS the ENTER key.	❑	❑	❑
g. ACKNOWLEDGE the alarm at the RM-11 console.	• ACKNOWLEDGE the alarm at the RM-11 console.	❑	❑	❑
11. Verify 0AOV-WX896, Release Tank Disch Isolation Valve, Auto Closes. **Cue: 0AOV-WX896 Auto closed.**	Contact the local operator to: • VERIFY 0AOV-WX896 AUTO CLOSES.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
12. Verify Release Tank Discharge Header Radiation HIGH alarm (Window 77A09 at 0PL01J) annunciates at 0PL01J and acknowledge. **Cue: Release Tank Discharge header Radiation High Alarm annunciated and acknowledged.**	Contact the local operator to: • VERIFY Release Tank discharge Header Radiation High alarm annunciates.	❑	❑	❑
*13. Place key locked switch for 0AOV-WX896, Release Tank Disch Isolation Valve, in Close. **Cue: Key locked switch for 0AOV-WX896 is in close.**	Contact the local operator to: PLACE key locked switch for 0AOV-WX896 in CLOSE.	❑	❑	❑

CAUTION

Some actions possible in the SUPERVISOR MODE may have serious detrimental effects on system operation. Therefore use caution when in this mode and do not leave the RM-11 console unattended when it is in this mode.

14. Verify/Adjust the ALERT alarm and HIGH alarm setpoints for 0RE-PR001 (0PS101) to the values specified by Health Physics in Step D.7.b using the instructions that follow: **NOTE: Alert alarm should not need to be changed.**	VERIFY/ADJUST the ALERT alarm and HIGH alarm setpoints to the values specified by Health Physics in step D.7.b as follows:			
a. Place the RM-11 Console in the Supervisor Mode.	• PLACE the RM-11 in the SUPERVISOR mode.	❑	❑	❑
b. Select the ALERT alarm setpoint (channel item 10) to be changed on the 0RE-PR001 (0PS101) CHAN ITEMS display by KEYING in 10 and DEPRESSING the SEL key. (Following this CHAN ITEM 10 should be displayed in reverse characters).	• SELECT the ALERT alarm setpoint (channel item #10) to be changed on the 0RE-PR001 (0PS101) CHAN ITEMS display by KEYING in 10 and DEPRESSING the SEL key.	❑	❑	❑
c. Enter the new ALERT alarm setpoint using the format XYZ ± AB (i.e. a value of 3.76E-10 would be entered as 376-10) and depress the ENTER key. The new value will be displayed after a short delay.	• ENTER the new ALERT alarm setpoint (656-5) and DEPRESS the ENTER key.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
d. Select the HIGH alarm setpoint (channel item 9) to be changed on the 0RE-PR001 (0PS101) CHAN ITEMS display by keying in 9 and depressing the SEL key. (Following this CHAN ITEM 9 should be displayed in reverse characters.)	• SELECT the HIGH alarm setpoint (channel item #9) to be changed on the 0RE-PR001 (0PS101) CHAN ITEMS display by KEYING in 9 and DEPRESSING the SEL key.	❑	❑	❑
e. Enter the new HIGH alarm setpoint using the format XYZ ± AB (i.e. a value of 3.76E-10 would be entered as 376-10) and depress the ENTER key. The new value will be displayed after a short delay.	• ENTER the new HIGH alarm setpoint (131-4) and DEPRESS the ENTER key. • INDEPENDENT VERIFICATION obtained.	❑	❑	❑
CUE: When asked, Independent Verification is complete.				
15. Verify/Clear Release Tank Discharge Header Radiation High annunciator (Window 77A09 at 0PL01J).	Contact the Radwaste Operator and VERIFY/CLEAR Release Tank Discharge Header Radiation High annunciator.	❑	❑	❑
CUE: When asked, Release Tank Discharge Header Radiation High annunciator is clear.				
16. Determine step 7 is N/A per previous NOTE.	Determines step 7 is N/A.	❑	❑	❑

NOTE

Step E.8 is not required if 0RE-PR010 is inoperable and AAR 0BwOS RETS 2.1-1a has been initiated or if ALERT ALARM & HIGH ALARM setpoints have not changed from step D.8.b.

Note: This step is NOT required (because there were no changes to these setpoints), but is included here in case the examinee performs it anyway.

17. Verify/Adjust the ALERT and HIGH setpoints for 0RE-PR010 to the values specified by Health Physics in step D.8.b using the instructions that follow:				
a. Select the ALERT alarm setpoint (channel item 10) to be changed on the 0RE-PR010 (OPS110) CHAN ITEMS display by keying in "10" and depressing the SEL key. (Following this CHAN ITEM 10 should be displayed in reverse characters.)	• SELECT the ALERT alarm setpoint (channel item #10) to be changed on the 0RE-PR010 (0PS110) CHAN ITEMS display by KEYING in 10 and DEPRESSING the SEL key. • Determines no actions required.	❑	❑	❑
b. Enter the new ALERT alarm setpoint using the format XYZ ± AB (i.e. a value of 3.76E-10 would be entered as 376-10) and depress the enter key.	• ENTER the new ALERT alarm setpoint (573-6) and DEPRESS the ENTER key.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
c. Select the HIGH alarm setpoint (channel item 9) to be changed on the 0RE-PR010 (OPS110) CHAN ITEMS display by keying in 9 and depressing the SEL key. (Following this CHAN ITEM 9 should be displayed in reverse characters).	• SELECT the HIGH alarm setpoint (channel item #9) to be changed on the 0RE-PR010 (0PS110) CHAN ITEMS display by KEYING in 9 and DEPRESSING the SEL key. • Determines no actions required.	❑	❑	❑
d. Enter the new HIGH alarm setpoint using the format XYZ ± AB (i.e. a value of 3.76E-10 would be entered as 376-10) and depress the enter key. The new value will be displayed after a short delay.	• ENTER the new HIGH alarm setpoint (819-6) and DEPRESS the ENTER key.	❑	❑	❑
e. Place the RM-11 Console in the NORMAL MODE.	• PLACE the RM-11 console in the NORMAL mode. • INDEPENDENT VERIFICATION obtained.	❑	❑	❑

CUE: When asked, INDEPENDENT VERIFICATION is complete.

18. Record the following data in the space provided.	Obtain/Record the following:			
a. Circulating Water Blowdown Rate_____gpm (OUR-CW032 at PNL 0PM01J, or computer point F2400)	• Circ Water Blowdown rate from 0UR-CW032 at 0PM01J, or computer point F2400.	❑	❑	❑
b. Supervisor Verification **Cue: Supervisor review is complete**	• SUPERVISOR VERIFICATION.	❑	❑	❑
c. Verify CW Blowdown Rate is Equal to or Greater than 8,000 gpm.	• VERIFY CW blowdown rate ≥ 8000 gpm.	❑	❑	❑

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.

2. Both Units are at 100% power.

3. 0PR01J, 0PR10J, and 0UR-CW032 are operable.

INITIATING CUES:

1. The Unit Supervisor has handed you a 0WX01T liquid release package, completed through section D, and has directed you to complete the release package through Section E, using the low flowrate path.

SIMULATOR SETUP INSTRUCTIONS

JPM NO: N-32

REQUIRED SIMULATOR MODE(S): ANY

MALFUNCTION #'S: N/A

COMMENTS:

1) BwOP WX501T1 needs to be filled out through section D.

2) Verify/Start 0WX01P on SDG WD5.

3) When contacted as Radwaste operator, report:
-adequate blowdown flow
-0WX897 is CLOSED
-0WX890 is CLOSED
-0WX889 is OPEN
-Release Tank pump is started
-Release Tank discharge Header Rad High annunciator is CLEAR.

4) When contacted as Radwaste Operator report 0WX896 is OPEN.

5) When contacted as Radwaste Operator report 0WX896 is CLOSED.

6) When contacted as RWO, report the Release Header Rad High Alarm is in and has been acknowledged.

7) When contacted as RWO, report the high rad alarm is CLEAR.

JOB PERFORMANCE MEASURE

TASK TITLE: **Establish an At Power Electrical Lineup**

JPM No.: **N-150**

REV: 0

K&A No.: 062A4.07

TASK No.: GP-14

K&A IMP: 3.1/3.1

TRAINEE:_____

EVALUATOR:_____

DATE:_____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)2,3,4,6,7,8,10,11,12,14,15,16**

JPM TIME:_____ MINUTES

CRITICAL TIME: **NA**

APPROX COMPLETION TIME **10** MINUTES

EVALUATION METHOD:

__X__ PERFORM
_____ SIMULATE

LOCATION:

_____ IN PLANT
__X__ SIMULATOR

GENERAL REFERENCES:

1. 1BwGP 100-3 "Power Ascension" Rev 19.

MATERIALS:

1BwGP 100-3 "Power Ascension" Rev 19.

TASK STANDARDS:

1. Establish an at power electrical lineup.

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 1 is MODE 1.
3. Currently at step 43 of 1BwGP 100-3.

INITIATING CUES:

1. The Unit Supervisor has directed you to perform step 43 of 1BwGP 100-3

PERFORMANCE CHECKLIST		STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____					
1.	Refer to 1BwGP 100-3 step 43.	Locate and open 1BwGP 100-3 step 43.	❑	❑	❑
*2.	Turn on the Synchroscope for the UAT Main Feed Breaker to BUS 143. The synchroscope should lock in the in-phase position.	Turn on synchroscope Ensure locks in at 12 o'clock position	❑	❑	❑
*3.	Close the UAT feed breaker to Bus 143.	Close breaker ACB 1431	❑	❑	❑
*4.	Open the SAT feed breaker to Bus 143.	Open breaker ACB 1432.	❑	❑	❑
5.	Turn off the Synchroscope.	Turns off the synchroscope.	❑	❑	❑
*6	Turn on the Synchroscope for the UAT Main Feed Breaker to BUS 144. The synchroscope should lock in the in-phase position.	Turn on synchroscope Ensure locks in at 12 o'clock position	❑	❑	❑
*7.	Close the UAT feed breaker to Bus 144.	Close breaker ACB 1441	❑	❑	❑
*8.	Open the SAT feed breaker to Bus 144.	Open breaker ACB 1442.	❑	❑	❑
9.	Turn off the Synchroscope.	Turns off the synchroscope.	❑	❑	❑
*10	Turn on the Synchroscope for the UAT Main Feed Breaker to BUS 157. The synchroscope should lock in the in-phase position.	Turn on synchroscope Ensure locks in at 12 o'clock position	❑	❑	❑
*11.	Close the UAT feed breaker to Bus 157.	Close breaker ACB 1571	❑	❑	❑
*12.	Open the SAT feed breaker to Bus 157.	Open breaker ACB 1572.	❑	❑	❑
13.	Turn off the Synchroscope.	Turns off the synchroscope.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*14. Turn on the Synchroscope for the UAT Main Feed Breaker to BUS 156. The synchroscope should lock in the in-phase position.	Turn on synchroscope Ensure locks in at 12 o'clock position	❑	❑	❑
*15. Close the UAT feed breaker to Bus 156.	Close breaker ACB 1561	❑	❑	❑
*16. Open the SAT feed breaker to Bus 156.	Open breaker ACB 1562.	❑	❑	❑
17. Turn off the Synchroscope.	Turns off the synchroscope.	❑	❑	❑

(CUE:) THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 1 is MODE 1.
3. Currently at step 43 of 1BwGP 100-3.

INITIATING CUES:

1. The Unit Supervisor has directed you to perform step 43 of 1BwGP 100-3.

JOB PERFORMANCE MEASURE

TASK TITLE: **RH System Startup for Recirculation**

JPM No.: **N-139** REV: 0

K&A No.: 005K5.09

TASK No.: RH-001 K&A IMP: 3.2/3.4

TRAINEE:_____

EVALUATOR:_____ DATE:_____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)7,14,17,19,20,22** JPM TIME:___ MINUTES

CRITICAL TIME: **NA** APPROX COMPLETION TIME **15** MINUTES

EVALUATION METHOD:
X PERFORM
___ SIMULATE

LOCATION:
___ IN PLANT
X SIMULATOR

GENERAL REFERENCES:

1. BwOP RH-5 "RH System Startup for Recirculation" Rev 11

MATERIALS:

BwOP RH-5 "RH System Startup for Recirculation" Rev 11

TASK STANDARDS:

1. Place the RH system in recirculation.

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 1 is in MODE 5.
3. The 1B RH Pump was lost due to electrical problems.
4. We are in the process of switching to the 1A RH Train on Unit 1.
5. 1A RH Train needs to be sampled prior to aligning for RH cooling per BwOP RH-7

INITIATING CUES:

1. The US directs you to align the "A" Train of the RH system for recirculation per BwOP RH-5 "RH System Startup for Recirculation".
2. All Prerequisites have been met.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

RECORD START TIME _____

Note: Provide cues to the examinee only if actual equipment is unavailable.

1.	Refer to 1BwOP RH-5, Step 1	Locate and open 1BwOP RH-5, Step 1. Review Precautions, Limitations and Actions.	❑	❑	❑

NOTE

If the RH System is being recirculated for sampling, the RH System must be recirculated for a minimum of 15 minutes.

NOTE

It may be necessary to start an additional CC pump to facilitate the high flowrates through the RH Heat Exchanger

2.	If desired, OPEN _MOV-CC9412A/B, _CC to RH HX _A/B, and VERIFY that the CC flow is between 5000-6000 gpm.	Ensures that 1CC9412A is open. Ensures CC flow is between 5000 & 6000 gpm.	❑	❑	❑

Cue: 1CC9412A is open.

3.	VERIFY/CLOSE _RH8701A & B/8702A & B, RC Loop _A/C to RH Pump _A/B Suct Isol Vlvs.	Ensures 1RH8701A & B are closed.	❑	❑	❑

Cue: 1RH8701A & B are closed.

4.	VERIFY/CLOSE _SI8811A/B, Cnmt Sump _A/B Isol Vlv.	Ensures 1RH8811A is closed.	❑	❑	❑

Cue: 1SI8811A is closed.

5.	VERIFY/CLOSE _CS009A/B, Cs Pp _A/B Sump Suct Vlv.	Ensures 1CS009A is closed.	❑	❑	❑

Cue: 1CS009A is closed.

6.	VERIFY/CLOSE _CV8804A/SI8804B _A/B RH HX to CV/SI Pp Suct Isol Vlv.	Ensures 1CV8804A is closed.	❑	❑	❑

Cue: 1CV8804A is closed.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*7. VERIFY/OPEN _SI8812A/B, RH Pp _A/B Suct from RWST Isol Vlv.	Opens 1SI8812A.	❑	❑	❑
Cue: 1SI8812A is open.				
8. VERIFY/LOCK OPEN _RH8724A/B, RH Pp _A/B Manual Dsch Isol Vlv.	Contacts local operator and ensures 1RH8724A is locked open.	❑	❑	❑
Cue: NLO reports that 1RH8724A is locked open. **Note: Candidate may have the WCC check the Locked Key Board.**				
9. VERIFY/CLOSE _SI8840, RH to Hot Legs _A & C Isol VLv.	Ensures 1SI8840 is closed.	❑	❑	❑
Cue: 1SI8840 is closed.				
10. VERIFY that the _RH610/611, RH Pp _A/B Miniflow Vlv, is in the AUTO position and OPEN.	Ensures that 1RH610 is open and the switch is in AUTO.	❑	❑	❑
Cue: 1RH610 is open **1RH610 controller is in Auto.**				
11. In MODES 1-3, VERIFY/LOCK CLOSE the following valves: a. _RH8734A, RH Train "A" to CV Letdown Isol VLv, (U1 364' S-14/U2 364'S-22) b. _RH8734B, RH Train "B" to CV Letdown Isol Vlv, (U1 364'V-14/U2 364 V-23)	Determines the step is N/A.	❑	❑	❑

CAUTION

Letdown must be maintained from at least one RH train whenever the RCS is water solid.

12. In MODES 4-6, VERIFY/LOCK CLOSE _RH 8734A/B, RH Train _A/B to CV Ltdn Isol Vlv., for the applicable train being placed on recirc.	Directs local operator to Lock Closed 1RH8734A.	❑	❑	❑
Cue: Local operator reports 1RH8734A is locked closed. **Note: Candidate may have the WCC check the Locked Key Board.**				

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

CAUTION

Performance of the next step, closure of _RH606/607 will make its respective train inoperable. Notify the Shift Manager to initiate the applicable LCOAR.

Cue: Shift Manager will initiate LCOAR

13.	If desired, CLOSE _RH606/607, RH HX _A/B Outlet Flow Cont Vlv. **Cue: 1RH606 is closed.**	Closes 1RH606.	❑	❑	❑
*14.	VERIFY/CLOSE in MANUAL _RH618/619, RH HX _A/B Bypass Flow Cont Vlv. **Cue: 1RH618 is closed 1RH618 controller is in Manual.**	• Places 1RH618 in MANUAL. • Closes 1RH618.	❑	❑	❑
15.	For MODE 1,2 and 3 VERIFY/OPEN _RH8716A and B, RH HX _A and B Dsch Hdr X-tie Vlv.	Determines step is N/A	❑	❑	❑

CAUTION

In the event of a safeguards actuation, the _RH8716A/B must be immediately reopened, at _PM06J.

16.	For MODE 4, VERIFY/CLOSE _RH8716A/B for the train NOT being recirculated. For MODES 5 and 6 VERIFY/PLACE OOS CLOSED _RH8716A/B, RH HX _A/B Dsch Hdr X-tie Vlv for the train NOT being recirculated. **Cue: 1RH8716B is closed.**	Ensures 1RH8716B is closed and OOS.	❑	❑	❑

NOTE

SI8809A/B, RH to Cold Legs _A & D/ B & C, must be OPEN in MODES 1-4. Prior to starting the RH on Recrc, ENSURE RCS pressure >300 psig, to prevent discharging the RWST to the RCS loops.

*17.	In MODES 5 and 6, IF RCS pressure is less than 300 psig, THEN CLOSE _SI8809A/B, RH to Cold Legs _A & D/B & C Isol Vlv, for the train being recirculated. **NOTE: Will only be performed if RCS pressure < 300 psig.**	Directs Local Operator to close 1SI8809A.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

CAUTION

In MODES 1-3, _RH8735 must be maintained closed. In MODE 4,5, and 6 an operator must be stationed near the _RH8735 valve, while the RH system is recirculating back to the RWST. In the event of a safeguards actuation, _RH8735 must be immediately closed, to maintain system flow available to all four cold legs. Communications must be established between the operator and the control room.

NOTE

If the RH System is to be run on Miniflow (_RH610/611) Recirculation, then go to BwOP RH-2, securing the RH system from Recirculation when shutdown is desired.

18.	Obtain the Shift Managers (or designee's) permission to open _RH8735, RH Recirc to RWST Isol Vlv, Locked Closed Vlave, and OBTAIN the required key. **Cue: Shift Manager has given permission to open 1RH8735. Local operator is standing by 1RH8735 with the required key.**	Receives SM permission	❑	❑	❑
*19.	If desired, UNLOCK and OPEN _RH8735 (U1 364' S-13+11'/U2 364' S-23+11') RH Recirc to RWST Isol Vlv, and COMPLETE OP-AA-101-301.03, Abnormal Component Position Sheet. **Cue: Unit Supervisor has prepared OP-AA-101-301.03.** **Cue: 1RH8735 is Unlocked and Open.**	Directs local operator to open 1RH8735. Notifies US requirement to complete OP-AA-101-301.03.	❑	❑	❑

NOTE

When starting an RH Pump, the control switch for _RH610/611, RH Pump Recirc Valve, should be held in the open position until pump flow stabilizes, then the control switch may be returned to AUTO. This prevents the RH pump from being deadheaded due to flow perturbations on the RH Pump start, reducing the possibility of RH pump damage.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*20. Start the RH pump per the following: a. HOLD the control switch for _RH610/611, RH Pp _A/B Miniflow Valve, to OPEN while starting the RH Pump. b. START _RH01PA/B, RH Pump _A/B. c. SLOWLY PLACE the control switch for _RH610/611, RH Pp _A/B Miniflow Valve, to the AUTO position. **Cue: 1A RH Pump is running. 1RH610 is in Auto.**	• Holds 1RH610 control switch to open. • Starts to 1A RH Pump • Places 1RH610 controller to the AUTO position.	❑	❑	❑
21. MONITOR RH Pump _A/B flow and VERIFY that the Miniflow Valve, _RH610/611, is maintaining a minimum of 500 gpm flow rate. **Cue: Local operator reports 1000 gpm on local gage.**	Ensures that a minimum of 500 gpm flow rate is obtained.	❑	❑	❑
*22. If recirculating back to the RWST, THEN ADJUST _RH618/619, RH HX _A/B Bypass flow control valve, until a flow of approximately 3300 gpm is established, or until the desired flow rate is established. **Cue: 1FI-618 indicates 3300 gpm.**	Adjusts 1RH618 to obtain a flow of approximately 3300 gpm (±300gpm)	❑	❑	❑

NOTE

When the Pressurizer is water solid and RH is operating, it is desired to maintain RH flow rate at least 3000 gpm due to LTOP concerns.

23. At approximately 3300 gpm, PLACE _RH618/619, RH HX _A/B Bypass Flow Cont Vlv, Flow Controller in the AUTO position. **Cue: 1RH618 controller is in the Auto position.**	Places the 1RH618 flow control valve in AUTO.	❑	❑	❑

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

PERFORMANCE CHECKLIST STANDARDS SAT UNSAT N/A

COMMENTS:

TASK CONDITIONS

1. You are an extra NSO.

2. Unit 1 is in MODE 5.

3. The 1B RH Pump was lost due to electrical problems.

4. In the process of switching to the 1A RH Train on Unit 1.

5. 1A RH Train needs to be sampled prior to aligning for RH cooling per BwOP RH-7

INITIATING CUES:

1. The US directs you to align the "A" Train of the RH system for recirculation per BwOP RH-5 "RH System Startup for Recirculation".

2. All Prerequisites have been met.

JOB PERFORMANCE MEASURE

TASK TITLE: **Respond to Source Range NI Failure** JPM No.: N-141

Task No: OA-053 K&A No.: 015A2.01

K&A IMP. 3.5/3.9

Trainee:_____

Evaluator:_____ DATE: ___/___/___

The Trainee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)2,4,5,6,7,8** JPM TIME:_____MINUTES

CRITICAL TIME: **N/A** APPROX COMP TIME **12** MINUTES

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR_____

MATERIALS:

None

GENERAL REFERENCES:

BwOA INST-1, "Nuclear Instrumentation Malfunction" Rev 54

TASK STANDARDS:

Respond to a Second Source Range NI Failure.

TASK CONDITIONS:

1. You are the Unit NSO.
2. The Unit is in MODE 5.
3. One hour ago N-31 failed low. All actions of 1BwOA INST-1 have been completed.
4. N-32 has just failed.
5. Bus 142 is de-energized due to SAT failure

INITIATING CUES:

1. Perform the actions of 1BwOA INST-1 for the failed N-32 Source Range channel.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____				
1. Refer to BwOA INST-1, Nuclear Instrument Malfunction.	Locate and open BwOA INST-1 Attachment C.	❑	❑	❑
*2. Check SR Required: • SR Block Permissive P6 **Cue: Bypass Permissive Panel is deenergized and P6 is in the appropriate status for current plant conditions**	Determines P6 should be lit but is not due to SAT failure.	❑	❑	❑
3. Check Audio Count Rate Channel: • Operable channel - SELECTED AT 1PM07J	Determines that this step is not applicable (2 failed channels)	❑	❑	❑
*4. Check Unit MODE: Unit in MODE 2 Unit in MODE 3,4,5 Unit in MODE 6	Determines Unit in MODE 5 and transitions to step 5.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*5. Determine MODE 3,4, or 5 Actions: Check SR channels-Only one failed **Cue: May dispatch operator to check bypss breakers. If so bypass breakers are racked out.** **Cue: No positive reactivity aditions in progress.**	Determines that 2 SR channels have failed and transition t the RNO column: • Verifies reactor trip and bypass breakers are open • Suspend positive reactivity additions (N/A) • Required actions of LCOAR 1BwOL 3.3.9, BDPS (Informs Unit Supervisor) • Monitor Source Range counts (0PM02J): 1NI-NR005B (Computer Point N0063) 1NI-NR006B (Computer Point N0062)(determines this is de-energized)	❑	❑	❑
Cue: Unit Supervisor will take the actions of 1BwOL 3.3.9 **Once the NSO begins to monitor SR counts on 0PM02J or computer points, inform NSO that an extra NSO wil continue to monitor.**				
*6 Place LEVEL TRIP switch for the affected channel(s) on 1PM07J in BYPASS **Cue: Level Trip switch for N-32 in BYPASS.**	Place LEVEL TRIP switch for N-32 in BYPASS	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*7. Place HIGH FLUX AT SHUTDOWN switch for the affected channel(s) on 1PM07J in-BLOCK. **Cue: HIGH FLUX AT SHUTDOWN switch for N-32 in BLOCK.**	Place HIGH FLUX AT SHUTDOWN switch for N-32 in BLOCK	❑	❑	❑
*8. Place both BDPS RESET/BLOCK switches to BLOCK: Train A Train B **Cue: BDPS for Train A/B in BLOCK**	Places BDPS for Train A/B in BLOCK.	❑	❑	❑
9. Check CV pump suction aligned to VCT: • Check VCT level greater than 37% **Cue: VCT Level 41%** • Check VCT pressure between 15 psig and 65 psig **Cue: VCT Pressure 25 psig** • VCT outlet isol valves OPEN: 1CV112B 1CV112C **Cue: 1CV112B/C Open** • RWST to CV pump suction valve(s)-Closed 1CV112D 1CV112E **Cue: 1CV112D/E Closed** **Note: Ensure student does not interfere with the RH JPM.**	Verifies VCT level >37% and pressure between 15-65 psig. Verifies 1CV112B/C are open. Verifies 1CV112D/E are closed.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
10. Bypass BDPS signal for the affected SR channel: • Place BDPS TEST-NORMAL switch on card NM107 (inside SR drawer) in-TEST: **NOTE: Use in book diagram to show how to operate switch.** **NOTE: Simulator Operator action: IRF RP25 to BYPASS.** • Check BDPS BYPASSED-LIT **Cue: BDPS TEST-NORMAL switch is in TEST**	Places BDPS TEST-NORMAL switch to TEST	❑	❑	❑
11. Check BDPS BYPASSED (1-10-D3)- LIT. **Cue: (1-10-D3) is LIT**	Check BDPS BYPASSED - LIT	❑	❑	❑
12. Check BDPS - OPERABLE Refer to Tech Spec 3.3.9 **Cue: Unit Supervisor states that BDPS is inoperable.**	Informs Unit Supervisor to verify operability of BDPS per Tech Spec 3.3.9. Transitions to step 5.i	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
13. Notify US to evaluate Tech Specs.	Inform US to Evaluate T.S.	❑	❑	❑

Cue: US Notified

Cue: THIS COMPLETES JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are the Unit NSO.

2. The Unit is in MODE 5.

3. One hour ago N-31 failed low. All actions of 1BwOA INST-1 have been completed.

4. N-32 has just failed.

5. Bus 142 is de-energized due to SAT failure.

INITIATING CUES:

1. Perform the actions of 1BwOA INST-1 for the failed N-32 Source Range channel.

JOB PERFORMANCE MEASURE

TASK TITLE: **Perform Local Emergency Boration**

JPM No.: **N-89** REV: 2

TPO No.: IV.D.OA-08 K&A No.: APE068AA1.08

TASK No.: OA-033 K&A IMP: 4.2/4.2

TRAINEE:_____

EVALUATOR:_____ DATE:_____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

CRITICAL ELEMENTS: **(*)2,3** JPM TIME:_____ MINUTES

CRITICAL TIME: **NA** APPROX COMPLETION TIME **8** MINUTES

EVALUATION METHOD:

_____ PERFORM
__X__ SIMULATE

LOCATION:

__X__ IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. 2BwOA PRI-2 Rev. 58, Emergency Boration

MATERIALS:

Copy of 2BwOA PRI-2

TASK STANDARDS:

1. Establish an emergency boration flowpath locally.

TASK CONDITIONS:

1. You are the Unit 2 Safe Shutdown NLO.
2. There has been a fire in the MCR requiring evacuation.
3. Both Remote Shutdown Panels are manned and a Unit shutdown is in progress on both units.
4. Unit 2 is currently in 2BwOA PRI-2 "Emergency Boration".
5. 2CV8104 will NOT open from the RSDP.
6. The boric acid filter has been determined clogged.
7. Alternate boration flow from the RWST can not be established.

INITIATING CUES:

1. The US has directed you to establish an emergency boration flowpath per 2BwOA PRI-2 step 2.a RNO.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____				
1. Refer to 2BwOA PRI-2 step 2.a RNO. **CUE: After examinee has located the procedure, provide him with a copy.**	• Locate and open 2BwOA PRI-2 to step 2a RNO. • Determines correct portion of 2a RNO.	❑	❑	❑
*2.If the boric acid filter is plugged, THEN bypass the filter by opening the boric acid filter supply to boric acid tank valve: 2AB8458 (401' N17) **Cue: 2AB8458 is open**	Determines boric acid filter is plugged from initial conditions. Opens valve 2AB8458	❑	❑	❑
*3.Manually or locally open emergency boration valve: - 2CV8104 (426' Q19 VCT Valve Aisle) - (MCC 232X5 B1) **Cue: Breaker at MCC232X5 B1 is open** **Note: Ensure motor is declutched from handwheel 2CV8104 is open**	Establish local emergency boration flowpath through 2CV8104 as follows: • **LOCATE** MCC232X5 B1 • **DE-ENERGIZE** MCC232X5 B1 • **LOCATE** 2CV8104 (426' Q19 VCT Valve Aisle) • **OPEN** 2CV8104 Emergency Boration valve	❑	❑	❑
(CUE:) THIS COMPLETES THIS JPM.				
RECORD STOP TIME _____				

COMMENTS:

TASK CONDITIONS:

1. You are the Unit 2 Safe Shutdown NLO.
2. There has been a fire in the MCR requiring evacuation.
3. Both Remote Shutdown Panels are manned and a Unit shutdown is in progress on both units.
4. Unit 2 is currently in 2BwOA PRI-2 "Emergency Boration".
5. 2CV8104 will NOT open from the RSDP.
6. The boric acid filter has been determined clogged.
7. Alternate boration flow from the RWST can not be established.

INITIATING CUES:

1. The US has directed you to establish an emergency boration flowpath per 2BwOA PRI-2 step 2.a RNO.

JOB PERFORMANCE MEASURE

TASK TITLE: **Establish Local Emergency Control of the 2A SX Pump.**

JPM No.: **N-67**

REV: 8

TPO No.: IV.D.OA-35

K&A No.: 013A4.01
2.1.30

TASK No.: OA-099

K&A IMP: 4.5/4.8
3.9/3.4

TRAINEE:_____

EVALUATOR:_____

DATE:_____

The Trainee: PASSED _____ this JPM.

FAILED _____

TIME STARTED: _____

TIME FINISHED: _____

CRITICAL ELEMENTS: **(*) 11,13**

JPM TIME:_____ MINUTES

CRITICAL TIME: **NA**

APPROX COMPLETION TIME **16** MINUTES

EVALUATION METHOD:

_____ PERFORM
__X__ SIMULATE

LOCATION:

__X__ IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. 2BwOA ELEC-5, Att. A, Rev. 54, Local Emergency Control of Safe Shutdown Equipment Unit 2.

MATERIALS:

Copy of 2BwOA ELEC-5, Att. A; F-2 Key to obtain electrical safety equipment and tools, and laser pointer.

TASK STANDARDS:

1. Perform a local emergency start of 2A SX pump.

TASK CONDITIONS:

1. You are an NLO assigned to assist the shift.
2. U-2 has just tripped in conjunction with an electrical fire in the U2 Remote Shutdown Panel.
3. 2B SX pump has tripped on overcurrent, and the SX systems can not be cross-tied.
4. The 2A SX pump will not manually start with the MCR switch.

INITIATING CUES:

1. The Shift Manager has directed you to perform a local emergency start of 2A SX pump per 2BwOA ELEC-5 Attachment A.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

RECORD START TIME _____

Note(s): Prompt the use of a laser pointer to show the location of required actions inside electrical cabinets. After locating the correct breaker cubicle, move to an unassigned cubicle to complete the JPM. DO NOT OPEN THE DOOR TO THE 2A SX PUMP BREAKER CUBICLE.

1.	Refer to 2BwOA ELEC-5.	Locate and Open 2BwOA ELEC-5 and determine that Attachment A step 1 is applicable:	❑	❑	❑

CUE: After the correct procedure is located, provide a copy.

CAUTION

EITHER of the following will disable protective trips on 4KV or 6.9KV equipment:

- o Loss of DC control power
- o Control power fuses removed

2.	Proceed to 2A SX pump breaker cubicle.	Locate 2A SX pump breaker cubicle.	❑	❑	❑

CUE: When cubicle is located, move to Bus 243 Cub #2 (unassigned).

3.	Local Closing of 4KV or 6.9KV Breakers: Check breaker - RACKED IN	Perform the following to attempt local closure of 2A SX pump breaker: • CHECK breaker RACKED IN.	❑	❑	❑

Cue: 2A SX Pump breaker is RACKED IN.

4.	Check relay targets - NOT UP	CHECK relay targets NOT UP.	❑	❑	❑

Cue: No targets are up.

5.	Check trip and close circuit fuses - INSTALED	CHECK trip and close circuit fuses INSTALLED.	❑	❑	❑

Cue: Fuses are installed.

6.	Check closing spring CHARGED	CHECK closing spring CHARGED.	❑	❑	❑

Cue: Closing spring is charged.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
7. Verify MCR control switch in - AFTER TRIP	VERIFY MCR control switch in AFTER TRIP.	❑	❑	❑
Cue: MCR switch is in AFTER TRIP				
8. Close breaker with the close reach rod.	Don or simulate donning PPE for HVS (must occur before attempting closure with reach rod)	❑	❑	❑
	o CLOSE breaker using the close reach rod.			
Cue: Breaker trips back open. If another attempt is made, breaker trips open again.				
	o Inform SM/US of failed attempts.			
Cue: If contacted as SM/US acknowledge failed attempt(s)and direct continuing with procedure. The 2B SX pump and unit crosstie are still not available.				
9. Verify equipment-RUNNING	o Determines the 2A SX pump is not running from previous actions.	❑	❑	❑
Cue: Breaker CLOSED light is NOT LIT, OPEN light is LIT. If asked as NSO in MCR, NO run current indicated at MCB. If asked as NLO at pump, pump is NOT running.	o Transitions to step 2.			

CAUTION

DO NOT attempt to close a breaker without control power if its power cable is damaged.

10. Start of equipment without control power: - Select equipment for start without control power - Check relay targets-not up	Determines 2A SX pump is still the pump to start. Verifies no relay targets are up.	❑	❑	❑

Cue: Relay Targets not up.

Note: HVS PPE must be worn (or simulated being worn as discussed previously) for this next step.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*11. Pull trip and close circuit fuses. **Cue: Trip and Close circuit fuses are removed.**	Dons protective equipment Pulls trip and close circuit fuses	❑	❑	❑
12. Check closing spring-CHARGED **Cue: Closing spring is charged.**	Verifies closing spring is charged.	❑	❑	❑
*13. Close breaker with close reach rod **Cue: Breaker is closed.**	Closes the 2A SX pump breaker with the reach rod.	❑	❑	❑
14. Verify equipment running. **CUE: Breaker indicates CLOSED.** **If asked as MCR NSO, report run current indicated.** **If asked as NLO at pump, report pump is running, and cubicle cooler is running**	Verify 2A SX pump is running: o Breaker indicates CLOSED. o Ammeter at MCB indicates RUN CURRENT. o Local observation. o Cubicle cooler is RUNNING.	❑	❑	❑

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an NLO assigned to assist the shift.
2. U-2 has just tripped in conjunction with an electrical fire in the U2 Remote Shutdown Panel.
2. 2B SX pump has tripped on overcurrent, and the SX systems can not be cross-tied.
4. The 2A SX pump will not manually start with the MCR switch.

INITIATING CUES:

1. The Shift Manager has directed you to perform a local emergency start of 2A SX pump per 2BwOA ELEC-5 Attachment A.

JOB PERFORMANCE MEASURE

TASK TITLE: **Local Reset of SI Signal**

JPM No.: **N-85** REV: 5

TPO No.: IV.D.OA-27 K&A No.:E02EA1.1

TASK No.: EP-027 K&A IMP: 4.0/3.9

TRAINEE:_____

EVALUATOR:_____ DATE:_____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

CRITICAL ELEMENTS: **(*) 3** JPM TIME:_____ MINUTES

CRITICAL TIME: **NA** APPROX COMPLETION TIME **15** MINUTES

EVALUATION METHOD:

_____ PERFORM
__X__ SIMULATE

LOCATION:

__X__ IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. 2BwOA PRI-5, Rev. 57D, Control Room Inaccessability, Attachment E ESF Manual Block or Reset.

MATERIALS:

2BwOA PRI-5 Attachment E
2PA10J cabinet key, Laser Pointer.

TASK STANDARDS:

1. Reset Safety Injection signal as required by 2BwOA PRI-5, Attachment E.

TASK CONDITIONS:

1. You are an extra NSO.
2. An inadvertant SI has occurred and the transition from 2BwEP-0 to 2BwEP ES-1.1 has just been made.
3. The resetting of SI from the MCB was unsuccessful for Train B.

INITIATING CUES:

1. The US directs you to locally reset Train B per 2BwOA PRI-5, Attachment E. No habitability concerns exist for entry into the AEER.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
RECORD START TIME _____				

INSTRUCTOR INFORMATION: PROMPT the use of a LASER pointer to show the location of required actions inside electrical cabinets.

1. Refer to 2BwOA PRI-5, Attachment E. **Notes: After operator locates the procedure, provide a copy. Initiating cue provided information that allows AEER entry.** **If actually going to the RSP, have the examinee locate the jumpers and keys, but do not allow them to be removed from the cabinet.** **Keys may be obtained from the key cabinet in the shift office or from the MCR rack.)**	Locate and open 2BwOA PRI-5, Attachment E. Determine entry can be made into the U-2 AEER.	❑	❑	❑
	Obtain the following: • Key to EF cabinet (2PA10J) from RSP. • 2 Jumpers from cabinet at RSP or MCR.	❑	❑	❑
2. Determine Reactor Trip Breaker (P4) status. **CUE: P4 Bypass Permissive is in solid, both trip breakers are OPEN**	**VERIFY:** Reactor Trip Breakers OPEN (P4 Actuated) by either of the following: o Call the control room to obtain status. o Check breakers locally.	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*3. Install jumpers across terminal points listed below for Trains A and/or B:	In the AEER (Aux bldg, 451 elev),	❑	❑	❑
a. Install TWO jumpers per train to -RESET:	At 2PA10J, Unlock and OPEN the rear of 2PA10J.			
TRAIN B Rear of Logic Cabinet - 2PA10J Terminal Board TB505 points 7 and 8 (Resets SI signal, blocks Auto SI) Rear of Output Cabinet - 2PA10J Terminal Board TB644 points 9 and 10 (Unlatches slave relays)	Reset Train B SI: **INSTALL a jumper at each of the following:** • Rear of LOGIC Cabinet, Terminal Board TB505, points 7 and 8.	❑	❑	❑
	• Rear of OUTPUT Cabinet, Terminal Board TB644, points 9 and 10.	❑	❑	❑

CUE: Inform examinee that all required actions in 2PA10J are to be simulated, and DO NOT break the plane of 2PA10J.

CUE: Jumper installed across points 7 and 8.

CUE: Jumper installed across points 9 and 10.

CUE: If either of the jumpers were installed improperly, then when the candidate requests the status of the Train B SI signal, provide the following: *The control room reports that Train B SI signal is still active.*

b. Check K602 relay(s) DEENERGIZED. o Train A (2PA09J) o Train B (2PA10J)	Ensures K602 relay DE-ENERGIZED at 2PA10J.	❑	❑	❑

CUE: K602 post is OUT.

c. Remove jumpers	Removes both jumpers that were previously installed utilizing appropriate safety precautions. • Both jumpers.	❑	❑	❑

(CUE: Both jumpers are removed)

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. An inadvertent SI has occurred and the transition from 2BwEP-0 to 2BwEP ES-1.1 has just been made.
3. The resetting of SI from the MCB was unsuccessful for Train B.

INITIATING CUES:

1. The US directs you to locally reset Train B per 2BwOA PRI-5, Attachment E. No habitability concerns exist for entry into the AEER.