Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

Reactor has tripped.

Transition from 1-E-0 to 1-ES-0.1 has been completed.

INITIATING CUE

You are requested to transfer the steam dumps to the steam pressure mode in accordance with 1-ES-0.1.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

R743 M

TASK

Transfer the steam dumps to the steam pressure mode following a reactor trip (1-ES-0.1).

TASK STANDARDS

Steam dumps are transferred to the steam pressure mode and then manually closed when a subsequent failure of the main steam pressure transmitter causes the steam dumps to fully open.

K/A REFERENCE:

041-A4.04 (2.7/2.7)

ALTERNATE PATH:

1-MS-PT-1464 fails high causing steam dumps to fully open in steam pressure mode.

TASK COMPLETION TIMES

Validation Time = 10 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

R743 M

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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.

PREREQUISITES

The trainee has completed the applicable course knowledge training at the reactor operator level.

INITIAL CONDITIONS

Reactor has tripped.

Transition from 1-E-0 to 1-ES-0.1 has been completed.

INITIATING CUE

You are requested to transfer the steam dumps to the steam pressure mode in accordance with 1-ES-0.1.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

Copy of 1-ES-0.1 signed off to the point of transferring the steam dumps to steam pressure mode.

PERFORMANCE STEPS

START TIME _____

1	Verify condenser steam dumps are available.	Procedure Step 13.a

SAT [ ] UNSAT [ ]

Standards	Operator verifies steam dumps available (annunciator A-G1 not lit, MSIVs open).

Notes/Comments

2	Verify condenser steam dumps closed. **NO**	Procedure Step 13.b

SAT [ ] UNSAT [ ]

Standards	Operator notes steam dumps are NOT closed and goes to Step 13.b RNO (Transfer steam dumps to steam pressure mode in manual).

Notes/Comments

3	Put steam dump controller to MANUAL.	Procedure Step 13.b.1 RNO
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Steam dump controller is placed in MANUAL.

Notes/Comments

4	Match steam dump controller output to demand indicated on TI-1408.	Procedure Step 13.b.2 RNO
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Steam dump controller output is matched to 1-MS-TI-1408 indication.	
	Notes/Comments	

5	Put mode selector switch to STEAM PRESS.	Procedure Step 13.b.3 RNO
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Mode selector switch is placed in STEAM PRESS.	
	Notes/Comments	

6	If desired, then return steam dump controller to AUTO.	Procedure Step 13.b.4
Critical Step		SAT [ ] UNSAT [ ]

Note to Evaluator	When the steam dump controller is placed in AUTO, a malfunction will cause 1-MS-PT-1464 to fail high and fully open all steam dumps.

Standards	Steam dump controller is placed in AUTO. Steam dumps are noted to be fully open. Steam dump interlock switch placed in OFF/Reset, **OR** Steam dump controller placed in manual and demand lowered to close steam dumps.

Performance Cue(s)	It is desired to return the steam dump controller to auto.

Performance Cue(s)	(After steam dumps are closed) Assume another operator will complete this task.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
RXXX

TASK

Transfer the steam dumps to the steam-pressure mode following a reactor trip (1-ES-0.1).

CHECKLIST

_____ Recall IC 111.

_____ Enter the following malfunctions:

- MS16, severity 1, ramp 30 seconds
- MS0501
- MS0502
- MS0503
- SI0701
- SI0702

_____ Perform steps of 1-ES-0.1 up to transferring the steam dumps to the steam pressure mode (step 13).

_____ Place the simulator in FREEZE.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13.	TRANSFER CONDENSER STEAM DUMP TO STEAM PRESSURE MODE:	
	☐ a) Verify Condenser Steam Dumps are available	☐ a) Use SG PORVs. ☐ GO TO Step 14.
	☐ b) Verify Condenser Steam Dumps - CLOSED	b) Transfer Steam Dumps to Steam Pressure mode in manual: ☐ 1) Put Steam Dump controller to MANUAL. ☐ 2) Match Steam Dump controller output to demand indicated on TI-1408. ☐ 3) Put Mode Selector switch to STEAM PRESS. ☐ 4) IF desired, THEN return Steam Dump Controller to AUTO. ☐ 5) GO TO Step 14.

(STEP 13 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

13. TRANSFER CONDENSER STEAM DUMP TO STEAM PRESSURE MODE: (Continued)

c) Place Condenser Steam Dumps in Steam Pressure mode:

☐ 1) Put both Steam Dump Interlock switches to OFF/RESET

☐ 2) Put Steam Dump Controller to MANUAL

☐ 3) Put Mode Selector switch to STEAM PRESS

☐ 4) Verify or reduce Steam Dump demand to zero

☐ 5) Return Steam Dump Controller to AUTO

☐ 6) Verify Steam Dump demand - ZERO

☐ 7) Put both Interlock switches to ON

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

A faulty relay in breaker 15H11 (1H bus normal feeder) requires replacement.

The Generator Output breaker (G-12) is operable.

Breaker 1-EP-BKR-15B11 (1H bus alternate feeder) and "B" RSST transformer are operable.

Lake level is 250'.

An operator is standing by at the RSSTs with procedure to adjust tap changers, if needed.

INITIATING CUE

You are requested to transfer 1H emergency bus from "C" reserve station service transformer to 1B station service bus in accordance with 1-OP-26.1. Control operations will NOT defeat the directional overcurrent relays on 15H11 (one of these relays is faulty).

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

N522

TASK

Transfer an emergency bus from a reserve station service transformer to a station service bus (1-OP-26.1).

TASK STANDARDS

Breakers 15B11 and 15H1 are closed and breakers 15H11 and 15F3 are opened.

Task was performed as directed by the procedure referenced in the task statement within parentheses (one of the underlined procedures if several are cited).

K/A REFERENCE:

062A4.07 (3.1/3.1)

ALTERNATE PATH:

N/A

TASK COMPLETION TIMES

Validation Time = 10 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

N522

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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Instructions for In-Plant JPMs

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PREREQUISITES

Since the objectives for the task have been trained and evaluated in a previous step, no prerequisites are required.

INITIAL CONDITIONS

A faulty relay in breaker 15H11 (1H bus normal feeder) requires replacement.

The Generator Output breaker (G-12) is operable.

Breaker 1-EP-BKR-15B11 (1H bus alternate feeder) and "B" RSST transformer are operable.

Lake level is 250'.

An operator is standing by at the RSSTs with procedure to adjust tap changers, if needed.

INITIATING CUE

You are requested to transfer 1H emergency bus from "C" reserve station service transformer to 1B station service bus in accordance with 1-OP-26.1. Control operations will NOT defeat the directional overcurrent relays on 15H11 (one of these relays is faulty).

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

Sync key

PERFORMANCE STEPS

START TIME _____

1	Verify the initial conditions are satisfied.	Procedure Step 5.5.1
		SAT [ ] UNSAT [ ]

Standards	Initial conditions are verified to be satisfied.

Notes/Comments

2	Review precautions and limitations.	Procedure Step 5.5.2
		SAT [ ] UNSAT [ ]

Standards	Precautions and limitations are reviewed.

Notes/Comments

3	If 1-FW-P-1B is not running, then place in pull-to-lock.	Procedure Step 5.5.3
		SAT [ ] UNSAT [ ]

Standards	• Checks 1-FW-P-1B is not running. • Places pump switches in PTL.

Notes/Comments

4	Check G-12 operable (to ensure power maintained to 1H bus).	Procedure Step 5.5.4
		SAT [ ] UNSAT [ ]

Standards	G-12 verified operable per initial conditions.

Notes/Comments

5	Check "B" SS is on normal feed (to ensure power maintained to 1H bus).	Procedure Step 5.5.4

SAT [ ] UNSAT [ ]

Standards	Checks 1-EP-BKR-15B2 is closed

Notes/Comments

6	If Control Ops is available, then defeat the directional overcurrent relays on breaker 15H11.	Procedure Step 5.5.5

SAT [ ] UNSAT [ ]

Standards	Operator NA's step (per initiating cue) and proceeds to the next applicable step.

Notes/Comments

7	Close the station service supply breaker to the emergency bus.	Procedure Step 5.5.6
Critical Step		SAT [ ] UNSAT [ ]

Standards	15B11 control switch is placed in CLOSE.

Notes/Comments

8	Check the applicable attachment to determine the incoming voltage and running voltage sources.	Procedure Step 5.5.7
		SAT [ ] UNSAT [ ]

Standards	Bus 1H is determined to be incoming and bus 1B is determined to be running.

Notes/Comments

9	Place the sync key for 15H1 in ON.	Procedure Step 5.5.8
	Critical Step	SAT [ ] UNSAT [ ]

Standards	15H1 sync key is placed in ON.

Notes/Comments

10	Request the OATC to have the 1B station service transformer tap changer or the "C" RSST tap changer adjusted so that the running voltage is 0 - 2 volts higher than incoming voltage.	Procedure Step 5.5.9

SAT [ ] UNSAT [ ]

Standards	Running voltage is verified 0-2 volts higher than incoming voltage. If not, either the 1B station service transformer tap changer or the "C" reserve station service tap changer has been adjusted until running voltage is 0 - 2 volts higher than incoming voltage.

Notes/Comments

Voltage will be within 0-2 volts. No tap changer adjustment will be necessary.

11	Close breaker 15H1.	Procedure Step 5.5.10
	Critical Step	SAT [ ] UNSAT [ ]

Standards	15H1 control switch is placed in CLOSE.

Notes/Comments

12	Verify current increases on the 4160v bus 1B Alt Feed AC Amps ammeter.	Procedure Step 5.5.11

SAT [ ] UNSAT [ ]

Standards	Current is verified to increase on the 4160v bus 1B Alt Feed AC Amps ammeter.

Notes/Comments

13	Place the sync key for the emergency bus alternate feeder breaker to OFF.	Procedure Step 5.5.12

SAT [ ] UNSAT [ ]

Standards	15H1 sync key is placed in OFF.

Notes/Comments

14	Open the emergency bus normal feeder breaker.	Procedure Step 5.5.13.a
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: 15H11 control switch is placed in OPEN.	
	Notes/Comments	

15	Open the transfer bus supply breaker to the emergency bus.	Procedure Step 5.5.13.b
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: 15F3 control switch is placed in OPEN.	
	Notes/Comments	

16	Verify 1H voltage is between 4200 and 4400 volts	Procedure Step 5.5.13.c

SAT [ ] UNSAT [ ]

Standards	Verifies 1H voltage between 4200 and 4400 volts.

Notes/Comments

17	Request Control Operations to restore the directional overcurrent relay on breaker 15H11 to normal.	Procedure Step 5.5.14

SAT [ ] UNSAT [ ]

Standards	Operator N/As step and states that the task is complete

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
N522

TASK

Transfer an emergency bus from a reserve station service transformer to a station service bus (1-OP-26.1).

CHECKLIST

_____ Recall IC 112.

_____ Place the simulator in RUN.

_____ Close breaker 15B11.

_____ Place sync key for 15H1 in ON.

_____ Adjust 1B station service tap changer or "C" RSST tap changer so RUNNING voltage is 1 volt higher than INCOMING voltage using PNID screen.

_____ NOTE: May need to leave tap changer in MANUAL.

_____ Place sync key for 15H1 in OFF.

_____ Open breaker 15B11.

_____ Place the simulator in FREEZE.

MOVE SYNC KEY TO "J" EDG BREAKER BETWEEN RUNS

5.5 Transferring 1H Emergency Bus from F Transfer Bus (C Reserve Station Service Transformer) to 1B Station Service Bus

NOTE: When Emergency Bus 1H is cross-tied to Station Service Bus 1B, the Unit 1 Main Generator MVAR MUST be limited to +300 MVAR Out (lagging) to ensure adequate Bus 1H voltage in accordance with GDC-17. No additional restrictions exist for Unit 1 Generator voltage other than 21.4 KV to 23.1 KV (machine rating). **(References 2.3.13 and 2.4.12)**

_____ 5.5.1 Check the Initial Conditions are satisfied.

_____ 5.5.2 Review the Precautions and Limitations.

_____ 5.5.3 IF 1-FW-P-1B, 1B Main Feedwater Pump, is NOT running, THEN place 1-FW-P-1B in PULL-TO-LOCK. **(Reference 2.4.9)**

NOTE: The offsite circuit to Bus 1H cannot be considered operable if Bus 1H is being supplied from 1B Station Service Bus when 1B Station Service bus is being fed from "B" RSST, regardless of which 34.5 KV bus is supplying "B" RSST. **(Reference 2.4.10)**

5.5.4 To ensure power is maintained to 1H Emergency Bus in accordance with Tech Spec 3.8.1 or 3.8.2 as applicable and prevent the possibility of the 1H Bus and the 1J Bus having the same off-site power source, check BOTH of the following are satisfied, OR enter the appropriate Action of Tech Spec 3.8.1 or 3.8.2 as applicable for one offsite circuit inoperable: **(References 2.4.2 and 2.4.10)**

_____ • Generator Output Breaker G-12 is operable OR open

_____ • "B" Station Service is on NORMAL feed (breaker 1-EP-BKR-15B2 is closed)

CAUTION

IF the Directional Overcurrent relays are operable, THEN the possibility exists that 1-EE-BKR-15H11 may be tripped by the Directional Overcurrent relays when transferring the 1H Emergency Bus from F Transfer Bus (C Reserve Station Service Transformer) to 1B Station Service Bus.

5.5.5 IF Control Operations is available, THEN defeat the Directional Overcurrent relays on Breaker 1-EE-BKR-15H11 as follows:

SRO a. Have the SRO approve defeating the 1-EE-BKR-15H11 Directional Overcurrent relays.

_____ b. Have Control Operations perform Attachment 1, Jumper Installation To Defeat 1-EE-BKR-15H11 Directional Overcurrent Trip.

SRO c. Notify the SRO that the 1-EE-BKR-15H11 Directional Overcurrent relays have been defeated.

_____ 5.5.6 Close breaker 15B11.

_____ 5.5.7 Check Attachment 5, 4160V Synchronization Incoming and Running Volts, to determine the Incoming Voltage and the Running Voltage Sources.

_____ 5.5.8 Place the sync key for 15H1 in ON.

_____ 5.5.9 Adjust Unit 1 B Station Service Tap Changer using 1-GOP-26.12, Operation Of B Station Service Transformer Tap Changer, OR C RSS Transformer Tap Changer using 0-GOP-26.1, Operation Of Reserve Station Service Transformer Tap Changer, so that the RUNNING Voltage is 0-2 volts higher than the INCOMING voltages.

_____ 5.5.10 Close breaker 15H1.

_____ 5.5.11 Check current increases on the 4160 V Bus 1B Alt Feed AC Amps indicator on 1-EI-CB-08A.

_____ 5.5.12 Place the sync key for 15H1 in OFF.

5.5.13 Do the following:

_____ a. Open breaker 15H11.

_____ b. Open breaker 15F3.

_____ c. Check 1H bus voltage is between 4200 and 4400 Volts.

5.5.14 IF Control Operations defeated the 1-EE-BKR-15H11 Directional Overcurrent relays, THEN enable the Directional Overcurrent relays on Breaker 1-EE-BKR-15H11 as follows:

_____ SRO a. Have the SRO approve enabling the 1-EE-BKR-15H11 Directional Overcurrent relays.

_____ b. Have Control Operations perform Attachment 2, Jumper Removal To Enable 1-EE-BKR-15H11 Directional Overcurrent Trip.

_____ SRO c. Notify the SRO that the 1-EE-BKR-15H11 Directional Overcurrent relays have been enabled.

Completed by: _____ Date: _____

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

1-E-1, "Loss of Reactor or Secondary Coolant," has directed the transition to 1-ES-1.4, "Transfer to Hot Leg Recirculation."

Safety Injection System is in the cold-leg recirculation mode.

Charging pump 1-CH-P-1B is flowing through the boron injection tank.

Charging pumps 1-CH-P-1A and 1C are not available.

INITIATING CUE

You are requested to transfer the Safety Injection System to the hot-leg recirculation mode in accordance with 1-ES-1.4, "Transfer to Hot Leg Recirculation."

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

R198 A

TASK

Transfer the Safety Injection System to the hot-leg recirculation mode (1-ES-1.4).

TASK STANDARDS

Safety Injection System is transferred to the hot-leg injection mode.

K/A REFERENCE:

006A4.07 (4.4/4.4)

ALTERNATE PATH:

Only one charging pump is in service.

TASK COMPLETION TIMES

Validation Time = 13 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

R198 A

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

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Instructions for In-Plant JPMs

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PREREQUISITES

The trainee has completed the applicable course knowledge training at the reactor operator level.

INITIAL CONDITIONS

1-E-1, "Loss of Reactor or Secondary Coolant," has directed the transition to 1-ES-1.4, "Transfer to Hot Leg Recirculation."

Safety Injection System is in the cold-leg recirculation mode.

Charging pump 1-CH-P-1B is flowing through the boron injection tank.

Charging pumps 1-CH-P-1A and 1C are not available.

INITIATING CUE

You are requested to transfer the Safety Injection System to the hot-leg recirculation mode in accordance with 1-ES-1.4, "Transfer to Hot Leg Recirculation."

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

None

PERFORMANCE STEPS

START TIME _____

1	Close the low-head safety injection pump discharge valves.	Procedure Step 1.a.1
	Critical Step	SAT [ ] UNSAT [ ]

NOTE TO THE EVALUATOR	This step is not critical if 1890C and 1890D are closed.
Standards	1-SI-MOV-1864A and 1-SI-MOV-1864B are closed.

Notes/Comments

2	Close the low-head safety injection pump cold-leg injection valves.	Procedure Step 1.a.2
	Critical Step	SAT [ ] UNSAT [ ]

NOTE TO THE EVALUATOR	This step is not critical if 1864A and 1864B are closed.
Standards	1-SI-MOV-1890C and 1-SI-MOV-1890D are closed.

Notes/Comments

3	Open the following low-head safety injection pump hot-leg injection valves: • 1-SI-MOV-1890A • 1-SI-MOV-1890B	Procedure Step 1.b
	Critical Step	SAT [ ] UNSAT [ ]

Standards	1-SI-MOV-1890A and 1-SI-MOV-1890B are energized by depressing the ON push-buttons.
Standards	Key switches for 1-SI-MOV-1890A and 1-SI-MOV-1890B are placed in OPEN.

Notes/Comments

4	Verify two charging pumps in service. **NO** (Alternate Path)	Procedure Step 2
		SAT [ ] UNSAT [ ]

Standards	Operator notes only one charging pump is in-service (may also refer to Initial Conditions). Operator applies procedure step 2 RNO.

Notes/Comments

5	Verify 1-CH-HCV-1311, Auxiliary Spray Valve, is closed.	Procedure Step 5.a
		SAT [ ] UNSAT [ ]

Standards	1-CH-HCV-1311 is verified closed (green light on, red light off)

Notes/Comments

6	Open normal charging line isolation valves.	Procedure Step 5.b
	Critical Step	SAT [ ] UNSAT [ ]

Standards	1-CH-HCV-1310, 1-CH-MOV-1289A & B are opened or verified open.

Notes/Comments

7	Open 1-CH-FCV-1122.	Procedure Step 5.c
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: 1-CH-FCV-1122 is placed in manual and opened to establish 60 gpm charging flow.	
	Notes/Comments	

8	Verify 1-SI-MOV-1836 and 1869A closed.	Procedure Step 5.d
		SAT [ ] UNSAT [ ]
	Standards: 1-SI-MOV-1836 and 1869A verified closed by checking light indication.	
	Notes/Comments	

9	Close BIT inlet isolation valves.	Procedure Step 5.e
	Critical Step	SAT [ ] UNSAT [ ]

NOTE TO THE EVALUATOR	Closing BIT inlets is not critical as long as outlets are closed.
Standards	1-SI-MOV-1867A and 1867B are closed.

Notes/Comments

10	Close BIT outlet isolation valves.	Procedure Step 5.f
	Critical Step	SAT [ ] UNSAT [ ]

NOTE TO THE EVALUATOR	Closing BIT outlets is not critical as long as inlets are closed.
Standards	1-SI-MOV-1867C and 1867D are closed.

Notes/Comments

11	Open 1-SI-MOV-1869B.	Procedure Step 5.g
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Key switch for 1-SI-MOV-1869B is placed in OPEN.

Notes/Comments

12	Verify hot leg injection flow.	Procedure Step 5.h
		SAT [ ] UNSAT [ ]

Standards	Operator verifies flow indicated on 1-SI-FI-1943, 1943-1, 1933, 1960, and 1932.

Notes/Comments

13	Close normal charging isolation valves.	Procedure Step 5.i
	Critical Step	SAT [ ] UNSAT [ ]

Standards	1-CH-MOV-1289A and 1289B are closed.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
R198A

TASK

Transfer the Safety Injection System to the hot-leg recirculation mode (1-ES-1.4).

CHECKLIST

_____ Recall IC 113.

_____ Enter the following malfunctions:

- RC0201
- CH1601
- CH1603

_____ Go to run and perform 1-E-0 to 1-E-1.

_____ Place the simulator in FREEZE.

_____ Put keys in 1-SI-MOV-1890A, 1890B, 1869A, and 1869B.

Dominion

NORTH ANNA POWER STATION

EMERGENCY PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION (WITH NO ATTACHMENTS)	10 PAGE 1 of 7

PURPOSE

To provide instructions for transferring the Safety Injection System to the Hot Leg Recirculation Mode.

ENTRY CONDITIONS

This procedure is entered from:

- 1-E-1, LOSS OF REACTOR OR SECONDARY COOLANT, or
- When conditions are met with TSC or Plant Staff concurrence, that transfer to Hot Leg Recirculation Mode is required. This may be eventually required, after transferring to Cold Leg Recirculation during implementation of any of the following:
  - 1-ES-1.2, POST-LOCA COOLDOWN AND DEPRESSURIZATION
  - 1-ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED
  - 1-ECA-3.2, SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY DESIRED

CONTINUOUS USE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: If any hot leg injection MOV will not open, the TSC should be consulted to determine the optimal SI alignment.

1.___ ALIGN LOW-HEAD SI PUMPS FOR HOT LEG RECIRCULATION:

a) Close the following valves:

1) Low-Head SI Pump Discharge Valves:

☐ • 1-SI-MOV-1864A

☐ • 1-SI-MOV-1864B

2) Low-Head SI Pump Cold Leg Injection Valves:

☐ • 1-SI-MOV-1890C

☐ • 1-SI-MOV-1890D

b) Open the Low-Head SI Pump Hot Leg Injection Valves:

☐ • 1-SI-MOV-1890A

☐ • 1-SI-MOV-1890B

2.___ VERIFY TWO CHARGING PUMPS - IN SERVICE

☐ GO TO Step 5.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

3.___ ALIGN CHARGING PUMP FLOWING THE BIT FOR HOT LEG RECIRCULATION:

a) Put the Standby Charging Pump in PTL:

- _____ 1-CH-P-1A
- _____ 1-CH-P-1B
- _____ 1-CH-P-1C

b) Put the Charging Pump that is flowing the BIT in PTL:

- _____ 1-CH-P-1A
- _____ 1-CH-P-1B
- _____ 1-CH-P-1C

c) Isolate the BIT by closing the following valves:

- ☐ • 1-SI-MOV-1867A
- ☐ • 1-SI-MOV-1867B
- ☐ • 1-SI-MOV-1867C
- ☐ • 1-SI-MOV-1867D

☐ d) Open 1-SI-MOV-1869B

☐ e) Start the Charging Pump stopped in Step 3b

(STEP 3 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

3. ALIGN CHARGING PUMP FLOWING THE BIT FOR HOT LEG RECIRCULATION: (Continued)

f) Verify Hot Leg injection flow before continuing:

- ☐ • 1-SI-FI-1943
- ☐ • 1-SI-FI-1943-1
- ☐ • 1-SI-FI-1933 (NQ)
- ☐ • 1-SI-FI-1960 (NQ)
- ☐ • 1-SI-FI-1932 (NQ)

f) Open the Normal Header Discharge Valve for the Charging Pump started in Step 3e:

- ☐ • 1-CH-MOV-1286A (1-CH-P-1A)
- ☐ • 1-CH-MOV-1286B (1-CH-P-1B)
- ☐ • 1-CH-MOV-1286C (1-CH-P-1C)

4.___ ALIGN CHARGING PUMP FLOWING THE ALTERNATE PATH FOR HOT LEG RECIRCULATION:

a) Put the Charging Pump that is flowing the alternate path in PTL:

- _____ 1-CH-P-1A
- _____ 1-CH-P-1B
- _____ 1-CH-P-1C

☐ b) Close 1-SI-MOV-1836

☐ c) Open 1-SI-MOV-1869A

☐ d) Start the Charging Pump stopped in Step 4a

(STEP 4 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.	ALIGN CHARGING PUMP FLOWING THE ALTERNATE PATH FOR HOT LEG RECIRCULATION: (Continued)	
	e) Verify Alternate Header flow: ☐ • 1-SI-FI-1940 ☐ • 1-SI-FI-1940-1	e) Open the Alternate Header Discharge Valve for the Charging Pump started in Step 4d: ☐ • 1-CH-MOV-1287A (1-CH-P-1A) ☐ • 1-CH-MOV-1287B (1-CH-P-1B) ☐ • 1-CH-MOV-1287C (1-CH-P-1C)
	f) Put the Standby Charging Pump in AFTER-STOP: • _____ 1-CH-P-1A • _____ 1-CH-P-1B • _____ 1-CH-P-1C	
	☐ g) GO TO Step 6.	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION: To provide adequate Charging Pump cooling, Charging flow must be maintained at least 60 gpm during transfer to Hot Leg recirculation.

* *

5.___ BIT ISOLATION WITH ONE OPERATING CHARGING PUMP:

☐ a) Verify 1-CH-HCV-1311, Auxiliary Spray Valve is closed.

b) Open Normal Charging Line Isolation Valves:

☐ • 1-CH-HCV-1310

☐ • 1-CH-MOV-1289A

☐ • 1-CH-MOV-1289B

☐ c) Open 1-CH-FCV-1122 in Manual to establish 60 gpm Charging flow.

d) Verify the following valves - CLOSED:

☐ • 1-SI-MOV-1836

☐ • 1-SI-MOV-1869A

RESPONSE NOT OBTAINED: ☐ d) Place control power on <u>AND</u> close valves.

e) Close BIT Inlet Isolation Valves:

☐ • 1-SI-MOV-1867A

☐ • 1-SI-MOV-1867B

(STEP 5 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

5. BIT ISOLATION WITH ONE OPERATING CHARGING PUMP: (Continued)

f) Close BIT Outlet Isolation Valves:

☐ • 1-SI-MOV-1867C

☐ • 1-SI-MOV-1867D

☐ g) Open 1-SI-MOV-1869B.

h) Verify Hot Leg Injection flow:

☐ • 1-SI-FI-1943

☐ • 1-SI-FI-1943-1

☐ • 1-SI-FI-1933 (NQ)

☐ • 1-SI-FI-1960 (NQ)

☐ • 1-SI-FI-1932 (NQ)

h) Do the following:

☐ 1) Verify 1-SI-MOV-1869B closed.

☐ IF NOT, THEN close 1-SI-MOV-1869B.

☐ 2) Open 1-SI-MOV-1869A.

3) Verify Alternate Header flow:

☐ • 1-SI-FI-1940

☐ • 1-SI-FI-1940-1

☐ IF no Alternate Header flow, THEN consult TSC or Plant Staff.

i) Close Normal Charging Line Isolation Valves:

☐ • 1-CH-MOV-1289A

☐ • 1-CH-MOV-1289B

6.___ RETURN TO PROCEDURE AND STEP IN EFFECT

- END -

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

Unit is in mode 5.

One of the pressurizer safety valves has been removed.

Residual Heat Removal System is unavailable for decay-heat removal.

All high-head safety injection pumps are unavailable.

The "B" low-head safety injection pump is unavailable.

INITIATING CUE

You are requested to initiate forced feed-and-spill using the "A" low-head safety injection pump cold-leg injection flow path in accordance with the applicable attachment to 1-AP-11.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

RXXX

TASK

Initiate forced feed-and-spill cooling in response to a loss of residual heat removal (1-AP-11).

TASK STANDARDS

"A" LHSI pump is aligned and flowing to the cold legs.

Reactor Coolant System temperature is stable or decreasing.

K/A REFERENCE:

025AA1.22 (2.9/2.8)

ALTERNATE PATH:

N/A

TASK COMPLETION TIMES

Validation Time = 10 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

RXXX

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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 is in mode 5.

One of the pressurizer safety valves has been removed.

Residual Heat Removal System is unavailable for decay-heat removal.

All high-head safety injection pumps are unavailable.

The "B" low-head safety injection pump is unavailable.

INITIATING CUE

You are requested to initiate forced feed-and-spill using the "A" low-head safety injection pump cold-leg injection flow path in accordance with the applicable attachment to 1-AP-11.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

1-AP-11, Attachment 6

PERFORMANCE STEPS

START TIME _____

1	Stop the containment sump pumps, if desired.	Procedure Step 1
		SAT [ ] UNSAT [ ]

Standards	1-DA-P-4A and 4B control switches are placed in OFF.
Performance Cue(s)	The shift manager desires to conserve containment sump inventory.

Notes/Comments

2	Verify a charging (HHSI) pump available. **NO**	Procedure Step 2
		SAT [ ] UNSAT [ ]

Standards	Answers "No" and goes to Step 5 because all HHSI pumps unavailable as per JPM initial conditions.

Notes/Comments

3	Align a LHSI pump to makeup to the RCS.	Procedure Step 5.a
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Opens 1-SI-MOV-1862A.

Notes/Comments

4	Close both LHSI pump discharge isolation valves to the hot legs.	Procedure Step 5.b
		SAT [ ] UNSAT [ ]

Standards	Closes 1-SI-MOV-1890A&B or ensures closed.

Notes/Comments

5	Open the desired LHSI pump discharge isolation valve.	Procedure Step 5.c
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Opens 1-SI-MOV-1864A.	
	Notes/Comments	

6	Start the desired LHSI pump.	Procedure Step 5.d
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Starts "A" LHSI pump.	
	Notes/Comments	

7	Open the desired LHSI pump discharge isolation valve to the cold legs.	Procedure Step 5.e
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Opens either 1-SI-MOV-1890C or D.	
	Notes/Comments	

8	Establish RCS bleed path using one of the following methods:	Procedure Step 6
		SAT [ ] UNSAT [ ]
	Standards: Verifies one pressurizer safety valve is removed per JPM initial conditions.	
	Notes/Comments	

9	Maintain RCS makeup and heat removal.	Procedure Step 7
		SAT [ ] UNSAT [ ]

Standards	Checks LHSI flow. Checks pressurizer safety valve removed. Checks RWST level greater than 15%.

Notes/Comments

10	When RHR ... is established, then consult with TSC or Plant Staff to determine if SI flow can be stopped. When SI flow can be stopped, then continue with Step 9.	Procedure Step 8
		SAT [ ] UNSAT [ ]

Standards	Task is complete.
Performance Cue(s)	Assume another operator will complete this task.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
RXXX

TASK

Initiate forced feed and spill cooling in response to a loss of residual heat removal (1-AP-11).

CHECKLIST

_____ Recall IC 114.

_____ Place all charging pumps and LHSI pumps in PULL-TO-LOCK.

_____ Depressurize the RCS to atmospheric.

_____ Ensure PRZR PORVs are closed and block valves are open.

_____ Ensure PRZR level is 20% to 30%.

_____ Ensure the following valves are closed:

- SI-MOV-1890C and D
- SI-MOV-1864A and B

_____ Ensure containment sump pump 1-DA-P-4A is in AUTO and 1-DA-P-4B is in OFF.

_____ Enter malfunctions RH0501 and RH0502, delay time = 0.

_____ Place the simulator in FREEZE.

* *

CAUTION:

- If the RCS is vented to the PRT, then PRT pressure indication should be monitored as an indication of RCS pressure. Changes in RCS pressure can result in Reactor Vessel water level changes that may not show on RCS standpipe level indicator 1-RC-LI-103.
- Depending on equipment and RCS conditions, boiling in the core may lead to PRZR surge line flooding and cause RVLIS and RCS Standpipe level indications to read higher than actual.
- If RWST level decreases to 15%, then the SI System should be aligned for recirculation using ATTACHMENT 7, ALIGNING THE SI SYSTEM FOR RECIRC, to provide long-term cooling.
- Charging and Low-Head Pumps taking suction from the RWST must be stopped when RWST level decreases to 8%. An alternate water source will be necessary in order to prevent loss of pump suction.

* *

NOTE:

- IF Cold leg injection is NOT available, THEN Hot leg injection using ATTACHMENT 5, HOT LEG INJECTION FORCED FEED AND SPILL, should be used.
- IF a maintenance breech OR leakage has been identified on a Cold leg, THEN Hot leg injection using ATTACHMENT 5, HOT LEG INJECTION FORCED FEED AND SPILL, should be used.
- IF a maintenance breech OR leakage has been identified on a Hot leg, THEN Cold leg injection using this Attachment, should be used.
- IF leak location has NOT been identified, THEN Cold leg injection using this Attachment, is the preferred flowpath.

1. IF desired to conserve Containment Sump inventory for RCS recirculation, THEN place the following Containment Sump Pumps in OFF:

   ___ • 1-DA-P-4A

   ___ • 1-DA-P-4B

2. ___ Verify a Charging (HHSI) Pump available AND is specified by the Alternate Core Cooling Method Assessment. IF NOT, THEN GO TO Step 5.

3. ___ Verify a Charging (HHSI) Pump flow path to the RCS cold legs is available. IF NOT, THEN GO TO Step 5.

4. Align a Charging Pump to make up to the RCS as follows:

   a. Open Charging Pump Suction from RWST Isolation Valves:

   ___ • 1-CH-MOV-1115B

   ___ • 1-CH-MOV-1115D

   b. Close Charging Pump Suction from VCT Isolation Valves:

   ___ • 1-CH-MOV-1115C

   ___ • 1-CH-MOV-1115E

   ___ c. Open 1-CH-MOV-1373, Charging Pump Recirc Header Isolation Valve.

   d. Open the Charging Pump Recirc Valves:

   ___ • 1-CH-MOV-1275A for 1-CH-P-1A

   ___ • 1-CH-MOV-1275B for 1-CH-P-1B

   ___ • 1-CH-MOV-1275C for 1-CH-P-1C

   ___ e. Start one Charging Pump.

   f. Close the Normal Charging Isolation Valves:

   ___ • 1-CH-MOV-1289A

   ___ • 1-CH-MOV-1289B

(STEP 4 CONTINUED ON NEXT PAGE)

g. Align one of the following cold leg injection flow paths as desired:

- BIT injection flow path:

a. Close BIT Recirc Valves:

___ • 1-SI-TV-1884A

___ • 1-SI-TV-1884B

___ • 1-SI-TV-1884C

b. Open BIT Outlet Valves:

___ • 1-SI-MOV-1867C

___ • 1-SI-MOV-1867D

c. Open BIT Inlet Valves:

___ • 1-SI-MOV-1867A

___ • 1-SI-MOV-1867B

OR

___ • Open 1-SI-MOV-1836, BIT Bypass Valve.

___ h. Verify Cold Leg SI flow indicated. IF NOT, THEN GO TO Step 5.

i. Close the Charging Pump Recirc Valves:

___ • 1-CH-MOV-1275A for 1-CH-P-1A

___ • 1-CH-MOV-1275B for 1-CH-P-1B

___ • 1-CH-MOV-1275C for 1-CH-P-1C

j. Check the following to determine if charging flow is adequate:

___ • RCS level is stable or increasing

___ • RCS temperature is stable or decreasing

___ k. IF charging flow is adequate, THEN GO TO Step 6. IF charging flow is NOT adequate, THEN GO TO Step 5 to align a Low-Head SI Pump.

5. Align a Low-Head SI Pump to make up to the RCS as follows:

   a. Open the desired Low-Head SI Pump Suction From RWST Suction Valve:

   ___ • 1-SI-MOV-1862A

   OR

   ___ • 1-SI-MOV-1862B

   b. Close both of the Low-Head SI Pump Discharge Isolation Valves to the Hot Legs:

   ___ • 1-SI-MOV-1890A

   ___ • 1-SI-MOV-1890B

   c. Open the desired Low-Head SI Pump Discharge Isolation Valve:

   ___ • 1-SI-MOV-1864A

   OR

   ___ • 1-SI-MOV-1864B

   d. Start the desired Low-Head SI Pump:

   ___ • 1-SI-P-1A

   OR

   ___ • 1-SI-P-1B

   e. Open the desired Low-Head SI Pump Discharge Isolation Valve to the Cold Legs:

   ___ • 1-SI-MOV-1890C

   OR

   ___ • 1-SI-MOV-1890D

6. Establish RCS bleed path using one of the following methods:

___ • Verify at least one PRZR Safety Valve is removed

OR

• Use PRZR PORVs:

___ 1) Verify power is available or restore power to PRZR PORV Block Valves.

___ 2) Open both PRZR PORV Block Valves.

___ 3) Open both PRZR PORVs.

7. Maintain RCS makeup and heat removal:

___ a. Maintain Charging or Low-Head SI flow.

___ b. Maintain RCS bleed path.

___ c. WHEN RWST level decreases to 15%, THEN initiate ATTACHMENT 7, ALIGNING THE SI SYSTEM FOR RECIRC.

*8. ___ WHEN RHR OR other means of decay heat removal is established, THEN consult TSC or Plant Staff to determine if SI flow can be stopped. WHEN SI flow can be stopped, THEN continue with Step 9.

9. ___ IF both of the following Low-Head SI Containment Suction Valves are closed, THEN GO TO Step 11. IF either valve is open, THEN GO TO Step 10:

• 1-SI-MOV-1860A

• 1-SI-MOV-1860B

* *

CAUTION: To provide adequate Charging Pump cooling, Charging flow must be maintained at least 60 gpm. During SI Recirculation Mode the Charging Pump recircs must remain closed to prevent lifting the Seal Water return relief valve.

* *

10. IF a Low Head SI Pump is aligned to supply Charging Pump suction in the SI Recirculation Mode, THEN have TSC or plant staff ensure the following is the desired Recovery method. IF NOT the desired Recovery method, THEN GO TO Step 14:

___ a. Verify 1-CH-HCV-1311, Auxiliary Spray Valve is closed.

b. Open Normal Charging Line Isolation Valves:

___ • 1-CH-HCV-1310

___ • 1-CH-MOV-1289A

___ • 1-CH-MOV-1289B

___ c. Open 1-CH-FCV-1122 in Manual to establish 60 gpm Charging flow.

d. Close BIT Inlet Isolation Valves:

___ • 1-SI-MOV-1867A

___ • 1-SI-MOV-1867B

e. Close BIT Outlet Isolation Valves:

___ • 1-SI-MOV-1867C

___ • 1-SI-MOV-1867D

___ f. IF 1-SI-MOV-1836 is open, THEN place control power on AND close.

___ g. Establish and maintain greater than 60 gpm Charging flow using 1-CH-FCV-1122 in MANUAL.

___ h. Have TSC or plant staff provide guidance on realigning systems for recovery.

___ i. GO TO Step 14.

11. ISOLATE BIT:

a. Do the following:

___ 1) Open 1-CH-MOV-1373, Charging Pump Recirc Header Isolation Valve.

2) Open Charging Pump Recirc Valves:

___ • 1-CH-MOV-1275A for 1-CH-P-1A

___ • 1-CH-MOV-1275B for 1-CH-P-1B

___ • 1-CH-MOV-1275C for 1-CH-P-1C

b. Close BIT Inlet Isolation Valves:

___ • 1-SI-MOV-1867A

___ • 1-SI-MOV-1867B

c. Close BIT Outlet Isolation Valves:

___ • 1-SI-MOV-1867C

___ • 1-SI-MOV-1867D

___ d. IF 1-SI-MOV-1836 is open, THEN place control power on AND close.

12. Establish normal Charging and Letdown:

___ a. Put controller for 1-CH-FCV-1122, Normal Charging Flow Control Valve, in MANUAL and close.

___ b. Verify 1-CH-HCV-1311, Auxiliary Spray Valve, is closed.

c. Open Normal Charging Line Isolation Valves:

___ • 1-CH-HCV-1310

___ • 1-CH-MOV-1289A

___ • 1-CH-MOV-1289B

___ d. Open 1-CH-FCV-1122, Normal Charging Flow Control Valve, to establish desired flow.

(STEP 12 CONTINUED ON NEXT PAGE)

e. Establish Letdown:

___ 1) Verify at least one CC Pump is running. IF NOT, THEN start at least one CC Pump using 1-OP-51.1, COMPONENT COOLING SYSTEM OR 1-AP-15, LOSS OF COMPONENT COOLING.

___ 2) Put 1-CH-PCV-1145 in MANUAL and open to 100%.

3) Open the following:

___ • 1-CH-TV-1204A

___ • 1-CH-TV-1204B

4) Place desired Letdown path in service:

___ • Open 1-CH-HCV-1142, RHR TO LETDOWN ISOL VALVE, to establish Letdown from RHR.

OR

• Do the following to establish Letdown from RCS:

a. Open the following:

___ • 1-CH-LCV-1460A

___ • 1-CH-LCV-1460B

b. Open at least one of the following Letdown Orifice Valves:

___ • 1-CH-HCV-1200A

___ • 1-CH-HCV-1200B

___ • 1-CH-HCV-1200C

___ 5) Adjust 1-CH-PCV-1145 in MANUAL or AUTO to establish desired letdown pressure.

(STEP 12 CONTINUED ON NEXT PAGE)

f. Check VCT makeup control system, as follows:

___ 1) Verify one Boric Acid Transfer Pump is aligned to Unit 1 blender. IF NOT, THEN align one Boric Acid Transfer Pump using the applicable 0-OP-8 series procedure.

___ 2) Verify at least one PG Pump is running. IF NOT, THEN start one PG Pump.

3) Set makeup concentration at greater than 2600 ppm, as follows:

___ a. Set Boric Acid Controller to 8.25 (16.5 gpm)

___ b. Set PG Controller to 4.25 (65 gpm)

___ 4) Place Blender control in AUTOMATIC.

g. Align Charging Pump suction to VCT, as follows:

___ 1) Verify VCT level is greater than 22%. IF NOT, THEN, WHEN VCT level is greater than 42%, THEN do Step 12.g.2 below:

2) Do the following:

a. Open Charging Pump Suction From VCT Isolation Valves:

___ • 1-CH-MOV-1115C

___ • 1-CH-MOV-1115E

b. Close Charging Pump Suction From RWST Isolation Valves:

___ • 1-CH-MOV-1115B

___ • 1-CH-MOV-1115D

13. SECURING LOW-HEAD SI PUMP:

a. Close Low-Head SI Pump Discharge to Cold Legs Valves:

___ • 1-SI-MOV-1864A

___ • 1-SI-MOV-1864B

___ b. Stop Low-Head SI Pump.

14. Do the following:

___ a. Continue alignment of Charging and Low-Head SI Systems as directed by the Station Emergency Manager.

___ b. RETURN TO 1-AP-11, LOSS OF RHR, step in effect.

- END -

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

Large-break loss of reactor coolant has occurred

Containment depressurization actuation has been manually actuated

Containment pressure is 45 psia and slowly decreasing

All steam generator pressures are stable

Hydrogen analyzer is in service

Containment hydrogen concentration is 1.5%

1-FR-Z.1 has been completed through verifying proper Service Water System operation

INITIATING CUE

You are requested to align the containment spray systems in accordance with 1-FR-Z.1.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

R216

TASK

Align the containment spray systems in response to high containment pressure (1-FR-Z.1).

TASK STANDARDS

"J" containment spray system components were aligned and all SW sample pumps were started

K/A REFERENCE:

026A4.01 (4.5/4.3)

ALTERNATE PATH:

"J" containment spray system components do not automatically start or open.

TASK COMPLETION TIMES

Validation Time = 10 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

R216

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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

Large-break loss of reactor coolant has occurred

Containment depressurization actuation has been manually actuated

Containment pressure is 45 psia and slowly decreasing

All steam generator pressures are stable

Hydrogen analyzer is in service

Containment hydrogen concentration is 1.5%

1-FR-Z.1 has been completed through verifying proper Service Water System operation

INITIATING CUE

You are requested to align the containment spray systems in accordance with 1-FR-Z.1.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

Copy of 1-FR-Z.1 signed off through verifying proper Service Water System operation

PERFORMANCE STEPS

START TIME _____

1	Verify casing cooling pump isolation valves are open **NO**	Procedure Step 5.a
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Notes 1-RS-MOV-100B is not open. Opens 1-RS-MOV-100B IAW procedure step 5.a RNO.

Notes/Comments

2	Verify both casing cooling pumps are running. **NO**	Procedure Step 5.b
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Notes 1-RS-P-3B is not running. Starts 1-RS-P-3B IAW procedure step 5.b RNO.	

Notes/Comments

3	Verify that the recirculation spray sump level is > 4 ft 10 in.	Procedure Step 5.c
		SAT [ ] UNSAT [ ]
	Standards: Verifies recirc spray sump level is > 4 ft 10 in.	

Notes/Comments

4	Verify that the recirculation spray pump isolation valves are open.	Procedure Step 5.d
		SAT [ ] UNSAT [ ]
	Standards: Verifies 1-RS-MOV-155A,B, and 156A,B are open.	

Notes/Comments

5	Verify that all recirculation spray pumps are running. **NO**	Procedure Step 5.e
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Notes 1-RS-P-1B and 2B are not running. Starts 1-RS-P-1B (following 2 minute time delay) and 1-RS-P-2B IAW procedure step 5.e RNO.	
	Notes/Comments	

6	Start the recirculation spray heat exchangers' radiation monitor sample pumps.	Procedure Step 5.f
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Control switches for the following pumps are placed in START • 1-SW-P-5 • 1-SW-P-6 • 1-SW-P-7 • 1-SW-P-8	
	Notes/Comments	

7	Verify all main steam trip valves closed.	Procedure Step 6.a
		SAT [ ] UNSAT [ ]
Standards	Verifies 1-MS-TV-101A,B,C are closed.	

Notes/Comments

8	Verify all main steam trip valve bypass valves closed.	Procedure Step 6.b
		SAT [ ] UNSAT [ ]
Standards	Verifies 1-MS-TV-1113A,B,C, are closed.	

Notes/Comments

9	Check if feed flow should be isolated to any steam generator. **NO**	Procedure Step 7.a
		SAT [ ] UNSAT [ ]

Standards	Verifies no steam generator pressure decreasing in an uncontrolled manner. Verifies no steam generator completely depressurized. Applies procedure step 7.a RNO (Go to step 8).

Notes/Comments

10	Return to procedure and step in effect.	Procedure Step 8
		SAT [ ] UNSAT [ ]

Standards	Task is complete.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
RXXX

TASK

Align the containment spray systems in response to high containment pressure (1-FR-Z.1).

CHECKLIST

_____ Recall IC 115

_____ Block automatic CDA

_____ Block manual CDA

_____ Allow simulator to run until > 4ft. 10in. in recirc spray sump

Dominion

NORTH ANNA POWER STATION

FUNCTION RESTORATION PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
1-FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE (WITH NO ATTACHMENTS)	10
		PAGE 1 of 7

PURPOSE

To provide instructions to respond to a high Containment pressure.

ENTRY CONDITIONS

This procedure is entered from:

- Red, Orange, or Yellow terminus of the CONTAINMENT CSF STATUS TREE.

CONTINUOUS USE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1.	VERIFY PHASE A ISOLATION VALVES - CLOSED	☐ IF flow path is NOT necessary, THEN close valves.

* *

CAUTION: If 1-ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, is in effect, then, to preserve RWST inventory, Step 2 through Step 5 of this procedure should not be performed.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2.	**CHECK IF CDA IS REQUIRED:**	
	☑ a) Containment pressure - HAS EXCEEDED 28 PSIA	☐ a) RETURN TO procedure and step in effect.
	b) Do the following:	
	☑ 1) Manually actuate CDA	
	☑ 2) Verify CC Pumps - TRIPPED	2) Stop CC Pumps: ☐ • 1-CC-P-1A ☐ • 1-CC-P-1B
	☑ 3) Stop all RCPs	
	☑ 4) Verify Phase B Isolation Valves - CLOSED	☐ 4) Manually close valves.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

3.___ VERIFY PROPER OPERATION OF CONTAINMENT QUENCH SPRAY SYSTEMS:

a) Verify QS Pump Discharge MOVs - OPEN: — ☑ a) Manually open valves.

☐ • 1-QS-MOV-101A

☐ • 1-QS-MOV-101B

b) Verify QS Pumps - RUNNING: — ☐ b) Manually start pumps.

☐ • 1-QS-P-1A

☐ • 1-QS-P-1B

4.___ VERIFY PROPER SERVICE WATER SYSTEM OPERATION:

☑ a) At least four Service Water Pumps - RUNNING — ☐ a) Manually start pumps.

b) Verify Service Water Supply to CC Heat Exchangers - CLOSED: — ☐ b) Manually close valves.

☑ • 1-SW-MOV-108A

☑ • 1-SW-MOV-108B

(STEP 4 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

4. VERIFY PROPER SERVICE WATER SYSTEM OPERATION: (Continued)

c) Verify Recirc Spray Heat Exchanger Service Water flow - INDICATED:

"H" TRAIN

☐ • 1-SW-FI-100A, RECIR SP HX A SW FLOW

☐ • 1-SW-FI-100D, RECIR SP HX D SW FLOW

"J'" TRAIN

☐ • 1-SW-FI-100B, RECIR SP HX B SW FLOW

☐ • 1-SW-FI-100C, RECIR SP HX C SW FLOW

c) Manually open valves:

"H" TRAIN

☑ • 1-SW-MOV-103A

☑ • 1-SW-MOV-101A

☑ • 1-SW-MOV-103D

☑ • 1-SW-MOV-101C

☑ • 1-SW-MOV-104A

☑ • 1-SW-MOV-105A

☑ • 1-SW-MOV-104D

☐ • 1-SW-MOV-105C

"J'" TRAIN

☑ • 1-SW-MOV-103B

☑ • 1-SW-MOV-101B

☑ • 1-SW-MOV-103C

☑ • 1-SW-MOV-101D

☑ • 1-SW-MOV-104B

☑ • 1-SW-MOV-105B

☑ • 1-SW-MOV-104C

☑ • 1-SW-MOV-105D

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

5.___ VERIFY PROPER OPERATION OF CONTAINMENT RECIRC SPRAY SYSTEMS:

a) Verify Casing Cooling Pump Isolation Valves - OPEN:

☐ a) Manually open valves.

"H" TRAIN

☐ • 1-RS-MOV-100A

☐ • 1-RS-MOV-101B

"J" TRAIN

☐ • 1-RS-MOV-100B

☐ • 1-RS-MOV-101A

b) Verify the following pumps - RUNNING:

☐ b) Manually start pumps.

"H" TRAIN

☐ • 1-RS-P-3A

"J" TRAIN

☐ • 1-RS-P-3B

☐ c) Verify Recirc Spray Sump level - GREATER THAN 4 FT 10 IN

☐ c) <u>WHEN</u> Recirc Spray Sump is greater than 4 ft 10 in, <u>THEN</u> perform Step 5.d through Step 5.f.

☐ Continue with Step 6.

(STEP 5 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

5. VERIFY PROPER OPERATION OF CONTAINMENT RECIRC SPRAY SYSTEMS: (Continued)

d) Verify Recirc Spray Pump Isolation Valves - OPEN:

"H" TRAIN

☐ • 1-RS-MOV-155A

☐ • 1-RS-MOV-156A

"J" TRAIN

☐ • 1-RS-MOV-155B

☐ • 1-RS-MOV-156B

☐ d) Manually open valves.

e) Verify the following pumps - RUNNING:

"H" TRAIN

☐ • 1-RS-P-1A (2 minute time delay)

☐ • 1-RS-P-2A

"J" TRAIN

☐ • 1-RS-P-1B (2 minute time delay)

☐ • 1-RS-P-2B

e) Do the following:

• Manually start ORS pumps:

☐ • 1-RS-P-2A

☐ • 1-RS-P-2B

• Manually start IRS pumps following time delay:

☐ • 1-RS-P-1A

☐ • 1-RS-P-1B

f) Start the following sample pumps on the Unit 1 Radiation Monitoring Panel:

☐ • 1-SW-P-5

☐ • 1-SW-P-8

☐ • 1-SW-P-6

☐ • 1-SW-P-7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6.___	VERIFY MAIN STEAMLINE ISOLATION:	☐ Manually close valves.
	☐ a) ALL MSTVs - CLOSED	☐ IF valves cannot be closed, THEN manually close SG Non-Return Valves and SG NRV Bypass Valves.
	☐ b) ALL MSTV Bypass Valves - CLOSED	

* *

CAUTION:
- At least one SG should be kept available for RCS cooldown to maintain secondary heat sink.
- If all SGs are faulted, then at least 100 gpm feed flow should be maintained to each SG.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7.___	CHECK IF FEED FLOW SHOULD BE ISOLATED TO ANY SG:	
	a) Check pressures in all SGs:	☐ a) GO TO Step 8.
	☐ • Any SG pressure decreasing in an uncontrolled manner	
	OR	
	☐ • Any SG completely depressurized	
	b) Isolate feed flow to affected SGs, unless required to maintain secondary heat sink:	
	☐ • Main Feedwater	
	☐ • AFW	
8.___	RETURN TO PROCEDURE AND STEP IN EFFECT	

- END -

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

The unit is at 100% power.

INITIATING CUE

You are requested to respond to plant conditions and perform any applicable immediate operator actions.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

R517 M

TASK

Perform the immediate operator actions in response to a loss of one or more circulating water pumps (1-AP-13, 1-E-0).

TASK STANDARDS

Reactor and turbine were tripped.

K/A REFERENCE:

075A2.02 (2.5/2.7)

ALTERNATE PATH:

N/A

TASK COMPLETION TIMES

Validation Time = 2 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

R517 M

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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.

PREREQUISITES

The trainee has completed the applicable course knowledge training at the reactor operator level.

INITIAL CONDITIONS

The unit is at 100% power.

INITIATING CUE

You are requested to respond to plant conditions and perform any applicable immediate operator actions.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

None

PERFORMANCE STEPS

START TIME _____

1	Verify that at least two circulating water pumps are running. **NO.**	Procedure Step 1
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Operator checks circ water pump indicating lights and notes less than 2 CW pumps are running. Operator applies procedure step 1 RNO (**Go to 1-E-0**).	

Notes/Comments

2	(1-E-0) Manually trip reactor.	Procedure Step 1.a
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Reactor trip switches on benchboard 1-1 and/or 1-2 are placed in the TRIP position.

Notes/Comments
Reactor will not trip automatically. Turbine will not trip until the reactor is tripped.

3	Check reactor trip and bypass breakers, rod bottom lights, and neutron flux.	Procedure Step 1.b
		SAT [ ] UNSAT [ ]

Standards	Operator notes reactor trip and bypass breakers' green lights are lit and red lights are not lit, all rod bottom lights are lit, and neutron flux is decreasing.

Notes/Comments

4	Manually trip turbine	Procedure Step 2.a
		SAT [ ] UNSAT [ ]

Standards	Turbine pushbuttons are depressed.
Simulation Cue(s)	Assume another operator is continuing with 1-E-0, you have completed your task.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
R517

TASK

Perform the immediate operator actions in response to a loss of one or more circulating water pumps (1-AP-13, 1-E-0).

CHECKLIST

_____ Recall IC 116

_____ Enter the following malfunctions

- MCW0101; Trigger = 1
- MCW0102; Trigger = 1
- MCW0103; Trigger = 1
- TU03
- RD32
- AMSAC_DEFEAT

_____ DMF TU03 trigger 2

_____ Set up trigger 2 to actuate on reactor trip as follows: RKF200 < 60.0

Dominion

NORTH ANNA POWER STATION

ABNORMAL PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
1-AP-13	LOSS OF ONE OR MORE CIRCULATING WATER PUMPS (WITH TWO ATTACHMENTS)	17
		PAGE 1 of 10

PURPOSE

To provide instructions to follow in the event that one or more Circulating Water Pumps are lost.

ENTRY CONDITIONS

This procedure is entered when any of the following conditions exist:

- TRIP indication on breaker control switches on the Circulating Water Control Panel, or
- One or more Circulating Water Pump Motors read zero amps, or
- One or more Circulating Water Pump Motors degraded as indicated by low amps, or
- Annunciator Panel "B" A-5, CW PP 1A-1B-1C-1D AUTO TRIP, is LIT

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
[1]___	VERIFY AT LEAST TWO CIRCULATING WATER PUMPS - RUNNING	☐ GO TO 1-E-0, REACTOR TRIP OR WATER SAFETY INJECTION, while continuing with this procedure.
*2.___	VERIFY CONDENSER VACUUM: ☐ • 3.5 INCHES HG ABS OR LESS AND ☐ • STABLE	☐ Initiate 1-AP-14, LOW CONDENSER VACUUM, while continuing with this procedure.
3.___	CHECK CIRCULATING WATER PUMP DISCHARGE MOV ON ALL NON-RUNNING PUMPS - CLOSED	Manually or locally close affected MOV: ☐ • 1-CW-MOV-100A ☐ • 1-CW-MOV-100B ☐ • 1-CW-MOV-100C ☐ • 1-CW-MOV-100D

* *

CAUTION: IF 2 CW pumps are aligned to 4 waterboxes, THEN the discharge MOVs should be throttled to 72.5 - 77.5% open by meter indication to prevent runout.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.___	CHECK CIRCULATING WATER PUMP DISCHARGE MOVs ON ALL RUNNING PUMPS - OPEN OR THROTTLED OPEN TO MAXIMUM ALLOWED BY PLANT CONDITIONS	Open or throttle open affected CW Pump Discharge MOV, while continuing with this procedure: ☐ • 1-CW-MOV-100A ☐ • 1-CW-MOV-100B ☐ • 1-CW-MOV-100C ☐ • 1-CW-MOV-100D

Dominion

NORTH ANNA POWER STATION

EMERGENCY PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
1-E-0	REACTOR TRIP OR SAFETY INJECTION (WITH ELEVEN ATTACHMENTS)	46 PAGE 1 of 21

PURPOSE

This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a Reactor trip or Safety Injection, to assess plant conditions, and to identify the appropriate recovery procedure.

ENTRY CONDITIONS

1) The following are symptoms that require a Reactor trip, if one has not occurred:
   - A Reactor protection system setpoint has been exceeded
   - A Turbine protection system setpoint with power greater than P-8 setpoint
2) The following are symptoms of a Reactor trip:
   - Any Reactor trip first out Annunciator - LIT
   - Reactor Trip and Bypass Breakers - OPEN
   - Rod Bottom Lights - LIT
   - Neutron flux - DECREASING
3) The following are symptoms that require a Reactor trip and Safety Injection, if one has not occurred:
   - Low PRZR pressure
   - High Containment pressure
   - Steamline differential pressure
   - High steamflow with lo-lo Tave
   - High steamflow with low steam pressure
4) The following are symptoms of a Reactor trip and Safety Injection:
   - Any SI first out Annunciator - LIT
   - Any Low-Head SI Pumps - RUNNING
5) Transition from another plant procedure.

CONTINUOUS USE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
[1]___	VERIFY REACTOR TRIP:	
	☐ a) Manually Trip Reactor	☐ IF Reactor will NOT trip, THEN GO TO 1-FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, STEP 1.
	b) Check the following:	
	☐ • Reactor Trip and Bypass Breakers - OPEN	
	☐ • Rod Bottom Lights - LIT	
	☐ • Neutron flux - DECREASING	
[2]___	VERIFY TURBINE TRIP:	
	☐ a) Manually Trip Turbine	
	☐ b) Verify all Turbine Stop Valves - CLOSED	☐ b) Put both EHC Pumps in PTL. ☐ IF Turbine is still NOT tripped, THEN manually run back Turbine. IF Turbine cannot be run back, THEN close Main Steamline Valves: ☐ • ALL MSTVs ☐ • ALL MSTV Bypass Valves
	☐ c) Reset Reheaters	
	☐ d) Verify MSR FCVs - CLOSED	☐ d) Reduce Reheater Control Manual valve positioner to Zero.
	☐ e) Verify Generator Output Breaker - OPEN	☐ e) IF Generator Output Breaker does NOT open after 30 seconds, THEN manually open G-12 AND Exciter Field Breaker.

Dominion
North Anna Power Station

LICENSED OPERATOR REQUALIFICATION PROGRAM

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS

The unit is in mode 1 and will be ramped from 100% to 75% at .3%/minute using rods and boron.

A boration was performed per the approved ramp plan, but was stopped early.

An additional 50 gallons of boric acid must be added to the RCS to ensure rods are in the desired band after the ramp.

INITIATING CUE

You are requested to establish a 3 gpm boration flow rate and add 50 gallons of boric acid to the RCS.

A blender flush will NOT be required after the boration.

Dominion
North Anna Power Station

LICENSED OPERATOR REQUALIFICATION PROGRAM

JOB PERFORMANCE MEASURE

R706 / 15779

TASK

Borate the Reactor Coolant System using the blender (1-GOP-8.3.4).

TASK STANDARDS

The boration is started IAW 1-GOP-8.3.4.

The boration is stopped when the malfunction (1-CH-FCV-114 open) is noted.

K/A REFERENCE:

004-A4.07 (3.9/3.7)

ALTERNATE-PATH TOPIC

1-CH-FCV-1114A opens in borate mode.

TASK COMPLETION TIMES

Validation Time = 12 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

LICENSED OPERATOR REQUALIFICATION PROGRAM

JOB PERFORMANCE MEASURE

R706 / 15779

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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 is in mode 1 and will be ramped from 100% to 75% at .3%/minute using rods and boron.

A boration was performed per the approved ramp plan, but was stopped early.

An additional 50 gallons of boric acid must be added to the RCS to ensure rods are in the desired band after the ramp.

INITIATING CUE

You are requested to establish a 3 gpm boration flow rate and add 50 gallons of boric acid to the RCS.

A blender flush will NOT be required after the boration.

EVALUATION METHOD

Perform if conducted in the simulator or in the electrical laboratory (use Performance Cue(s)

Simulate if conducted in the station (use Simulation Cue(s)

TOOLS AND EQUIPMENT

1-GOP-8.3.4

PERFORMANCE STEPS

START TIME _____

1	Verify initial conditions are satisfied.	Procedure Step ____

SAT [ ] UNSAT [ ]

Standards	Operator notes 1-LOG-2A, RCS Makeup Log does NOT need to be initiated based on plant conditions (Unit in Mode 1).

Notes/Comments	

2	Review precautions and limitations.	Procedure Step ____

SAT [ ] UNSAT [ ]

Standards	Precautions and limitations are reviewed.

Notes/Comments	

3	Determine the rate and magnitude of boric acid makeup.	Procedure Step ____

SAT [ ] UNSAT [ ]

Standards	3 gpm and 50 gallons are determined as per the initiating cue.

Notes/Comments	

4	Obtain unit SRO concurrence makeup is proper.	Procedure Step ____

SAT [ ] UNSAT [ ]

Standards	Asks for concurrence on rate and magnitude of boration.
Performance Cue(s)	I concur.
Notes/Comments	

5	Place the blender control switch to STOP.	Procedure Step ____

SAT [ ] UNSAT [ ]

Standards	Blender control switch is placed in STOP.
Notes/Comments	

6	Place the blender mode switch in BORATE.	Procedure Step ____

CRITICAL STEP SAT [ ] UNSAT [ ]

Standards	Blender mode selector switch is placed in BORATE.
Notes/Comments	

7	Ensure the boric acid supply valve, 1-CH-FCV-1113A, is in AUTO and open.	Procedure Step _____

SAT [ ] UNSAT [ ]

Standards	1-CH-FCV-1113A is verified to be open (RED light LIT, Green light OFF) with control switch in auto.

Notes/Comments	

8	Place the BLENDER CONTROL switch to START.	Procedure Step _____

CRITICAL STEP SAT [ ] UNSAT [ ]

Standards	BLENDER CONTROL selector switch is in START.

Notes/Comments	TIME BORATION STARTED _____

9	Respond to 1-CH-FCV-1114A failure **(alternate path step)**	Procedure Step ____

CRITICAL STEP SAT [ ] UNSAT [ ]

Note To The Evaluator	The operator may not notice PG flow until after the next two steps (Adjust 1-CH-LCV-1112C and 1-CH-FC-1113A as required). Per OP-AP-300, Reactivity Management, if unexpected conditions/indications are encountered during reactivity manipulations, stop the evolution and resolve prior to proceeding. If the operator does not notice PG flow, he will continue with the procedure, stop the boration, and find 1-CH-FCV-1114A open when directed to ensure it is in AUTO and CLOSED. The valve will not close if the operator attempts to close it manually.

Standards	Operator identifies the unexpected PG flow and places the blender control switch in STOP.

Performance Cue(s)	If the operator notices the PG flow and stops the boration: Acknowledge report and state that the JPM is complete.

Performance Cue(s)	If the operator does not notice PG flow during the boration, but finds 1-CH-FCV-1114A open when directed by procedure to ensure it is in AUTO and CLOSED: Acknowledge report, then state that I&C will be notified and the JPM is complete.

Notes/Comments	TIME BORATION STOPPED _____ 1-CH-FCV-1114A will not close if operator attempts to close manually.

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE

R706 / 15779

NORMAL TASK

Borate the Reactor Coolant System using the blender (1-GOP-8.3.4).

ALTERNATE-PATH TOPIC

1-CH-FCV-1114A opens in borate mode.

CHECKLIST

_____ Recall IC for 100% power, MOL (180)

_____ Enter Switch Override: FCV114A_O = ON, Delay = 0, Trigger = 1

_____ Set up trigger 1 to actuate on boric acid flow as follows: yic113a_flow .ge. 0.2

_____ Do simspray, then rod banks

_____ Set up BA pot to keep alarm out when 3 gpm is established

_____ **After each operator is finished**:

_____ **Check PCS program, RCS Boron Adjustment, and adjust values as required**

_____ **Check calculators zeroed and curve book returned to shelf**

_____ **Check blender flows on screen are reset to zero when IC recalled**

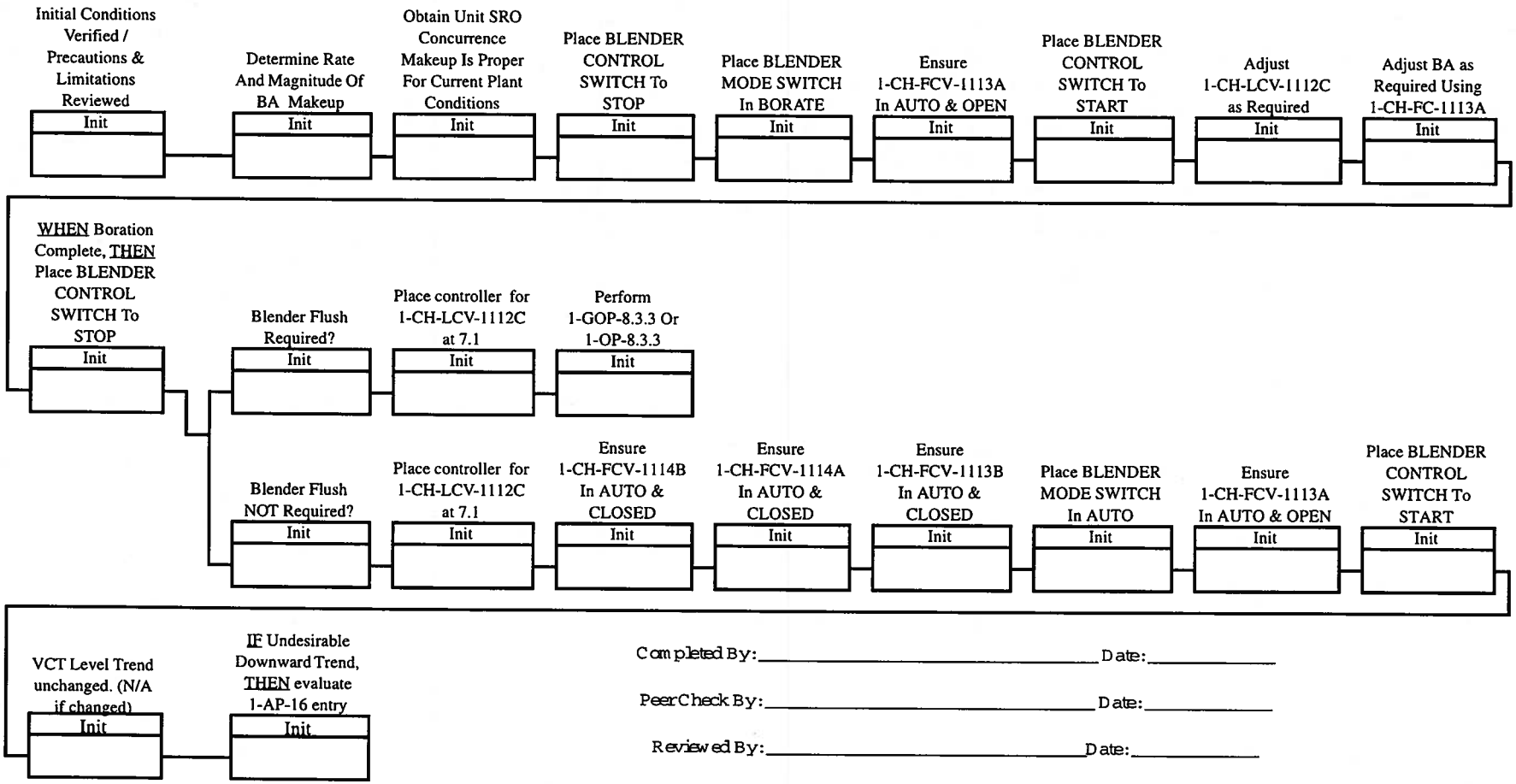
_____ Replace GOP/procedure that was used

PLACING THE BLENDER IN THE BORATE MODE OF OPERATION

☐ **PURPOSE** –To provide instructions for placing the blender in the Borate mode of operation.

☐ **INITIAL CONDITIONS**–IF Unit 1 is in Mode 3, 4, 5, or 6, THEN 1-LOG-2A, RCS Makeup Log, has been initiated.

☐ **PRECAUTIONS AND LIMITATIONS** – To minimize the risk of an unexpected RCS boron dilution, closely monitor blender Boric Acid and/or PG flows to ensure that the desired flows are maintained.
Peer checking is required for the performance of this procedure.



Completed By: _____ Date: _____

Peer Check By: _____ Date: _____

Reviewed By: _____ Date: _____

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

The unit is at 100% power.

INITIATING CUE

You are requested to respond to plant conditions as required.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

R633 Modified

TASK

Respond to a failure of the controlling pressurizer level channel (1-RC-LT-1459) IAW 1-AP-3.

TASK STANDARDS

Pressurizer level channel 461/460 was selected and affected systems were restored.

K/A REFERENCE:

016A2.01 (3.0/3.1)

ALTERNATE PATH:

1-RC-LT-1459 fails low and letdown isolates.

TASK COMPLETION TIMES

Validation Time = 10 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

R633 Modified

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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.

PREREQUISITES

The trainee has completed the applicable course knowledge training at the reactor operator level.

INITIAL CONDITIONS

The unit is at 100% power.

INITIATING CUE

You are requested to respond to plant conditions as required.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

Copy of 1-AP-3

PERFORMANCE STEPS

START TIME _____

1	Verify redundant instrument channel indication normal.	Procedure Step 1
		SAT [ ] UNSAT [ ]
	Standards: 1-RC-LT-1460 and 1461 are verified to be normal.	

Notes/Comments

Operator may place 1-CH-FCV-1122 in manual and lower charging flow.

2	Verify steam generator level controlling channels normal.	Procedure Step 2
		SAT [ ] UNSAT [ ]
	Standards: Steam flow, feed flow, steam generator level, and steam pressure are verified to be normal for each steam generator.	

Notes/Comments

3	Verify turbine first stage pressure indications normal.	Procedure Step 3
		SAT [ ] UNSAT [ ]
	Standards: Turbine first stage pressure indications (1-MS-PT-1446 and 1447) are verified to be normal.	
	Notes/Comments	

4	Verify pressurizer level indications normal. **NO** **(Alternate Path)**	Procedure Step 4
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Notes 1-RC-LT-1459 is failed low. Applies procedure step 4 RNO.	
	Notes/Comments	

5	Place 1-CH-FCV-1122, charging flow control valve, in manual and control pressurizer level at program.	Procedure Step 4 RNO
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: 1-CH-FCV-1122 placed in manual and charging flow is lowered to restore pressurizer level to program.	
	Performance Cue(s): (If operator stops after completing Immediate Operator Actions) You are requested to continue in 1-AP-3.	
	Notes/Comments	

6	Verify operable pressurizer level channel selected. **NO**	Procedure Step 5.a
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Checks indication for selected pressurizer level channels. Notes 1-RC-LT-1459 is failed low and the Pressurizer Level Channel Defeat Switch is in the 459/460 position. Applies procedure step 5.a RNO	
	Notes/Comments	

7	Select operable pressurizer level channels for control.	Procedure Step 5.a.1 RNO
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: PZR LEVEL CHANNEL DEFEAT switch is selected to 461/460.	
	Notes/Comments	

8	Verify the following annunciators are proper for plant conditions:	Procedure Step 5.a.2 RNO
		SAT [ ] UNSAT [ ]
	Standards: Verifies annunciators B-F8, B-G6, B-G7, and B-G8 are not lit.	
	Notes/Comments	

9	Verify the emergency bus backup heaters are restored.	Procedure Step 5.b

SAT [ ] UNSAT [ ]

Standards	Verifies emergency bus backup heaters are not tripped.

Notes/Comments

10	Verify letdown in service. **NO** **(Alternate Path)**	Procedure Step 5.c

SAT [ ] UNSAT [ ]

Standards	Notes letdown flow not indicated Applies procedure step 5.c RNO (Restore letdown using Attachment 2)

Notes/Comments

11	Restore letdown using Attachment 2, LETDOWN RESTORATION.	Procedure Step 5.c RNO

SAT [ ] UNSAT [ ]

Standards	Goes to Attachment 2

Notes/Comments

12	Ensure charging flow is at least 25 gpm.	Procedure Step 1 Att.2
		SAT [ ] UNSAT [ ]

Standards	Adjusts charging flow to 25 – 40 gpm.

Notes/Comments

13	Ensure letdown isolation valves are open.	Procedure Step 2 Att.2
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Control switch for 1-CH-LCV-1460A is placed in OPEN Notes 1-CH-LCV-1460B, 1-CH-TV-1204A, and 1-CH-TV-1204B are open.

Notes/Comments

14	Place 1-CH-PCV-1145, Letdown Pressure Control Valve, in MANUAL.	Procedure Step 3 Att.2
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Letdown pressure control valve 1-CH-PCV-1145 MANUAL push-button is depressed.	
	Notes/Comments	

15	Fully open 1-CH-PCV-1145.	Procedure Step 4 Att.2
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Raise push-button on the controller for 1-CH-PCV-1145 is depressed until controller output is 100% and the RAISE push-button back light is illuminated.	
	Notes/Comments	

16	Open the desired letdown orifice isolation valve.	Procedure Step 5 Att.2
	Critical Step	SAT [ ] UNSAT [ ]

Standards	Control switch for 1-CH-HCV-1200A, 1200B, or 1200C is placed in OPEN.
Performance Cue(s)	If asked: The US desires to use 1-CH-HCV-1200B.

Notes/Comments

17	Adjust 1-CH-PCV-1145 to obtain 300-psig letdown pressure as indicated on 1-CH-PI-1145, Non-regenerative Heat Exchanger Outlet Pressure.	Procedure Step 6 Att.2
	Critical Step	SAT [ ] UNSAT [ ]

Standards	1-CH-PCV-1145 is manually closed until 300 psig is indicated on 1-CH-PI-1145.

Notes/Comments

18	Place 1-CH-PCV-1145 in AUTO.	Procedure Step 7 Att.2

SAT [ ] UNSAT [ ]

NOTE TO THE EVALUATOR	IF 1-CH-PCV-1145 WAS NOT ADJUSTED TO 300 PSIG, THEN THIS STEP IS CRITICAL.
Standards	Letdown pressure control valve 1-CH-PCV-1145 AUTO push-button is depressed.

Notes/Comments

19	Adjust charging and letdown to maintain program pressurizer level.	Procedure Step 8 Att.2

SAT [ ] UNSAT [ ]

Standards	Ensures pressurizer level is lowering to program level and adjusts 1-CH-FCV-1122 as necessary. Returns to procedure step 5.d.

Notes/Comments

20	Verify pressurizer level control in AUTO. **NO**	Procedure Step 5.d

SAT [ ] UNSAT [ ]

Standards	Notes 1-CH-FCV-1122 is in manual. Applies procedure step 5.d RNO

Notes/Comments

21	Verify pressurizer level restored to program.	Procedure Step 5.d.1 RNO

SAT [ ] UNSAT [ ]

Standards	Checks pressurizer level at program level on recorder. When level returns to program, continues with steps for placing level control in AUTO.

Notes/Comments

22	Check output of 1-RC-LCV-1459G, Pressurizer Level Control, and adjust as required.	Procedure Step 5.d.2 RNO

SAT [ ] UNSAT [ ]

Standards	(Applicable only if pressurizer level is on program and controller output is other than expected) Pressurizer Level Control Valve, 1-RC-LCV-1459G, is placed in MANUAL and controller output is adjusted to the expected value. The controller is then returned to AUTO.

Notes/Comments

23	Place 1-CH-FCV-1122, Charging FLow Control Valve, in AUTO.	Procedure Step 5.d.3

SAT [ ] UNSAT [ ]

Standards	Charging flow control valve, 1-CH-FCV-1122, AUTO push-button is depressed.

Notes/Comments

24	Verify pressurizer control group heaters not tripped. **NO**	Procedure Step 5.e
		SAT [ ] UNSAT [ ]

Standards	Checks status pressurizer control group heaters and associated alarms. Notes PRZ HTR CYC LOSS OF CONT PWR OR AUTO TRIP annunciator has alarmed. Applies procedure step 5.e RNO.

Notes/Comments

25	Reset the pressurizer control group heaters.	Procedure Step 5.e RNO
		SAT [ ] UNSAT [ ]

Standards	Control switch for the pressurizer control group heaters is placed in START then returned to AUTO-AFTER-START.
Performance Cue(s)	Assume another operator will complete the procedure.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

SIMULATOR SETUP

JOB PERFORMANCE MEASURE
R633

TASK

Respond to a failure of the controlling pressurizer level channel (1-RC-LT-1459) IAW 1-AP-3.

CHECKLIST

_____ Recall IC 118

_____ Ensure that 459/460 is selected

_____ Enter malfunction MRC0801, Ramp = 1, Severity = -1

_____ Place simulator in RUN

_____ Place the simulator in FREEZE

Dominion

NORTH ANNA POWER STATION

ABNORMAL PROCEDURE

NUMBER	PROCEDURE TITLE	REVISION
1-AP-3	LOSS OF VITAL INSTRUMENTATION (WITH TWO ATTACHMENTS)	26
		PAGE 1 of 19

PURPOSE

To provide instructions to follow in the event of a loss of vital instrumentation.

ENTRY CONDITIONS

This procedure is entered when a faulty indication occurs on any of the following vital instrumentation channels:

- Reactor Coolant Flow, or
- Pressurizer Level, or
- Pressurizer Pressure Protection, or
- DELTA T/TAVE Protection, or
- Containment Pressure Protection, or
- RWST Level, or
- Steam Generator Level, or
- Turbine Stop Valves Indication, or
- Turbine First Stage Impulse Pressure, or
- Turbine Auto Stop Oil Low Pressure Trip Signal, or
- Steam Flow, or
- Feed Flow, or
- Steam Pressure, or
- Station Service Bus Undervoltage, or
- Station Service Bus Underfrequency.

CONTINUOUS USE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
[1]___	VERIFY REDUNDANT INSTRUMENT CHANNEL INDICATION - NORMAL	☐ IF unable to determine Reactor is in a safe operating condition, THEN GO TO 1-E-0, REACTOR TRIP OR SAFETY INJECTION.
[2]___	VERIFY STEAM GENERATOR LEVEL CONTROLLING CHANNELS - NORMAL:	Do the following:
	☐ • Steam Flow	a) Place the associated valves in MANUAL:
	☐ • Feed Flow	☐ • Main Feed Reg Valves
	☐ • Steam Generator Level	☐ • Main Feed Reg Bypass Valves
	☐ • Steam Pressure	☐ b) Control Steam Generator level.
[3]___	VERIFY TURBINE FIRST STAGE PRESSURE INDICATIONS - NORMAL	IF the controlling channel failed, THEN do the following: ☐ • Place Control Rod Mode Selector switch in MANUAL. ☐ • Manually control SG level on program, as desired.
[4]___	VERIFY PRESSURIZER LEVEL INDICATIONS - NORMAL	IF any selected channel failed, THEN do the following: ☐ a) Place 1-CH-FCV-1122, Charging Flow Control Valve, in MANUAL. ☐ b) Control Pressurizer level at program.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5. ___	VERIFY SYSTEMS AFFECTED BY PRESSURIZER LEVEL CHANNELS - NORMAL	
☐	a) Verify operable Pressurizer level channels - SELECTED	a) Do the following: ☐ 1) Select operable Pressurizer level channels for control. 2) Verify the following Annunciators are proper for plant conditions: ☐ • Panel B-F8, PRZ LO LEVEL ☐ • Panel B-G6, PRZ HI LEVEL - BU HTRS ON ☐ • Panel B-G7, PRZ LO LEV HTRS OFF - LETDWN ISOL ☐ • Panel B-G8, PRZ HI LEVEL
☐	b) Verify Emergency Bus backup Heaters - RESTORED	☐ b) IF Emergency Bus backup Heaters will NOT restore, THEN enter Tech Spec 3.4.9.
☐	c) Verify Letdown - IN SERVICE	☐ c) Restore letdown using Attachment 2, LETDOWN RESTORATION.

(STEP 5 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5.	VERIFY SYSTEMS AFFECTED BY PRESSURIZER LEVEL CHANNELS - NORMAL (Continued)	
	☐ d) Verify Pressurizer Level Control - IN AUTO	d) Do the following: ☐ 1) Verify level restored to program. ☐ 2) Check output of 1-RC-LCV-1459G, Pressurizer Level Control and adjust as required. ☐ 3) Place 1-CH-FCV-1122, Charging Flow Control Valve in AUTO.
	☐ e) Verify Pressurizer Control Group Heaters - NOT TRIPPED	☐ e) Reset Pressurizer Control Group Heaters by placing control switch to START position.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6.	VERIFY BOTH TURBINE FIRST STAGE PRESSURE CHANNELS - NORMAL	IF Condenser Steam Dumps are available, THEN transfer to Steam Pressure Mode by doing the following: ☐ a) Place both STEAM DUMP INTLK switches to OFF/RESET. ☐ b) Place STEAM DUMP CONTROLLER to MANUAL. ☐ c) Place MODE SELECTOR switch to STEAM PRESS. ☐ d) Ensure Steam Dump demand is ZERO. ☐ e) Return STEAM DUMP CONTROLLER to AUTO. ☐ f) Verify Steam Dump demand is ZERO. ☐ g) Place both STEAM DUMP INTLK switches to ON.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7.	VERIFY OPERABLE CHANNELS SELECTED FOR ALL OF THE FOLLOWING SGWLC INSTRUMENTS: ☐ • Turbine First Stage Pressure ☐ • "A" SG Steam Flow ☐ • "B" SG Steam Flow ☐ • "C" SG Steam Flow ☐ • "A" SG Feed Flow ☐ • "B" SG Feed Flow ☐ • "C" SG Feed Flow	Do one of the following as directed by the Unit 1 SRO: ☐ • IF desired to swap ONLY the failed channel, THEN GO TO Step 9. OR ☐ • IF desired to swap ALL SGWLC channels to the same channel, THEN GO TO Step 10.
8.	GO TO STEP 11	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9. ___	SWAP ONLY THE FAILED SGWLC CHANNEL AS FOLLOWS:	
☐	a) Swap of Turbine First Stage Pressure channel - DESIRED	☐ a) GO TO Step 9b.
☐	1) Verify Rod Control Mode Selector Switch in MANUAL	☐ 1) Place Rod Control Mode Selector Switch is in MANUAL.
	2) Verify Steam Dumps in one of the following conditions:	2) Do one of the following with Unit SRO concurrence:
☐	• Steam Pressure Mode	☐ • Place Steam Dumps in - OFF
	OR	OR
☐	• OFF	• IF Condenser Steam Dumps are available, THEN transfer to Steam Pressure Mode by doing the following:
		☐ 1. Place both STEAM DUMP INTLK switches to OFF/RESET.
		☐ 2. Place STEAM DUMP CONTROLLER to MANUAL.
		☐ 3. Place MODE SELECTOR switch to STEAM PRESS.
		☐ 4. Ensure Steam Dump demand is ZERO.
		☐ 5. Place STEAM DUMP CONTROLLER to AUTO.
		☐ 6. Verify Steam Dump demand is ZERO.
		☐ 7. Place both STEAM DUMP INTLK switches to ON.

(STEP 9 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9.	SWAP ONLY THE FAILED SGWLC CHANNEL AS FOLLOWS: (Continued)	
☐	3) Check ALL Bypass Feed Reg valves in MANUAL	☐ 3) Place ALL Bypass Feed Reg valves are in MANUAL.
☐	4) Place ALL Main Feed Reg valves in MANUAL	
☐	5) Select the operable Turbine First Stage Pressure channel for control	
☐	6) Verify ALL Steam Generator Level Median Controlling channels - OPERABLE	☐ 6) GO TO Step 9a7.
☐	a. Verify Steam Generator Levels are on program	
☐	b. Return the Main or Bypass Feed Reg Valves to AUTO, as required	
☐	7) Verify Condenser Steam Dumps - AVAILABLE	☐ 7) GO TO Step 9a9.

(STEP 9 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

9. SWAP ONLY THE FAILED SGWLC CHANNEL AS FOLLOWS: (Continued)

8) Place Steam Dumps in Steam Pressure Mode by doing the following with Unit SRO concurrence:

- ☐ a. Place both STEAM DUMP INTLK switches to OFF/RESET
- ☐ b. Place STEAM DUMP CONTROLLER to MANUAL
- ☐ c. Place MODE SELECTOR switch to STEAM PRESS
- ☐ d. Ensure Steam Dump demand is ZERO
- ☐ e. Place STEAM DUMP CONTROLLER to AUTO
- ☐ f. Verify Steam Dump demand is ZERO
- ☐ g. Place both STEAM DUMP INTLK switches to ON

(STEP 9 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9.	SWAP ONLY THE FAILED SGWLC CHANNEL AS FOLLOWS: (Continued)	
☐	9) Auto Rod Control - DESIRED	☐ 9) GO TO Step 9b.
☐	a. Verify Tave and Tref - MATCHED WITHIN 1.5°F	a. Adjust Tave and Tref, as required: ☐ • Manually adjust Control Rods. ☐ • Manually adjust Turbine load.
☐	b. Return Rod Control Mode Selector switch to AUTO	
☐	b) Swap of Steam Flow channel - DESIRED	☐ b) GO TO Step 9c.
☐	1) Verify affected Main Feed Reg valve in MANUAL	☐ 1) Place affected Main Feed Reg valve in MANUAL.
☐	2) Select the operable Steam Flow channel for control	
☐	3) Verify affected Steam Generator Level Median Controlling channel - OPERABLE	☐ 3) GO TO Step 9c.
☐	a. Verify affected Steam Generator Level is on program	
☐	b. Return affected Main Feed Reg Valve to AUTO, as required	

(STEP 9 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9.	SWAP ONLY THE FAILED SGWLC CHANNEL AS FOLLOWS: (Continued)	
☐	c) Swap of Feed Flow channel - DESIRED	☐ c) GO TO Step 11.
☐	1) Verify affected Main Feed Reg valve in MANUAL	☐ 1) Place affected Main Feed Reg valve in MANUAL.
☐	2) Select the operable Feed Flow channel for control	
☐	3) Verify affected Steam Generator Level Median Controlling channel - OPERABLE	☐ 3) GO TO Step 11.
☐	a. Verify affected Steam Generator Level is on program	
☐	b. Return affected Main Feed Reg Valve to AUTO, as required	
☐	d) GO TO Step 11	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. ___	SWAP ALL SGWLC CHANNELS AS FOLLOWS:	
☐	a) Verify Rod Control Mode Selector Switch in MANUAL	☐ a) Place Rod Control Mode Selector Switch in MANUAL.
	b) Verify Steam Dumps in one of the following conditions:	b) Do one of the following with Unit SRO concurrence:
☐	• Steam Pressure Mode OR	☐ • Place Steam Dumps in - OFF OR
☐	• OFF	• IF Condenser Steam Dumps are available, THEN transfer to Steam Pressure Mode by doing the following:
		☐ a. Place both STEAM DUMP INTLK switches to OFF/RESET.
		☐ b. Place STEAM DUMP CONTROLLER to MANUAL.
		☐ c. Place MODE SELECTOR switch to STEAM PRESS.
		☐ d. Ensure Steam Dump demand is ZERO.
		☐ e. Place STEAM DUMP CONTROLLER to AUTO.
		☐ f. Verify Steam Dump demand is ZERO.
		☐ g. Place both STEAM DUMP INTLK switches to ON.

(STEP 10 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10.	SWAP ALL SGWLC CHANNELS AS FOLLOWS: (Continued)	
☐	c) Check ALL Bypass Feed Reg valves in MANUAL	☐ c) Place ALL Bypass Feed Reg valves are in MANUAL.
☐	d) Place ALL Main Feed Reg valves in MANUAL	
	e) Select ALL of the following channels to the same channel:	
☐	• Steam Flow	
☐	• Feed Flow	
☐	• First Stage Pressure	
☐	f) Verify ALL Steam Generator Level Median Controlling channels - OPERABLE	☐ f) GO TO Step 10g.
☐	1) Verify Steam Generator Levels are on program	
☐	2) Return the Main or Bypass Feed Reg Valves to AUTO, as required	
☐	g) Verify Condenser Steam Dumps - AVAILABLE	☐ g) GO TO Step 10i.

(STEP 10 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

10. SWAP ALL SGWLC CHANNELS AS FOLLOWS: (Continued)

h) Do one of the following with Unit SRO concurrence:

- Place Steam Dumps in Steam Pressure Mode by doing the following:

☐ 1) Place both STEAM DUMP INTLK switches to OFF/RESET

☐ 2) Place STEAM DUMP CONTROLLER to MANUAL

☐ 3) Place MODE SELECTOR switch to STEAM PRESS

☐ 4) Ensure Steam Dump demand is ZERO

☐ 5) Place STEAM DUMP CONTROLLER to AUTO

☐ 6) Verify Steam Dump demand is ZERO

☐ 7) Place both STEAM DUMP INTLK switches to ON

OR

(STEP 10 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10.	SWAP ALL SGWLC CHANNELS AS FOLLOWS: (Continued) • Place Steam Dumps in Tave Mode by doing the following:	
☐	1. Verify BOTH channels of Turbine First Stage Pressure are operable	
☐	2. Place both STEAM DUMP INTLK switches to OFF/RESET	
☐	3. VERIFY ANNUNCIATOR PANEL "P" E-4, C-7 PERM STM DUMP ARMED FROM LOSS OF LOAD - NOT LIT	☐ 3) Place Steam Dump Mode Selector switch to RESET.
☐	4. Place MODE SELECTOR switch to TAVE	
☐	5. Ensure Steam Dump demand is ZERO	
☐	6. Place both STEAM DUMP INTLK switches to ON	

(STEP 10 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10.	SWAP ALL SGWLC CHANNELS AS FOLLOWS: (Continued)	
☐	i) Auto Rod Control - DESIRED	☐ i) GO TO Step 11.
☐	1) Verify Tave and Tref - MATCHED WITHIN 1.5°F	1) Adjust Tave and Tref, as required: ☐ • Manually adjust Control Rods. ☐ • Manually adjust Turbine load.
☐	2) Return Rod Control Mode Selector switch to AUTO	
	NOTE: With one instrument channel lost, operations may continue only if the channel is placed in trip condition within the specified time period and the conditions of the applicable Technical Specification are met.	
11.___	VERIFY OPERATION OF THE FOLLOWING INSTRUMENTS:	
☐	a) Reactor Coolant Flow Instrumentation indication - NORMAL	☐ a) IF unit is in Mode 1, THEN complete 1-MOP-55.71, REACTOR COOLANT FLOW INSTRUMENTATION within 72 hours.
☐	b) Pressurizer Level Instrumentation indication - NORMAL	☐ b) IF unit is in Mode 1 or 2, THEN complete 1-MOP-55.72, PRESSURIZER LEVEL INSTRUMENTATION within 72 hours.
☐	c) Pressurizer Pressure Protection Instrumentation indication - NORMAL	☐ c) IF unit is in Mode 1, 2, or 3, THEN complete 1-MOP-55.73, PRESSURIZER PRESSURE PROTECTION INSTRUMENTATION, Section 5.1 within one hour.

(STEP 11 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11.	VERIFY OPERATION OF THE FOLLOWING INSTRUMENTS: (Continued)	
	☐ d) Loop ΔT/TAVE Protection Instrumentation indication - NORMAL	☐ d) IF unit is in Mode 1, 2, or 3, THEN complete 1-MOP-55.74, LOOP ΔT/TAVE PROTECTION INSTRUMENTATION, Section 5.1 within one hour.
	☐ e) Containment Pressure Protection Instrumentation indication - NORMAL	☐ e) IF unit is in Mode 1, 2, 3, or 4, THEN complete 1-MOP-55.75, CONTAINMENT PRESSURE PROTECTION INSTRUMENTATION within 72 hours.
	☐ f) Steam Generator Level Instrumentation indication - NORMAL	f) Do the following: ☐ • IF unit is in Mode 1 or 2, THEN enter TRM 3.3.11, Condition A. ☐ • IF unit is in Mode 1, 2, or 3, THEN complete 1-MOP-55.76, STEAM GENERATOR LEVEL INSTRUMENTATION within 72 hours.
	☐ g) Steam Pressure Instrumentation indication - NORMAL	☐ g) IF unit is in Mode 1, 2, or 3, THEN complete 1-MOP-55.79, STEAM PRESSURE INSTRUMENTATION within 72 hours.
	☐ h) Steam Flow Instrumentation indication - NORMAL	☐ h) IF unit is in Mode 1, 2, or 3, THEN complete 1-MOP-55.77, STEAM FLOW INSTRUMENTATION within 72 hours.
	☐ i) Feed Flow Instrumentation indication - NORMAL	☐ i) IF unit is in Mode 1 or 2, THEN complete 1-MOP-55.78, FEED FLOW INSTRUMENTATION within 72 hours.

(STEP 11 CONTINUED ON NEXT PAGE)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11.	VERIFY OPERATION OF THE FOLLOWING INSTRUMENTS: (Continued)	
	☐ j) Turbine Stop Valve Closure Signal Instrumentation annunciator indication - NORMAL	☐ j) IF unit is in Mode 1, THEN complete 1-MOP-55.80, TURBINE STOP VALVE CLOSURE SIGNAL INSTRUMENTATION within 72 hours.
	☐ k) Turbine First Stage Pressure Instrumentation indication - NORMAL	☐ k) IF unit is in Mode 1, 2, or 3, THEN complete 1-MOP-55.81, TURBINE FIRST STAGE PRESSURE INSTRUMENTATION, Section 5.1 within one hour.
	☐ l) Turbine Auto Stop Oil Pressure annunciator indication - NORMAL	☐ l) IF unit is in Mode 1, THEN complete 1-MOP-55.82, TURBINE AUTO STOP OIL LOW PRESSURE INSTRUMENTATION within 72 hours.
	☐ m) RCP Bus Undervoltage annunciator indication - NORMAL	☐ m) IF unit is in Mode 1, THEN complete 1-MOP-55.83, REACTOR PROTECTION SYSTEM INPUT FROM STATION SERVICE BUSES 2A, 2B, AND 2C UNDERVOLTAGE within 72 hours.
	☐ n) RCP Bus Underfrequency annunciator indication - NORMAL	☐ n) IF unit is in Mode 1, THEN complete 1-MOP-55.84, REACTOR PROTECTION SYSTEM INPUT FROM STATION SERVICE BUSES 2A, 2B, AND 2C UNDERFREQUENCY within 72 hours.
	☐ o) RWST Level Instrumentation indication - NORMAL	☐ o) IF unit is in Mode 1, 2, 3, or 4, THEN complete 1-MOP-55.85, RWST LEVEL INSTRUMENTATION within 72 hours.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12. ___	VERIFY MAINTENANCE OPERATING PROCEDURE(S) - INITIATED FOR ALL FAULTY INSTRUMENT CHANNELS	IF the failed instrument channel was not in the mode specified, THEN do the following: ☐ a) Continue operation. ☐ b) Enter Action Statement. c) Do either of the following: ☐ • Initiate the appropriate MOP specified in Step 11 for the failed channel(s). OR ☐ • Have the I&C department place the failed channel(s) in trip. ☐ d) Refer to the applicable Technical Specifications as listed in the Reference Section of the associated MOP. ☐ e) DO NOT enter mode specified in Technical Specification until all requirements of Technical Specifications for affected channel have been met. ☐ f) Notify Instrument Department to repair faulty channel
13. ___	NOTIFY MANAGER NUCLEAR OPERATIONS OR OPERATIONS MANAGER ON CALL OF FAILURE	
14. ___	RETURN TO PROCEDURE IN EFFECT	

- END -

- Westinghouse SSP Tech Manual
- Westinghouse Process Instrumentation Manual and Prints
- Instrument Department PTs
- Tech Spec 3.3.1
- Tech Spec 3.3.2
- Tech Spec 3.3.4
- Tech Spec 3.3.3
- TRM 3.3.11, Steam Generator Water Level Control System Median Signal Selector
- CTS 02-92-2506-001, from HPES 92-04
- 1-MOP-55.71, REACTOR COOLANT FLOW INSTRUMENTATION
- 1-MOP-55.72, PRESSURIZER LEVEL INSTRUMENTATION
- 1-MOP-55.73, PRESSURIZER PRESSURE PROTECTION INSTRUMENTATION
- 1-MOP-55.74, LOOP ΔT/TAVE PROTECTION INSTRUMENTATION
- 1-MOP-55.75, CONTAINMENT PRESSURE PROTECTION INSTRUMENTATION
- 1-MOP-55.76, STEAM GENERATOR LEVEL INSTRUMENTATION
- 1-MOP-55.77, STEAM FLOW INSTRUMENTATION
- 1-MOP-55.78, FEED FLOW INSTRUMENTATION
- 1-MOP-55.79, STEAM PRESSURE INSTRUMENTATION
- 1-MOP-55.80, TURBINE STOP VALVE CLOSURE SIGNAL INSTRUMENTATION
- 1-MOP-55.81, TURBINE FIRST STAGE PRESSURE INSTRUMENTATION
- 1-MOP-55.82, AUTO STOP OIL LOW PRESSURE INSTRUMENTATION
- 1-MOP-55.83, REACTOR PROTECTION SYSTEM INPUT FROM STATION SERVICE BUSES 1A, 1B, AND 1C UNDERVOLTAGE
- 1-MOP-55.84, REACTOR PROTECTION SYSTEM INPUT FROM STATION SERVICE BUSES 1A, 1B, AND 1C UNDERFREQUENCY
- 1-MOP-55.85, RWST LEVEL INSTRUMENTATION

- CTS Assignment 02-99-1801-003, Tech Spec Change 290
- DCP 06-015, NRC GSI-191, RWST Level ESFAS Function to Support Containment Sump Modifications/North Anna/Unit 1 (Rev 22, Step 10.o)
- DC NA-11-01097, Steam Flow/Feed Flow Coincident with Low Steam Generator Level Reactor Trip Elimination - Unit 1 and TSCR N-078 and TRMCR 124, Elimination of the Steam Flow/Feed Flow Mismatch with Low Steam Generator Water Level Reactor Trip (Rev 26, Step 2, 9.a.6, 9.b.3, 9.c.3, 10.f and 11.f RNO)

NUMBER 1-AP-3	ATTACHMENT TITLE LETDOWN RESTORATION	ATTACHMENT 2
REVISION 26		PAGE 1 of 1

1. ___ Ensure Charging Flow is at least 25 gpm.

2. Ensure the following valves are open:

   ___ • 1-CH-LCV-1460A, LETDOWN ISOLATION VALVE

   ___ • 1-CH-LCV-1460B, LETDOWN ISOLATION VALVE

   ___ • 1-CH-TV-1204A, LETDOWN ISOLATION VALVE

   ___ • 1-CH-TV-1204B, LETDOWN ISOLATION VALVE

3. ___ Place 1-CH-PCV-1145, LETDOWN PRESSURE CONTROL VALVE, in MAN.

4. ___ Fully open 1-CH-PCV-1145.

NOTE: To prevent potential overheating of Letdown, Charging flow may need to be increased immediately after establishing Letdown flow.

5. Open the desired Letdown Orifice Isolation Valve(s):

   ___ • 1-CH-HCV-1200A, A LETDOWN ORIFICE ISOLATION VALVE

   ___ • 1-CH-HCV-1200B, B LETDOWN ORIFICE ISOLATION VALVE

   ___ • 1-CH-HCV-1200C, C LETDOWN ORIFICE ISOLATION VALVE

6. ___ Adjust 1-CH-PCV-1145 to obtain 300 psig Letdown pressure as indicated on 1-CH-PI-1145, NONREGENERATIVE HEAT EXCH OUTLET PRESS.

7. ___ Place 1-CH-PCV-1145 in AUTO.

8. ___ Adjust Charging and Letdown to maintain program PRZR level.

- END -

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

The control room has been evacuated and the OATC is at the Aux Shutdown Panel.

Turbine trip from the control room is not possible.

INITIATING CUE

You are requested to trip the main turbine locally in accordance with the "Remote Turbine Trip" attachment in 1-AP-20.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

N867

TASK

Trip the main turbine locally (1-AP-20, 1-FR-S.1).

TASK STANDARDS

The unit 1 main turbine was locally tripped.

K/A REFERENCE:

045A3.04 (3.4/3.6)

ALTERNATE PATH:

Local trip lever does not trip the main turbine.

TASK COMPLETION TIMES

Validation Time = 10 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

N867

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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.

PREREQUISITES

Before being evaluated on the task, the trainee must have completed the reactor operator's course checkout during which the objectives listed below would have been addressed.

INITIAL CONDITIONS

The control room has been evacuated and the OATC is at the Aux Shutdown Panel.

Turbine trip from the control room is not possible.

INITIATING CUE

You are requested to trip the main turbine locally in accordance with the "Remote Turbine Trip" attachment in 1-AP-20.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

None

PERFORMANCE STEPS

START TIME _____

1	At the main turbine pedestal, place the local trip lever in TRIPPED position.	Procedure Step 1.a
		SAT [ ] UNSAT [ ]

Standards	Simulates placing turbine trip lever in the TRIPPED position.
Simulation Cue(s)	If asked, state that there is no change in sound.

Notes/Comments

2	Verify all eight turbine stop and control valves are closed in the doghouse. **NO** **(Alternate Path)**	Procedure Step 1.b

SAT [ ] UNSAT [ ]

Note to Evaluator	If the operator was told there was no change in sound when the trip lever was placed in TRIPPED, he might answer "No" on this step without entering the doghouse.

Standards	Enters doghouse and visually checks position of stop valves and control valves and notes they are not closed. Applies procedure step 1.b RNO.

Simulation Cue(s)	All governor and throttle valves are as you see them.

Notes/Comments

3	Open both of the following breakers at turbine mezzanine east:	Procedure Step 1.b.1 RNO

Critical Step	SAT [ ] UNSAT [ ]

Standards	Simulates opening breakers 1A1-2D1 AND 1B1-3A2 (power supplies for EHC pumps, 1-TM-P-3 and 1-TM-P-4).

Notes/Comments

4	Open EHC accumulator drain valves.	Procedure Step 1.b.2 RNO
	Critical Step	SAT [ ] UNSAT [ ]
	Standards: Simulates opening 1-EH-15, 17, 19, and 21.	
	Simulation Cue(s): Pressure is decreasing on the accumulator indicators.	
	Notes/Comments	

5	Notify the OATC of the status of the turbine stop valves and EHC system.	Procedure Step 2
		SAT [ ] UNSAT [ ]
	Standards: Visually checks turbine stop valve position and notes they are closed. Simulates reporting stop valves are closed, EHC accumulators are drained, and EHC pump breakers are open.	
	Simulation Cue(s): • Acknowledge report. • You may return to normal duties.	
	Notes/Comments	

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

NUMBER 1-AP-20	ATTACHMENT TITLE	ATTACHMENT 6
REVISION 26	REMOTE TURBINE TRIP	PAGE 1 of 2

STEP	ACTION/ EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION: EHC fluid is a health hazard and is under high pressure.

* *

1.___ LOCALLY TRIP THE TURBINE FROM THE TURBINE PEDESTAL:

☐ a) Place the local Trip Lever in the TRIPPED position

b) Verify all 8 Turbine Stop and Control Valves - CLOSED in Doghouse:

- ☐ 1-MS-TV-1A
- ☐ 1-MS-TV-1B
- ☐ 1-MS-TV-1C
- ☐ 1-MS-TV-1D
- ☐ 1-MS-GOV-1A
- ☐ 1-MS-GOV-1B
- ☐ 1-MS-GOV-1C
- ☐ 1-MS-GOV-1D

Response Not Obtained:

b)) Perform the following:

1) Open both the following breakers at Turbine Mezzanine East:

- ☐ 1A1-2 D1, Power to 1-TM-P-3, EHC Pump
- ☐ 1B1-3 A2, Power to 1-TM-P-4, EHC Pump.

2) Open EHC Accumulator Drain Valves:

- ☐ 1-EH-15, "A" EHC Accumulator Drain
- ☐ 1-EH-17, "B" EHC Accumulator Drain
- ☐ 1-EH-19, "C" EHC Accumulator Drain
- ☐ 1-EH-21, "D" EHC Accumulator Drain

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

2. ___ MAKE NOTIFICATIONS

☐ Notify the OATC at the Aux Shutdown Panel of status of Turbine Stop Valves and EHC System and await further instructions

- END -

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

Both units are in mode 1.

Unit 2 accumulator makeup is required.

INITIATING CUE

You are requested to align for makeup to the unit-2 SI accumulators from the unit-2 RWST in accordance with 2-OP-7.3.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

NXXX

TASK

Align the hydro-test pump in order to fill the safety injection accumulators (2-OP-7.3).

TASK STANDARDS

Task was performed as directed by the procedure referenced in the task statement within parentheses (one of the underlined procedures if several are cited).

Work was performed in compliance with the Radiation Work Permit; exposure to surface and airborne contamination was minimized; and ALARA principles were applied.

K/A REFERENCE:

006A1.13 (3.5/3.7)

ALTERNATE PATH:

N/A

TASK COMPLETION TIMES

Validation Time = 30 minutes Start Time = _____

Actual Time = _____ minutes Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

NXXX

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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Instructions for In-Plant JPMs

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PREREQUISITES

Before being evaluated on the task, the trainee must have completed the reactor operator's course checkout during which the objectives listed below would have been addressed.

INITIAL CONDITIONS

Both units are in mode 1.

Unit 2 accumulator makeup is required.

INITIATING CUE

You are requested to align for makeup to the unit-2 SI accumulators from the unit-2 RWST in accordance with 2-OP-7.3.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

Administrative key

PERFORMANCE STEPS

START TIME _____

1	Check initial conditions and review precautions and limitations.	Procedure Step 5.1.1 and 5.1.2
		SAT [ ] UNSAT [ ]
Standards	Initial conditions checked and P&Ls reviewed.	

Notes/Comments

2	Ensure 1-SI-48, RWST to Hydro Test Pump Suction Header Isol Valve, is closed.	Procedure Step 5.1.3.a

SAT [ ] UNSAT [ ]

Standards	Simulates attempting to operate 1-SI-48 in the closed direction to verify no stem movement.
Simulation Cue(s)	Valve handwheel did not move.

Notes/Comments

3	Ensure 1-SI-58, Hydro Test PP to SI Accum Makeup Line Isol Valve, is locked and closed.	Procedure Step 5.1.3.b

SAT [ ] UNSAT [ ]

Standards	Ensures 1-SI-58 locked closed by simulating pulling lock and chain to check for integrity, checking locking device hinders valve operation, and checking valve stem position.
Simulation Cue(s)	(If the unit 1 penetration area is a High Rad Area with a locked gate) Assume another operator has ensured 1-SI-58 is locked closed.

Notes/Comments

4	Open 2-SI-16, RWST to Hydro Test Pump Suction Header Isol Valve.	Procedure Step 5.1.3.c

Critical Step	SAT [ ] UNSAT [ ]

Standards	Opens 2-SI-16 by simulating turning the valve handwheel in the open direction until the valve is fully open as indicated by no more stem movement, then rotating handwheel approximately one quarter turn to move off the backseat.

Simulation Cue(s)	Stem moved out and handwheel stopped.

Notes/Comments

5	Open 1-SI-50, Hydro Test Pump Suction Header Isolation Valve.	Procedure Step 5.1.3.d

Critical Step	SAT [ ] UNSAT [ ]

Standards	Opens 1-SI-50 by simulating turning the valve handwheel in the open direction until the valve is fully open as indicated by no more stem movement, then rotating handwheel approximately one quarter turn to move off the backseat.

Simulation Cue(s)	Stem moved out and handwheel stopped.

Notes/Comments

6	Open 1-SI-52, Hydro Test Pump Discharge Header Isolation Valve.	Procedure Step 5.1.3.e

Critical Step	SAT [ ] UNSAT [ ]

Standards	Opens 1-SI-52 by simulating turning the valve handwheel in the open direction until the valve is fully open as indicated by no more stem movement, then rotating handwheel approximately one quarter turn to move off the backseat.

Simulation Cue(s)	Stem moved out and handwheel stopped.

Notes/Comments

7	Unlock and open 2-SI-47, Hydro Test Pump Discharge Header Isolation Valve.	Procedure Step 5.1.3.f

Critical Step	SAT [ ] UNSAT [ ]

Standards	Unlocks and opens 2-SI-47 by simulating the following: • Use admin key to remove lock and chain. • Turn valve handwheel in open direction until no more stem movement. • Rotatate handwheel approximately one quarter turn to move off backseat.

Simulation Cue(s)	Stem moved out and handwheel stopped.

Simulation Cue(s)	Inform the operator to remain in the area in order to close 1-SI-58, if required.

Notes/Comments

8	Independently verify the valve lineup.	Procedure Step 5.1.3.g

SAT [ ] UNSAT [ ]

Standards	Requests IV be performed by another operator and waits for IV completion.

Simulation Cue(s)	Independent verification is complete. (Evaluator initials IV steps.)

Notes/Comments

9	Check hydro-test pump cooling tank level and oil level do not indicate low level.	Procedure Step 5.1.4.a & b

SAT [ ] UNSAT [ ]

Standards	Checks cooling tank sight glass and pump oil sight glass to verify low level not indicated.

Simulation Cue(s)	Level is as you see it (in each sight glass).

Notes/Comments

10	Check Unit 1 panel 1G-G5 is not lit.	Procedure Step 5.1.5
		SAT [ ] UNSAT [ ]

Standards	Notifies control room that alignment steps are complete and requests RO to perform remaining steps.
Simulation Cue(s)	Assume another operator will complete this procedure.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

5.0 INSTRUCTIONS

5.1 Filling Safety Injection Accumulators

_____ 5.1.1 Check Initial Conditions are satisfied.

_____ 5.1.2 Review Precautions and Limitations.

CAUTION

WHEN 2-SI-47, Hydro Test Pump Discharge Header Isolation Valve, is open in Mode 1, 2, 3, OR 4, THEN an Operator MUST remain in the immediate area in order to close 2-SI-47 quickly if containment isolation becomes necessary. **(Reference 2.4.1)**

5.1.3 Align 2-QS-TK-1, Refueling Water Storage Tank, as the water source for 1-SI-P-2, Hydro Test Pump, as follows:

_____ a. Ensure 1-SI-48, RWST To Hydro Test Pump Suction Header Isol Valve, is closed.

_____ b. Ensure 1-SI-58, Hydro Test PP To SI Accum Makeup Line Isol Valve, is locked closed.

_____ c. Open 2-SI-16, RWST To Hydro Test Pump Suction Header Isol Valve.

_____ d. Open 1-SI-50, Hydro Test Pump Suction Header Isolation Valve.

_____ e. Open 1-SI-52, Hydro Test Pump Discharge Header Isolation Valve.

_____ f. Unlock and open 2-SI-47, Hydro Test Pump Discharge Header Isolation Valve.

g. Independently verify the following lineup: **(Reference 2.4.8)**

_____ IV
- 1-SI-48, RWST To Hydro Test Pump Suction Header Isol Valve, is closed

_____ IV
- 1-SI-58, Hydro Test PP To SI Accum Makeup Line Isol Valve, is locked closed

_____ IV
- 2-SI-16, RWST To Hydro Test Pump Suction Header Isol Valve, is open

_____ IV
- 1-SI-50, Hydro Test Pump Suction Header Isolation Valve, is open

_____ IV
- 1-SI-52, Hydro Test Pump Discharge Header Isolation Valve, is open

_____ IV
- 2-SI-47, Hydro Test Pump Discharge Header Isolation Valve, is unlocked and open

5.1.4 Have local operator check 1-SI-P-2 Hydro Test Pump to check:

_____ a. Cooling tank sight glass does NOT indicate low level.

_____ b. Pump oil sight glass does NOT indicate low level. **(Reference 2.3.4)**

_____ 5.1.5 Check Unit 1 Panel G-G5, HYDRO TEST PP STUFFING BOX RESERVOIR LO LEVEL, is NOT LIT. **(Reference 2.3.4)**

_____ 5.1.6 IF in Mode 1 or 2, or Mode 3 with RCS pressure > 1000 psig, THEN record the initial level(s) of the accumulator(s) to be filled in the table in Attachment 1, Accumulator Level Addition Data Tables, Section 1.

CAUTION

DO NOT fill more than ONE SI Accumulator at a time. The cross-connection of the liquid space of SI Accumulator to the liquid space of another SI Accumulator is NOT allowed.

5.1.7 Do the following to align the accumulator(s) to be filled. Mark accumulator(s) not to be filled N/A.

_____ • IF 2-SI-TK-1A, Safety Injection Accumulator 1A, is to be filled, THEN open 2-SI-HCV-2851A, A SI ACCUMULATOR MAKEUP LINE ISOL.

_____ • IF 2-SI-TK-1B, Safety Injection Accumulator 1B, is to be filled, THEN open 2-SI-HCV-2851B, B SI ACCUMULATOR MAKEUP LINE ISOL.

_____ • IF 2-SI-TK-1C, Safety Injection Accumulator 1C, is to be filled, THEN open 2-SI-HCV-2851C, C SI ACCUMULATOR MAKEUP LINE ISOL.

_____ 5.1.8 Set 1-SI-HIC-1947, HYDRO TEST PP SPEED CONT, to 0 percent output.

_____ 5.1.9 Start 1-SI-P-2, HYDRO TEST PUMP.

_____ 5.1.10 Operate 1-SI-HIC-1947 as desired to regulate pump capacity.

CAUTION

IF accumulator pressure rises excessively during filling, THEN the accumulator must be vented to the Gaseous Waste System using Subsection 5.5, Venting Safety Injection Accumulators.

5.1.11 WHEN the accumulator being filled reaches the desired level(s), THEN do the following:

_____ a. Set 1-SI-HIC-1947 to 0 percent output.

_____ b. Wait 15 seconds for the Speed Changer Motor to reduce the speed.

_____ c. Stop 1-SI-P-2.

_____ d. Wait 60 seconds for 1-SI-P-2 to stop.

5.1.12 Do the following for the accumulator(s) just filled. Mark Accumulators not filled N/A:

_____ _____ IV
- IF 2-SI-TK-1A was just filled, THEN close 2-SI-HCV-2851A, A SI ACCUMULATOR MAKEUP LINE ISOL.

_____ _____ IV
- IF 2-SI-TK-1B was just filled, THEN close 2-SI-HCV-2851B, B SI ACCUMULATOR MAKEUP LINE ISOL.

_____ _____ IV
- IF 2-SI-TK-1C was just filled, THEN close 2-SI-HCV-2851C, C SI ACCUMULATOR MAKEUP LINE ISOL.

_____ 5.1.13 IF in Mode 1 or 2, or Mode 3 with RCS pressure > 1000 psig, THEN record the final level(s) of the accumulator(s) just filled in the table in Attachment 1, Section 1.

_____ 5.1.14 IF desired to fill another SI Accumulator, THEN perform Steps 5.1.6 through 5.1.13.

_____ _____ IV 5.1.15 Close and lock 2-SI-47, Hydro Test Pump Discharge Header Isolation Valve. **(Reference 2.4.1)**

_____ _____ IV 5.1.16 Close 2-SI-16, RWST To Hydro Test Pump Suction Header Isol Valve.

_____ _____ IV 5.1.17 Close 1-SI-50, Hydro Test Pump Suction Header Isolation Valve.

_____ _____ IV 5.1.18 Close 1-SI-52, Hydro Test Pump Discharge Header Isolation Valve.

5.1.19 IF in Mode 1 or 2, or Mode 3 with RCS pressure > 1000 psig, THEN do the following:

_____ a. Determine the accumulator addition by subtracting percentages recorded in the table in Attachment 1, Section 1.

_____ b. Complete 2-LOG-4B, Accumulator Log.

_____ IV c. Have an qualified individual independent verify the calculations in 2-LOG-4B, Accumulator Log.

CAUTION

IF the Accumulator requires sampling in accordance with 2-LOG-4B, THEN sample results are required within 6 hours in accordance with Tech Spec SR 3.5.1.4. IF the Accumulator Boron concentration is NOT 2500 to 2800 ppm, THEN the Action Statement of Tech Spec 3.5.1 applies.

_____ d. IF 2-LOG-4B requires sampling an accumulator, THEN immediately notify Chemistry to sample the accumulator.

_____ e. IF samples were taken, THEN record sampling results below. Mark Accumulators not sampled N/A:

Accumulator Tank	Sample ppm
2-SI-TK-1A, Safety Injection Accumulator 1A	
2-SI-TK-1B, Safety Injection Accumulator 1B	
2-SI-TK-1C, Safety Injection Accumulator 1C	

Completed by: _____ Date: _____

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

INITIAL CONDITIONS

Component cooling surge tank level is low (45%).

INITIATING CUE

You are requested to makeup to the component cooling water head tank from either unit-1 or unit 2 Condensate System in accordance with 1-AP-15, attachment 4, and raise level to 60%.

It is not desired to place 1-CC-LCV-100 in service.

After completing the makeup, assume the Condensate System WILL be needed for a makeup to the chemical feed head tank.

Dominion
North Anna Power Station
JOB PERFORMANCE MEASURE EVALUATION

OPERATOR PROGRAM

N876

TASK

Fill the component cooling water head tank (1-AP-15).

TASK STANDARDS

The CC head tank has been filled.

Work was performed in compliance with the Radiation Work Permit; exposure to surface and airborne contamination was minimized; and ALARA principles were applied.

K/A REFERENCE:

008A2.02 (3.2/3.5)

ALTERNATE PATH:

N/A

TASK COMPLETION TIMES

Validation Time = 20 minutes
Actual Time = _____ minutes

Start Time = _____
Stop Time = _____

PERFORMANCE EVALUATION

Rating [ ] SATISFACTORY [ ] UNSATISFACTORY

Candidate (Print) _____

Evaluator (Print) _____

Evaluator's Signature / Date _____

EVALUATOR'S COMMENTS

_____

_____

_____

Dominion
North Anna Power Station

JOB PERFORMANCE MEASURE
(Evaluation)

OPERATOR PROGRAM

N876

READ THE APPLICABLE INSTRUCTIONS TO THE CANDIDATE

Instructions for Simulator JPMs

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.

Instructions for In-Plant JPMs

I will explain the initial conditions, and state the task to be performed. All steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. 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

Component cooling surge tank level is low (45%).

INITIATING CUE

You are requested to makeup to the component cooling water head tank from either unit-1 or unit 2 Condensate System in accordance with 1-AP-15, attachment 4, and raise level to 60%.

It is not desired to place 1-CC-LCV-100 in service.

After completing the makeup, assume the Condensate System WILL be needed for a makeup to the chemical feed head tank.

EVALUATION METHOD

Perform if conducted in the simulator or in a laboratory (use Performance Cue(s))

Simulate if conducted in the station or on a dead simulator (use Simulation Cue(s))

TOOLS AND EQUIPMENT

None

PERFORMANCE STEPS

START TIME _____

1	Open at least one of the following valves to supply makeup to the CC head tank:	Procedure Step 1
	Critical Step	SAT [ ] UNSAT [ ]

Standards	1-CN-426 and/or 1-CN-441 is verified open by simulating turning the valve handwheel in the closed direction approximately one turn and then in the open direction until stem movement stops, then rotating closed approximately one quarter turn to get off the backseat.

Standards	1-CN-426 and/or 1-CN-441 is opened by simulating turning the valve handwheel in the open direction until stem movement stops, then rotating closed approximately one quarter turn to get off the backseat.

Simulation Cue(s)	Valve stem moved out and handwheel stopped.

Notes/Comments 1-CN-441 (or 1-CN-426) is normally open.

2	Open Condensate to CC Surge Tank isolation valve.	Procedure Step 2
	Critical Step	SAT [ ] UNSAT [ ]

Standards	1-CN-41 is opened by simulating turning the valve handwheel in the open direction until stem movement stops, then rotating closed approximately one quarter turn to get off the backseat.
Simulation Cue(s)	Valve stem moved out and handwheel stopped.

Notes/Comments

3	Open 1-CC-LCV-100 bypass valve.	Procedure Step 3
	Critical Step	SAT [ ] UNSAT [ ]

Note to Evaluator	Local level indication is on the side of the tank opposite from the room entrance.

Standards	1-CC-625 is opened by simulating turning the valve handwheel in the open direction until stem movement stops, then rotating closed approximately one quarter turn to get off the backseat.

Simulation Cue(s)	You hear flow through the valve. Valve stem moved out and handwheel stopped. (If operator checks level indication, report that level is 50% and going up.)

Notes/Comments

4	If desired to place 1-CC-LCV-100 in service, then do the following:	Procedure Step 4
		SAT [ ] UNSAT [ ]

Standards	Step is N/A'd per the initiating cue.

Simulation Cue(s)	It is not desired to place 1-CC-LCV-100 in service.

Notes/Comments

5	When the desired level is reached, then do the following: Close the following valves:	Procedure Step 5.a

Critical Step	SAT [ ] UNSAT [ ]

Note to Evaluator	Local level indication is on the side of the tank opposite from the room entrance.

Standards	CC head tank level is monitored locally and makeup is isolated when desired level is obtained. 1-CC-625 is closed by simulating turning the handwheel in the closed direction until stem movement stops. 1-CC-624 and 623 are verified closed by simulating attempting to turn the handwheel in the closed direction.

Simulation Cue(s)	CC head tank level is 60%. (If operator does not check local indication, give cue that the control room has paged him and reports CC head tank level is 60%.) Valve stem moved in and handwheel stopped. (1-CC-625) Handwheel did not rotate. (1-CC-624 and 623)

Notes/Comments

6	Ensure 1-CC-LCV-100 is not in manual override.	Procedure Step 5.b
		SAT [ ] UNSAT [ ]

Standards	Simulates checking handwheel in full clockwise position.
Simulation Cue(s)	Handwheel did not move.

Notes/Comments

7	Close Condensate to CC Surge Tank isolation valve	Procedure Step 5.c
		SAT [ ] UNSAT [ ]

Standards	1-CN-41 is closed by simulating turning the handwheel in the closed direction until stem movement stops.
Simulation Cue(s)	Valve stem moved in and handwheel stopped.

Notes/Comments

8	If condensate will not be needed for makeup to the Chemical Feed Head Tank, then close the following valves:	Procedure Step 6

	SAT [ ] UNSAT [ ]

Standards	Step is N/A'd because initiating cue states condensate will be needed.

Simulation Cue(s)	(If the operator simulates closing 1-CN-426, then state that the valve stem moved in and the handwheel stopped.) (If the operator simulates checking 1-CN-441 closed, then state that the handwheel did not rotate.)

Notes/Comments

9	Notify Chemistry department to sample CC system for chromates.	Procedure Step 7

	SAT [ ] UNSAT [ ]

Standards	Chemistry is notified (gaitronics, phone, in-person, control room...).

Simulation Cue(s)	Acknowledge notification.

Notes/Comments

>>>>> END OF EVALUATION <<<<<

STOP TIME _____

SIMULATOR, LABORATORY, IN--PLANT SETUP
(If Required)

NUMBER 1-AP-15	ATTACHMENT TITLE CONDENSATE MAKEUP TO THE CC HEAD TANK	ATTACHMENT 4
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1. Open at least one of the following valves to supply makeup to the CC Head Tank:

___ • 1-CN-426, Condensate to Auxiliary Building from Unit 1 Isolation Valve, located in the Turbine Building Basement at the entrance to the Emergency Switchgear Room

___ • 1-CN-441, Condensate to Auxiliary Building from Unit 2 Isolation Valve, located in the Turbine Building Basement at the entrance to the Emergency Switchgear Room

2. ___ Open 1-CN-41, Condensate To Component Clg Wtr Surge Tk Isol Vv, located on the Auxiliary Building second floor at the East end of the Auxiliary Steam Header.

3. ___ Open 1-CC-625, 1-CC-LCV-100 Bypass Valve.

4. IF desired to place 1-CC-LCV-100 in service, THEN do the following:

___ a) Open 1-CC-623, 1-CC-LCV-100 Inlet Isolation Valve.

___ b) Open 1-CC-624, 1-CC-LCV-100 Outlet Isolation Valve.

___ c) Verify 1-CC-LCV-100 is open. IF NOT, THEN manually override 1-CC-LCV-100 by turning handwheel in counter-clockwise (open) direction.

5. WHEN the desired level is reached, THEN do the following:

a) Close the following valves:

___ • 1-CC-625, 1-CC-LCV-100 Bypass Valve

___ • 1-CC-624, 1-CC-LCV-100 Outlet Isolation Valve

___ • 1-CC-623, 1-CC-LCV-100 Inlet Isolation Valve

___ b) Ensure 1-CC-LCV-100 is NOT in manual override by checking handwheel in full clockwise position.

___ c) Close 1-CN-41, Condensate To Component Clg Wtr Surge Tk Isol Vv.

6. IF Condensate will NOT be needed for makeup to the Chemical Feed Head Tank, THEN close the following valves:

___ • 1-CN-426, Condensate to Auxiliary Building from Unit 1 Isolation Valve, located in the Turbine Building Basement at the entrance to the Emergency Switchgear Room

___ • 1-CN-441, Condensate to Auxiliary Building from Unit 2 Isolation Valve, located in the Turbine Building Basement at the entrance to the Emergency Switchgear Room

7. ___ Notify the Chemistry Department to sample the CC System for chromates.