

**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 []

<u>Standards</u>	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 []

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	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.
-------------------	--

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

<u>Performance Cue(s)</u>	It is desired to return the steam dump controller to auto.
---------------------------	--

<u>Performance Cue(s)</u>	<p>(After steam dumps are closed)</p> <p>Assume another operator will complete this task.</p>
---------------------------	---

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.

NUMBER 1-ES-0.1	PROCEDURE TITLE REACTOR TRIP RESPONSE	REVISION 31 PAGE 16 of 23
------------------------	--	--

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

NUMBER 1-ES-0.1	PROCEDURE TITLE REACTOR TRIP RESPONSE	REVISION 31 PAGE 17 of 23
------------------------	--	------------------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13.	<p>TRANSFER CONDENSER STEAM DUMP TO STEAM PRESSURE MODE: (Continued)</p> <p>c) Place Condenser Steam Dumps in Steam Pressure mode:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1) Put both Steam Dump Interlock switches to OFF/RESET <input type="checkbox"/> 2) Put Steam Dump Controller to MANUAL <input type="checkbox"/> 3) Put Mode Selector switch to STEAM PRESS <input type="checkbox"/> 4) Verify or reduce Steam Dump demand to zero <input type="checkbox"/> 5) Return Steam Dump Controller to AUTO <input type="checkbox"/> 6) Verify Steam Dump demand - ZERO <input type="checkbox"/> 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

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

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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	Initial conditions are verified to be satisfied.
------------------	--

Notes/Comments

2	Review precautions and limitations.	Procedure Step 5.5.2
---	-------------------------------------	----------------------

SAT <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	<ul style="list-style-type: none">• 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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 ☐

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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.
- c. Notify the SRO that the 1-EE-BKR-15H11 Directional Overcurrent relays have been defeated.

SRO

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

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

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 []
----------------------	----------------------

<u>NOTE TO THE EVALUATOR</u>	This step is not critical if 1890C and 1890D are closed.
------------------------------	--

<u>Standards</u>	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: <ul style="list-style-type: none"> • 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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>NOTE TO THE EVALUATOR</u>	Closing BIT inlets is not critical as long as outlets are closed.
------------------------------	---

<u>Standards</u>	1-SI-MOV-1867A and 1867B are closed.
------------------	--------------------------------------

Notes/Comments

10	Close BIT outlet isolation valves.	Procedure Step 5.f
----	------------------------------------	--------------------

Critical Step	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>NOTE TO THE EVALUATOR</u>	Closing BIT outlets is not critical as long as inlets are closed.
------------------------------	---

<u>Standards</u>	1-SI-MOV-1867C and 1867D are closed.
------------------	--------------------------------------

Notes/Comments

11	Open 1-SI-MOV-1869B.	Procedure Step 5.g
----	----------------------	--------------------

Critical Step	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Key switch for 1-SI-MOV-1869B is placed in OPEN.
------------------	--

Notes/Comments

12	Verify hot leg injection flow.	Procedure Step 5.h
----	--------------------------------	--------------------

	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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.



NORTH ANNA POWER STATION

EMERGENCY PROCEDURE

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

UNIT ONE

CONTINUOUS USE

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION	10
		PAGE 2 of 7

STEP	ACTION/ EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>NOTE: If any hot leg injection MOV will not open, the TSC should be consulted to determine the optimal SI alignment.</p>		
1. ____	<p>ALIGN LOW-HEAD SI PUMPS FOR HOT LEG RECIRCULATION:</p> <p>a) Close the following valves:</p> <p>1) Low-Head SI Pump Discharge Valves:</p> <p><input type="checkbox"/> • 1-SI-MOV-1864A</p> <p><input type="checkbox"/> • 1-SI-MOV-1864B</p> <p>2) Low-Head SI Pump Cold Leg Injection Valves:</p> <p><input type="checkbox"/> • 1-SI-MOV-1890C</p> <p><input type="checkbox"/> • 1-SI-MOV-1890D</p> <p>b) Open the Low-Head SI Pump Hot Leg Injection Valves:</p> <p><input type="checkbox"/> • 1-SI-MOV-1890A</p> <p><input type="checkbox"/> • 1-SI-MOV-1890B</p>	
2. ____	<p>VERIFY TWO CHARGING PUMPS - IN SERVICE</p>	<p><input type="checkbox"/> GO TO Step 5.</p>

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION	10
		PAGE 3 of 7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3. ____	<p>ALIGN CHARGING PUMP FLOWING THE BIT FOR HOT LEG RECIRCULATION:</p> <p>a) Put the Standby Charging Pump in PTL:</p> <ul style="list-style-type: none"> • ____ 1-CH-P-1A • ____ 1-CH-P-1B • ____ 1-CH-P-1C <p>b) Put the Charging Pump that is flowing the BIT in PTL:</p> <ul style="list-style-type: none"> • ____ 1-CH-P-1A • ____ 1-CH-P-1B • ____ 1-CH-P-1C <p>c) Isolate the BIT by closing the following valves:</p> <ul style="list-style-type: none"> <input type="checkbox"/> • 1-SI-MOV-1867A <input type="checkbox"/> • 1-SI-MOV-1867B <input type="checkbox"/> • 1-SI-MOV-1867C <input type="checkbox"/> • 1-SI-MOV-1867D <p><input type="checkbox"/> d) Open 1-SI-MOV-1869B</p> <p><input type="checkbox"/> e) Start the Charging Pump stopped in Step 3b</p>	

(STEP 3 CONTINUED ON NEXT PAGE)

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION	10
		PAGE 4 of 7

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:	f) Open the Normal Header Discharge Valve for the Charging Pump started in Step 3e:
	<input type="checkbox"/> • 1-SI-FI-1943	<input type="checkbox"/> • 1-CH-MOV-1286A (1-CH-P-1A)
	<input type="checkbox"/> • 1-SI-FI-1943-1	<input type="checkbox"/> • 1-CH-MOV-1286B (1-CH-P-1B)
	<input type="checkbox"/> • 1-SI-FI-1933 (NQ)	<input type="checkbox"/> • 1-CH-MOV-1286C (1-CH-P-1C)
	<input type="checkbox"/> • 1-SI-FI-1960 (NQ)	
	<input type="checkbox"/> • 1-SI-FI-1932 (NQ)	
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	
	<input type="checkbox"/> b) Close 1-SI-MOV-1836	
	<input type="checkbox"/> c) Open 1-SI-MOV-1869A	
	<input type="checkbox"/> d) Start the Charging Pump stopped in Step 4a	
(STEP 4 CONTINUED ON NEXT PAGE)		

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION	10
		PAGE
		5 of 7

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:	e) Open the Alternate Header Discharge Valve for the Charging Pump started in Step 4d:
	<input type="checkbox"/> • 1-SI-FI-1940	<input type="checkbox"/> • 1-CH-MOV-1287A (1-CH-P-1A)
	<input type="checkbox"/> • 1-SI-FI-1940-1	<input type="checkbox"/> • 1-CH-MOV-1287B (1-CH-P-1B)
		<input type="checkbox"/> • 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	
	<input type="checkbox"/> g) GO TO Step 6.	

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION	10
		PAGE 6 of 7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p>CAUTION: To provide adequate Charging Pump cooling, Charging flow must be maintained at least 60 gpm during transfer to Hot Leg recirculation.</p> <p>*****</p>		
5. ____	<p>BIT ISOLATION WITH ONE OPERATING CHARGING PUMP:</p> <p><input type="checkbox"/> a) Verify 1-CH-HCV-1311, Auxiliary Spray Valve is closed.</p> <p>b) Open Normal Charging Line Isolation Valves:</p> <p><input type="checkbox"/> • 1-CH-HCV-1310</p> <p><input type="checkbox"/> • 1-CH-MOV-1289A</p> <p><input type="checkbox"/> • 1-CH-MOV-1289B</p> <p><input type="checkbox"/> c) Open 1-CH-FCV-1122 in Manual to establish 60 gpm Charging flow.</p> <p>d) Verify the following valves - CLOSED:</p> <p><input type="checkbox"/> • 1-SI-MOV-1836</p> <p><input type="checkbox"/> • 1-SI-MOV-1869A</p> <p>e) Close BIT Inlet Isolation Valves:</p> <p><input type="checkbox"/> • 1-SI-MOV-1867A</p> <p><input type="checkbox"/> • 1-SI-MOV-1867B</p>	<p><input type="checkbox"/> d) Place control power on <u>AND</u> close valves.</p>
(STEP 5 CONTINUED ON NEXT PAGE)		

NUMBER	PROCEDURE TITLE	REVISION
1-ES-1.4	TRANSFER TO HOT LEG RECIRCULATION	10
		PAGE 7 of 7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5.	<p>BIT ISOLATION WITH ONE OPERATING CHARGING PUMP: (Continued)</p> <p>f) Close BIT Outlet Isolation Valves:</p> <p><input type="checkbox"/> • 1-SI-MOV-1867C</p> <p><input type="checkbox"/> • 1-SI-MOV-1867D</p> <p><input type="checkbox"/> g) Open 1-SI-MOV-1869B.</p> <p>h) Verify Hot Leg Injection flow:</p> <p><input type="checkbox"/> • 1-SI-FI-1943</p> <p><input type="checkbox"/> • 1-SI-FI-1943-1</p> <p><input type="checkbox"/> • 1-SI-FI-1933 (NQ)</p> <p><input type="checkbox"/> • 1-SI-FI-1960 (NQ)</p> <p><input type="checkbox"/> • 1-SI-FI-1932 (NQ)</p> <p>i) Close Normal Charging Line Isolation Valves:</p> <p><input type="checkbox"/> • 1-CH-MOV-1289A</p> <p><input type="checkbox"/> • 1-CH-MOV-1289B</p>	<p>h) Do the following:</p> <p><input type="checkbox"/> 1) Verify 1-SI-MOV-1869B closed.</p> <p><input type="checkbox"/> <u>IF NOT, THEN</u> close 1-SI-MOV-1869B.</p> <p><input type="checkbox"/> 2) Open 1-SI-MOV-1869A.</p> <p>3) Verify Alternate Header flow:</p> <p><input type="checkbox"/> • 1-SI-FI-1940</p> <p><input type="checkbox"/> • 1-SI-FI-1940-1</p> <p><input type="checkbox"/> <u>IF</u> no Alternate Header flow, <u>THEN</u> consult TSC or Plant Staff.</p>
6. ____	<p>RETURN TO PROCEDURE AND STEP IN EFFECT</p> <p style="text-align: center;">- END -</p>	

**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 []
--	-------------------

<u>Standards</u>	1-DA-P-4A and 4B control switches are placed in OFF.
------------------	--

<u>Performance Cue(s)</u>	The shift manager desires to conserve containment sump inventory.
---------------------------	---

Notes/Comments

2	Verify a charging (HHSI) pump available. NO	Procedure Step 2
---	--	------------------

	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Opens 1-SI-MOV-1862A.
------------------	-----------------------

Notes/Comments

4	Close both LHSI pump discharge isolation valves to the hot legs.	Procedure Step 5.b
---	--	--------------------

SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Opens 1-SI-MOV-1864A.
------------------	-----------------------

Notes/Comments

6	Start the desired LHSI pump.	Procedure Step 5.d
---	------------------------------	--------------------

Critical Step	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	Verifies one pressurizer safety valve is removed per JPM initial conditions.
------------------	--

Notes/Comments

9	Maintain RCS makeup and heat removal.	Procedure Step 7
---	---------------------------------------	------------------

	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	Checks LHSI flow. Checks pressurizer safety valve removed. Checks RWST level greater than 15%.
------------------	--

Notes/Comments

10	<u>When</u> RHR ... is established, then consult with TSC or Plant Staff to determine if SI flow can be stopped. <u>When</u> SI flow can be stopped, <u>then</u> continue with Step 9.	Procedure Step 8
----	--	------------------

	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	Task is complete.
------------------	-------------------

<u>Performance Cue(s)</u>	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.

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 1 of 10

***** :

- 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 breach 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 breach 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.

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 2 of 10

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)

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 3 of 10

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.

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 4 of 10

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

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 5 of 10

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

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 6 of 10

***** :

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.

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 7 of 10

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)

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 8 of 10

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)

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 9 of 10

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.

NUMBER 1-AP-11	ATTACHMENT TITLE COLD LEG INJECTION FORCED FEED AND SPILL	ATTACHMENT 6
REVISION 29		PAGE 10 of 10

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 []
----------------------	----------------------

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	Control switches for the following pumps are placed in START <ul style="list-style-type: none"> • 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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
--	------------------------------	--------------------------------

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
--	------------------------------	--------------------------------

<u>Standards</u>	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



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.

UNIT ONE

CONTINUOUS USE

NUMBER	PROCEDURE TITLE	REVISION
1-FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE	10
		PAGE 2 of 7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1. <u>Σ</u>	VERIFY PHASE A ISOLATION VALVES - CLOSED	<input type="checkbox"/> IF flow path is <u>NOT</u> necessary, <u>THEN</u> close valves.
<p>*****</p> <p>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.</p> <p>*****</p>		
2. <u>Σ</u>	CHECK IF CDA IS REQUIRED:	
	<input checked="" type="checkbox"/> a) Containment pressure - HAS EXCEEDED 28 PSIA	<input type="checkbox"/> a) RETURN TO procedure and step in effect.
	b). Do the following:	
	<input checked="" type="checkbox"/> 1) Manually actuate CDA	
	<input checked="" type="checkbox"/> 2) Verify CC Pumps - TRIPPED	2) Stop CC Pumps:
		<input type="checkbox"/> • 1-CC-P-1A
		<input type="checkbox"/> • 1-CC-P-1B
	<input checked="" type="checkbox"/> 3) Stop all RCPs	
	<input checked="" type="checkbox"/> 4) Verify Phase B Isolation Valves - CLOSED	<input type="checkbox"/> 4) Manually close valves.

NUMBER 1-FR-Z.1	PROCEDURE TITLE RESPONSE TO HIGH CONTAINMENT PRESSURE	REVISION 10 PAGE 3 of 7
------------------------	--	--------------------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3.	VERIFY PROPER OPERATION OF CONTAINMENT QUENCH SPRAY SYSTEMS:	
	a) Verify QS Pump Discharge MOVs - OPEN: <input type="checkbox"/> • 1-QS-MOV-101A <input type="checkbox"/> • 1-QS-MOV-101B	<input checked="" type="checkbox"/> a) Manually open valves.
	b) Verify QS Pumps - RUNNING: <input type="checkbox"/> • 1-QS-P-1A <input type="checkbox"/> • 1-QS-P-1B	<input type="checkbox"/> b) Manually start pumps.
4.	VERIFY PROPER SERVICE WATER SYSTEM OPERATION:	
	<input checked="" type="checkbox"/> a) At least four Service Water Pumps - RUNNING <input checked="" type="checkbox"/> b) Verify Service Water Supply to CC Heat Exchangers - CLOSED: <input checked="" type="checkbox"/> • 1-SW-MOV-108A <input checked="" type="checkbox"/> • 1-SW-MOV-108B	<input type="checkbox"/> a) Manually start pumps. <input type="checkbox"/> b) Manually close valves.
(STEP 4 CONTINUED ON NEXT PAGE)		

NUMBER 1-FR-Z.1	PROCEDURE TITLE RESPONSE TO HIGH CONTAINMENT PRESSURE	REVISION 10 PAGE 4 of 7
------------------------	--	--------------------------------------

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:	c) Manually open valves:
	"H" TRAIN	"H" TRAIN
	<input type="checkbox"/> • 1-SW-FI-100A, RECIR SP HX A SW FLOW	<input checked="" type="checkbox"/> • 1-SW-MOV-103A
	<input type="checkbox"/> • 1-SW-FI-100D, RECIR SP HX D SW FLOW	<input checked="" type="checkbox"/> • 1-SW-MOV-101A
	"J" TRAIN	<input checked="" type="checkbox"/> • 1-SW-MOV-103D
	<input type="checkbox"/> • 1-SW-FI-100B, RECIR SP HX B SW FLOW	<input checked="" type="checkbox"/> • 1-SW-MOV-101C
	<input type="checkbox"/> • 1-SW-FI-100C, RECIR SP HX C SW FLOW	<input checked="" type="checkbox"/> • 1-SW-MOV-104A
		<input checked="" type="checkbox"/> • 1-SW-MOV-105A
		<input checked="" type="checkbox"/> • 1-SW-MOV-104D
		<input type="checkbox"/> • 1-SW-MOV-105C
		"J" TRAIN
		<input checked="" type="checkbox"/> • 1-SW-MOV-103B
		<input checked="" type="checkbox"/> • 1-SW-MOV-101B
		<input checked="" type="checkbox"/> • 1-SW-MOV-103C
		<input checked="" type="checkbox"/> • 1-SW-MOV-101D
		<input checked="" type="checkbox"/> • 1-SW-MOV-104B
		<input checked="" type="checkbox"/> • 1-SW-MOV-105B
		<input checked="" type="checkbox"/> • 1-SW-MOV-104C
		<input checked="" type="checkbox"/> • 1-SW-MOV-105D

NUMBER	PROCEDURE TITLE	REVISION
1-FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE	10
		PAGE
		5 of 7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5. ____	<p>VERIFY PROPER OPERATION OF CONTAINMENT RECIRC SPRAY SYSTEMS:</p> <p>a) Verify Casing Cooling Pump Isolation Valves - OPEN:</p> <p> "H" TRAIN</p> <p> <input type="checkbox"/> • 1-RS-MOV-100A</p> <p> <input type="checkbox"/> • 1-RS-MOV-101B</p> <p> "J" TRAIN</p> <p> <input type="checkbox"/> • 1-RS-MOV-100B</p> <p> <input type="checkbox"/> • 1-RS-MOV-101A</p> <p>b) Verify the following pumps - RUNNING:</p> <p> "H" TRAIN</p> <p> <input type="checkbox"/> • 1-RS-P-3A</p> <p> "J" TRAIN</p> <p> <input type="checkbox"/> • 1-RS-P-3B</p> <p><input type="checkbox"/> c) Verify Recirc Spray Sump level - GREATER THAN 4 FT 10 IN</p>	<p><input type="checkbox"/> a) Manually open valves.</p> <p><input type="checkbox"/> b) Manually start pumps.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Continue with Step 6.</p>
(STEP 5 CONTINUED ON NEXT PAGE)		

NUMBER 1-FR-Z.1	PROCEDURE TITLE RESPONSE TO HIGH CONTAINMENT PRESSURE	REVISION 10 PAGE 6 of 7
------------------------	--	--------------------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5.	<p>VERIFY PROPER OPERATION OF CONTAINMENT RECIRC SPRAY SYSTEMS: (Continued)</p>	
	<p>d) Verify Recirc Spray Pump Isolation Valves - OPEN:</p>	<p><input type="checkbox"/> d) Manually open valves.</p>
	<p>“H” TRAIN</p>	
	<p><input type="checkbox"/> • 1-RS-MOV-155A</p>	
	<p><input type="checkbox"/> • 1-RS-MOV-156A</p>	
	<p>“J” TRAIN</p>	
	<p><input type="checkbox"/> • 1-RS-MOV-155B</p>	
	<p><input type="checkbox"/> • 1-RS-MOV-156B</p>	
	<p>e) Verify the following pumps - RUNNING:</p>	<p>e) Do the following:</p>
	<p>“H” TRAIN</p>	<p>• Manually start ORS pumps:</p>
	<p><input type="checkbox"/> • 1-RS-P-1A (2 minute time delay)</p>	<p><input type="checkbox"/> • 1-RS-P-2A</p>
	<p><input type="checkbox"/> • 1-RS-P-2A</p>	<p><input type="checkbox"/> • 1-RS-P-2B</p>
	<p>“J” TRAIN</p>	<p>• Manually start IRS pumps following</p>
	<p><input type="checkbox"/> • 1-RS-P-1B (2 minute time delay)</p>	<p>time delay:</p>
	<p><input type="checkbox"/> • 1-RS-P-2B</p>	<p><input type="checkbox"/> • 1-RS-P-1A</p>
		<p><input type="checkbox"/> • 1-RS-P-1B</p>
	<p>f) Start the following sample pumps on the Unit 1 Radiation Monitoring Panel:</p>	
	<p><input type="checkbox"/> • 1-SW-P-5</p>	
	<p><input type="checkbox"/> • 1-SW-P-8</p>	
	<p><input type="checkbox"/> • 1-SW-P-6</p>	
	<p><input type="checkbox"/> • 1-SW-P-7</p>	

NUMBER	PROCEDURE TITLE	REVISION
1-FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE	10
		PAGE
		7 of 7

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6. ____	VERIFY MAIN STEAMLINE ISOLATION:	<input type="checkbox"/> Manually close valves.
	<input type="checkbox"/> a) ALL MSTVs - CLOSED	<input type="checkbox"/> IF valves cannot be closed, THEN manually close SG Non-Return Valves and SG NRV Bypass Valves.
	<input type="checkbox"/> 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.		

7. ____	CHECK IF FEED FLOW SHOULD BE ISOLATED TO ANY SG:	
	a) Check pressures in all SGs:	<input type="checkbox"/> a) GO TO Step 8.
	<input type="checkbox"/> • Any SG pressure decreasing in an uncontrolled manner	
	<u>OR</u>	
	<input type="checkbox"/> • Any SG completely depressurized	
	b) Isolate feed flow to affected SGs, unless required to maintain secondary heat sink:	
	<input type="checkbox"/> • Main Feedwater	
	<input type="checkbox"/> • 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 []
----------------------	-----------------

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	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 ☐

<u>Standards</u>	Turbine pushbuttons are depressed.
------------------	------------------------------------

<u>Simulation Cue(s)</u>	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



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

UNIT ONE

CONTINUOUS USE

NUMBER	PROCEDURE TITLE	REVISION
1-AP-13	LOSS OF ONE OR MORE CIRCULATING WATER PUMPS	17
		PAGE
		2 of 10

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

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

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:
		<input type="checkbox"/> • 1-CW-MOV-100A
		<input type="checkbox"/> • 1-CW-MOV-100B
		<input type="checkbox"/> • 1-CW-MOV-100C
		<input type="checkbox"/> • 1-CW-MOV-100D



NORTH ANNA POWER STATION

EMERGENCY PROCEDURE

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

NUMBER 1-E-0	PROCEDURE TITLE REACTOR TRIP OR SAFETY INJECTION	REVISION 46 PAGE 2 of 21
---------------------	---	---------------------------------------

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

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 ☐

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

Notes/Comments	
----------------	--

2	Review precautions and limitations.	Procedure Step _____
---	-------------------------------------	----------------------

SAT ☐ UNSAT ☐

<u>Standards</u>	Precautions and limitations are reviewed.
------------------	---

Notes/Comments	
----------------	--

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

SAT ☐ UNSAT ☐

<u>Standards</u>	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 []

<u>Standards</u>	Asks for concurrence on rate and magnitude of boration.
------------------	---

<u>Performance Cue(s)</u>	I concur.
---------------------------	-----------

<u>Notes/Comments</u>	
-----------------------	--

5	Place the blender control switch to STOP.	Procedure Step _____
---	---	----------------------

SAT [] UNSAT []

<u>Standards</u>	Blender control switch is placed in STOP.
------------------	---

<u>Notes/Comments</u>	
-----------------------	--

6	Place the blender mode switch in BORATE.	Procedure Step _____
---	--	----------------------

CRITICAL STEP

SAT [] UNSAT []

<u>Standards</u>	Blender mode selector switch is placed in BORATE.
------------------	---

<u>Notes/Comments</u>	
-----------------------	--

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

SAT ☐ UNSAT ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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 []

<u>Note To The Evaluator</u>	<p>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).</p> <p>Per OP-AP-300, Reactivity Management, if unexpected conditions/indications are encountered during reactivity manipulations, stop the evolution and resolve prior to proceeding.</p> <p>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.</p>
------------------------------	--

<u>Standards</u>	Operator identifies the unexpected PG flow and places the blender control switch in STOP.
------------------	---

<u>Performance Cue(s)</u>	<p>If the operator notices the PG flow and stops the boration:</p> <p>Acknowledge report and state that the JPM is complete.</p>
---------------------------	--

<u>Performance Cue(s)</u>	<p>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:</p> <p>Acknowledge report, then state that I&C will be notified and the JPM is complete.</p>
---------------------------	---

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

>>>> 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

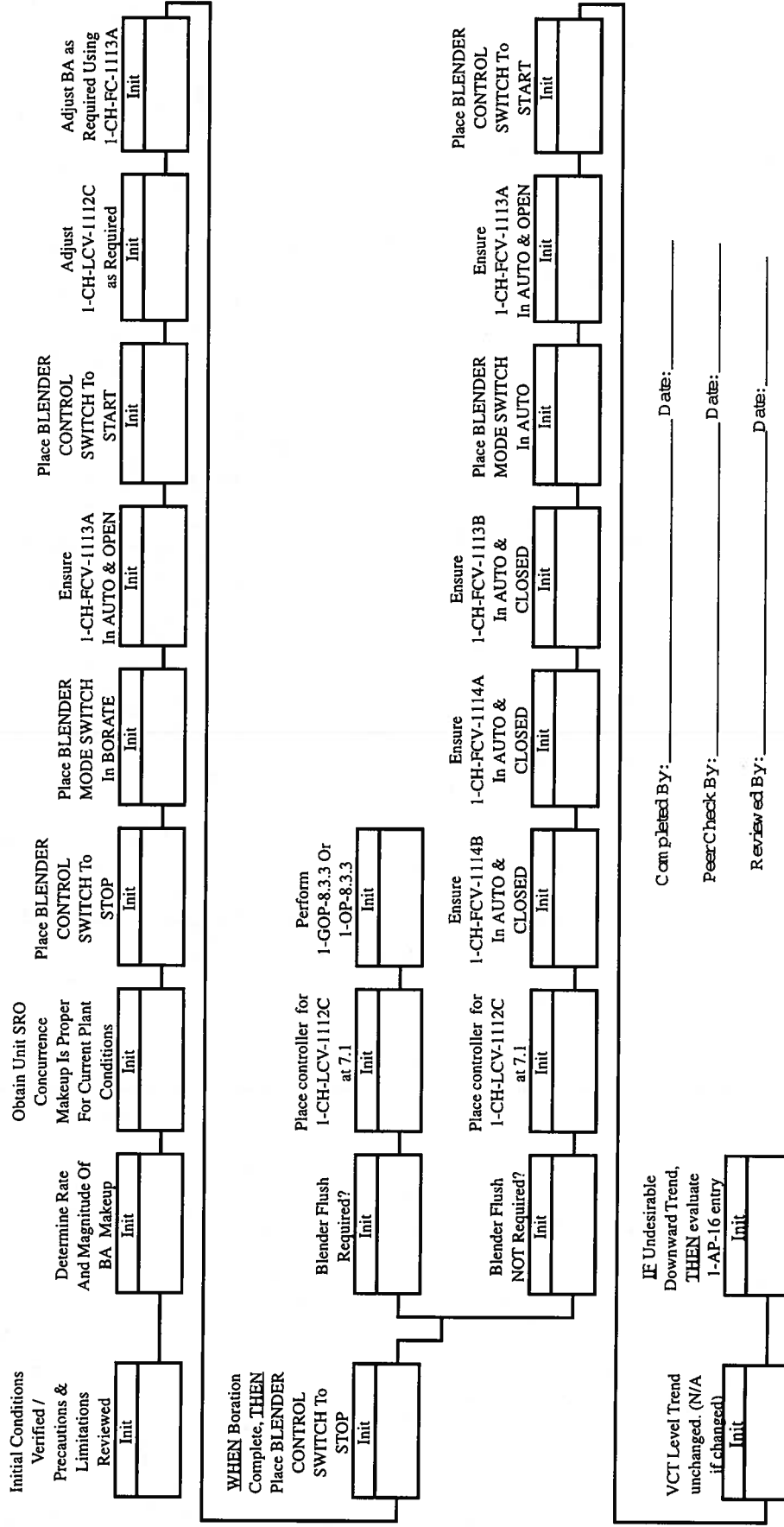
1-GOP-8.3.4
Revision 3
Page 1 of 1

☐ **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 []
<u>Standards</u>	1-RC-LT-1460 and 1461 are verified to be normal.	
<u>Notes/Comments</u> 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 []
<u>Standards</u>	Steam flow, feed flow, steam generator level, and steam pressure are verified to be normal for each steam generator.	
<u>Notes/Comments</u>		

3	Verify turbine first stage pressure indications normal.	Procedure Step 3
---	---	------------------

	SAT [] UNSAT []
--	-----------------

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	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 []
----------------------	-----------------

<u>Standards</u>	1-CH-FCV-1122 placed in manual and charging flow is lowered to restore pressurizer level to program.
------------------	--

<u>Performance Cue(s)</u>	(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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	<p>Checks indication for selected pressurizer level channels.</p> <p>Notes 1-RC-LT-1459 is failed low and the Pressurizer Level Channel Defeat Switch is in the 459/460 position.</p> <p>Applies procedure step 5.a RNO</p>
------------------	---

Notes/Comments

7	Select operable pressurizer level channels for control.	Procedure Step 5.a.1 RNO
---	---	-----------------------------

Critical Step	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

<u>Standards</u>	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 ☐

<u>Standards</u>	Verifies emergency bus backup heaters are not tripped.
------------------	--

Notes/Comments

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

SAT ☐ UNSAT ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	Goes to Attachment 2
------------------	----------------------

Notes/Comments

12	Ensure charging flow is at least 25 gpm.	Procedure Step 1 Att.2
----	--	------------------------

SAT <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	Adjusts charging flow to 25 – 40 gpm.
------------------	---------------------------------------

Notes/Comments

13	Ensure letdown isolation valves are open.	Procedure Step 2 Att.2
----	---	------------------------

Critical Step	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Control switch for 1-CH-HCV-1200A, 1200B, or 1200C is placed in OPEN.
------------------	---

<u>Performance Cue(s)</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>NOTE TO THE EVALUATOR</u>	IF 1-CH-PCV-1145 WAS NOT ADJUSTED TO 300 PSIG, THEN THIS STEP IS CRITICAL.
------------------------------	--

<u>Standards</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	(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 ☐

<u>Standards</u>	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 ☐

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

Notes/Comments

25	Reset the pressurizer control group heaters.	Procedure Step 5.e RNO
----	--	---------------------------

SAT ☐ UNSAT ☐

<u>Standards</u>	Control switch for the pressurizer control group heaters is placed in START then returned to AUTO-AFTER-START.
------------------	--

<u>Performance Cue(s)</u>	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



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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 2 of 19
----------------------	--	---------------------------------------

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 3 of 19
----------------------	--	---------------------------------------

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

(STEP 5 CONTINUED ON NEXT PAGE)

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 4 of 19
----------------------	--	---------------------------------------

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 5 of 19
----------------------	--	---------------------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6. ____	<p>VERIFY BOTH TURBINE FIRST STAGE PRESSURE CHANNELS - NORMAL</p>	<p><u>IF</u> Condenser Steam Dumps are available, <u>THEN</u> transfer to Steam Pressure Mode by doing the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> a) Place both STEAM DUMP INTLK switches to OFF/RESET. <input type="checkbox"/> b) Place STEAM DUMP CONTROLLER to MANUAL. <input type="checkbox"/> c) Place MODE SELECTOR switch to STEAM PRESS. <input type="checkbox"/> d) Ensure Steam Dump demand is ZERO. <input type="checkbox"/> e) Return STEAM DUMP CONTROLLER to AUTO. <input type="checkbox"/> f) Verify Steam Dump demand is ZERO. <input type="checkbox"/> g) Place both STEAM DUMP INTLK switches to ON.

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 6 of 19
----------------------	--	---------------------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7. ____	<p>VERIFY OPERABLE CHANNELS SELECTED FOR ALL OF THE FOLLOWING SGWLC INSTRUMENTS:</p> <ul style="list-style-type: none"> <input type="checkbox"/> • Turbine First Stage Pressure <input type="checkbox"/> • "A" SG Steam Flow <input type="checkbox"/> • "B" SG Steam Flow <input type="checkbox"/> • "C" SG Steam Flow <input type="checkbox"/> • "A" SG Feed Flow <input type="checkbox"/> • "B" SG Feed Flow <input type="checkbox"/> • "C" SG Feed Flow 	<p>Do one of the following as directed by the Unit 1 SRO:</p> <ul style="list-style-type: none"> <input type="checkbox"/> • IF desired to swap <u>ONLY</u> the failed channel, <u>THEN GO TO</u> Step 9. <li style="text-align: center;"><u>OR</u> <input type="checkbox"/> • IF desired to swap <u>ALL</u> SGWLC channels to the same channel, <u>THEN GO TO</u> Step 10.
8. ____	GO TO STEP 11	

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 7 of 19
----------------------	--	---------------------------------------

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 8 of 19
----------------------	--	---------------------------------------

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 9 of 19
-----------------------------	---	---

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:	
	<input type="checkbox"/> a. Place both STEAM DUMP INTLK switches to OFF/RESET	
	<input type="checkbox"/> b. Place STEAM DUMP CONTROLLER to MANUAL	
	<input type="checkbox"/> c. Place MODE SELECTOR switch to STEAM PRESS	
	<input type="checkbox"/> d. Ensure Steam Dump demand is ZERO	
	<input type="checkbox"/> e. Place STEAM DUMP CONTROLLER to AUTO	
	<input type="checkbox"/> f. Verify Steam Dump demand is ZERO	
	<input type="checkbox"/> g. Place both STEAM DUMP INTLK switches to ON	
(STEP 9 CONTINUED ON NEXT PAGE)		

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 10 of 19
-----------------------------	---	--

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 11 of 19
----------------------	--	--

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 12 of 19
----------------------	--	--

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 13 of 19
----------------------	--	--

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 14 of 19
----------------------	--	--

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:	
	<ul style="list-style-type: none"> Place Steam Dumps in Steam Pressure Mode by doing the following: 	
	<input type="checkbox"/> 1) Place both STEAM DUMP INTLK switches to OFF/RESET	
	<input type="checkbox"/> 2) Place STEAM DUMP CONTROLLER to MANUAL	
	<input type="checkbox"/> 3) Place MODE SELECTOR switch to STEAM PRESS	
	<input type="checkbox"/> 4) Ensure Steam Dump demand is ZERO	
	<input type="checkbox"/> 5) Place STEAM DUMP CONTROLLER to AUTO	
	<input type="checkbox"/> 6) Verify Steam Dump demand is ZERO	
	<input type="checkbox"/> 7) Place both STEAM DUMP INTLK switches to ON	
	<p style="text-align: center;"><u>OR</u></p>	
	(STEP 10 CONTINUED ON NEXT PAGE)	

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 15 of 19
----------------------	--	--

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10.	SWAP ALL SGWLC CHANNELS AS FOLLOWS: (Continued)	
	<ul style="list-style-type: none"> Place Steam Dumps in Tave Mode by doing the following: 	
	<input type="checkbox"/> 1. Verify BOTH channels of Turbine First Stage Pressure are operable	
	<input type="checkbox"/> 2. Place both STEAM DUMP INTLK switches to OFF/RESET	
	<input type="checkbox"/> 3. VERIFY ANNUNCIATOR PANEL "P" E-4, C-7 PERM STM DUMP ARMED FROM LOSS OF LOAD - NOT LIT	<input type="checkbox"/> 3) Place Steam Dump Mode Selector switch to RESET.
	<input type="checkbox"/> 4. Place MODE SELECTOR switch to TAVE	
	<input type="checkbox"/> 5. Ensure Steam Dump demand is ZERO	
	<input type="checkbox"/> 6. Place both STEAM DUMP INTLK switches to ON	
(STEP 10 CONTINUED ON NEXT PAGE)		

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 16 of 19
----------------------	--	--

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10.	SWAP ALL SGWLC CHANNELS AS FOLLOWS: (Continued)	
	<input type="checkbox"/> i) Auto Rod Control - DESIRED	<input type="checkbox"/> i) GO TO Step 11.
	<input type="checkbox"/> 1) Verify Tave and Tref - MATCHED WITHIN 1.5°F	<input type="checkbox"/> 1) Adjust Tave and Tref, as required: <input type="checkbox"/> • Manually adjust Control Rods. <input type="checkbox"/> • Manually adjust Turbine load.
	<input type="checkbox"/> 2) Return Rod Control Mode Selector switch to AUTO	
	<p>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.</p>	
11. ____	VERIFY OPERATION OF THE FOLLOWING INSTRUMENTS:	
	<input type="checkbox"/> a) Reactor Coolant Flow Instrumentation indication - NORMAL	<input type="checkbox"/> a) <u>IF</u> unit is in Mode 1, <u>THEN</u> complete 1-MOP-55.71, REACTOR COOLANT FLOW INSTRUMENTATION within 72 hours.
	<input type="checkbox"/> b) Pressurizer Level Instrumentation indication - NORMAL	<input type="checkbox"/> b) <u>IF</u> unit is in Mode 1 or 2, <u>THEN</u> complete 1-MOP-55.72, PRESSURIZER LEVEL INSTRUMENTATION within 72 hours.
	<input type="checkbox"/> c) Pressurizer Pressure Protection Instrumentation indication - NORMAL	<input type="checkbox"/> c) <u>IF</u> unit is in Mode 1, 2, or 3, <u>THEN</u> complete 1-MOP-55.73, PRESSURIZER PRESSURE PROTECTION INSTRUMENTATION, Section 5.1 within one hour.
(STEP 11 CONTINUED ON NEXT PAGE)		

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 17 of 19
----------------------	--	--

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

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 18 of 19
----------------------	--	--

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11.	VERIFY OPERATION OF THE FOLLOWING INSTRUMENTS: (Continued)	
	<input type="checkbox"/> j) Turbine Stop Valve Closure Signal Instrumentation annunciator indication - NORMAL	<input type="checkbox"/> j) IF unit is in Mode 1, THEN complete 1-MOP-55.80, TURBINE STOP VALVE CLOSURE SIGNAL INSTRUMENTATION within 72 hours.
	<input type="checkbox"/> k) Turbine First Stage Pressure Instrumentation indication - NORMAL	<input type="checkbox"/> 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.
	<input type="checkbox"/> l) Turbine Auto Stop Oil Pressure annunciator indication - NORMAL	<input type="checkbox"/> l) IF unit is in Mode 1, THEN complete 1-MOP-55.82, TURBINE AUTO STOP OIL LOW PRESSURE INSTRUMENTATION within 72 hours.
	<input type="checkbox"/> m) RCP Bus Undervoltage annunciator indication - NORMAL	<input type="checkbox"/> 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.
	<input type="checkbox"/> n) RCP Bus Underfrequency annunciator indication - NORMAL	<input type="checkbox"/> 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.
	<input type="checkbox"/> o) RWST Level Instrumentation indication - NORMAL	<input type="checkbox"/> o) IF unit is in Mode 1, 2, 3, or 4, THEN complete 1-MOP-55.85, RWST LEVEL INSTRUMENTATION within 72 hours.

NUMBER 1-AP-3	PROCEDURE TITLE LOSS OF VITAL INSTRUMENTATION	REVISION 26 PAGE 19 of 19
----------------------	--	--

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12. ____	VERIFY MAINTENANCE OPERATING PROCEDURE(S) - INITIATED FOR ALL FAULTY INSTRUMENT CHANNELS	<p>IF the failed instrument channel was not in the mode specified, <u>THEN</u> do the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> a) Continue operation. <input type="checkbox"/> b) Enter Action Statement. c) Do either of the following: <ul style="list-style-type: none"> <input type="checkbox"/> • Initiate the appropriate MOP specified in Step 11 for the failed channel(s). <li style="text-align: center;"><u>OR</u> <input type="checkbox"/> • Have the I&C department place the failed channel(s) in trip. <input type="checkbox"/> d) Refer to the applicable Technical Specifications as listed in the Reference Section of the associated MOP. <input type="checkbox"/> e) <u>DO NOT</u> enter mode specified in Technical Specification until all requirements of Technical Specifications for affected channel have been met. <input type="checkbox"/> 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 -		

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

- 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

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

- 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 []
--	-----------------

<u>Standards</u>	Simulates placing turbine trip lever in the TRIPPED position.
------------------	---

<u>Simulation Cue(s)</u>	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 ☐

<u>Note to Evaluator</u>	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.
--------------------------	---

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

<u>Simulation Cue(s)</u>	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 ☐

<u>Standards</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Simulates opening 1-EH-15, 17, 19, and 21.
------------------	--

<u>Simulation Cue(s)</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>

<u>Standards</u>	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.
------------------	---

<u>Simulation Cue(s)</u>	<ul style="list-style-type: none"> 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 REMOTE TURBINE TRIP	ATTACHMENT 6
REVISION 26		PAGE 1 of 2

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p>CAUTION: EHC fluid is a health hazard and is under high pressure.</p> <p>*****</p>		
1. ____	<p>LOCALLY TRIP THE TURBINE FROM THE TURBINE PEDESTAL:</p> <p><input type="checkbox"/> a) Place the local Trip Lever in the TRIPPED position</p> <p>b) Verify all 8 Turbine Stop and Control Valves - CLOSED in Doghouse:</p> <p><input type="checkbox"/> • 1-MS-TV-1A</p> <p><input type="checkbox"/> • 1-MS-TV-1B</p> <p><input type="checkbox"/> • 1-MS-TV-1C</p> <p><input type="checkbox"/> • 1-MS-TV-1D</p> <p><input type="checkbox"/> • 1-MS-GOV-1A</p> <p><input type="checkbox"/> • 1-MS-GOV-1B</p> <p><input type="checkbox"/> • 1-MS-GOV-1C</p> <p><input type="checkbox"/> • 1-MS-GOV-1D</p>	<p>b)) Perform the following:</p> <p>1) Open both the following breakers at Turbine Mezzanine East:</p> <p><input type="checkbox"/> • 1A1-2 D1, Power to 1-TM-P-3, EHC Pump</p> <p><input type="checkbox"/> • 1B1-3 A2, Power to 1-TM-P-4, EHC Pump.</p> <p>2) Open EHC Accumulator Drain Valves:</p> <p><input type="checkbox"/> • 1-EH-15, "A" EHC Accumulator Drain</p> <p><input type="checkbox"/> • 1-EH-17, "B" EHC Accumulator Drain</p> <p><input type="checkbox"/> • 1-EH-19, "C" EHC Accumulator Drain</p> <p><input type="checkbox"/> • 1-EH-21, "D" EHC Accumulator Drain</p>

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2. ____	MAKE NOTIFICATIONS	
	<input type="checkbox"/> 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

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

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 ☐

<u>Standards</u>	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 ☐

<u>Standards</u>	<u>Simulates</u> attempting to operate 1-SI-48 in the closed direction to verify no stem movement.
------------------	--

<u>Simulation Cue(s)</u>	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 ☐

<u>Standards</u>	Ensures 1-SI-58 locked closed by <u>simulating</u> pulling lock and chain to check for integrity, checking locking device hinders valve operation, and checking valve stem position.
------------------	--

<u>Simulation Cue(s)</u>	(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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Opens 2-SI-16 by <u>simulating</u> 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.
------------------	--

<u>Simulation Cue(s)</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	Opens 1-SI-50 by <u>simulating</u> 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.
------------------	--

<u>Simulation Cue(s)</u>	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 []
----------------------	-------------------

<u>Standards</u>	Opens 1-SI-52 by <u>simulating</u> 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.
------------------	--

<u>Simulation Cue(s)</u>	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 []
----------------------	-------------------

<u>Standards</u>	Unlocks and opens 2-SI-47 by <u>simulating</u> the following: <ul style="list-style-type: none"> • 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.
------------------	---

<u>Simulation Cue(s)</u>	Stem moved out and handwheel stopped.
--------------------------	---------------------------------------

<u>Simulation Cue(s)</u>	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 ☐

<u>Standards</u>	Requests IV be performed by another operator and waits for IV completion.
------------------	---

<u>Simulation Cue(s)</u>	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 ☐

<u>Standards</u>	Checks cooling tank sight glass and pump oil sight glass to verify low level not indicated.
------------------	---

<u>Simulation Cue(s)</u>	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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
--	---

<u>Standards</u>	Notifies control room that alignment steps are complete and requests RO to perform remaining steps.
------------------	---

<u>Simulation Cue(s)</u>	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.
- _____ 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 []
----------------------	-----------------

<u>Standards</u>	1-CN-426 and/or 1-CN-441 is verified open by <u>simulating</u> 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.
------------------	--

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

<u>Simulation Cue(s)</u>	Valve stem moved out and handwheel stopped.
--------------------------	---

<u>Notes/Comments</u>
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 <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Standards</u>	1-CN-41 is opened by <u>simulating</u> turning the valve handwheel in the open direction until stem movement stops, then rotating closed approximately one quarter turn to get off the backseat.
------------------	--

<u>Simulation Cue(s)</u>	Valve stem moved out and handwheel stopped.
--------------------------	---

Notes/Comments

3	Open 1-CC-LCV-100 bypass valve.	Procedure Step 3
---	---------------------------------	------------------

Critical Step	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
----------------------	---

<u>Note to Evaluator</u>	Local level indication is on the side of the tank opposite from the room entrance.
--------------------------	--

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

<u>Simulation Cue(s)</u>	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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

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 []
----------------------	-----------------

<u>Note to Evaluator</u>	Local level indication is on the side of the tank opposite from the room entrance.
--------------------------	--

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

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

<u>Notes/Comments</u>

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

SAT <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

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 <input type="checkbox"/>	UNSAT <input type="checkbox"/>
------------------------------	--------------------------------

Standards	1-CN-41 is closed by <u>simulating</u> 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 []
--	-----------------

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

<u>Simulation Cue(s)</u>	(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 []
--	-----------------

<u>Standards</u>	Chemistry is notified (gaitronics, phone, in-person, control room...).
------------------	--

<u>Simulation Cue(s)</u>	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
REVISION 23		PAGE 1 of 2

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

NUMBER 1-AP-15	ATTACHMENT TITLE CONDENSATE MAKEUP TO THE CC HEAD TANK	ATTACHMENT 4
REVISION 23		PAGE 2 of 2

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