

Final Submittal

**VOGTLE MAY 2005 EXAM  
50-424, 425/2005-301**

**MAY 17 - 25, 2005  
MAY 27, 2005 (WRITTEN)**

Control Room JPMs (simulator JPMs)



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**NRC-JP-13427-002**

**D/G 1B PARALLEL OPERATION  
WITH FAILURE OF LOAD POT**

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** Following a 7 day D/G 1B outage, Maintenance and Engineering Support are standing by for a D/G 1B test run. D/G 1B was just started, and is now operating unloaded with the D/G output breaker open. You are relieving the BOP, and will be performing the remainder of this test run. The outside area SO is stationed at the D/G to support the evolution.

**Assigned Task:** The applicable portions of 13145-1 have been completed for starting DG-1B. In accordance with procedure 13427-1, parallel D/G 1B to 1BA03 and raise DG-1B load to 7000 kw per Section 4.2.1. starting with step 3.

JPM INFORMATION

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

JPM TITLE: D/G 1B PARALLEL OPERATION WITH FAILURE OF LOAD POT

Application: RO/SRO  
 Task Number: 11021  
 K/A Number: 062A1.01 RO: 3.4 SRO: 3.8  
 Safety Function: 6 - Electrical  
 10CFR55.45 Ref.: 5

REVISION: 0

COMPLETION TIME: 21 minutes

Evaluation Method  Performed  Simulated  
 Evaluation Location  Simulator  Control Room  Unit 1  Unit 2  
 Performance Time: \_\_\_\_\_ minutes

OVERALL JPM EVALUATION  SATISFACTORY  UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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**INSTRUCTIONS TO EXAMINER**


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This JPM is based on the latest rev of 13427-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "@..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 13427-1 and 17038-1

**SIMULATOR SETUP:**

1. Reset to IC 14
2. Start D/G 1B allow it to run unloaded until all annunciators are clear
3. Set **Trigger 1** with the following overrides:
  - DG 1B (A) Load Pot to 100%**
  - ALB 38 E01 – ON (DG 1B Trouble)**
  - ALB 38 A04 – ON with a 10 sec time delay (LO outlet temp)**
  - ALB 38 C04 – ON with a 20 sec time delay (JW outlet temp)**
4. Acknowledge alarms and freeze simulation

Setup time: 5 minutes

### DIRECTIONS TO OPERATOR

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**Initial Conditions:** Following a 7 day D/G 1B outage, Maintenance and Engineering Support are standing by for a D/G 1B test run. D/G 1B was just started, and is now operating unloaded with the D/G output breaker open. You are relieving the BOP, and will be performing the remainder of this test run. The outside area SO is stationed at the D/G to support the evolution.

**Assigned Task:** The applicable portions of 13145-1 have been completed for starting DG-1B. In accordance with procedure 13427-1, parallel D/G 1B to 1BA03 and raise DG-1B load to 7000 Kew per Section 4.2.1. starting with step 3.

**Task Standard:** DG-1B paralleled to 1BA03 and operated per 13427-1

## JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1**SAT  UNSAT **Paralleling Diesel Generator To 1BA03**

- ENSURE the Diesel Generator 1B Sync Mode Selector Switch TS-DG1B is in AUTO
- ENSURE Breaker 1BA03-05 and 1BA03-01 Synchronization Switches are OFF
- ♦ PLACE the Breaker 1BA03-19 Synchronization Switch to ON
- ♦ VERIFY Diesel Generator is in the Parallel Mode by observing the blue DSL GEN 1B UNIT MODE/FAST START light is not illuminated.
- SET the Diesel Generator Load Pot 1-SE-4915 to 1.00

**STEP 2****CRITICAL (♦)**SAT  UNSAT **Adjust D/G 1B voltage and frequency**

- SELECT 1BA03 4160V Bus phase voltage of the highest value
- SELECT the Diesel Generator 1B voltage of the lowest value
- VERIFY Sync Scope Meter is rotating, Synchronizing Lights are bright at the 6 o'clock position, Synchronizing lights are dark at the 12 o'clock position, and the Red AUTO SYNC PERMISSIVE LIGHT comes on near the 12 o'clock position
- ADJUST generator voltage to approximately 50V above the highest phase of the bus voltage
- ♦ ADJUST the generator speed until the Sync Scope needle is rotating slowly in the clockwise direction (fast)

**NOTE:** When the DG is paralleled to 1BA03 during the next step, the DG will uncontrollably pick up maximum load.

## JPM STEPS

**STEP 3****CRITICAL (♦)**SAT  UNSAT **Closing D/G 1B output breaker**

- ♦ When the Sync Scope needle reaches the 11 o'clock position DEPRESS and HOLD the Diesel Generator 1B AUTO SYNC PERMISSIVE PUSHBUTTON PB-DG1B
- VERIFY that the DG1B OUTPUT BRKR 1BA03-19 CLOSES

**NOTE TO SIMULATOR INSTRUCTOR:**

After the DG output breaker is closed, INSERT Trigger 1.

**STEP 4****CRITICAL (♦)**SAT  UNSAT **Respond to Uncontrollable DG Load Increase**

- ♦ Recognize that DG load is NOT stable at minimum load (700 kW), and that it is increasing uncontrollably.
- Attempt to lower load using DG load pot
- ♦ Perform either of the following:(1)
  - OPEN the DG output breaker  
or
  - TRIP the DG

(1) If the DG is not manually tripped within 5 minutes, trip the DG due to a Lube Oil or Jacket Water trip.

STOP TIME: \_\_\_\_\_



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**NRC-JP-19030-001**

**DEPRESSURIZE RCS USING AUX SPRAY TO REDUCE BREAK FLOW TO  
RUPTURED STEAM GENERATOR  
(PRESSURIZER SPRAYS AND PORV'S NOT AVAILABLE)**

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**JPM INFORMATION**

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*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** A tube rupture has occurred on SG #3. The crew has transitioned from 19000-C to 19030-C. Steps 1 through 16 of 19030-C have been performed.

**Assigned Task:** The SS has directed you to depressurize the RCS beginning with step 17 of 19030-C

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**JPM INFORMATION**


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OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_ / \_\_\_ / \_\_\_

JPM TITLE:           Depressurize RCS Using Aux Spray to Reduce Break Flow to  
Ruptured Steam Generator (Pressurizer Sprays and PORV's Not Available)

COMPLETION TIME: 22 minutes

Application:           RO/SRO  
 Task Number:         37011  
 K/A Number:         000038EA104   RO:   4.3    SRO: 4.1  
 Safety Function      3 – Pressure Control  
 10CFR55.45 Ref.:    6, 7, 12

Evaluation Method     Performed            SimulatedEvaluation Location    Simulator            Control Room    Unit 1    Unit 2

Performance Time:    \_\_\_\_\_minutes

**OVERALL JPM EVALUATION**            **SATISFACTORY**            **UNSATISFACTORY**

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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**INSTRUCTIONS TO EXAMINER**


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This JPM is based on the latest rev of 19030-C. Verify this JPM is in accord with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 19030-C, Steam Generator Tube Rupture

**SIMULATOR SETUP:** 1. Reset to IC14 (MOL 100%)

NOTE: for the following 2 overrides use the overtab (not the panel drawing)

2. Override PZR SPRAYS shut: SWITCH 455B & 455C to "CNT DN"
3. Override PZR PORVS shut: SWITCH 455A & 456A to "CLOSE"
4. Insert malfunction SG01C at 50%
5. Initiate manual Rx Trip and SI
6. Throttle AFW flow to  $\approx$  200 gpm per SG
7. Verify ruptured SG level > 10% NR
8. Perform 19030 steps 1 through 18a
9. Ack/Reset alarms
10. Freeze simulator

Setup time: 10 minutes

**DIRECTIONS TO OPERATOR**

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:** A large tube rupture has occurred on SG #3. The crew has transitioned from 19000-C to 19030-C. Steps 1 through 16 of 19030-C have been performed.

**ASSIGNED TASK:** The SS has directed you to depressurize the RCS beginning with step 17 of 19030-C.

**TASK STANDARD:** RCS depressurized.

## JPM STEPS

START TIME: \_\_\_\_\_

## STEP 1

SAT  UNSAT 

Evaluate RCS Depressurization Capability

- Step 17: Check RCS Subcooling > 44 °F [58 °F]
- Step 18: Check normal PRZR spray available and spray with maximum spray
- Step 18 RNO: go to step 19. observe caution and note prior to step 19.
- Caution – The PRT may rupture if a PRZR PORV is used to depressurize the RCS. This may result in abnormal containment conditions.
- Caution – Cycling of the PRZR PORV should be minimized.
- Note – The upper head region of the vessel may void during RCS depressurization if RCPs are not running. This will result in a rapidly rising PRZR level.
- Step 19a: ARM one train of COPS and verify PRZR PORV block open
- Step 19b: Depressurize RCS using a PORV

## CUES:

- Ⓞ Provide cues as needed to indicate PZR spray valves are not functional.
- Ⓞ Provide cues as needed to indicate PZR PORV's are not functional.
- Ⓞ Indicate following conditions: RCS pressure is 1535 psig; Ruptured SG pressure is 1120 psig, PRZR level is 28%; RCS subcooling is 85°F.

## STEP 2

**CRITICAL (♦)**SAT  UNSAT Establish Support Conditions for Aux Spray Operation

- Step 19b RNO 1): Verify at least one SI pump running
- Step 19b RNO 2): Ensure PRZR heaters OFF
- Step 19b RNO 3): Verify at least one CCP running
- ♦ Step 19b RNO 4): Shut BIT discharge isolation valves HV-8801A & HV-8801B

## CUES:

- Ⓞ Provide cues as needed to indicate at least one SI pump and one CCP are running.
- Ⓞ Provide cues as needed to indicate that the BIT isolation valves are closed.

## JPM STEPS

**STEP 3****CRITICAL (◆)**SAT  UNSAT **Depressurize RCS**

- Step 19b RNO 5): Set Seal Flow Control valve HC-182 to maximum seal flow (HV-182 shut)
- ◆ Step 19b RNO 6): Open Charging to RCS Isolation valves HV-8105 and HV-8106
- ◆ Step 19b RNO 7): Open PRZR Aux Spray valve HV-8145
- ◆ Step 19b RNO 8): Close Charging Isolation valves HV-8146 and HV-8147
- Step 19b RNO 9): Ensure closed PRZR spray valves PV-455B & PV-455C
- Step 19b RNO 10): Adjust RCP Seal Flow Control HV-182 as necessary to establish 8 to 13 GPM RCP seal injection flow
- ◆ Step 19b RNO 11): Adjust Charging Flow Control FIC-121 as necessary to establish required aux spray flow.
- Step 19b RNO 12): Return to step 18c

**CUES:**

Note: Simulator operator needs to ensure that RCS temperature is maintained <518 F (or target temperature determined).

© Provide cues as needed to indicate required valve positions.

**STEP 4****CRITICAL (◆)**SAT  UNSAT **Determine RCS depressurization should be stopped**

(Note: *Subcooling is not expected to decrease to < 24°F during depressurization.*)

- ◆ **Step 18c: Check if ANY of the following conditions are satisfied:**
  - BOTH of the following:**
    - 1) RCS pressure < Ruptures SG pressure
    - 2) PRZR level > 9% [37% ADVERSE]
  - OR-
  - RCS subcooling < 24 °F [38 °F ADVERSE]
  - OR-
  - PRZR level > 75% [52% ADVERSE]
- Step 18c RNO: Return to Step 18b
- Step 18b: Spray with maximum available spray

**CUES:**

© Provide cues to indicate that RCS pressure is ≤ Ruptured SG pressure and PZR level is 15%.

## JPM STEPS

**STEP 5****CRITICAL (◆)**SAT  UNSAT **Stop depressurization**

- Step 18d 1): Shut normal spray valves
- ◆ Step 18d 2) a): Open Charging to Loop Iso Valve HV-8146 or HV-8147
- ◆ Step 18d 2) b): Shut PRZR Aux Spray Valve HV-8145

**CUES:**

- ☉ Provide cues as needed to indicate required valve positions.

**STEP 6**SAT  UNSAT **Report to SS**

- RCS depressurized

STOP TIME: \_\_\_\_\_

*Field Notes*



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JOB PERFORMANCE MEASURE

NRC-JP-19030-001

DEPRESSURIZE RCS USING AUX SPRAY TO REDUCE BREAK FLOW TO  
RUPTURED STEAM GENERATOR  
(PRESSURIZER SPRAYS AND PORV'S NOT AVAILABLE)

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JPM INFORMATION

This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.

**Initial Conditions:** A tube rupture has occurred on SG #3. The crew has transitioned from 19000-C to 19030-C. Steps 1 through 16 of 19030-C have been performed.

**Assigned Task:** The SS has directed you to depressurize the RCS beginning with step 17 of 19030-C.

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Task Standard: RCS depressurized and break flow reduced.¶

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JPM INFORMATION

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OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_/\_\_\_/\_\_\_

JPM TITLE: Depressurize RCS Using Aux Spray to Reduce Break Flow to Ruptured Steam Generator (Pressurizer Sprays and PORV's Not Available)

COMPLETION TIME: 22 minutes

Application: RO/SRO
Task Number: 37011
K/A Number: 000038EA104 RO: 4.3 SRO: 4.1
Safety Function: 3 - Pressure Control
10CFR55.45 Ref.: 6, 7, 12

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Evaluation Method [ ] Performed [ ] Simulated
Evaluation Location [ ] Simulator [ ] Control Room [ ] Unit 1 [ ] Unit 2
Performance Time: \_\_\_\_\_ minutes

OVERALL JPM EVALUATION [ ] SATISFACTORY [ ] UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

INSTRUCTIONS TO EXAMINER

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This JPM is based on the latest rev of 19030-C. Verify this JPM is in accord with the latest procedural revision prior to use. Cues preceded by a "@"... are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

REQUIRED ITEMS: 1. 19030-C, Steam Generator Tube Rupture

SIMULATOR SETUP: 1. Reset to IC14 (MOL 100%)

NOTE: for the following 2 overrides use the overtab (not the panel drawing)

- 2. Override PZR SPRAYS shut: SWITCH 455B & 455C to "CNT DN"
3. Override PZR PORVS shut: SWITCH 455A & 456A to "CLOSE"
4. Insert malfunction SG01C at 50%
5. Initiate manual Rx Trip and SI
6. Throttle AFW flow to ~ 200 gpm per SG
7. Verify ruptured SG level > 10% NR
8. Perform 19030 steps 1 through 18a
9. Ack/Reset alarms
10. Freeze simulator

Setup time: 10 minutes

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DIRECTIONS TO OPERATOR

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INITIAL CONDITIONS: A large tube rupture has occurred on SG #3. The crew has transitioned from 19000-C to 19030-C. Steps 1 through 16 of 19030-C have been performed.

ASSIGNED TASK: The SS has directed you to depressurize the RCS beginning with step 17 of 19030-C.

TASK STANDARD: RCS depressurized.

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JPM STEPS

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START TIME: \_\_\_\_\_

**STEP 1**

SAT  UNSAT

Evaluate RCS Depressurization Capability

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- Step 17: Check RCS Subcooling > 44 °F [58 °F]
- Step 18: Check normal PRZR spray available and spray with maximum spray
- Step 18 RNO: go to step 19. observe caution and note prior to step 19.
- Caution – The PRT may rupture if a PRZR PORV is used to depressurize the RCS. This may result in abnormal containment conditions.
- Caution – Cycling of the PRZR PORV should be minimized.
- Note – The upper head region of the vessel may void during RCS depressurization if RCPs are not running. This will result in a rapidly rising PRZR level.
- Step 19a: ARM one train of COPS and verify PRZR PORV block open
- Step 19b: Depressurize RCS using a PORV.

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**CUES:**

- Ⓢ Provide cues as needed to indicate PZR spray valves are not functional.
- Ⓢ Provide cues as needed to indicate PZR PORV's are not functional.
- Ⓢ Indicate following conditions: RCS pressure is 1535 psig; Ruptured SG pressure is 1120 psig, PRZR level is 28%; RCS subcooling is 85°F.

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• Recognizes requirement to establish AUX SPRAY for RCS depressurization ¶

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**STEP 2**

**CRITICAL (♦)**

SAT  UNSAT

Establish Support Conditions for Aux Spray Operation

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- Step 19b RNO 1): Verify at least one SI pump running
- Step 19b RNO 2): Ensure PRZR heaters OFF.
- Step 19b RNO 3): Verify at least one CCP running
- ♦ Step 19b RNO 4): Shut BIT discharge isolation valves HV-8801A & HV-8801B

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**CUES:**

- Ⓢ Provide cues as needed to indicate at least one SI pump and one CCP are running.
- Ⓢ Provide cues as needed to indicate that the BIT isolation valves are closed.

JPM STEPS

STEP 3

CRITICAL (♦)

SAT  UNSAT

Depressurize RCS

- Step 19b RNO 5): Set Seal Flow Control valve HC-182 to maximum seal flow (HV-182 shut)
- ♦ Step 19b RNO 6): Open Charging to RCS Isolation valves HV-8105 and HV-8106
- ♦ Step 19b RNO 7): Open PRZR Aux Spray valve HV-8145
- ♦ Step 19b RNO 8): Close Charging Isolation valves HV-8146 and HV-8147
- Step 19b RNO 9): Ensure closed PRZR spray valves PV-455B & PV-455C
- Step 19b RNO 10): Adjust RCP Seal Flow Control HV-182 as necessary to establish 8 to 13 GPM RCP seal injection flow
- ♦ Step 19b RNO 11): Adjust Charging Flow Control FIC-121 as necessary to establish required aux spray flow.
- Step 19b RNO 12): Return to step 18c

CUES:

Note: Simulator operator needs to ensure that RCS temperature is maintained <518 F (or target temperature determined).

© Provide cues as needed to indicate required valve positions.

STEP 4

CRITICAL (♦)

SAT  UNSAT

Determine RCS depressurization should be stopped

(Note: Subcooling is not expected to decrease to < 24°F during depressurization.)

♦ Step 18c: Check if ANY of the following conditions are satisfied:

BOTH of the following:

- 1) RCS pressure < Ruptured SG pressure
- 2) PRZR level > 9% [37% ADVERSE]

-OR-

RCS subcooling < 24 °F [38 °F ADVERSE]

-OR-

PRZR level > 75% [52% ADVERSE]

- Step 18c RNO: Return to Step 18b
- Step 18b: Spray with maximum available spray

CUES:

© Provide cues to indicate that RCS pressure is < Ruptured SG pressure and PZR level is 15%.

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• PRZR level >

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JPM STEPS

STEP 5  
CRITICAL (♦)

SAT  UNSAT

Stop depressurization

- Step 18d 1): Shut normal spray valves
- ♦ Step 18d 2) a): Open Charging to Loop Iso Valve HV-8146 or HV-8147
- ♦ Step 18d 2) b): Shut PRZR Aux Spray Valve HV-8145

CUES:

Ⓢ Provide cues as needed to indicate required valve positions.

STEP 6

SAT  UNSAT

Report to SS

- RCS depressurized

STOP TIME: \_\_\_\_\_

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 ♦ Shut PZR Aux Spray valve HV-8145

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*Energy to Serve Your World™*

**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**NRC-JP-18035-001**

**PERFORM CONTROL ROOM ISOLATION  
FOR  
TOXIC GAS RELEASE**

This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.

🕒 **THIS IS A TIME CRITICAL JPM** 🕒

**Initial Conditions:** The plant is at 100% power. You are the Balance of Plant operator. A transfer truck accident just outside the plant entrance has caused chlorine fumes to begin entering the Control Room.

**Assigned Task:** The SS has directed you to "Perform a Control Room Isolation for both Units due to a Toxic Gas Release".

JPM INFORMATION

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_ / \_\_\_ / \_\_\_

JPM TITLE: Perform Control Room Isolation for Toxic Gas Release

REVISION: 0 March 29, 2005

COMPLETION TIME: 5 minutes TIME CRITICAL ☉

Application: RO/SRO

Task Number: 60013

K/A Number: 068G2.4.49 RO: 4.0 SRO: 4.0

Safety Function: Service Systems

10CFR: 41.10/ 43.2/ 45.6

Evaluation Method  Performed  Simulated

Evaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

OVERALL JPM EVALUATION  SATISFACTORY  UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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**JPM INFORMATION**


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This JPM is based on the latest revisions of 18035-C and 13301-C. Verify this JPM is in accord with the latest procedural revision prior to use. Cues preceded by a "@..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

- REQUIRED ITEMS:** 1. AOP18035-C and SOP 13301
- SIMULATOR SETUP:**
1. Reset to IC14 (MOL 100%)
  2. Insert Override - Switch HS 12195A to Normal (A Train Man Act)
  3. Insert Override - Switch HS 12120 to STOP (CREF A)
  4. Set Trigger 1 to the following Overrides:
    - Switch HS 12121 to STOP (CREF B)
    - Yellow Light for HS 12121 – ON
  5. Freeze simulator
  6. When directed, go to run.

Setup time: 3 minutes

### DIRECTIONS TO OPERATOR

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

***This is a TIME CRITICAL JPM***

**INITIAL CONDITIONS:** The plant is at 100% power. You are the Balance of Plant operator. A transfer truck accident just outside the plant entrance has caused chlorine fumes to begin entering the Control Room

**Assigned Task:** The SS has directed you to "Perform a Control Room Isolation for both Units due to a Toxic Gas Release".

**Task Standard:** Control Room Isolation properly aligned.

## JPM INFORMATION

START TIME: \_\_\_\_\_ TIME CRITICAL ①

**STEP 1****CRITICAL (◆)**SAT  UNSAT **Initiate Control Room Isolation**

- HS-12195A positioned to ACTUATE (it will not function)
- ◆ HS-12196A positioned to ACTUATE
- ◆ Contacts Unit 2 control room staff to actuate CRI on Unit 2 (1)

**CUES:**(1) **Unit 2 SS will ensure Unit 2 CRI is performed.**

- ① In the plant, if requested after simulated CRI actuation, provide feedback that the 'CR ISO' white indicator lights on HS-12125B and HS-12196B are lit.

**STEP 2****CRITICAL (◆)**SAT  UNSAT **Shut Outside Air Supply Dampers***NOTE: Opposite unit dampers will be simulated in the Simulator*

- ◆ 1-HS-12114 positioned to CLOSE
- ◆ 1-HS-12115 positioned to CLOSE
- ◆ 2-HS-12114 positioned to CLOSE(1)
- ◆ 2-HS-12115 positioned to CLOSE(1)

**CUES:**(1) **(Simulator Only)** "The SS will ensure 2-HS 12114 and 2-HS-12115 are placed in the CLOSE position"

- ① In the plant, if requested after simulated operation, provide feedback that the CLOSE green indicator lights on HS-12114 and HS-12115 are lit.

## JPM INFORMATION

## STEP 3

## CRITICAL (◆)

SAT  UNSAT **Verification of Proper Control Room Isolation Alignment***(Per the direction of AOP 18035 step 2, the examinee may refer to 13301-C to verify proper CRI alignment)*

- PLACE either CR ISO MANUAL ACTUATION Switch in ACTUATE:  

TRAIN A	TRAIN B
1-HS-12195A [A4]	1-HS-12196A [A6]
- VERIFY that TRAIN B CR FLTR UNIT LEAD SUPPLY AIR FAN starts.  

TRAIN B
1-1531-N7-002 [B10]
- VERIFY that TRAIN A CR FLTR UNIT STANDBY SUPPLY AIR FAN does not start:  

TRAIN A
1-1531-N7-001 [B8]
- ◆ Identify the trip of the TRAIN B CR FLTR UNIT LEAD SUPPLY AIR FAN.
- ◆ Starts the TRAIN A CR FLTR UNIT STANDBY SUPPLY AIR FAN (1)
- (1) Sim Operator: Delete O/R on the A train CREF unit when it's HS is taken to START.
- VERIFY that both KIT TOIL + CONF RM EXH ISO DMPRs close:  

TRAIN A	TRAIN B
A-HV-12162 [D6]	A-HV-12163 [D7]
- VERIFY that both CR NORM AIR SUPPLY ISO DMPRs close:  

TRAIN A	TRAIN B
1-HV-12146 [C6]	1-HV-12147 [C7]
- VERIFY that both CR NORM AIR RTN ISO DMPRs close:  

TRAIN A	TRAIN B
1-HV-12149 [E6]	1-HV-12148 [E7]
- VERIFY that the CR FILTER UNIT OUTLET AIR DMPR on the running train is open:  

TRAIN A	TRAIN B
1-HV-12128 [C9]	1-HV-12129 [C11]
- VERIFY that the CR RTN FAN INLET AIR DMPR on the running train is open:  

TRAIN A	TRAIN B
1-HV-12130 [D8]	1-HV-12131 [D10]
- VERIFY that the CR NORMAL HVAC UNIT INTAKE ISO DMPR on the running train is closed:  

TRAIN A	TRAIN B
A-HV-12153 [B6]	A-HV-12152 [B7]
- VERIFY that the CR NORM AC UNIT SUPPLY FANS, A-1531-A7-001 [C4] and A-1531-A7-002 [C5], shut down.
- VERIFY that the CR NORM AC UNIT EXH FAN, A-1531-B7-009 [D4] and A-1531-B7-010 [D5], shut down.

**JPM INFORMATION**

- VERIFY that the KITCH TOILET AND CONF RM EXH FAN, A-HS-12164 in the Shift AA's Office, stops. (2)
- NOTE: If it is necessary to isolate outside air to the Control Room in the next step, both the Unit 1 and Unit 2 dampers should be shut.
- If Control Room outside air is restricted for Control Room habitability due to smoke or toxic gas intake, then CLOSE the CR OUTSIDE AIR SUPPLY DAMPERS for both Units:
 

UNIT 1	UNIT 2
1-HS-12114 [E8]	2-HS-12114
1-HS-12115 [E10]	2-HS-12115
- ENSURE proper operation of the TSC Air Filtration System per 13303-C, "Technical Support Center And Central Alarm Station HVAC Systems". (2)
- VERIFY proper Essential Chiller operation. (2)

(1) Sim Operator: Delete O/R on the A train CREF unit when it's HS is taken to START.

**CUE:**

(2) *The Extra Operator will verify this step.*

STEP 4  
 SAT  UNSAT

**Report to SS**

- Control Room Isolation completed

STOP TIME: \_\_\_\_\_

**Field Notes**



Energy to Serve Your World™

PLANT VOGTLE

CONTROL ROOM OPERATOR  
JOB PERFORMANCE MEASURE

NRC-JP-18035-001

PERFORM CONTROL ROOM ISOLATION,  
FOR  
TOXIC GAS RELEASE.

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- Deleted: M. C. Henry
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This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.

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⌚ THIS IS A TIME CRITICAL JPM ⌚

**Initial Conditions:** The plant is at 100% power. You are the Balance of Plant operator. A transfer truck accident just outside the plant entrance has caused chlorine fumes to begin entering the Control Room.

**Assigned Task:** The SS has directed you to "Perform a Control Room Isolation for both Units due to a Toxic Gas Release".

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- Assigned Task: The USS has directed you to assume the
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- Deleted: Task Standard: Plant conditions correctly diagnosed and immediate operator actions performed correctly.
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JPM INFORMATION

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

JPM TITLE: Perform Control Room Isolation for Toxic Gas Release

REVISION: 0 March 29, 2005

COMPLETION TIME: 5 minutes TIME CRITICAL

Application: RO/SRO  
 Task Number: 60013  
 K/A Number: 068G2.4.49 RO: 4.0 SRO: 4.0  
 Safety Function: Service Systems  
 10CFR: 41.10/ 43.2/ 45.6

Evaluation Method  Performed  Simulated

Evaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

OVERALL JPM EVALUATION  SATISFACTORY  UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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JPM INFORMATION

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REQUIRED ITEMS: 1. AOP18035-C and SOP 13301

- SIMULATOR SETUP:
1. Reset to IC14 (MQL 100%)
  2. Insert Override - Switch HS 12195A to Normal (A Train Man Act)
  3. Insert Override - Switch HS 12120 to STOP (CREF A)
  4. Set Trigger 1 to the following Overrides:
    - Switch HS 12121 to STOP (CREF B)
    - Yellow Light for HS 12121 - ON
  5. Freeze simulator
  6. When directed, go to run.

Setup time: 3 minutes

DIRECTIONS TO OPERATOR

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

*This is a TIME CRITICAL JPM*

INITIAL CONDITIONS: The plant is at 100% power. You are the Balance of Plant operator. A transfer truck accident just outside the plant entrance has caused chlorine fumes to begin entering the Control Room.

Assigned Task: The SS has directed you to "Perform a Control Room Isolation for both Units due to a Toxic Gas Release".

Task Standard: Control Room Isolation properly aligned.

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- Deleted: ASSIGNED TASK: The USS has directed you to assume the "At the Controls" function. 7
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JPM INFORMATION

START TIME: TIME CRITICAL

STEP 1

CRITICAL

SAT UNSAT

Initiate Control Room Isolation

- HS-12195A positioned to ACTUATE (it will not function)
HS-12196A positioned to ACTUATE
Contacts Unit 2 control room staff to actuate CRI on Unit 2 (1)

CUES:

(1) Unit 2 SS will ensure Unit 2 CRI is performed.

In the plant, if requested after simulated CRI actuation, provide feedback that the 'CR ISO' white indicator lights on HS-12125B and HS-12196B are lit.

STEP 2

CRITICAL

SAT UNSAT

Shut Outside Air Supply Dampers

NOTE: Opposite unit dampers will be simulated in the Simulator

- 1-HS-12114 positioned to CLOSE
1-HS-12115 positioned to CLOSE
2-HS-12114 positioned to CLOSE (1)
2-HS-12115 positioned to CLOSE (1)

CUES:

(1) (Simulator Only) The SS will ensure 2-HS 12114 and 2-HS-12115 are placed in the CLOSE position

In the plant, if requested after simulated operation, provide feedback that the CLOSE green indicator lights on HS-12114 and HS-12115 are lit.

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JPM INFORMATION

STEP 3

CRITICAL (♦)

SAT  UNSAT

Verification of Proper Control Room Isolation Alignment

(Per the direction of AOP 18035 step 2, the examinee may refer to 13301-C to verify proper CR alignment.)

☒ • PLACE either CR ISO MANUAL ACTUATION Switch in ACTUATE:

TRAIN A TRAIN B  
1-HS-12195A [A4] 1-HS-12196A [A6]

☒ • VERIFY that TRAIN B CR FLTR UNIT LEAD SUPPLY AIR FAN starts.

TRAIN B  
1-1531-N7-002 [B10]

☒ • VERIFY that TRAIN A CR FLTR UNIT STANDBY SUPPLY AIR FAN does not start:

TRAIN A  
1-1531-N7-001 [B8]

☒ ♦ Identify the trip of the TRAIN B CR FLTR UNIT LEAD SUPPLY AIR FAN.

☒ ♦ Starts the TRAIN A CR FLTR UNIT STANDBY SUPPLY AIR FAN (1)

(1) Sim Operator: Delete O/R on the A train CREF unit when it's HS is taken to START.

☒ • VERIFY that both KIT TOIL + CONF RM EXH ISO DMPRs close:

TRAIN A TRAIN B  
A-HV-12162 [D6] A-HV-12163 [D7]

☒ • VERIFY that both CR NORM AIR SUPPLY ISO DMPRs close:

TRAIN A TRAIN B  
1-HV-12146 [C6] 1-HV-12147 [C7]

☒ • VERIFY that both CR NORM AIR RTN ISO DMPRs close:

TRAIN A TRAIN B  
1-HV-12149 [E6] 1-HV-12148 [E7]

☒ • VERIFY that the CR FILTER UNIT OUTLET AIR DMPR on the running train is open:

TRAIN A TRAIN B  
1-HV-12128 [C9] 1-HV-12129 [C11]

☒ • VERIFY that the CR RTN FAN INLET AIR DMPR on the running train is open:

TRAIN A TRAIN B  
1-HV-12130 [D8] 1-HV-12131 [D10]

☒ • VERIFY that the CR NORMAL HVAC UNIT INTAKE ISO DMPR on the running train is closed:

TRAIN A TRAIN B  
A-HV-12153 [B6] A-HV-12152 [B7]

☒ • VERIFY that the CR NORM AC UNIT SUPPLY FANS, A-1531-A7-001 [C4] and A-1531-A7-002 [C5], shut down.

☒ • VERIFY that the CR NORM AC UNIT EXH FAN, A-1531-B7-009 [D4] and A-1531-B7-010 [D5], shut down.

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**IMMEDIATE OPERATOR ACTIONS**

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Approved By :

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R. D. Brigdon Date: 4/18

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**ASSIGNED TASK:** The USS has directed you to assume the "At the Controls" function.

**TASK STANDARD:** Plant conditions correctly diagnosed and

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Immediate operator actions performed correctly.

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All DRPI "Rod Bottom" lights

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☐ • Second switch positioned to ACTUATE

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OPEN		
☐ ♦ RTB observed		
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☐ ♦ Neutron flux observed		
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LOWERING		
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- ◆ Identify the trip of the B CREF unit.
- ◆ Starts the A train CREF unit. (1)

STEP 3A - Simulator N/A if performed in-plant  
CRITICAL (◆)  
SAT  UNSAT  N/A

Verify both AC Emergency busses energized Shut Outside Air Supply Dampers on the other unit.

---

◆ Identify the need to shut dampers on the other unit

---

CUES:  
# In the simulator, when requested, "The USS will ensure isolation of the other unit".

- ◆ 4160 1E busses AA02 and BA03 at 4100 to 4200 volts and/or Bus Potential lights lit verified ENERGIZED
- ◆ All 480 1E busses verified ENERGIZED

STEP 3B - In-Plant NA if performed in the simulator

**CRITICAL (◆)**

SAT  UNSAT  N/A

**Shut Outside Air Supply Dampers on the other unit.**

- ◆ HS-12114 positioned to CLOSE on opposite unit.
- ◆ HS-12115 positioned to CLOSE on opposite unit.)

CUES:

Ⓢ In the plant, if requested after simulated operation, provide feedback that the CLOSE green indicator lights on HS-12114 and HS-12115 are lit.

STEP 4

SAT  UNSAT

**Check if SI is actuated or required**

*Note:* After IOAs of 19000-C is completed, provide following cue to examinee: **"The USS will initiate 19001-C."**

- SI annunciators darkNOT LIT
- BPLBP window 1-4, "SI Actuated", darkNOT LIT
- Verify PRZR pressure > **1870 psig**
- Verify Steamline pressure > **585 psig**
- Verify Containment pressure < **3.8 psig**
- Verify **No NO alignment ALIGNMENT** of ECCS equipment to injection phase **(1)**

CUES:

**(1)** After IOAs of 19000-C completed, cue the examinee "The USS will initiate 19001-C."



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**RQ-JP-19030-002**

**ESTABLISH REQUIRED SUBCOOLING FOR RCS DEPRESSURIZATION**

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

 **THIS IS A TIME CRITICAL JPM** 

**Initial Conditions:** A tube rupture has occurred on SG #4. The crew has transitioned from 19000-C to 19030-C. Steps 1 through 5 of 19030-C have been performed.

**Assigned Task:** The SS has directed you to "Cooldown the RCS to obtain the core exit temperature required for RCS depressurization starting with step 6 of 19030-C. When the required core exit temperature is reached stabilize core exit temperature."

**JPM INFORMATION**

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

JPM TITLE:               Establish Required Subcooling for RCS Depressurization

COMPLETION TIME:   **13 minutes    TIME CRITICAL** ☉

*This time limit is based on FSAR Chapter 15, Table 15.6.3-1, as amended per REA 97-VAA600.*

Application:           RO/SRO

Task Number:         37011

K/A Number:         EPE038EA1.36   RO:   4.3     SRO: 4.5

Safety Function:     Secondary Heat Removal

10CFR55.45 Ref.:    4, 6, 12

Evaluation Method     Performed            Simulated

Evaluation Location    Simulator            Control Room    Unit 1    Unit 2

Performance Time:    \_\_\_\_\_minutes

**OVERALL JPM EVALUATION            SATISFACTORY            UNSATISFACTORY**

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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**INSTRUCTIONS TO EXAMINER**


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This JPM is based on 19030-C. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 19030-C, Steam Generator Tube Rupture Response

**SIMULATOR SETUP:**

1. Reset to IC14
2. Insert malfunction SG01D at 50%
3. Initiate manual Rx trip and SI
4. Throttle AFW flow to  $\approx$  200 gpm per SG
5. Verify ruptured SG level > 10%
6. Perform 19030 steps 1 through 5
7. Ensure ruptured SG pressure increases above 1100 psig
8. Lower RCS pressure to approx. 1850-1900 psig
9. Ack/Reset alarms
10. Freeze simulator

Setup time: 12 minutes

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**DIRECTIONS TO OPERATOR**


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You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

***This is a TIME CRITICAL JPM***

**INITIAL CONDITIONS:** A tube rupture has occurred on SG #4. The crew was transitioned from 19000-C to 19030-C. Steps 1 through 5 of 19030-C have been performed.

**ASSIGNED TASK:** The SS has directed you to "Cooldown the RCS to obtain the core exit temperature required for RCS depressurization starting with step 6 of 19030-C. When the required core exit temperature is reached stabilize core exit temperature."

**TASK STANDARD:** Core exit thermocouple temperatures less than required for RCS depressurization.

## JPM STEPS

START TIME: ..... TIME CRITICAL Ⓢ

**STEP 1****CRITICAL (◆)**SAT  UNSAT **Block Low Steam Pressure SLI**

- NOTE: When the low steamline pressure SI/SLI signal is blocked, main steamline isolation will occur if the high steam pressure rate setpoint is exceeded.
- Step 6: Check if low steamline pressure SI/SLI should be blocked
- Step 6a: PRZR pressure < 2000 psig
- Step 6b: High Steam Pressure Rate alarms clear (ALB14 A2/B2/C2/D2)
- ◆ **Step 6c: Block low steamline pressure SI/SLI by momentarily placing HS-40068 and HS-40069 in BLOCK**

**NOTE: BPLB windows: Steamline Isol Train A SI Blocked (4.2)  
Steamline Isol Train B SI Blocked (5.2)**

## JPM STEPS

## STEP 2

SAT  UNSAT **Determine required core exit temperature**

- Step 7a: Steam dumps to be used for cooldown
- Step 7b: RCS temperature > 550 °F
- Step 7c: WHEN RCS cooldown is initiated, THEN HOLD HS-0500A and HS-0500B in the BYPASS INTERLOCK position until RCS temperature is less than 550°F.
- CAUTION: If RCPs are not running, the following steps may cause a false indication on RCS Integrity for the ruptured loop. Ruptured loop T-Cold indication should be disregarded until Step 29 is performed.
- CAUTION: AFW flow to intact SG(s) should be raised prior to maximum rate cooldown, to prevent re-initiation of AFW flow to ruptured SG.
- NOTE: The cooldown initiated by the following step should be stopped if any additional ruptured SGs are identified.
- NOTE: If the lowest ruptured SG pressure falls between the given pressures within the following table, use the lowest corresponding core exit temperature.
- Step 8a: Determine required core exit temperature:

<u>Lowest Ruptured SG Pressure</u>	<u>Core Exit Temperature (°F)</u>
1200	530
1100	518
1000	506
900	493
800	479
600	463
500	424
400	399
300	366
290	350

**NOTE: Ruptured SG pressure should be between 1100 and 1200 psig**

- Required core exit temperature determined to be 518°F

## CUES:

- © Provide indication Ruptured SG's steamline pressure ≈ 1120 psig.

## JPM STEPS

**STEP 3****CRITICAL (♦)**SAT  UNSAT **Initiate RCS cooldown**

*Note: If a steamline isolation occurs, the operator should reestablish the cooldown using the intact SG's ARVs. Failure to resume the cooldown at the maximum rate is comment.*

- NOTE: If using steam dumps, the maximum rate cooldown should be established without delay but in a controlled manner to prevent initiation of a SLI.
- AFW flow increased to intact SGs (1, 2, and 3) for cooldown
- ♦ Step 8.b.1): Match demand on SG Header Pressure Controller PIC-507 and Steam Dump demand meter UI-500
- ♦ Step 8.b.2): Transfer steam dumps to STM PRESS mode using HS-500C
- ♦ Step 8.b.3): OPEN all available steam dumps by slowly raising demand on PIC-507
- ♦ Place HS-500A and HS-500B in BYP INTLK

**NOTE: (If RCS Temp is above 550°F Holding bypass switches is required until temp is < 550°F)**

- ♦ Step 8.c: Core Exit TCs < required temperature (*will not met this initially*)
- ♦ Step 8.c RNO: Continue with step 9. When core exit TCs less than required temperature, then perform steps 8d and 8e

**CUES:**

- © Provide indication RCS NR Tavg ≈ 545 °F

**FOLLOW UP QUESTION: "What does max rate cooldown mean to you?"**

## JPM STEPS

## STEP 4

SAT  UNSAT **Perform steps 9 through 13 as time permits**

Note: These steps are not required to be performed to satisfy the task standard. These steps can be performed while the RCS cooldown is in progress.

- Step 9a: Check intact S/G NR levels > 10%
- Step 9b: Check NO SG levels rising in an uncontrolled manner
- Step 9c: Control feed flow to maintain intact S/G NR levels between 10 – 65%
- Step 10a: Check power available to PORV Block valves
- Step 10b: Check PORVs shut
- Step 10c: Check at least one PORV Block valve open
- Step 11: Reset SI
- Step 12: Reset CIA
- Step 13a: Verify IA pressure > 100 psig
- Step 13b: Open INSTR AIR CNMT ISO VLV HV-9378 using handswitches HS-9378A and HS-9378B.
- Step 14a: Check RCS pressure > 300 psig
- Step 14b: Stop RHR pumps
- Step 15a: Check core exit TCs < required temperature
- Step 15a RNO: Do not proceed until core exit TCs < required temperature

## STEP 5

CRITICAL (♦)

SAT  UNSAT **Stop RCS cooldown**

Note: If used earlier, the ARVs should be adjusted to stop the cooldown and maintain temperatures.

- ♦ **Core exit temperatures < 518°F**
- Step 8d: Stop RCS cooldown  
(PIC-507 adjusted to stop cooldown see note above)
- Step 8e: Control steam release to maintain core exit TC temperatures < required temperature  
(PIC-507 adjusted to stabilize core exit temperatures < 518°F)

## CUES:

- ©. Provide indication as needed to indicate that CETC temperatures < stated temperature.

STOP TIME: \_\_\_\_\_

## STEP 6

SAT  UNSAT **Report to SS**

- Core exit thermocouples are < 518°F

**Field Notes**



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**RQ-JP-19030-002**

**ESTABLISH REQUIRED SUBCOOLING FOR RCS DEPRESSURIZATION**

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**Deleted:** May 13, 2004

**Deleted:** April 5, 2005¶

**Deleted:** Written By : S. N.  
Dyer . Date: . 5/13/2004¶

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**Approved By :** R. D.  
Brigdon . Date: . 5/14/2004¶

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**🕒 THIS IS A TIME CRITICAL JPM 🕒**

**Initial Conditions:** A tube rupture has occurred on SG #4. The crew has transitioned from 19000-C to 19030-C. Steps 1 through 5 of 19030-C have been performed.

**Assigned Task:** The SS has directed you to "Cooldown the RCS to obtain the core exit temperature required for RCS depressurization starting with step 6 of 19030-C. When the required core exit temperature is reached stabilize core exit temperature."

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**Task Standard:** . Core exit thermocouple temperatures less than required for RCS depressurization. ¶

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JPM INFORMATION

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_ / \_\_\_ / \_\_\_

JPM TITLE: Establish Required Subcooling for RCS Depressurization

COMPLETION TIME: 13 minutes TIME CRITICAL ☉

*This time limit is based on FSAR Chapter 15, Table 15.6.3-1, as amended per REA 97-VAA600.*

Application: RO/SRO

Task Number: 37011

K/A Number: EPE038EA1.36 RO: 4.3 SRO: 4.5

Safety Function: Secondary Heat Removal

10CFR55.45 Ref.: 4, 6, 12

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- Deleted: 2
- Deleted: May 13, 2004
- Deleted: April 6, 2005
- Deleted: amended

Evaluation Method  Performed  Simulated

Evaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

OVERALL JPM EVALUATION  SATISFACTORY  UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

## INSTRUCTIONS TO EXAMINER

This JPM is based on 19030-C. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 19030-C, Steam Generator Tube Rupture Response

**SIMULATOR SETUP:**

1. Reset to IC14
2. Insert malfunction SG01D at 50%
3. Initiate manual Rx trip and SI
4. Throttle AFW flow to ≈ 200 gpm per SG
5. Verify ruptured SG level > 10%
6. Perform 19030 steps 1 through 5
7. Ensure ruptured SG pressure increases above 1100 psig
8. Lower RCS pressure to approx. 1850-1900 psig
9. Ack/Reset alarms
10. Freeze simulator

Setup time: 12 minutes

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## DIRECTIONS TO OPERATOR

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

***This is a TIME CRITICAL JPM***

**INITIAL CONDITIONS:** A tube rupture has occurred on SG #4. The crew was transitioned from 19000-C to 19030-C. Steps 1 through 5 of 19030-C have been performed.

**ASSIGNED TASK:** The SS has directed you to "Cooldown the RCS to obtain the core exit temperature required for RCS depressurization starting with step 6 of 19030-C. When the required core exit temperature is reached stabilize core exit temperature."

**TASK STANDARD:** Core exit thermocouple temperatures less than required for RCS depressurization.

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JPM STEPS

START TIME: \_\_\_\_\_ TIME CRITICAL

**STEP 1**  
**CRITICAL (♦)**  
SAT  UNSAT

**Block Low Steam Pressure SL!**

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• NOTE: When the low steamline pressure SI/SLI signal is blocked, main steamline isolation will occur if the high steam pressure rate setpoint is exceeded.

• Step 6: Check if low steamline pressure SI/SLI should be blocked

• Step 6a: PRZR pressure < 2000 psig

• Step 6b: High Steam Pressure Rate alarms clear (ALB14 A2/B2/C2/D2)

♦ Step 6c: Block low steamline pressure SI/SLI by momentarily placing HS-40068 and HS-40069 in BLOCK

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**NOTE: BPLB windows: Steamline Isol Train A SI Blocked (4.2)**  
**Steamline Isol Train B SI Blocked (5.2)**

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JPM STEPS

STEP 2

SAT  UNSAT

Determine required core exit temperature

- Step 7a: Steam dumps to be used for cooldown
- Step 7b: RCS temperature > 550 °F
- Step 7c: WHEN RCS cooldown is initiated, THEN HOLD HS-0500A and HS-0500B in the BYPASS INTERLOCK position until RCS temperature is less than 550°F.
- CAUTION: If RCPs are not running, the following steps may cause a false indication on RCS Integrity for the ruptured loop. Ruptured loop T-Cold indication should be disregarded until Step 29 is performed.
- CAUTION: AFW flow to intact SG(s) should be raised prior to maximum rate cooldown, to prevent re-initiation of AFW flow to ruptured SG.
- NOTE: The cooldown initiated by the following step should be stopped if any additional ruptured SGs are identified.
- NOTE: If the lowest ruptured SG pressure falls between the given pressures within the following table, use the lowest corresponding core exit temperature.
- Step 8a: Determine required core exit temperature:

Lowest Ruptured SG Pressure	Core Exit Temperature (°F)
1200	530
1100	518
1000	506
900	493
800	479
600	463
500	424
400	399
300	366
290	350

***NOTE: Ruptured SG pressure should be between 1100 and 1200 psig***

- Required core exit temperature determined to be 518°F

CUES:

- ☉ Provide indication Ruptured SG's steamline pressure = 1120 psig.

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JPM STEPS

**STEP 3**  
**CRITICAL (♦)**  
 SAT  UNSAT

**Initiate RCS cooldown**  
 Note: If a steamline isolation occurs, the operator should reestablish the cooldown using the intact SG's ARVs. Failure to resume the cooldown at the maximum rate is comment.

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♦ NOTE: If using steam dumps, the maximum rate cooldown should be established without delay but in a controlled manner to prevent initiation of a SLI.

♦ AFW flow increased to intact SGs (1, 2, and 3) for cooldown

♦ **Step 8.b.1): Match demand on SG Header Pressure Controller PIC-507 and Steam Dump demand meter UI-500**

♦ **Step 8.b.2): Transfer steam dumps to STM PRESS mode using HS-500C**

♦ **Step 8.b.3): OPEN all available steam dumps by slowly raising demand on PIC-507**

♦ **Place HS-500A and HS-500B in BYP INTLK**

**NOTE: (If RCS Temp is above 550°F Holding bypass switches is required until temp is < 550°F)**

♦ **Step 8.c: Core Exit TCs < required temperature (will not met this initially)**

♦ **Step 8.c RNO: Continue with step 9. When core exit TCs less than required temperature, then perform steps 8d and 8e**

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**CUES:**  
 © Provide indication RCS NR Tav<sub>g</sub> = 545 °F

**FOLLOW UP QUESTION: "What does max rate cooldown mean to you?"**

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- Deleted: Place HS-500C in
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- Deleted:  ♦ Check if auto steam dump isolation should be bypassed
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- Formatted: Font: (Default) Arial, 10 pt, Bold
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- Deleted: Stm Dump Controller PIC-507 in MAN & adjusted to fully open PV-507A, B, & C (see note above)
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JPM STEPS

STEP 4

SAT  UNSAT

Perform steps 9 through 13 as time permits

Note: These steps are not required to be performed to satisfy the task standard. These steps can be performed while the RCS cooldown is in progress.

- Step 9a: Check intact S/G NR levels > 10%
- Step 9b: Check NO SG levels rising in an uncontrolled manner
- Step 9c: Control feed flow to maintain intact S/G NR levels between 10 – 65%
- Step 10a: Check power available to PORV Block valves
- Step 10b: Check PORVs shut
- Step 10c: Check at least one PORV Block valve open
- Step 11: Reset SI
- Step 12: Reset CIA
- Step 13a: Verify IA pressure > 100 psig
- Step 13b: Open INSTR AIR CNMT ISO VLV HV-9378 using handswitches HS-9378A and HS-9378B.
- Step 14a: Check RCS pressure > 300 psig
- Step 14b: Stop RHR pumps
- Step 15a: Check core exit TCs < required temperature
- Step 15a RNO: Do not proceed until core exit TCs < required temperature

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STEP 5

CRITICAL (♦)

SAT  UNSAT

Stop RCS cooldown

Note: If used earlier, the ARVs should be adjusted to stop the cooldown and maintain temperatures.

- Core exit temperatures < 518°F
- Step 8d: Stop RCS cooldown  
*(PIC-507 adjusted to stop cooldown see note above)*
- Step 8e: Control steam release to maintain core exit TC temperatures < required temperature  
*(PIC-507 adjusted to stabilize core exit temperatures < 518°F)*

CUES:

Ⓞ Provide indication as needed to indicate that CETC temperatures < stated temperature.

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STOP TIME: \_\_\_\_\_

STEP 6

SAT  UNSAT

Report to SS

- Core exit thermocouples are < 518°F

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Field Notes



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**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**NRC-JP-13009-001**

**PERFORM A MANUAL MAKEUP WITH A LOSS OF BORIC ACID FLOW**

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** VCT level is 32%.

**Assigned Task:** The SS has directed you to perform a Manual Makeup per 13009-1 to raise VCT to 50%.

**JPM INFORMATION**

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

JPM TITLE: Perform Manual Makeup with Loss of Boric Acid Flow

COMPLETION TIME: 15 minutes

Application: RO/SRO  
 Task Number: 090  
 K/A Number: APE024AA1.17 RO: 3.9 SRO: 3.9  
 Safety Function: 1 - Reactivity  
 10CFR55.45 Ref.: 6, 8, 12

Evaluation Method  Performed  Simulated  
 Evaluation Location  Simulator  Control Room  Unit 1  Unit 2  
 Performance Time: \_\_\_\_\_minutes

**OVERALL JPM EVALUATION**  **SATISFACTORY**  **UNSATISFACTORY**

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

**INSTRUCTIONS TO EXAMINER**

This JPM is based on the latest rev of 13009-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:**

1. 13009, CVCS Reactor Makeup Control System
2. Reactivity Briefing Sheet for BOL 100% conditions

**SIMULATOR SETUP:**

1. Reset to IC10 (BOL 100%)
2. Lower VCT level to 32% using the divert valve
2. Set Trigger 1 with RF CV 26 (1208-U4-292 closed over 5 seconds)

Setup time: 3 minutes

**DIRECTIONS TO OPERATOR**

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**Initial Conditions:** VCT level is 32%.

**Assigned Task:** The SS has directed you to perform a Manual Makeup per 13009-1 to raise VCT to 50%.

**TASK STANDARD:** VCT level raised by correctly performing 13009.

## JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1****CRITICAL (♦)**SAT  UNSAT **Select procedure and setup blender for manual makeup**

- ♦ Selects Procedure 13009-1, CVCS REACTOR MAKEUP CONTROL SYSTEM, Section 4.6 manual makeup.
- ♦ Set TOTAL MAKEUP Integrator 1-FQI-0111 to the desired amount of Total Makeup Water.  
(18% x 19.2 gal/% = 346 gallons)  
**NOTE: This number may vary slightly based on actual VCT levels**
- ♦ Set BORIC ACID TO BLENDER Integrator 1-FQI-0110 to the amount of boric acid calculated:  
(346 gallons x 1087 ppm / 7000 ppm = 53.7 gallons)  
**NOTE: This number may vary slightly based on actual VCT levels**
- ♦ Adjust BORIC ACID Flow Controller 1-FIC-0110 pot setting and ensure controller is in AUTO:  
(1087 ppm x 25 / 7000 ppm = 3.88)

**NOTES:**Volumetric change in VCT is equal to 19.2 gallons per percent change in level.Digital counters and thumbwheel settings on BORIC ACID TO BLENDER Integrator 1-FQI-0110 read in tenth gallon increments**STEP 2****CRITICAL (♦)**SAT  UNSAT **Align Reactor Makeup Controls for Manual Makeup**

- Place VCT Makeup Control 1HS-40001B in STOP.
- ♦ PLACE VCT MAKEUP MODE SELECT 1-HS-40001A in MAN.
- ♦ BA TO BLENDER 1-HS-0110A in AUTO.
- ♦ RX MU WTR TO BA BLENDER 1-HS-0111A in AUTO.
- ♦ One Boric Acid Transfer Pump running or in AUTO.
- ♦ One Reactor Makeup Water Pump running or in AUTO.
- ♦ Ensure TOTAL MAKEUP Flow controller 1-FIC-0111 in AUTO with pot set for 100 gpm  
(approximately 6.25) total flowrate.

**NOTES/CAUTIONS:**With either Blender Outlet valve hand switch in the open position, an automatic isolation will not occur due to a Boric Acid and/or Total Makeup Flow DeviationsThe preferred flow path for Manual Makeup is through 1-FV-0110B BLENDER OUTLET TO CHARGING PUMPS SUCT. Use 1-FV-0111B only if 1-FV-0110B is not available

## JPM STEPS

**STEP 3****CRITICAL (♦)**SAT  UNSAT **Align Discharge Flowpath**

- ♦ OPEN:
- BLENDER OUTLET TO VCT 1-FV-0111B
  - or
  - BLENDER OUTLET CHARGING PUMPS SUCTION 1-FV-0110B

CUES:

- © Provide cues as needed to indicate required valve positions.

**STEP 5****CRITICAL (♦)**SAT  UNSAT **Start Manual Makeup**

- ♦ PLACE VCT Makeup Control Switch 1-HS-40001B in START.

**STEP 6**SAT  UNSAT **Verify Proper Operation of Manual Makeup**

- VERIFY Boric Acid Transfer Pump RUNNING.
- VERIFY Reactor Makeup Water Pump RUNNING.
- VERIFY Boric Acid to Blender 1-FV-0110A throttles OPEN to provide desired flow.
- VERIFY Reactor MU Wtr to Blender 1-FV-0111A throttles OPEN to provide desired flow.
- MONITOR Boric Acid Blend Integrator 1-FQI-0110 and Total Makeup Integrator 1-FQI-0111.

**Note:** Shortly after the examinee verifies proper operation of the Manual Makeup, INSERT Trigger 1.

**Boric acid flow will then lower to zero due to a clogged boric acid filter. This will cause a Boric Acid Flow deviation alarm after a 30 second time delay, but no isolation will occur due to the discharge valve being placed in the hard open position. Manual operator action will be required to stop a dilution event.**

## JPM STEPS

**STEP 7****CRITICAL (◆)**SAT  UNSAT **Stops Manual Makeup due to Loss of Boric Acid Flow**

- ◆ Determine that 1-FV-0110A is not providing desired boric acid flow.
- ◆ STOPS Manual Makeup by either:
  - Closing 1-FV-0111B or 1-FV-0110B
  - or
  - Placing VCT Makeup Control 1-HS-40001B in STOP.

STOP TIME: \_\_\_\_\_

**STEP 8**SAT  UNSAT **Report to SS**

- Manual Makeup terminated due to inadequate boric acid flow.

*Field Notes*



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CONTROL ROOM OPERATOR

JOB PERFORMANCE MEASURE

NRC-JP-13009-001

PERFORM A MANUAL MAKEUP WITH A LOSS OF BORIC ACID FLOW

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- Deleted: December 3, 2003
- Deleted: March 29, 2005¶

Deleted: Written By : S. N. Dyer Date: 12/3/2003¶
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Approved By : R. D. Brigdon Date: 5/14/2004¶
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This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.

**Initial Conditions:** VCT level is 32%.

**Assigned Task:** The SS has directed you to perform a Manual Makeup per 13009-1 to raise VCT to 50%.

**Deleted:** ~~THIS IS A TIME CRITICAL JPM~~

**Deleted:** A reactor trip has occurred and the plant has been stabilized in hot standby conditions. Per step 3 of 19001-C, the crew determined 3 control rods failed to fully insert.

**Deleted:** The USS has directed you to "Initiate emergency boration of the RCS per step 3 RNO of 19001-C."

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**Task Standard:**

**Deleted:** Emergency boration flow established

**Deleted:** VCT level raised by correctly performing 13009.¶

¶

JPM INFORMATION

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OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

JPM TITLE: Perform Manual Makeup with Loss of Boric Acid Flow

COMPLETION TIME: 15 minutes

Application: RO/SRO  
 Task Number: 090  
 K/A Number: APE024AA1.17 RO: 3.9 SRO: 3.9  
 Safety Function: 1 - Reactivity  
 10CFR55.45 Ref.: 6, 8, 12

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Comment [snd1]: Changed the K/A number from a knowledge K/A to an ability K/A number which changed the Importance factor

Evaluation Method  Performed  Simulated

Evaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

OVERALL JPM EVALUATION  SATISFACTORY  UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

**INSTRUCTIONS TO EXAMINER**

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This JPM is based on the latest rev of 13009-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

- REQUIRED ITEMS:**
1. 13009, CVCS Reactor Makeup Control System
  2. Reactivity Briefing Sheet for BOL 100% conditions

- SIMULATOR SETUP:**
1. Reset to IC10 (BOL 100%)
  2. Lower VCT level to 32% using the divert valve
  2. Set Trigger 1 with RF CV 26 (1208-U4-292 closed over 5 seconds)

Setup time: 3 minutes

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**DIRECTIONS TO OPERATOR**

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**Initial Conditions:** VCT level is 32%.

**Assigned Task:** The SS has directed you to perform a Manual Makeup per 13009-1 to raise VCT to 50%.

**TASK STANDARD:** VCT level raised by correctly performing 13009.

Deleted: 2. Insert the following overrides:  
 FI-183 0%  
 HS-112D CLOSE  
 HS-112E CLOSE  
 3. Insert the following malfunctions:  
 RD 17E @ 12 steps (final value)  
 RD 17H @ 6 steps  
 RD 17N @ 6 steps  
 4. Trip the RXT  
 5. Stabilize plant conditions:  
 Trip both MFPs  
 Throttle AFW @ 200gpm/SG  
 6. Place BOTH boric acid pumps in STOP  
 7. Ack/Reset alarms  
 8. Freeze

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Deleted: INITIAL CONDITIONS: A reactor trip has occurred and the plant has been stabilized in hot standby conditions. Per step 3 of 19001-C, the crew determined 3 control rods failed to fully insert.  
 ASSIGNED TASK: The USS has directed you to "Initiate emergency boration of the RCS per step 3 RNO of 19001-C".

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JPM STEPS

START TIME: \_\_\_\_\_

STEP 1

CRITICAL (♦)

SAT  UNSAT

Select procedure and setup blender for manual makeup

- ♦ Selects Procedure 13009-1, CVCS REACTOR MAKEUP CONTROL SYSTEM, Section 4.6 manual makeup.
- ♦ Set TOTAL MAKEUP Integrator 1-FQI-0111 to the desired amount of Total Makeup Water. (18% x 19.2 gal/% = 346 gallons)  
*NOTE: This number may vary slightly based on actual VCT levels*
- ♦ Set BORIC ACID TO BLENDER Integrator 1-FQI-0110 to the amount of boric acid calculated: (346 gallons x 1087 ppm / 7000 ppm = 53.7 gallons)  
*NOTE: This number may vary slightly based on actual VCT levels*
- ♦ Adjust BORIC ACID Flow Controller 1-FIC-0110 pot setting and ensure controller is in AUTO: (1087 ppm x 25 / 7000 ppm = 3.88)

NOTES:

Volumetric change in VCT is equal to 19.2 gallons per percent change in level.

Digital counters and thumbwheel settings on BORIC ACID TO BLENDER Integrator 1-FQI-0110 read in tenth gallon increments

STEP 2

CRITICAL (♦)

SAT  UNSAT

Align Reactor Makeup Controls for Manual Makeup

- ♦ Place VCT Makeup Control 1-HS-40001B in STOP.
- ♦ PLACE VCT MAKEUP MODE SELECT 1-HS-40001A in MAN.
- ♦ BA TO BLENDER 1-HS-0110A in AUTO.
- ♦ RX MU WTR TO BA BLENDER 1-HS-0111A in AUTO.
- ♦ One Boric Acid Transfer Pump running or in AUTO.
- ♦ One Reactor Makeup Water Pump running or in AUTO.
- ♦ Ensure TOTAL MAKEUP Flow controller 1-FIC-0111 in AUTO with pot set for 100 gpm (approximately 6.25) total flowrate.

NOTES/CAUTIONS:

With either Blender Outlet valve hand switch in the open position, an automatic isolation will not occur due to a Boric Acid and/or Total Makeup Flow Deviations

The preferred flow path for Manual Makeup is through 1-FV-0110B BLENDER OUTLET TO CHARGING PUMPS SUCT. Use 1-FV-0111B only if 1-FV-0110B is not available

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JPM STEPS

STEP 3

CRITICAL (♦)

SAT  UNSAT

Align Discharge Flowpath

OPEN:

- BLENDER OUTLET TO VCT 1-FV-0111B

or

- BLENDER OUTLET CHARGING PUMPS SUCTION 1-FV-0110B,

CUES:

Ⓢ Provide cues as needed to indicate required valve positions.

STEP 5

CRITICAL (♦)

SAT  UNSAT

Start Manual Makeup

PLACE VCT Makeup Control Switch 1-HS-40001B in START.

STEP 6

SAT  UNSAT

Verify Proper Operation of Manual Makeup

- VERIFY Boric Acid Transfer Pump RUNNING.
- VERIFY Reactor Makeup Water Pump RUNNING.
- VERIFY Boric Acid to Blender 1-FV-0110A throttles OPEN to provide desired flow.
- VERIFY Reactor MU Wtr to Blender 1-FV-0111A throttles OPEN to provide desired flow.
- MONITOR Boric Acid Blend Integrator 1-FQI-0110 and Total Makeup Integrator 1-FQI-0111.

Note: Shortly after the examinee verifies proper operation of the Manual Makeup, INSERT Trigger 1.

Boric acid flow will then lower to zero due to a clogged boric acid filter. This will cause a Boric Acid Flow deviation alarm after a 30 second time delay, but no isolation will occur due to the discharge valve being placed in the hard open position. Manual operator action will be required to stop a dilution event.

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• Boration flow indicator 1-FI-0110B > 30 gpm

• If FI-0110B < 30gpm, start second boric acid transfer pump.

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STEP 7

CRITICAL (♦)

SAT  UNSAT

Stops Manual Makeup due to Loss of Boric Acid Flow

☒ ♦ Determine that 1-FV-0110A is not providing desired boric acid flow.

☒ ♦ STOPS Manual Makeup by either:

• Closing 1-FV-0111B or 1-FV-0110B

or

• Placing VCT Makeup Control 1-HS-40001B in STOP.

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STOP TIME: \_\_\_\_\_

STEP 8

SAT  UNSAT

Report to SS

☒ • Manual Makeup terminated due to inadequate boric acid flow.

Field Notes

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STOP TIME: \_\_\_\_\_ ¶

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STEP 7¶

SAT  UNSAT ¶

Observe plant parameters¶

Note: This task is considered complete when boration flow has been initiated. After this has been accomplished, provide ¶

the cue given below to the operator.¶

☒ • Pressurizer heaters energized¶

☒ • Determine the need to add 462 ppm of boron(1)¶

CUES:¶

(1) The extra RO will monitor boron concentration and terminate emergency boration when ¶ appropriate.¶

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		RQ
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TIME CRITICAL 8 minutes		
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**STEP 1**

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***Start one Boric Acid Transfer pump***

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**Determine Boric Acid Flow Setting**

**◆ DETERMINE** the Boric Acid Blender Flow 1-FIC-0110 setting for the desired makeup boron concentration using PTDB Tab 2.2. (1)

**NOTE:**

(1) The Boric Acid Flow setting should be already properly set for automatic operation, however the RO would be expected to verify the setting is correct prior initiating a manual makeup.

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**DETERMINE** the Boric Acid Blender Flow 1-FIC-0110 setting for the desired makeup boron

concentration using PTDB Tab 2.2. (1)

NOTE:

(1) The Boric Acid Flow setting should be already properly set for automatic operation, however the RO would be expected to verify the setting is correct prior initiating a manual makeup.

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**Start at least one Boric Acid Transfer Pump**

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**Ensure a charging pump is running**

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**• Verify at least one charging pump running**

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- ♦ ADJUST 1-FIC-0110 to the desired setting and ENSURE it is in AUTO. (1)
- PLACE TOTAL MAKEUP 1-FIC-0111 in AUTO.
- RESET Boric Acid Blend Control 1-FQI-0110 and ADJUST it to desired amount of boric acid.
- RESET Boric Acid Blend Control 1-FQI-0111 and ADJUST it to the desired amount of total makeup.

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(1) The examinee would be expected to refer to the Reactivity Briefing sheet for this evolution.

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**STEP 3**

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SAT  UNSAT

**Align Reactor Makeup Control Valves for Manual Makeup**

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**Emergency Boration using the normal makeup flowpath**

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Note: The examinee may attempt to utilize other flowpaths, however, this flowpath is the only one in which EB Flow can be verified.

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- Ensure BA TO BA BLENDER 1-HS-0110A in AUTO
- Ensure RX MU WTR TO BA BLENDER 1-HS-0111A in AUTO
- Ensure one Boric Acid Transfer Pump RUNNING or in AUTO

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1-FV-110A, BAST to BA Blender, OPEN

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- Ensure one Reactor Makeup Water Pump RUNNING or in AUTO

CUES:

© Provide cues as needed to indicate required valve positions.

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1-FV-110B, Blender Outlet to Charging Pump Suction, OPEN

Page 5: [37] Deleted Administrator 05/09/2005 2:44:00 PM





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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**NRC-JP-18007-001**

**RESPOND TO LOSS OF CHARGING FLOW**

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** The plant is at 100% power.

**Assigned Task:** The SS has directed you to "Assume the duties of the Reactor Operator."



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**INSTRUCTIONS TO EXAMINER**

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This JPM is based on 18007-C. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:**           1.     18007, Section B, Loss of Charging Flow

**SIMULATOR SETUP:**       1.     Reset to IC14 (MOL 100%)  
                                  2.     Insert malfunction CV07 on Trigger 1  
                                  3.     Ack/Reset alarms  
                                  4.     Freeze simulator

Setup time: 3 minutes

**DIRECTIONS TO OPERATOR**

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:**       The plant is at 100% power.

**ASSIGNED TASK:**           The SS has directed you to "Assume the duties of the Reactor Operator."

**TASK STANDARD:**           Plant conditions correctly diagnosed and corrective actions completed.

## JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1****CRITICAL (◆)**SAT  UNSAT **Identify Charging Pump Trip and Perform Immediate Operator Action**

- Identify trip of Normal Charging Pump
- ◆ **Letdown manually isolated (IOA of 18007-C, Section B):**
  - **Letdown Orifice Isolation valve closed (HV-8149A,B,orC)**
  - **Letdown Isolation Valves closed (LV-459 and -LV-460)**

**NOTES & CUES:**

- (1) With a loss of charging flow through the Regenerative Heat Exchanger, letdown flow should be promptly isolated to minimize the possibility of equipment damage. If the examinee refers to the AOP prior to taking this action, then the step is considered UNSAT.

**STEP 2**SAT  UNSAT **Check Key Parameters on Plant Computer**

- Monitor and trend RCP parameters and refer to 13003, "RCP Operation" (1)
- Check for indications of gas binding/loss of suction to charging pump (2)

**NOTES:**

- (1) RCP parameters should be monitored due to the loss of RCP seal injection. ACCW is available to cool the thermal barrier, so no significant challenges to continued RCP operation will be present.
- (2) No indications of gas binding (fluctuations in discharge pressure or flow, low VCT level, etc.) will be present. The examinee is expected to check for these indications on the IPC or chart trends.

**CUE:**

If IPC trend length is an issue due to simulator reset, tell the examinee the trend indications prior to the pump trip were present for 30 minutes.

## JPM STEPS

## STEP 3

SAT  UNSAT **Investigate Cause of Charging Loss**

- Verify no indications of leakage are present (1)

**NOTES :**

- (1) No indications of leakage will be present, however the examinee may dispatch operators to the field to inspect the NCP and its breaker, as well as to look for any leakage indications.

**BOOTH OPERATOR CUE:**

If dispatched, report back from the field that 1NA05-08 has Overcurrent flags indicated on all three phases, and that there is a scorched smell in the pump room coming from the motor area. No leakage indications are present.

## STEP 4

SAT  UNSAT **Verify ACCW System in Service**

- At least one ACCW pump verified running.

**NOTE:**

This action would most likely already be performed while checking RCP parameters.

## STEP 5

SAT  UNSAT **Check if Charging Flow can be Re-established**

- Normal Charging valves checked OPEN:
- |                    |                          |
|--------------------|--------------------------|
| HV-8105            | Charging line isolation  |
| HV-8106            | Charging line isolation  |
| HV-8146 or HV-8147 | Loop Charging valves     |
| HV-8485A and B     | CCP discharge valves     |
| FV-121             | Charging flow controller |
- Determines that charging and letdown flow can be restored per 13006-1 (1)

**NOTES & CUES:**

- (1) If examinee informs SS that no indications are present that would prevent restoration of charging, then provide a cue that the SS desires that charging flow be returned to service if conditions permit.

## JPM STEPS

## STEP 6

SAT  UNSAT 

CRITICAL (◆)

**Charging Flow Established per SOP 13006-1 Section 4.4.13**

- 13006-1 section 4.4.13 selected & checks if CCP needs flushing at BOL conditions (1)
- DISPATCH an Operator to perform pump pre-start checks. (2)
- ENSURE VCT level 1-LI-0185 indicates between 30 and 80%.
- ENSURE OPEN VCT OUTLET VALVES 1-HV-0112B AND 1-HV-0112C.
- ENSURE OPEN CCP A & B COMMON MINIFLOW 1-HV-8110.
- If starting a CCP PERFORM the following:
  - a. OPEN CCP-A(B) SUCTION VALVE 1-HV-8471A (1-HV-8471B),
  - b. OPEN CCP-A(B) DISCHARGE VALVE 1-HV-8485A (1-HV-8485B),
  - c. OPEN CCP-A(B) MINIFLOW VALVE 1-HV-8111A (1-HV-8111B),
  - d. CLOSE CHARGING THROTTLE VALVE 1-HV-0190A (1-HV-0190B),
  - e. If starting CCP-B, OPEN CCP DISCHARGE HEADER CROSS-CONNECT 1-HV-8438.
- If starting CCP A,
  - a. OPEN CCP-A SUCTION 1-HV-8471A,
  - b. OPEN CCP-A MINIFLOW 1-HV-8111A
  - c. ENSURE OPEN CCP COMMON MINIFLOW 1-HV-8110,
  - d. CLOSE CHARGING THROTTLE 1-HV-0190A,
  - e. OPEN CCP-A DISCHARGE ISOLATION 1-HV-8485A,
- If starting CCP B,
  - a. OPEN CCP-B SUCTION 1-HV-8471B,
  - b. OPEN CCP-B MINIFLOW 1-HV-8111B,
  - c. ENSURE OPEN CCP COMMON MINIFLOW 1-HV-8110,
  - d. CLOSE CHARGING THROTTLE 1-HV-0190B,
  - e. OPEN CCP-B DISCHARGE ISOLATION 1-HV-8485B,
  - f. OPEN CCP DISCHARGE HEADER CROSS-CONNECT 1-HV-8438.
- ◆ **Selected CCP started**
- ◆ **HC-182 adjusted to restore seal injection flow 8 to 13 gpm**
- FIC-121 adjusted to establish desired charging flow (3)
- Initiate section 4.4.2 for letdown restoration (4)

## CUES:

- (1) BOL conditions are NOT present
- (2) Pre-start checks have been completed on both CCP's .

## NOTES:

- (3) Charging flow will be raised to 80-90 gpm in Section 4.4.2.

## CUE:

- (4) The extra operator will perform the remainder of 13006-1 to restore letdown flow.

STOP TIME: \_\_\_\_\_

JPM STEPS

STEP 7

SAT  UNSAT

**Report to SS**

• Operator actions completed

*Field Notes*



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CONTROL ROOM OPERATOR

JOB PERFORMANCE MEASURE

NRC-JP-18007-001

RESPOND TO LOSS OF CHARGING FLOW

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LEVEL INSTRUMENT

Deleted: Revision

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Deleted: January 24, 2001

Deleted: March 31, 2005

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Written By : M. C.  
Henry Date: 1/24/2001

Approved By : R. D.  
Brigdon Date: 1/25/2001

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** The plant is at 100% power.

**Assigned Task:** The SS has directed you to "Assume the duties of the Reactor Operator."

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**Task Standard:** Plant conditions correctly diagnosed and corrective actions completed.¶

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JPM INFORMATION

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OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_/\_\_\_/\_\_\_

JPM TITLE: Respond to Loss of Charging Flow

COMPLETION TIME: 15 minutes

Application: RO/SRO  
 Task Number: 60017  
 K/A Number: 000028EA212 RO: 3.1 SRO: 3.5  
 10CFR55.45 Ref.: 3, 4, 5

Deleted: Failure of PRZR Level Instrument

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Evaluation Method  Performed  Simulated

Evaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

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**OVERALL JPM EVALUATION**  **SATISFACTORY**  **UNSATISFACTORY**

Examiner Comments:

  
  
  
  
  
  
  
  
  
  

Examiner's Signature: \_\_\_\_\_

**INSTRUCTIONS TO EXAMINER**

This JPM is based on 18007-C. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "Ⓢ..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 18007, Section B, Loss of Charging Flow

**SIMULATOR SETUP:**

1. Reset to IC14 (MOL 100%)
2. Insert malfunction CV07 on Trigger 1
3. Ack/Reset alarms
4. Freeze simulator

Setup time: 3 minutes

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**DIRECTIONS TO OPERATOR**

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:** The plant is at 100% power.

**ASSIGNED TASK:** The SS has directed you to "Assume the duties of the Reactor Operator."

**TASK STANDARD:** Plant conditions correctly diagnosed and corrective actions completed.

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JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1**  
**CRITICAL (♦)**  
 SAT  UNSAT

**Identify Charging Pump Trip and Perform Immediate Operator Action**

- Identify trip of Normal Charging Pump
- ♦ **Letdown manually isolated (IOA of 18007-C, Section B):**
  - **Letdown Orifice Isolation valve closed (HV-8149A,B,orC)**
  - **Letdown Isolation Valves closed (LV-459 and -LV-460)**

**NOTES & CUES:**

(1) With a loss of charging flow through the Regenerative Heat Exchanger, letdown flow should be promptly isolated to minimize the possibility of equipment damage. If the examinee refers to the AOP prior to taking this action, then the step is considered UNSAT.

**STEP 2**  
 SAT  UNSAT

**Check Key Parameters on Plant Computer**

- Monitor and trend RCP parameters and refer to 13003, "RCP Operation" (1)
- ♦ Check for indications of gas binding/loss of suction to charging pump (2)

**NOTES:**

(1) RCP parameters should be monitored due to the loss of RCP seal injection. ACCW is available to cool the thermal barrier, so no significant challenges to continued RCP operation will be present.

(2) No indications of gas binding (fluctuations in discharge pressure or flow, low VCT level, etc.) will be present. The examinee is expected to check for these indications on the IPC or chart trends.

**CUE:**

If IPC trend length is an issue due to simulator reset, tell the examinee the trend indications prior to the pump trip were present for 30 minutes.

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- Deleted: failed channel
- Deleted: PRZR level indications referenced
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- Deleted: LT-459 instrument failure identified
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- Deleted: :
- Deleted: © Provide indication that LI-459 is = 100% with PRZR level lowering on the other channels.
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- Deleted: Restore PRZR level to program
- Deleted: ♦ Charging flow controller FIC-121 adjusted to increase charging flow¶
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... know that
- Deleted:  • Seal injection flow 8 to 13 gpm

JPM STEPS

**STEP 3**  
 SAT  UNSAT

Investigate Cause of Charging Loss

• Verify no indications of leakage are present (1)

**NOTES:**  
 (1) No indications of leakage will be present, however the examinee may dispatch operators to the field to inspect the NCP and its breaker, as well as to look for any leakage indications.

**BOOTH OPERATOR CUE:**  
 If dispatched, report back from the field that 1NA05-08 has Overcurrent flags indicated on all three phases, and that there is a scorched smell in the pump room coming from the motor area.  
 No leakage indications are present.

**STEP 4**  
 SAT  UNSAT

Verify ACCW System in Service

• At least one ACCW pump verified running.

**NOTE:**  
 This action would most likely already be performed while checking RCP parameters.

**STEP 5**  
 SAT  UNSAT

Check if Charging Flow can be Re-established

• Normal Charging valves checked OPEN:

HV-8105	Charging line isolation
HV-8106	Charging line isolation
HV-8146 or HV-8147	Loop Charging valves
HV-8485A and B	CCP discharge valves
FV-121	Charging flow controller

• Determines that charging and letdown flow can be restored per 13006-1 (1)

**NOTES & CUES:**  
 (1) If examinee informs SS that no indications are present that would prevent restoration of charging, then provide a cue that the SS desires that charging flow be returned to service if conditions permit.

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- Deleted: Select valid input to PRZR Level Control and Recorder
- Deleted: ♦
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- Deleted:  • PRZR level recorder LS-459E in 461
- Deleted: Restore PRZR level control to auto
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If desired provide examinee with the cue given below.
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 • PRZR level maintained by FIC-121 (1)
- Deleted: CUE
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JPM STEPS

STEP 6

SAT  UNSAT

CRITICAL (♦)

Charging Flow Established per SOP 13006-1 Section 4.4.13

• 13006-1 section 4.4.13 selected & checks if CCP needs flushing at BOL conditions. (1)

• DISPATCH an Operator to perform pump pre-start checks. (2)

• ENSURE VCT level 1-LI-0185 indicates between 30 and 80%.

• ENSURE OPEN VCT OUTLET VALVES 1-HV-0112B AND 1-HV-0112C.

• ENSURE OPEN CCP A & B COMMON MINIFLOW 1-HV-8110.

• If starting a CCP PERFORM the following:

a. OPEN CCP-A(B) SUCTION VALVE 1-HV-8471A (1-HV-8471B).

b. OPEN CCP-A(B) DISCHARGE VALVE 1-HV-8485A (1-HV-8485B).

c. OPEN CCP-A(B) MINIFLOW VALVE 1-HV-8111A (1-HV-8111B).

d. CLOSE CHARGING THROTTLE VALVE 1-HV-0190A (1-HV-0190B).

e. If starting CCP-B, OPEN CCP DISCHARGE HEADER CROSS-CONNECT 1-HV-8438.

• If starting CCP A,

a. OPEN CCP-A SUCTION 1-HV-8471A.

b. OPEN CCP-A MINIFLOW 1-HV-8111A.

c. ENSURE OPEN CCP COMMON MINIFLOW 1-HV-8110.

d. CLOSE CHARGING THROTTLE 1-HV-0190A.

e. OPEN CCP-A DISCHARGE ISOLATION 1-HV-8485A.

• If starting CCP B,

a. OPEN CCP-B SUCTION 1-HV-8471B.

b. OPEN CCP-B MINIFLOW 1-HV-8111B.

c. ENSURE OPEN CCP COMMON MINIFLOW 1-HV-8110.

d. CLOSE CHARGING THROTTLE 1-HV-0190B.

e. OPEN CCP-B DISCHARGE ISOLATION 1-HV-8485B.

f. OPEN CCP DISCHARGE HEADER CROSS-CONNECT 1-HV-8438.

♦ Selected CCP started

♦ HC-182 adjusted to restore seal injection flow 8 to 13 gpm

• FIC-121 adjusted to establish desired charging flow (3)

• initiate section 4.4.2 for letdown restoration (4)

CUES:

(1) BOL conditions are NOT present.

(2) Pre-start checks have been completed on both CCP's.

NOTES:

(3) Charging flow will be raised to 80-90 gpm in Section 4.4.2.

CUE:

(4) The extra operator will perform the remainder of 13006-1 to restore letdown flow.

STOP TIME: \_\_\_\_\_

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Cue the examinee that

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JPM STEPS

STEP 7  
 SAT  UNSAT   
 Report to SS  
 • Operator actions completed

Field Notes

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 STEP 7  
 SAT  UNSAT   
 1  
 Letdown Flow Established  
 1  
 • Verify Pressurizer level is greater than 17% 1  
 • PIC-131 adjusted to 50-75% to support letdown restoration 1  
 • TIC-130 adjusted to approximately 50% to support letdown restoration (1) 1  
 • Charging flow adjusted to 80-90 gpm to support letdown ... 1 1

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STEP 7

SAT  UNSAT

**Letdown Flow Established**

- ♦ Verify Pressurizer level is greater than 17%
- PIC-131 adjusted to 50-75% to support letdown restoration
- TIC-130 adjusted to approximately 50% to support letdown restoration (1)
- Charging flow adjusted to 80-90 gpm to support letdown flow
- ♦ Letdown isolation valves opened
- ♦ Letdown orifice isolation valve opened
- PIC-131 adjusted to establish letdown pressure of 360-380 psig and returned to Auto (1)
- TIC-130 adjusted to maintain letdown temperature less than 115 0F and returned to Auto (1)
- Monitor system parameters for proper response
- Return Pressurizer level control system to Auto, when conditions permit (3)

CUE:

- (1) This action may be necessary while opening the Letdown Orifice Isolation Valve.
- (3) This JPM can be terminated at this time. Letdown restoration is evaluated in a number of other settings.

STEP 8

SAT  UNSAT

**Initiate**

Note: Identifying the associated bistables and Master Test switch is evaluated using a separate JPM and is therefore not considered critical for this task.

• Need for

CUES:

- (1) When requested, "The USS will evaluate

Tech Specs for applicability."

(2) *When requested, "The USS will notify I&C and ensure the associated Bistable Test/Master Test switches are positioned to TEST."*



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**RQ-JP-13130-001**

**DILUTE CONTAINMENT WITH SERVICE AIR**

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** A LOCA has occurred on Unit 1. The crew is performing step 19 of 19010-C. The TSC has requested that Service Air be aligned to Containment to reduce the hydrogen concentration of the Containment atmosphere.

**Assigned Task:** The SS has directed you to "Dilute the Containment Hydrogen concentration using Service Air per 13130-1, "Post-Accident Hydrogen Control."

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**JPM INFORMATION**


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OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_ / \_\_\_ / \_\_\_\_

JPM TITLE: Dilute Containment with Service Air

COMPLETION TIME: 8 minutes

Application: RO/SRO

Task Number: 29013

K/A Number: 028A4.01 RO: 4.0 SRO: 4.0

Safety Function: 5 - Containment

10CFR55 Ref.: 41.7 / 45.5 to 45.8

Evaluation Method  Performed  SimulatedEvaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

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**OVERALL JPM EVALUATION**  **SATISFACTORY**  **UNSATISFACTORY**


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Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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**INSTRUCTIONS TO EXAMINER**


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This JPM is based on 13130-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

- REQUIRED ITEMS:** 1. 13130, Post-Accident Hydrogen Control
- SIMULATOR SETUP:**
1. Reset to IC 14 (MOL 100%)
  2. Insert malf. RC05C at 100% (Hot Leg Break)
  3. Throttle AFW to 570 gpm
  4. Use Remote Function ED08 to set CNMT H<sub>2</sub> at 8%
  5. Use Remote Function ED07 to override CNMT H<sub>2</sub>
  6. Use Remote Function ED06 to set CNMT Pressure at 15#
  7. Use Remote Function ED05 to override CNMT Pressure
  8. Trip RCPs
  9. Verify RCS pressure rising
  10. Reset SI
  11. Stop RHR pumps
  12. Place both Ctmt H<sub>2</sub> Monitors in service per 13130
  13. Ack/Reset alarms
  14. Freeze simulator when Ctmt H<sub>2</sub> concentration stabilizes

Setup Time: 20 minutes

### DIRECTIONS TO OPERATOR

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:** A LOCA has occurred on Unit 1. The crew is performing step 19 of 19010-C. The TSC has requested that Service Air be aligned to Containment to reduce the hydrogen concentration of the Containment atmosphere.

**ASSIGNED TASK:** The SS has directed you to "Dilute the Containment hydrogen concentration using Service Air per 13130-1, "Post-Accident Hydrogen Control."

**TASK STANDARD:** Service Air aligned to Containment atmosphere.

## JPM STEPS

START TIME: \_\_\_\_\_

## STEP 1

SAT  UNSAT 

Appropriate procedure selected

 • 13130, Section 4.4.2 selected

## STEP 2

CRITICAL (◆)

SAT  UNSAT 

Align Service Air to Containment

- Verify containment pressure < 40 psig
- ◆ HS 40120 **and** 40122 positioned to RESET (CIA)
- ◆ HS 9385A positioned to OPEN
- ◆ HS 9385B held in OPEN position until HV 9385 fully OPENED

## STEP 3

CRITICAL (◆)

SAT  UNSAT 

Initiate Service Air Purge

**SIMULATOR OPERATOR NOTES:**

1. Use remote function ED06 to control containment pressure from 15 psig to 17 psig with a ramp time of 600 seconds once a 9380 valve is open. This will allow verification of air to containment.
2. Use malfunction IA02 at 5% to simulate air flow out of service air system. Expect A/Cs in standby to start.

- ◆ HV 9380A or HV 9380B OPENED
- Verify Service Air pressure > 80 psig
- Monitor Ctmt H<sub>2</sub> concentration (1) (2)
- Verify Ctmt pressure remains < 40 psig (3)

## CUE:

- (1) When requested, "The Extra RO will monitor H<sub>2</sub> concentration."
- (2) When requested, "The USS will notify Chemistry to begin sampling."
- (3) When requested, "The Extra RO will monitor containment pressure."

JPM STEPS

STEP 4

SAT  UNSAT

**Report to SS**

• Service Air aligned to Ctmt atmosphere

STOP TIME: \_\_\_\_\_

*Field Notes*



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**RQ-JP-13130-001**

**DILUTE CONTAINMENT WITH SERVICE AIR**

Deleted: Revision

Deleted: 7

Deleted: 8

Deleted: December 3, 2003

Deleted: April 5, 2005

Deleted: Written By: S. N.  
Dyer. Date: 12/3/2003  
Approved By: Richard D.  
Brigdon Date: 5/14/2004

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** A LOCA has occurred on Unit 1. The crew is performing step 19 of 19010-C. The TSC has requested that Service Air be aligned to Containment to reduce the hydrogen concentration of the Containment atmosphere.

**Assigned Task:** The SS has directed you to "Dilute the Containment Hydrogen concentration using Service Air per 13130-1, "Post-Accident Hydrogen Control."

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Task Standard: . Service Air aligned to Containment atmosphere. ¶

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JPM INFORMATION

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_/\_\_\_/\_\_\_

JPM TITLE: Dilute Containment with Service Air

COMPLETION TIME: 8 minutes

Application: RO/SRO  
 Task Number: 29013  
 K/A Number: 028A4.01 RO: 4.0 SRO: 4.0  
 Safety Function: 5 - Containment  
 10CFR55 Ref.: 41.7 / 45.5 to 45.8

- Deleted: REVISION:
- Deleted: 7
- Deleted: 8
- Deleted: December 3, 2003
- Deleted: April 5, 2005
- Comment [snd1]:** Completion Time was changed due to increases in performance time. The increase is related to requirement for 3 way communications, place keeping, & peer checking
- Deleted: SF5
- Deleted: 45
- Deleted: 6

Evaluation Method  Performed  Simulated

Evaluation Location  Simulator  Control Room  Unit 1  Unit 2

Performance Time: \_\_\_\_\_ minutes

**OVERALL JPM EVALUATION**  SATISFACTORY  UNSATISFACTORY

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

## INSTRUCTIONS TO EXAMINER

This JPM is based on 13130-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "@..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

- REQUIRED ITEMS:** 1. 13130, Post-Accident Hydrogen Control
- SIMULATOR SETUP:**
1. Reset to IC 14 (MOL 100%)
  2. Insert malf. RC05C at 100% (Hot Leg Break)
  3. Throttle AFW to 570 gpm
  4. Use Remote Function ED08 to set CNMT H<sub>2</sub> at 8%
  5. Use Remote Function ED07 to override CNMT H<sub>2</sub>
  6. Use Remote Function ED06 to set CNMT Pressure at 15#
  7. Use Remote Function ED05 to override CNMT Pressure
  8. Trip RCPs
  9. Verify RCS pressure rising
  10. Reset SI
  11. Stop RHR pumps
  12. Place both Ctmt H<sub>2</sub> Monitors in service per 13130
  13. Ack/Reset alarms
  14. Freeze simulator when Ctmt H<sub>2</sub> concentration stabilizes

Setup Time: 20 minutes

## DIRECTIONS TO OPERATOR

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:** A LOCA has occurred on Unit 1. The crew is performing step 19 of 19010-C. The TSC has requested that Service Air be aligned to Containment to reduce the hydrogen concentration of the Containment atmosphere.

**ASSIGNED TASK:** The SS has directed you to "Dilute the Containment hydrogen concentration using Service Air per 13130-1, "Post-Accident Hydrogen Control."

**TASK STANDARD:** Service Air aligned to Containment atmosphere.

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JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1**  
 SAT  UNSAT

**Appropriate procedure selected**

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• 13130, Section 4.4.2 selected

**STEP 2**  
**CRITICAL (♦)**  
 SAT  UNSAT

**Align Service Air to Containment**

---

• Verify containment pressure < 40 psig  
 ♦ HS 40120 and 40122 positioned to RESET (CIA)  
 ♦ HS 9385A positioned to OPEN  
 ♦ HS 9385B held in OPEN position until HV 9385 fully OPENED

**STEP 3**  
**CRITICAL (♦)**  
 SAT  UNSAT

**Initiate Service Air Purge**

**SIMULATOR OPERATOR NOTES:**

**1. Use remote function ED06 to control containment pressure from 15 psig to 17 psig with a ramp time of 600 seconds once a 9380 valve is open. This will allow verification of air to containment.**

**2. Use malfunction IA02 at 5% to simulate air flow out of service air system. Expect A/Cs in standby to start.**

---

♦ HV 9380A or HV 9380B OPENED  
 • Verify Service Air pressure > 80 psig  
 • Monitor Ctmt H<sub>2</sub> concentration (1) (2)  
 • Verify Ctmt pressure remains < 40 psig (3)

**CUE:**

(1) When requested, "The Extra RO will monitor H<sub>2</sub> concentration."  
 (2) When requested, "The USS will notify Chemistry to begin sampling."  
 (3) When requested, "The Extra RO will monitor containment pressure."

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JPM STEPS

STEP 4
SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
<b>Report to SS</b>
<input type="checkbox"/> • Service Air aligned to Cmt atmosphere

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STOP TIME: .....

*Field Notes*



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**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**RQ-JP-13011-001**

**PLACE RHR IN SERVICE**

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** A plant cooldown from Mode 4 to Mode 5 is in progress in accordance with UOP 12006-C, Section C. In addition, power has been restored to A train loop suctions per 13011-1.

**Assigned Task:** The SS has directed you to "Place RHR Train A in service and establish a 50°F/hr cooldown rate using 13011-1."

---

**JPM INFORMATION**


---

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_ / \_\_\_ / \_\_\_

JPM TITLE:           Place RHR In Service

COMPLETION TIME: 25 minutes

Application:           RO/SRO  
 Task Number:         12004  
 K/A Number:         SF4005A4.01      RO: 3.6      SRO: 3.4  
 Safety Function:     Primary Heat Removal  
 10CFR55.45 Ref.:   4, 6, 7

Evaluation Method     Performed            Simulated  
 Evaluation Location    Simulator            Control Room    Unit 1    Unit 2  
 Performance Time:    \_\_\_\_\_minutes

**OVERALL JPM EVALUATION**        **SATISFACTORY**            **UNSATISFACTORY**

Examiner Comments:

Examiner's Signature: \_\_\_\_\_

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**INSTRUCTIONS TO EXAMINER**


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This JPM is based on the latest rev of 13011-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 13011, Residual Heat Removal System

**SIMULATOR SETUP:**

1. Reset to IC3 (BOL mode 4)
2. Ensure both trains of CCW in service
3. Trip RCPs 02 and 03
4. Power HV 8701A/B
5. Adjust ARV setpoints to est a 10°F/hr cooldown rate
6. Ensure RCS pressure stable at approx. 350 psig.
7. Activate RF: RH2 to align letdown from desired train
8. Adjust charging flow to 75 GPM
9. Verify Hi Flux at Shutdown Alarm Reset
10. Ack/Reset alarms
11. Place SIP HS's in PTL and tag
12. Freeze simulator

**NOTE TO SIMULATOR INSTRUCTOR:** Ensure IPC indications (Mode Dependent Alarming) for Reactivity is indicating properly.

Setup time: 15 minutes

---

**DIRECTIONS TO OPERATOR**


---

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:** A plant cooldown from Mode 4 to Mode 5 is in progress in accordance with UOP 12006-C, Section C. In addition, power has been restored to the A train loop suctions per 13011-1.

**ASSIGNED TASK:** The SS has directed you to "Place RHR Train A in service and establish a 50°F/hr cooldown rate using 13011-1."

**TASK STANDARD:** RHR in service with a cooldown established.

## JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1****CRITICAL (◆)****SEQ 1**SAT  UNSAT **Align RHR for operation**

- Section 4.3 selected
- 4.3.1: Inform HP that this RHR system change could affect area radiation levels so that surveys can be taken and personnel made aware of the changed condition **(1)**
- 4.3.2: Restore power to RHR PMP-A SUCTION FROM HOT LEG LOOP 1 Inlet Isolations and air to RHR System Flow Control Valves as follows; IV required: **(2)**
- NOTE - When in Mode 1, 2 or 3, 1-HV-8809A/B should not be shut simultaneously
- NOTE - One train of RHR at a time should be aligned for shutdown cooling
- 4.3.3.a: Close the RHR Trn-A to Hot Leg Crossover Iso Valve HV-8716A
- ◆ 4.3.3.b: Close the RHR Trn-A Heat Exch Outlet HV-606. Verify closure at Group 1 MLB 01 2.2 or by computer point UD8701
- 4.3.3.c: Close the RHR Trn-A Heat Exch Bypass FV-618. Verify closure by computer point UD8696.
- 4.3.3.d: Ensure open the RHR PMP A TO COLD LEG 1&2 ISO VLV 1-HV-8809A; IV required **(3)**
- 4.3.3.e: Place RHR PUMP A in PULL-TO-LOCK
- ◆ 4.3.3.f: Close the RWST TO RHR PMP-A SUCTION 1-HV-8812A
- ◆ 4.3.3.g: Open the RHR PMP-A SUCTION FROM HOT LEG LOOP 1 Valve 1-HV-8701B
- ◆ 4.3.3.h: Open the RHR PMP-A SUCTION FROM HOT LEG LOOP 1 1-HV-8701A
- 4.3.3.i: Place RHR PMP-A in AUTO position
- 4.3.4: Remove power from RHR to Charging Isolation Valve **(4)**
- Ensure the train related CCW System is in service per 13715-1, "Component Cooling Water System".  
2 Train A CCW pumps running  
CCW Discharge Header Train A 1-PI-1874 approximately 90 psig  
CCW Discharge Header Train A 1-FI-1876 approximately 9000 GPM

**CUES:**

- (1)** "The SS will notify HP"
- (2)** "Step 4.3.2 and the IV have been completed"
- (3)** "IV has been completed."
- (4)** **Will call SSS or ABO to perform this step.**

**NOTE: Simulator operator use Remote Function SI10A to remove power to 1-HV-8804A**

## JPM STEPS

## STEP 2

CRITICAL (◆)

SEQ 2

SAT  UNSAT 

## Startup RHR system

- 4.3.6.a: Verify OPEN the RHR PMP-A MINIFLOW ISO 1-FV-0610
- CAUTION - In order to prevent excessive RHRS heatup and possible pump damage, RHR HEAT EXCH OUTLET for Train A 1-HV-0606 and RHR HEAT EXCH BYPASS for Train A 1-FV-0618 must be closed. Actual valve position should be monitored at Group 1 MLB 01 2.2 or by computer point prior to pump start.
- ◆ 4.3.6.b: Start RHR pump A
- Establish RHR Letdown per Section 4.5

## JPM STEPS

## STEP 3

SAT  UNSAT **Establish RHR letdown per section 4.5***Note: Valve 021 was opened during simulator setup using remote function RH2*

- 4.5.1: To initially place RHR letdown in service perform Section 4.5.4.
- 4.5.4.1: Close RHR LETDOWN TO CVCS ISOLATION Valve 1-HV-0128
- NOTE: Only one train of RHR should be aligned for letdown operation. This prevents pressurizing the suction of an idle RHR Pump from the operating RHR train
- NOTE: Precaution 2.1.10 should be reviewed
- 2.1.10: Ensure HP is informed to perform surveys when changes are made to the RHR operational configuration. Changes in area condition levels can occur when a train is placed in service, when trains are swapped, or when letdown is established or changed. In addition, ensure operators in the Auxiliary Building are informed that radiation levels may change in their workspaces due to system changes.
- 4.5.4.2.a: Open the RHR to CVCS Letdown Isolation 1-1205-U4-021 **(1)**
- Independent verification requested **(2)**
- NOTE: Design maximum CVCS letdown flow is 120 gpm
- NOTE: The RHR Hx outlet Low Pressure Letdown Relief Valve 1-PSV-8856A lifts to the BRS RHT at 600 psig
- 4.5.4.4: Slowly open the RHR LETDOWN TO CVCS ISOLATION Valve 1-HV-0128 **(3)**
- NOTE: During Solid Plant conditions ONLY 1-PIC-0131 should be used for letdown flow control and 1-HV-0128 should remain in the FULL OPEN position
- NOTE: Pressure on the suction of the idle RHR Train may increase if there is leak by past the manual letdown isolation valve
- 4.5.4.5: Adjust the Letdown Pressure Controller 1-PIC-0131 and/or RHR Letdown Isolation 1-HV-0128 as required to obtain the desired Letdown Flow as indicated on 1-FI-0132C

CUES: **(1)** "The ABO reports that 1205-U4-021 is open."  
**(2)** "The IV is completed."  
**(3)** If requested, "Establish 75 gpm letdown flow."

## JPM STEPS

## STEP 4

SAT  UNSAT **Warmup RHR system***Note: The miniflow valve opens at appr. 750 gpm and closes at ≈ 1400 gpm.*

- **NOTE:** Due to leak-by of the RHR Hx Outlet and Bypass Valves, RHR warming will begin as soon as the pump is started. However, due to miniflow cooling back to the suction of the pump, the temperature rise at the Hx inlet is only expected to reach approximately 200°F with the RCS at approximately 350°F. A rapid temperature rise should be expected when the miniflow valve goes closed.
- 4.3.7.a: Monitor RHR TRN-A Heat Exchanger Inlet Temperature using Plant Computer T0630, until the temperature stabilizes **(1)**
- **CAUTION:** If the RCS is under vacuum, a minimum flow rate of about 1200 gpm for 3 minutes is needed to refill the voided section of RHR discharge piping. 1500 gpm should NOT be exceeded during the refill period. Flow rates are to be adjusted very SLOWLY any time flow is being increased due to possible water hammer concerns
- 4.3.7.b: Throttle open the RHR TRN-A HEAT EXCH BYPASS 1-FV-0618 until RHR PMP A MINIFLOW ISO VLV 1-FV-0610 closes
- 4.3.7.c: Complete RHR warm-up by monitoring RHR Hx Inlet Temperature using Plant Computer T0630, until the temperature stabilizes

## CUES:

- (1)** After short time period, if needed, provide indication that RHR inlet temperature has stabilized at 190°F.
- © RHR flow indicates ≈ 800 gpm and inlet temperatures indicate ≈ 190°F for 5 mins.
- © After opening the FV-618(9), indicate "RHR flow is ≈ 1000 gpm and inlet temperature has indicated ≈ 350°F for 5 minutes."

## JPM STEPS

## STEP 5

## CRITICAL (◆)

SAT  UNSAT **Initiate RHR cooldown**

*Note: Establishing a specific cooldown rate is extremely time intensive. Because of this time factor, establishing a cooldown will satisfy the requirements of this JPM.*

- CAUTION: If the RCS is under vacuum, a minimum flow rate of about 1200 gpm for 3 minutes is needed to refill the voided section of RHR discharge piping. 1500 gpm should NOT be exceeded during the refill period. Flow rates are to be adjusted very SLOWLY any time flow is being increased due to possible water hammer concerns
- NOTE: >3200 gpm indicated flow ensures  $\geq 3000$  gpm actual flow for all temperatures
- NOTE: 3000 gpm RHR flow is required for Mode 6
- ◆ 4.3.8.a: Throttle open the RHR HEAT EXCH BYPASS for Train A 1-FV-0618 to the desired flow rate (nominally 3000 gpm)
- 4.3.8.b: Verify the RHR PMP-A MINIFLOW ISO VLV 1-FV-0610 closes
- CAUTION: The RHR Heat Exchanger Train A Bypass Flow Controller Potentiometer should be set for a minimum flow of 3000 gpm (Pot setting: 3.6 for 3000 gpm, 4.1 for 3200 gpm) prior to placing controller in AUTO. The potentiometer setting for the desired flow rate (gpm) is approximately equal to  $(\text{Desired Flow}/5000)^2 \times 10$
- 4.3.8.c: Place the RHR TRN-A HEAT EXCH BYPASS Flow Controller 1-FIC-0618A in AUTO if desired
- NOTE: During Solid Plant conditions, ONLY 1-PIC-0131 should be used for letdown flow control and 1-HV-0128 should remain in the FULL OPEN position
- 4.3.8.d: Adjust the LOW PRESSURE LETDOWN Controller 1-PIC-0131 and/or LETDOWN FROM RHR Control Valve 1-HV-0128 as required to maintain desired letdown flow
- ◆ 4.3.8.e: Slowly throttle open RHR TRN-A HEAT EXCH OUTLET 1-HV-0606 to establish desired RCS cooling (1)

## CUES:

- (1) After cooldown initiated, "The Extra RO will maintain the cooldown rate  $\leq 50$  °F/hr."

**JPM STEPS**

STEP 6
SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
<b>Report to SS</b>
<input checked="" type="checkbox"/> • RHR in service with a cooldown established

STOP TIME: \_\_\_\_\_

***Field Notes***



*Energy to Serve Your World™*

**PLANT VOGTLE**

**CONTROL ROOM OPERATOR**

**JOB PERFORMANCE MEASURE**

**RQ-JP-13011-001**

**PLACE RHR IN SERVICE**

- Deleted:** Revision 1
- Deleted:** 4
- Deleted:** 5
- Deleted:** December 3, 2003
- Deleted:** April 5, 2005
- Deleted:**  
Written By: S. N.  
Dyer. Date: 12/3/2003  
Approved By: R. D.  
Brigdon. Date: 5/14/2004

*This information describes the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the task before beginning. You will be allowed access to any item normally used to perform this task.*

**Initial Conditions:** A plant cooldown from Mode 4 to Mode 5 is in progress in accordance with UOP 12006-C, Section C. In addition, power has been restored to A train loop suctions per 13011-1.

**Assigned Task:** The SS has directed you to "Place RHR Train A in service and establish a 50°F/hr cooldown rate using 13011-1."

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**Task Standard:** RHR in service with a cooldown established. ¶

¶

JPM INFORMATION

OPERATOR'S NAME: \_\_\_\_\_

EVALUATION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

JPM TITLE:           Place RHR In Service

COMPLETION TIME: 25 minutes

Application:           RO/SRO  
Task Number:        12004  
K/A Number:        SF4005A4.01    RO: 3.6    SRO: 3.4  
Safety Function:    Primary Heat Removal  
10CFR55.45 Ref.:    4, 6, 7

- Deleted: REVISION: 1
- Deleted: 4
- Deleted: 5
- Deleted: December 3, 2003
- Deleted: April 5, 2005
- Deleted: 0

Evaluation Method     Performed        Simulated

Evaluation Location    Simulator        Control Room    Unit 1        Unit 2

Performance Time:    \_\_\_\_\_minutes

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**OVERALL JPM EVALUATION**        SATISFACTORY        UNSATISFACTORY

Examiner Comments:

  
  
  
  
  
  
  
  
  
  

Examiner's Signature: \_\_\_\_\_

**INSTRUCTIONS TO EXAMINER**

This JPM is based on the latest rev of 13011-1. Verify this JPM is in accordance with the latest procedural revision prior to use. Cues preceded by a "©..." are provided to enhance simulation of this JPM and should only be used when the simulator is unavailable. Cues designated by (#) are to be provided to the examinee during the performance of this JPM.

**REQUIRED ITEMS:** 1. 13011, Residual Heat Removal System

- SIMULATOR SETUP:**
1. Reset to IC3 (BOL mode 4)
  2. Ensure both trains of CCW in service
  3. Trip RCPs 02 and 03
  4. Power HV 8701A/B
  5. Adjust ARV setpoints to est a 10°F/hr cooldown rate
  6. Ensure RCS pressure stable at approx. 350 psig.
  7. Activate RF: RH2 to align letdown from desired train
  8. Adjust charging flow to 75 GPM
  9. Verify Hi Flux at Shutdown Alarm Reset
  10. Ack/Reset alarms
  11. Place SIP HS's in PTL and tag
  12. Freeze simulator

**NOTE TO SIMULATOR INSTRUCTOR:** Ensure IPC indications (Mode Dependent Alarming) for Reactivity is indicating properly.

Setup time: 15 minutes

**DIRECTIONS TO OPERATOR**

You will be given information describing the Initial Conditions, Assigned Task, and the Task Standard. Please ensure you understand the assigned task before beginning. You will be allowed access to any item normally used to perform this task.

**INITIAL CONDITIONS:** A plant cooldown from Mode 4 to Mode 5 is in progress in accordance with UOP 12006-C, Section C. In addition, power has been restored to the A train loop suction per 13011-1.

**ASSIGNED TASK:** The SS has directed you to "Place RHR Train A in service and establish a 50°F/hr cooldown rate using 13011-1."

**TASK STANDARD:** RHR in service with a cooldown established.

- Deleted: Stop the RHR Pump
- 5. Close
- Deleted:
- Deleted: and
- Deleted: OR 8702A/B (selected train)
- Deleted: 6
- Deleted: Open 606/607 and Close 618/619
- 7. Open 6716A/B and 8812A/B
- 8. Momentarily start RHRP A to lower temp on TR-612
- 9.
- Deleted: 10
- Deleted: Lower HC-128's demand to 0%
- 11.
- Deleted: (RH3)
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- Deleted: HV-8701A/B and HV-8702A/B
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JPM STEPS

START TIME: \_\_\_\_\_

**STEP 1**  
**CRITICAL (♦)**  
**SEQ 1**  
**SAT**  **UNSAT**

**Align RHR for operation**

- Section 4.3 selected
- 4.3.1: Inform HP that this RHR system change could affect area radiation levels so that surveys can be taken and personnel made aware of the changed condition (1)
- 4.3.2: Restore power to RHR PMP-A SUCTION FROM HOT LEG LOOP 1 Inlet Isolations and air to RHR System Flow Control Valves as follows: IV required: (2)
- NOTE - When in Mode 1, 2 or 3, 1-HV-8809A/B should not be shut simultaneously
- NOTE - One train of RHR at a time should be aligned for shutdown cooling
- 4.3.3.a: Close the RHR Trn-A to Hot Leg Crossover Iso Valve HV-8716A,
- ♦ 4.3.3.b: Close the RHR Trn-A Heat Exch Outlet HV-606. Verify closure at Group 1 MLB 01 2.2 or by computer point UD8701
- 4.3.3.c: Close the RHR Trn-A Heat Exch Bypass FV-618. Verify closure by computer point UD8696.
- 4.3.3.d: Ensure open the RHR PMP A TO COLD LEG 1&2 ISO VLV 1-HV-8809A; IV required (3)
- 4.3.3.e: Place RHR PUMP A in PULL-TO-LOCK
- ♦ 4.3.3.f: Close the RWST TO RHR PMP-A SUCTION 1-HV-8812A
- ♦ 4.3.3.g: Open the RHR PMP-A SUCTION FROM HOT LEG LOOP 1 Valve 1-HV-8701B
- ♦ 4.3.3.h: Open the RHR PMP-A SUCTION FROM HOT LEG LOOP 1 1-HV-8701A
- 4.3.3.i: Place RHR PMP-A in AUTO position
- 4.3.4: Remove power from RHR to Charging Isolation Valve (4)
- Ensure the train related CCW System is in service per 13715-1, "Component Cooling Water System".  
 2 Train A CCW pumps running  
 CCW Discharge Header Train A 1-PI-1874 approximately 90 psig  
 CCW Discharge Header Train A 1-FI-1876 approximately 9000 GPM

**CUES:**

- (1) "The SS will notify HP"
- (2) "Step 4.3.2 and the IV have been completed"
- (3) "IV has been completed."
- (4) Will call SSS or ABO to perform this step.

**NOTE: Simulator operator use Remote Function S10A to remove power to 1-HV-8804A.**

- Deleted: Note: This JPM only evaluates the selected train. Alignment of BOTH trains would violate procedure and JPM should be considered UNSAT. ¶
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- Deleted: (607) CLOSED
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- Deleted: (619) CLOSED
- Deleted: RHR to cold legs HV-8809A(B) OPEN
- Deleted:  • Independent verification requested (2) ¶
- Deleted: ♦
- Deleted: RHR pump A(B) in PTL
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- Deleted: RWST to RHR HV-8812A(B) CLOSED
- Formatted: Font: Bold
- Deleted: Hot leg suction HV-8701B(8702B) and HV-8701A(8702A) OPEN
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- Formatted: Font: Bold
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- Deleted: RHR pump A(B) in AUTO
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- Deleted: U
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- Deleted: The BOP will perform the
- Deleted: 3
- Deleted: When requested, "S... [1]

JPM STEPS

STEP 2  
CRITICAL (♦)  
SEQ 2  
SAT  UNSAT

Startup RHR system

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• 4.3.6.a: Verify OPEN the RHR PMP-A MINIFLOW ISO 1-FV-0610

• CAUTION - In order to prevent excessive RHRS heatup and possible pump damage, RHR HEAT EXCH OUTLET for Train A 1-HV-0606 and RHR HEAT EXCH BYPASS for Train A 1-FV-0618 must be closed. Actual valve position should be monitored at Group 1 MLB 01 2.2 or by computer point prior to pump start.

---

♦ 4.3.6.b: Start RHR pump A

• Establish RHR Letdown per Section 4.5

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JPM STEPS

STEP 3  
 SAT  UNSAT

**Establish RHR letdown per section 4.5**  
*Note: Valve 021 was opened during simulator setup using remote function RH2.*

---

• 4.5.1: To initially place RHR letdown in service perform Section 4.5.4.

• 4.5.4.1: Close RHR LETDOWN TO CVCS ISOLATION Valve 1-HV-0128

• NOTE: Only one train of RHR should be aligned for letdown operation. This prevents pressurizing the suction of an idle RHR Pump from the operating RHR train

---

• NOTE: Precaution 2.1.10 should be reviewed

• 2.1.10: Ensure HP is informed to perform surveys when changes are made to the RHR operational configuration. Changes in area condition levels can occur when a train is placed in service, when trains are swapped, or when letdown is established or changed. In addition, ensure operators in the Auxiliary Building are informed that radiation levels may change in their workspaces due to system changes.

---

• 4.5.4.2.a: Open the RHR to CVCS Letdown Isolation 1-1205-U4-021 (1)

• Independent verification requested (2)

• NOTE: Design maximum CVCS letdown flow is 120 gpm

• NOTE: The RHR Hx outlet Low Pressure Letdown Relief Valve 1-PSV-8856A lifts to the BRS RHT at 600 psig

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• 4.5.4.4: Slowly open the RHR LETDOWN TO CVCS ISOLATION Valve 1-HV-0128 (3)

• NOTE: During Solid Plant conditions ONLY 1-PIC-0131 should be used for letdown flow control and 1-HV-0128 should remain in the FULL OPEN position

• NOTE: Pressure on the suction of the idle RHR Train may increase if there is leak by past the manual letdown isolation valve

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• 4.5.4.5: Adjust the Letdown Pressure Controller 1-PIC-0131 and/or RHR Letdown Isolation 1-HV-0128 as required to obtain the desired Letdown Flow as indicated on 1-FI-0132C

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CUES: (1) "The ABC reports that 1205-U4-021 is open."  
 (2) "The JV is completed."  
 (3) If requested, "Establish 75 gpm letdown flow."

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Deleted: HC-128 adjusted to establish letdown flow  
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JPM STEPS

STEP 4

SAT  UNSAT

**Warmup RHR system**

Note: The miniflow valve opens at appr. 750 gpm and closes at ≈ 1400 gpm.

- NOTE: Due to leak-by of the RHR Hx Outlet and Bypass Valves, RHR warming will begin as soon as the pump is started. However, due to miniflow cooling back to the suction of the pump, the temperature rise at the Hx inlet is only expected to reach approximately 200°F with the RCS at approximately 350°F. A rapid temperature rise should be expected when the miniflow valve goes closed.
- 4.3.7.a: Monitor RHR TRN-A Heat Exchanger Inlet Temperature using Plant Computer T0630, until the temperature stabilizes, (1)
- CAUTION: If the RCS is under vacuum, a minimum flow rate of about 1200 gpm for 3 minutes is needed to refill the voided section of RHR discharge piping. 1500 gpm should NOT be exceeded during the refill period. Flow rates are to be adjusted very SLOWLY any time flow is being increased due to possible water hammer concerns
- 4.3.7.b: Throttle open the RHR TRN-A HEAT EXCH BYPASS 1-FV-0618 until RHR PMP A MINIFLOW ISO VLV 1-FV-0610 closes
- 4.3.7.c: Complete RHR warm-up by monitoring RHR Hx Inlet Temperature using Plant Computer T0630, until the temperature stabilizes

CUES:

- (1) After short time period, if needed, provide indication that RHR inlet temperature has stabilized at 190°F.
- ⊙ RHR flow indicates ≈ 800 gpm and inlet temperatures indicate ≈ 190°F for 5 mins.
- ⊙ After opening the FV-618(9), indicate "RHR flow is ≈ 1000 gpm and inlet temperature has indicated ≈ 350°F for 5 minutes."

**Deleted:** RHR inlet temperature indications verified stable  
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**Deleted:** RHR HX bypass controller FIC-618(619) raised until miniflow FV-610(611) CLOSES  
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**Deleted:** RHR inlet temperature indications verified stable  
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JPM STEPS

STEP 5  
CRITICAL (♦)

SAT  UNSAT

Initiate RHR cooldown

Note: Establishing a specific cooldown rate is extremely time intensive. Because of this time factor, establishing a cooldown will satisfy the requirements of this JPM.

- CAUTION: If the RCS is under vacuum, a minimum flow rate of about 1200 gpm for 3 minutes is needed to refill the voided section of RHR discharge piping. 1500 gpm should NOT be exceeded during the refill period. Flow rates are to be adjusted very SLOWLY any time flow is being increased due to possible water hammer concerns
- NOTE: >3200 gpm indicated flow ensures >3000 gpm actual flow for all temperatures
- NOTE: 3000 gpm RHR flow is required for Mode 6
- ♦ **4.3.8.a: Throttle open the RHR HEAT EXCH BYPASS for Train A 1-FV-0618 to the desired flow rate (nominally 3000 gpm)**
- 4.3.8.b: Verify the RHR PMP-A MINIFLOW ISO VLV 1-FV-0610 closes
- CAUTION: The RHR Heat Exchanger Train A Bypass Flow Controller Potentiometer should be set for a minimum flow of 3000 gpm (Pot setting: 3.6 for 3000 gpm, 4.1 for 3200 gpm) prior to placing controller in AUTO. The potentiometer setting for the desired flow rate (gpm) is approximately equal to (Desired Flow/5000) x 10
- 4.3.8.c: Place the RHR TRN-A HEAT EXCH BYPASS Flow Controller 1-FIC-0618A in AUTO if desired
- NOTE: During Solid Plant conditions, ONLY 1-PIC-0131 should be used for letdown flow control and 1-HV-0128 should remain in the FULL OPEN position
- 4.3.8.d: Adjust the LOW PRESSURE LETDOWN Controller 1-PIC-0131 and/or LETDOWN FROM RHR Control Valve 1-HV-0128 as required to maintain desired letdown flow
- ♦ **4.3.8.e: Slowly throttle open RHR TRN-A HEAT EXCH OUTLET 1-HV-0606 to establish desired RCS cooling (1)**

CUES:

(1) After cooldown initiated, "The Extra RO will maintain the cooldown rate ≤ 50 °F/hr."

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**JPM STEPS**

STEP 6
SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>
<b>Report to,SS</b>
<input type="checkbox"/> • RHR in service with a cooldown established

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STOP TIME: \_\_\_\_\_

**Field Notes**

When requested, "Step 4.3.4(4.4.4) has been performed."