

**Catawba Nuclear Station
JPM A
May 2014 NRC Initial License Exam**

System JPM A

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EVALUATION SHEET

Task: Respond to an inadvertent dilution while shutdown per AP/1/A/5500/013 (Boron Dilution), Case II (Boron Dilution While Shutdown)

Alternate Path: Yes

Facility JPM #: New

Safety Function: 1 **Title:** Chemical and Volume Control System

K/A 004 A2.06 Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS: and based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Inadvertent boration/dilution

Rating(s): 4.2 / 4.3 **CFR:** 41.5 / 43/5 / 45/3 / 45/5

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: AP/1/A/5500/013 (Boron Dilution) rev. 24

Task Standard: Starts the 1A NI (Safety Injection) pump.

Validation Time: 15 minutes **Time Critical:** Yes _____ No X

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Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

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COMMENTS

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #168.
3. Enter the password.
4. Select “Yes” on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE “Extra Operator” is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event
	LOA-NI004 (RACKOUT NI PMP 1B)	RACK OUT				
	LOA-NV067 (RACKOUT NV PMP 1B)	RACK OUT				
	LOA-NV066 (RACKOUT NV PMP 1A)	RACK OUT				2
	Ensure EVENT 2 = x10i167c (NV-353 & 364 MIXED BED DEMIN 1A ISOL “CLOSE” pushbutton)					

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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 is in MODE 5

Unit 1 RMWST is aligned for VCT makeup.

INITIATING CUES:

- A boron dilution event is in progress, you have been instructed to perform AP/1/A/5500013 (Boron Dilution), Case II (Boron Dilution While Shutdown).

EXAMINER NOTE: After reading cue, provide the applicant with a copy of AP/1/A/5500/013

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 1. Verify boron dilution event - IN PROGRESS.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines a boron dilution event is in progress per the initiating cue.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>STEP 2</u> Verify Reactor Trip:</p> <ul style="list-style-type: none"> All rod bottom lights - LIT All reactor trip and bypass breakers - OPEN. <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant verifies the reactor is tripped by verifying all rod bottom lights are lit on the DRPI monitors and that the green OPEN lights are lit for RX TRIP BKR 1A and RX TRIP BKR 1B on 1MC-1.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 3</u> 3. Verify core alterations - IN PROGRESS.</p> <p><u>STANDARD:</u></p> <p>Applicant verifies that core alterations are NOT because the unit is in MODE 5 and proceeds to the RNO.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4</u> 3. RNO <u>GO TO</u> Step 5.</p> <p><u>STANDARD:</u></p> <p>Applicant proceeds to step 5</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 5. Evacuate personnel from reactor building using the following:</p> <ul style="list-style-type: none"> • Containment evacuation alarm • Plant page. <p><u>STANDARD:</u></p> <p>Applicant depresses the red ON pushbutton for the UNIT 1 CONT EVAC ALARM on 1MC-1 and makes a plant page.</p> <p>This step is critical to perform either action to protect the health and safety of the people working inside containment.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 6</u> 6. Stop any dilutions in progress as follows:</p> <p style="padding-left: 40px;">a. Place "NC MAKEUP CONTROL" switch to "STOP".</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant places the "NC MAKEUP CONTROL" to the STOP position 1MC-10.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 7</u> 6. b. Verify Unit 1 RMWST aligned for VCT makeup.</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant verifies the Unit 1 RMWST is aligned per the initial conditions.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 8</u> 6. c. Place both reactor makeup water pumps to "OFF".</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant places RX M/U WTR PUMP 1A and RX M/U WTR PUMP 1B to the "OFF" position on 1MC-10.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 9</u> 6. d. Isolate the NV demineralizers as follows:</p> <p style="padding-left: 40px;">1) Place 1NV-153A (Letdn Hx Otlt 3-Way Valve) in the "VCT" position.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant places 1NV-153A in the "VCT" position on 1MC-10.</p> <p>This step is critical to prevent un-saturating the Mixed Bed Demineralizers.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 10</u> 6. d. 2) Ensure the following valves - CLOSED:</p> <ul style="list-style-type: none"> 1NV-353 & 364 (Mixed Bed Demin 1A Isol) 1NV-368 & 379 (Mixed Bed Demin 1B Isol). <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant depresses the green CLOSE pushbutton for NV-353 & 364 MIXED BED DEMIN 1A ISOL and verifies the green CLSD light is lit for NV-368 & 379 MIXED BED DEMIN 1A ISOL on 1MC-10.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>NOTE</u> Unit shutdown alignments may have established alternate boration flowpaths.</p> <p><u>STEP 11</u> 7. Ensure proper BDMS operation as follows:</p> <p style="padding-left: 40px;">a. Verify at least one of the following alarm(s) - LIT:</p> <ul style="list-style-type: none"> • 1AD-2, E/2 "TRAIN A SHUTDOWN MARGIN ALARM" <p style="padding-left: 80px;">OR</p> <ul style="list-style-type: none"> • 1AD-2, F/2 "TRAIN B SHUTDOWN MARGIN ALARM". <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant verifies at least one of the alarms is lit.</div> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 12</u> 7. b. Ensure the following valves - OPEN:</p> <ul style="list-style-type: none"> • 1NV-252A (NV Pumps Suct From FWST) • 1NV-253B (NV Pumps Suct From FWST). <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant verifies the red OPEN lights are lit for 1NV-252A and 1NV-253B on 1MC-10.</div> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 13</u> 7. c. Ensure the following valves - CLOSED:</p> <ul style="list-style-type: none"> 1NV-188A (VCT Otlt Isol) 1NV-189B (VCT Otlt Isol). <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant verifies that the green CLSD lights are lit for 1NV-188A and 1NV-189B on 1MC-10.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 14</u> 7. d. Verify NV pump - ON.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that no NV pumps are on and proceeds to the RNO.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15</u> 7. d. RNO d. Perform the following:</p> <p style="margin-left: 100px;">1) <u>IF</u> NV pump 1A <u>AND</u> 1B boration flowpath <u>NOT</u> available, <u>THEN GO TO</u> Enclosure 1 (NI or ND Pump Boron Injection Alignment).</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant proceeds to Enclosure 1.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p style="text-align: center;">Enclosure 1</p> <p><u>STEP 16</u> 1. Align NC system boration flowpath as follows:</p> <p style="padding-left: 40px;">a. <u>IF</u> establishing NC system boration, <u>THEN GO TO</u> Step 2.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding-left: 40px;">Applicant proceeds to step 2.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 17</u> 2. Initiate NC system boration flow as required using at least one of the following boration flowpaths.</p> <ul style="list-style-type: none"> • <u>IF</u> NI Pump 1A aligned to provide boron injection flowpath, <u>THEN</u> perform the following to establish NI Pump 1A injection flow: <ul style="list-style-type: none"> a. Ensure 1NI-118A (NI Pump 1A C-Leg Inj Isol) - OPEN. <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding-left: 40px;">Applicant verifies that the red OPEN light is lit for 1NI-118A on 1MC-11</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 18</u> b. START NI Pump 1A.</p> <p><u>STANDARD:</u></p> <p>Applicant depresses the red ON pushbutton for NI PMP 1A.</p> <p>This step is critical to initiate NC system boration flow.</p> <p>NOTE TO EXAMINER: No other flow paths will be aligned.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 19</u> 3. <u>WHEN</u> NC system boration no longer required, <u>THEN</u> perform Step 5.</p> <p><u>STANDARD:</u></p> <p>Applicant acknowledges step.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 20</u> 4. <u>GO TO</u> Case II (Boron Dilution While Shutdown), Step 9.</p> <p><u>STANDARD:</u></p> <p>Applicant proceeds to Case II, Step 9.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>NOTE</u> A time delay of up to 3-5 minutes can be expected before indication of negative reactivity insertion is obtained on excore instrumentation.</p> <p><u>STEP 21</u> 9. Verify neutron flux level - STABLE OR DECREASING.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant reads the step.</p> <p>Examiner Cue: “Another operator will complete the procedure.”</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
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INITIAL CONDITIONS:

Unit 1 is in MODE 5

Unit 1 RMWST is aligned for VCT makeup.

INITIATING CUES:

- **A boron dilution event is in progress, you have been instructed to perform AP/1/A/5500013 (Boron Dilution), Case II (Boron Dilution While Shutdown).**

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EVALUATION SHEET

Task: Transfer the Emergency Core Coolant System to the Cold Leg Recirculation

Alternate Path: Yes

Facility JPM #: NI-088

Safety Function: 2 **Title:** Emergency Core Cooling System (ECCS)

K/A 006 A4.07 Ability to manually operate and/or monitor in the control room: ECCS pumps and valves.

Rating(s): 4.4 / 4.4 **CFR:** 41.7 / 45.5 to 45.8

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation)

Task Standard: EP/1/A/5000/ES-1.3 Transfer to Cold Leg Recirculation) step 6 is performed and the 1A and 1B NV (Chemical Volume and Control System) and NI (Safety Injection System) pumps are secured.

Validation Time: 15 minutes **Time Critical:** Yes _____ No X

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Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

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COMMENTS

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #169
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event
	VLV-NI037F (NI184B CNMT SUMP LINE 1B ISOL (STEM) FAIL TO POSITION)	0				
	MAL-NC013A (NC COLD LEG A LEAK)	27.5				
	VLV-ND005F (ND28A ND HX A OUTLET TO CHARG AB FAIL TO POSITION.	0				

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INITIAL CONDITIONS:

- A LOCA has occurred on Unit 1.

INITIATING CUES:

- 1AD-9, E/8 'FWST LO-LO LEVEL' annunciator is lit and the Control Room Supervisor instructs you, as the BOP, to transfer to Cold Leg Recirculation using EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation) step 6.

EXAMINER NOTE: After reading the cue, provide the applicant with a copy of EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation) complete through step 8 with step 6 flagged.

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 6. WHEN FWST level decreases to 5% (1AD-9, E/8 "FWST LO-LO LEVEL"), THEN align NV and NI Systems for recirc as follows:</p> <p style="padding-left: 40px;">a. Ensure Enclosure 1 (Foldout Page) is monitored.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant reads the step.</p> <p style="background-color: yellow; padding: 5px;">Examiner Cue: The OATC will monitor Enclosure 1</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>NOTE</u> CSF should not be implemented until directed by this procedure.</p> <p><u>STEP 2</u> b. Verify at least one of the following annunciators - LIT:</p> <ul style="list-style-type: none"> • 1AD-20, B/2 "CONT. SUMP LEVEL >2.5 ft" <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • 1AD-21, B/2 "CONT. SUMP LEVEL >2.5 ft". <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant determines that one or both annunciators are lit.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 3</u> c. Verify both ND pumps - ON.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that only 1 ND pump is running and transitions to the RNO</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4</u> 6.c. RNO c. Perform the following:</p> <p style="margin-left: 100px;">1) <u>IF</u> 1NI-185A (ND Pump 1A Cont Sump Suct) is open, <u>THEN</u> start ND pump 1A.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that ND PUMP 1A is on by verifying the red ON light is lit on 1MC-11.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 2) <u>IF</u> 1NI-184B (ND Pump 1B Cont Sump Suct) is open, <u>THEN</u> start ND pump 1B.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that 1NI-184B is not open by verifying the green CLSD light is lit on 1MC-11 and determines that the step is not applicable.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 6</u> 3) <u>IF</u> any ND pump running with suction aligned to sump, <u>THEN GO TO</u> Step 6.d.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant determines that ND Pump 1A is running with suction aligned to the sump and proceeds to step 6.d.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7</u> 6. d. Ensure the following valves - CLOSED:</p> <ul style="list-style-type: none"> • 1ND-32A (ND Train 1A Hot Leg Inj Isol) • 1ND-65B (ND Train 1B Hot Leg Inj Isol). <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant depresses the green CLOSE pushbuttons for 1ND-32A and 1ND-65B on 1MC-11.</p> <p>This step is critical to prevent pump run out should only one ND pump be running.</p> <p>Examiner NOTE: Only one of the valves need to be closed to satisfy the critical step since the valves are in series.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 8</u> 6. e. Isolate NI Pump Miniflow as follows:</p> <p style="padding-left: 40px;">1) Verify NC pressure - LESS THAN 1620 PSIG.</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that NC (Reactor Coolant System) pressure is less than 1620 psig.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 9</u> 2) Ensure the following valves - CLOSED:</p> <ul style="list-style-type: none"> • 1NI-115A (NI Pump 1A Miniflow Isol) • 1NI-144A (NI Pump 1B Miniflow Isol). <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that the green CLSD lights are lit for 1NI-115A and 1NI-144A on 1MC-11.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 10</u> 3) Ensure "PWR DISCON FOR 1NI-147B" switch in "ENABLE".</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that the "PWR DISCON FOR 1NI-147B" is in "ENABLE" on 1MC-11.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 11</u> 4) Ensure 1NI-147B (NI Miniflow Hdr To FWST Isol) - CLOSED.</p> <p><u>STANDARD:</u></p> <p>Applicant determines that the green CLSD light is lit for 1NI-147B on 1MC-11.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12</u> 6. f. Verify at least one of the following NV pumps miniflow valves - CLOSED:</p> <ul style="list-style-type: none"> • 1NV-203A (NV Pumps A&B Recirc Isol) <p>OR</p> <ul style="list-style-type: none"> • 1NV-202B (NV Pmps A&B Recirc Isol). <p><u>STANDARD:</u></p> <p>Applicant determines that the green CLSD lights is lit for 1NV-203A or 1NV-202B on 1MC-10.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13</u> g. Ensure 1NI-334B (NI Pump Suct X-Over From ND) - OPEN.</p> <p><u>STANDARD:</u></p> <p>Applicant determines the red OPEN light is lit for 1NI-334B on 1MC-11.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 14</u> h. OPEN the following valves:</p> <ul style="list-style-type: none"> • 1NI-332A (NI Pump Suct X-Over From ND) • 1NI-333B (NI Pump Suct From ND). <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant depresses the red OPEN pushbuttons for 1NI-332A and 1NI-333B on 1MC-11.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15</u> i. Align ND discharge to suction of NI and NV pumps as follows:</p> <p>1) OPEN 1ND-28A (ND Supply To NV & 1A NI Pmps).</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant depresses the red OPEN pushbutton for 1ND-28A on 1MC-11 and determines that the valve will not open and continues.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 16</u> 2) OPEN 1NI-136B (ND Supply To NI Pump 1B).</p> <p><u>STANDARD:</u></p> <p>Applicant depresses the red OPEN pushbutton for 1NI-136B on 1MC-11, determines that the valve will not open and proceeds to the next step.</p> <p>Examiner NOTE: 1NI-136B will not open due to an interlock with 1NI-184B</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 17</u> j. Verify at least one ND train aligned to provide suction to NV and NI as follows:</p> <ul style="list-style-type: none"> • <u>A Train:</u> <ul style="list-style-type: none"> • 1A ND pump running • 1ND-28A (ND Supply To NV & 1A NI Pmps) - OPEN. <p><u>STANDARD:</u></p> <p>Applicant determines no train can be aligned to provide suction to NV and NI and proceeds to the RNO.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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JPM B
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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 18</u> 6.j. RNO j. Perform the following:</p> <p style="padding-left: 100px;">1) <u>IF</u> either valve is in intermediate position, <u>THEN</u> allow 20 seconds for valve to open.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 19</u> 2) <u>IF</u> either valve is open <u>AND</u> its associated ND pump on, <u>THEN GO TO</u> Step 6.k.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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JPM B

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 20</u> 3) <u>IF</u> both A train and B train unavailable, <u>THEN</u> trip all NV and NI pumps.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant determines both A train and B train are unavailable and depresses the green OFF pushbuttons for NV PMP 1A, NV PUMP 1B, NI PMP 1A and NI PUMP 1A.</p> <p>This step is critical to protect the NV and NI pumps from damage from loss of suction and allow them to be available later when the FWST has been refilled.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 21</u> k. Isolate FWST from NV and NI pumps as follows:</p> <p>1) Place "PWR DISCON FOR 1NI-100B" switch in "ENABLE".</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant places the switch for "PWR DISCON FOR 1NI-100B" in the ENABLE position.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 22</u> 2) CLOSE 1NI-100B (NI Pmps Suct From FWST).</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant depresses the green CLOSE pushbutton for 1NI-100B on 1MC-11.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 23</u> 3) CLOSE the following valves:</p> <ul style="list-style-type: none"> 1NV-252A (NV Pumps Suct From FWST) 1NV-253B (NV Pumps Suct From FWST). <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant depresses the green CLOSE pushbuttons for 1NV-252A and 1NV-253B on 1MC-10.</div> <p><u>COMMENTS:</u></p> <p style="text-align: center; margin-top: 20px;">END OF TASK</p>	<p>___ SAT</p> <p>___ UNSAT</p>
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STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
May 2014 NRC Initial License Exam
JPM B

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- A LOCA has occurred on Unit 1.

INITIATING CUES:

- 1AD-9, E/8 'FWST LO-LO LEVEL' annunciator is lit and the Control Room Supervisor instructs you, as the BOP, to transfer to Cold Leg Recirculation using EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation) step 6.

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System JPM C

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JPM C
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EVALUATION SHEET

Task: Perform PT/1/A/4200/023B (NC PORV and Air Supply Stroke Test), Enclosure 13.4 (NC PORV Cycle)

Alternate Path: No

Facility JPM #: New

Safety Function: 3 **Title:** Pressurizer Pressure Control

K/A 010 A4.03 Ability to manually operate and/or monitor in the control room: PORV and block valves

Rating(s): 4.0 / 3.8 **CFR:** 41.5 / 43.5 / 45.3 / 45.13

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: PT/1/A/4200/023B (NC PORV and Air Supply Stroke Test), Enclosure 13.4 (NC PORV Cycle) rev. 017

Task Standard: Enclosure 13.4 successfully completed for 1NC-32B (PZR PORV) and the associated valves are returned to the as found position.

Validation Time: 7 minutes **Time Critical:** Yes _____ No X

=====

Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

Catawba Nuclear Station
JPM C
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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #170
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event

**Catawba Nuclear Station
JPM C
May 2014 NRC Initial License Exam**

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 is in MODE 3.

INITIATING CUES:

- The Control Room Supervisor instructs you to perform PT/1/A/4200/023B, Enclosure 13.4 for 1NC-32B.

EXAMINER NOTE: After reading cue, provide the applicant with a copy of PT/1/A/4200/023B, Enclosure 13.4.

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 1.1 IF testing 1NC-32B (Pzr PORV), perform the following:</p> <p style="padding-left: 40px;">1.1.1 Record the as found position of 1NC-31B (Pzr PORV Isol) below:</p> <p style="padding-left: 80px;">_____</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant records OPEN as the as found position.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>STEP 2</u> 1.1.2 Ensure 1NC-31B (Pzr PORV Isol) is closed.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant places the switch for 1NC-31B to the CLOSE or OVERRIDE position.</div> <p>This step is critical to prevent a pressure transient when 1NC-32B is opened.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
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Catawba Nuclear Station

JPM C

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 3</u> 1.1.3 Record the as found position of 1NC-32B (Pzr PORV) below: <div style="text-align: center; margin-top: 10px;">_____</div></p> <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant records CLOSED as the as found position for 1NC-32B</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4</u> 1.1.4 Circle below the as found switch position of 1NC-32B (Pzr PORV). <div style="text-align: center; margin-top: 10px;">Close Open Auto</div></p> <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant circles Auto as the as found switch position of 1NC-32B.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 1.1.5 Ensure 1NC-32B (Pzr PORV) is closed.</p> <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant determines that 1NC-32B is closed.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

Catawba Nuclear Station

JPM C

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 6</u> 1.1.6 Cycle 1NC-32B (Pzr PORV) from closed to open to closed from the control room.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant places the switch for 1NC-32B to the OPEN position and then to the AUTO or CLOSE position.</p> <p>This step is critical to cycle 1NC-32B.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7</u> 1.1.7 Return 1NC-32B (Pzr PORV) to the as found position, as recorded in Step 1.1.3 of this enclosure.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant determines that 1NC-32B is in the as found position as recorded in step 1.1.3.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8</u> 1.1.8 Return switch for 1NC-32B (Pzr PORV) to the as found position, as recorded in Step 1.1.4 of this enclosure.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant places the switch for 1NC-32B to the AUTO position.</p> <p>This step is critical to return the switch for 1NC-32B to the as found position.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD		SAT/UNSAT
<div><div><div>STEP 9</div><div>1.1.9 Return 1NC-31B (Pzr PORV Isol) to the as found position, as recorded in Step 1.1.1 of this enclosure.</div></div><div><div>STANDARD:</div><div>Applicant places the switch for 1NC-31B to the OPEN position.</div><div>This step is critical to return 1NC-31B to the as found position and make 1NC-32B available for pressure relief.</div><div>COMMENTS:</div><div>END OF TASK</div></div></div> <div><div>CRITICAL STEP</div><div><div>___ SAT</div><div>___ UNSAT</div></div></div>		

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
2014 NRC Initial License Exam
JPM C

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 is in MODE 3.

INITIATING CUES:

- The Control Room Supervisor instructs you to perform PT/1/A/4200/023B, Enclosure 13.4 for 1NC-32B.

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JPM D
May 2014 NRC Initial License Exam**

System JPM D

Catawba Nuclear Station
JPM D
May 2014 NRC Initial License Exam

EVALUATION SHEET

Task: Start Reactor Coolant Pump 1B

Alternate Path: Yes

Facility JPM #: NCP081 (modified)

Safety Function: 4P **Title:** Reactor Coolant Pump System

K/A 003 A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS control including: RCP vibration.

Rating(s): 2.9 / 2.9 **CFR:** 41.5 / 45.5

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: OP/1/A/6150/002A (Reactor Coolant Pump) rev. 068

Task Standard: 1B Reactor Coolant Pump is tripped when vibration is noted to be greater than NC pump trip criteria.

Validation Time: 20 minutes **Time Critical:** Yes _____ No X

=====

Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

Catawba Nuclear Station
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1. Reset to any 100% power IC set.
2. Manually trip the reactor at 1MC-1.
3. Trip all (4) four NCP breakers at 1MC-10.
4. Place CF pump in service for auto S/G level control and secure CA.
5. Insert MAL-NCP005FXB (NCP VIB B MOUNT HORIZ FAILURE) Initial =0 Ramp =240 Value=10, EVENT =1, Delay = 5
6. Insert MAL-NCP005FYB (NCP VIB B MOUNT VERT FAILURE) Initial =0 Ramp =240 Value=10, EVENT =1, Delay = 5
7. Insert MAL-NCP005SXB (NCP VIB B MOUNT HORIZ FAILURE) Initial =0 Ramp =120 Value=30, EVENT =1, Delay = 5
8. Insert MAL-NCP005SYB (NCP VIB B MOUNT VERT FAILURE) Initial =0 Ramp =120 Value=30, EVENT =1, Delay = 5
9. Insert EVENT 1 = x10d185M >400 (NCP B AMPS>400)
10. Freeze simulator and write to a snap.

IC SELECTED:

SIMULATOR OPERATOR INSTRUCTIONS:

ENSURE BENTLEY NEVADA VIBRATION MONITORS ON BACK BOARD ARE RESET AND THAT ALARMS 1AD-6 A/5 AND B/5 ARE CLEARED BETWEEN STUDENTS.

Catawba Nuclear Station

JPM D

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #171
3. Enter the password.
4. Select “Yes” on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE “Extra Operator” is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event
	MAL-NCP005FXB (NCP VIB 1B MOUNT HORZ FAILURE)	10	5	4 MIN		1
	MAL-NCP005FYB (NCP VIB 1B MOUNT VERT FAILURE)	10	5	4 MIN		1
	MAL-NCP005SXB (NCP VIB 1B SHAFT HORZ FAILURE)	30	5	2 MIN		1
	MAL-NCP005SYB (NCP VIB 1B SHAFT VERT FAILURE)	30	5	2 MIN		1
	Ensure EVENT 1 = x10d185m>400 (NCP B AMPS > 400)					

**Catawba Nuclear Station
JPM D
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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

EP/1/A/5000/ES-0.2, Natural Circulation Cooldown has been implemented following a Reactor Trip caused by a lightning strike in the switchyard. Normal power has been restored.

INITIATING CUES:

Start NC Pump 1B by completing OP/1/A/6150/002A, NC Pump Operation Enclosure 4.1 beginning at Step 3.14.

EXAMINER NOTE: After reading cue, provide the applicant with a copy of OP/1/A/6150/002A (Reactor Coolant Pump Operation), Enclosure 4.1 (Startup and Operation of the NC Pumps) signed off up to Step 3.14.

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1</u> 3.14 Two minutes prior to starting NC pump, start one oil lift pump for NCP to be started by pressing the "ON" pushbutton for:</p> <ul style="list-style-type: none"> • "NC PUMP OIL LIFT PUMP B1" • "NC PUMP OIL LIFT PUMP B2" <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant depresses the red ON pushbutton for NC PMP OIL LIFT PMP B1 or B2 approximately two minutes prior to starting the 1B NC Pump.</p> <p>This step is critical to lift and lubricate the pump so that it can be started.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
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JPM D

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STEP/STANDARD	SAT/UNSAT
<p>NOTE: 1. If NC pump is <u>NOT</u> started, the oil lift pump shall be secured to minimize stress on oil nozzles.</p> <p>2. The Degraded Bus Voltage Relays (27N) may actuate on the essential bus being supplied by the 6.9KV Switchgear associated with the NC Pump to be started in the following step. The alarm condition is expected to clear within 36 seconds.{PIP 95-0287}</p> <p>STEP 2 3.15 Start desired NC pump by pressing the "ON" pushbutton for: (R.M.)</p> <ul style="list-style-type: none"> • "NC PUMP 1B" <p>STANDARD:</p> <div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p>Applicant depresses the red ON pushbutton for NC PMP 1B. Once Hi Hi vibration is verified, the pump should be tripped.</p> </div> <p>This step is critical to start the 1B NC Pump and then trip the pump upon verification of Hi Hi Vibration to protect the pump from further damage.</p> <p>NOTE TO EXAMINER: Approximately 5 seconds after the NCP is started, the Hi Hi Vibration alarm will come in. The shaft vibration will reach 20 mils prior to reaching 5 on the mount. Per the annunciator response, the pump should be tripped at >20 mils in Modes 1 and 2, but not until >30 mils in Mode 3 (current condition). At 5 mils on the mount, the pump is tripped regardless of mode. 5 mils on the mount will occur before 30 mils on the shaft.</p> <p>EXAMINER CUE: <u>AFTER</u> the pump is tripped: "The CRS has pulled AP/1/A/5500/004 (Loss of Reactor Coolant Pump) and is ready to proceed."</p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
2014 NRC Initial License Exam
JPM D

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

EP/1/A/5000/ES-0.2, Natural Circulation Cooldown has been implemented following a Reactor Trip caused by a lightning strike in the switchyard. Normal power has been restored.

INITIATING CUES:

Start NC Pump 1B by completing OP/1/A/6150/002A, NC Pump Operation Enclosure 4.1 beginning at Step 3.14.

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System JPM E

Catawba Nuclear Station
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EVALUATION SHEET

Task: Synchronize the Generator to the Grid

Alternate Path: Yes

Facility JPM #: NEW

Safety Function: 4S **Title:** Main and Reheat Steam System (MRSS)

K/A 045 A4.02 Ability to manually operate and/or monitor in the control room: T/G controls, including breakers

Rating(s): 2.7 / 2.6 **CFR:** 41.7 / 45.5 to 45.8

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: OP/1/B/6300/001 (Turbine Generator) rev. 099

Task Standard: Synchronizes the generator to the grid and pick up load.

Validation Time: 15 minutes **Time Critical:** Yes _____ No X

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Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

Catawba Nuclear Station

JPM E

May 2014 NRC Initial License Exam

SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #172
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event
	OVR-EP006B (GEN BKR 1B TRIP ENABLE PB)	ON				2
	OVR-EP006C (GEN BKR 1B TRIP PB)	ON				2
	OVR-EP007B (GEN BKR 1A TRIP ENABLE PB)	ON				4
	OVR-EP007C (GEN BKR 1A TRIP PB)	ON				4
	Ensure EVENT 2 = x01i120a & !x01i148e					
	Ensure EVENT 4 = x01i120b & !x01i147e					

**Catawba Nuclear Station
JPM E
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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is in MODE 1 at 14% power.
- Turbine Generator startup is in progress per OP/1/B/6300/001 (Turbine Generator) Enclosure 4.1 (Turbine Generator Startup).

INITIATING CUES:

The CRS has instructed you synchronize the generator to the grid in auto and pick up load starting at Step 3.62. Peer Checks have been waived.

EXAMINER NOTE: After reading cue, provide the applicant with a copy of OP/1/B/6300/001 (Turbine Generator) Enclosure 4.1 (Turbine Generator Startup).

Catawba Nuclear Station

JPM E

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 3.62 Synchronize the Generator to the grid as follows:</p> <p style="padding-left: 40px;">3.62.1 Prior to placing the turbine generator on line, ensure Rx power is between 13% and 15% power.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px; margin-left: 40px;">Applicant determines Rx power is approximately 14%.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>STEP 2</u> 3.62.2 Announce the following over the plant page:</p> <p style="padding-left: 40px;">"Placing Unit 1 Main Turbine on line, please clear the Transformer Yard".</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px; margin-left: 40px;">Applicant makes an announcement using the beige phone on 1MC-1</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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STEP/STANDARD	SAT/UNSAT
<p>NOTE: If "MAN/AUTO REG" (1MC1) indicates "MAN", Manual sync of Generator is required.</p> <p><u>STEP 3</u> 3.62.3 IF Auto sync of the Generator is desired, perform the following:</p> <p style="padding-left: 100px;">3.62.3.1 Verify "MAN/AUTO REG" in "AUTO" (1MC1).</p> <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;"> Applicant determines auto sync of the generator is desired per the initiating cue and determines that the AUTO light for MAN/AUTO REG is LIT </div> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p>NOTE: 1. When "GEN SYNC SELECT" switch is turned to "AUTO 1A" or "AUTO 1B", the AVR Auto Sync Relay automatically adjusts Terminal voltage and Turbine speed and closes the selected breaker.</p> <p>2. The following will occur when the Generator Breaker closes:</p> <ul style="list-style-type: none"> • 6-7 MWe is picked up. • A Target of 60 MWe is automatically input. • A Load Rate of 12 MW/MIN is automatically input. • The MW feedback loop is placed in service. • The turbine is placed in "HOLD". <p><u>STEP 4</u> 3.62.3.2 Turn "GEN SYNC SELECT" switch (1MC1) to "AUTO 1A" or "AUTO 1B" position.</p> <p><u>STANDARD:</u></p> <p>Applicant places the GEN SYNC SELECT switch to either the AUTO 1A or AUTO 1B position.</p> <p>EXAMINER NOTE: The first breaker selected will fail to close.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 3.62.3.3 IF the selected Generator Breaker did NOT close, perform the following:</p> <p>A. Depress "Auto Sync Enable" on Turbine Control panel.</p> <p><u>STANDARD:</u></p> <p>Applicant depresses the "Auto Sync Enable" button on the Turbine Control Panel.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD		SAT/UNSAT
<p><u>STEP 6</u></p> <p>B. <u>IF</u> selected Generator Breaker fails to close within 5 minutes, perform Steps 3.62.3.2 - 3.62.3.3 for opposite breaker.</p> <p><u>STANDARD:</u></p> <p>Applicant determines that the generator breaker failed to close and returns to step 3.62.3.2 for the opposite breaker.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7</u></p> <p>3.62.3.2 Turn "GEN SYNC SELECT" switch (1MC1) to "AUTO 1A" or "AUTO 1B" position.</p> <p><u>STANDARD:</u></p> <p>Applicant places the GEN SYNC SELECT switch to the opposite position than was selected the first time.</p> <p>This step is critical to close a generator breaker and synchronize the generator grid.</p> <p><u>COMMENTS:</u></p>		<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8</u></p> <p>3.62.3.3 <u>IF</u> the selected Generator Breaker did <u>NOT</u> close, perform the following:</p> <p><u>STANDARD:</u></p> <p>Applicant determines the step does not apply this time.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD		SAT/UNSAT
<p><u>STEP 9</u> 3.62.3.4 Return "GEN SYNC SELECT" switch to the "MAN" position.</p> <p><u>STANDARD:</u></p> <p>Applicant places the GEN SYNC SELECT switch to the MAN position.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10</u> 3.62.4 IF Manual sync of Generator is desired, perform the following:</p> <p><u>STANDARD:</u></p> <p>Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11</u> 3.62.5 After Generator Breaker 1A (or 1B) has closed, verify the following:</p> <p>3.62.5.1 A Target of 60 MWe.</p> <p>3.62.5.2 A Load Rate of 12 MW/Min.</p> <p><u>STANDARD:</u></p> <p>Applicant verifies a target of 60 MWe and a Load Rate of 12MW/Min is present on the Turbine Control Panel or the Turbine Graphic.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 12</u> 3.62.6 Select "GO" to pick up load.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant depresses the "GO" button on the Turbine Control Panel.</p> <p>This step is critical allow the turbine generator control system to throttle open the control valves to pick up load.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13</u> 3.62.7 WHILE continuing with the power increase, but before 50% power, place other Generator Breaker in service as follows:</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant reads the step.</p> <p>EXAMINER CUE: "Another operator will place the other breaker in service."</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
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JPM E

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is in MODE 1 at 14% power.
- Turbine Generator startup is in progress per OP/1/B/6300/001 (Turbine Generator) Enclosure 4.1 (Turbine Generator Startup).

INITIATING CUES:

The CRS has instructed you synchronize the generator to the grid in auto and pick up load starting at Step 3.62. Peer Checks have been waived.

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System JPM F

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EVALUATION SHEET

Task: Restoration of Offsite Power

Alternate Path: No

Facility JPM #: New

Safety Function: 6 **Title:** A.C. Electrical Distribution

K/A 062 A4.01 Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard).

Rating(s): 3.3 / 3.1 **CFR:** 41.7 / 45.5 to 45.8

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: AP/1/A/5500/007 (Loss of Normal Power), Enclosure 4 (Restoration of Offsite Power) rev. 071

Task Standard: All 6.9 KV busses energized.

Validation Time: 15 minutes **Time Critical:** Yes _____ No X

=====

Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #173
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event
	OVR-CM024A (HW PMP 1A SEL SW OFF LT)	ON				1
	OVR-CM024B (HW PMP 1A SEL SW ON LT)	OFF				1
	OVR-CM025A (HW PMP 1B SEL SW OFF LT)	ON	20 SEC			1
	OVR-CM025B (HW PMP 1B SEL SW ON LT)	OFF	20 SEC			1
	OVR-CM026A (HW PMP 1C SEL SW OFF LT)	ON	1 MIN			1
	OVR-CM026B (HW PMP 1C SEL SW ON LT)	OFF	1 MIN			1
	OVR-EP023B (PCB 15 TRIP TRIP PB)	ON				
	OVR-CM024A (HW PMP 1A SEL SW OFF LT)	ON			1 SEC	4
	OVR-CM024B (HW PMP 1A SEL SW ON LT)	OFF			1SEC	4
	OVR-CM025A (HW PMP 1B SEL SW OFF LT)	ON			1SEC	6
	OVR-CM025B (HW PMP 1B SEL SW ON LT)	OFF			1SEC	6
	OVR-CM026A (HW PMP 1C SEL SW OFF LT)	ON			1SEC	8
	OVR-CM026B (HW PMP 1C SEL SW ON LT)	OFF			1SEC	8
	Ensure EVENT 4 = x11o063r (7KV 1TA FDR FRM 1T2A CLSD Light)					
	Ensure EVENT 6 = x11o147r (7KV 1TB FDR FRM 1T2A CLSD Light)					
	Ensure EVENT 8 = x11o345r (7KV 1TD FDR FRM 1T1A CLSD Light)					

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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is recovering from a Loss of Offsite Power Event.
- The TCC has informed the Control Room that the electrical grid has remained energized and adequate switchyard voltage and grid reliability is available to re-energize 6.9 KV busses with motor breakers open.
- The status of all 6.9 KV bus lockout relays has been determined.
- Power restoration has been approved by station management.

INITIATING CUES:

The SRO instructs you restore offsite power to the 6.9 KV busses per AP/1/A/5500/007 (Loss of Normal Power), Enclosure 4 (Restoration of Offsite Power).

EXAMINER NOTE: After reading cue, provide the applicant with a copy of AP/1/A/5500/007 (Loss of Normal Power), Enclosure 4 (Restoration of Offsite Power).

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 1. Verify both turbine generator breakers - OPEN.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant determines that the green OPEN lights are lit for GEN BKR 1B and GEN BKR 1A on 1MC-11, 1MC-1, or via the OAC.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>NOTE</u> If loss of grid has occurred, then it may take 6-8 hours to restore power to CNS switchyard.</p> <p><u>STEP 2</u> 2. Verify with TCC - ELECTRICAL GRID HAS REMAINED ENERGIZED.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant determines that the electrical grid has remained energized per the initiating cue.</p> <p>BOOTH OPERATOR CUE: IF TCC is contacted, "The electrical grid has remained energized."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 3</u> 3. Verify switchyard - ENERGIZED.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that the switchyard is energized via the OAC.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4</u> 4. Ensure both main transformer's MODs - CLOSED.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that red CLSD lights are lit for MOD 1A and MOD 1B on 1MC-11, or that the MODs are closed via the OAC</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 5. Verify with TCC that adequate switchyard voltage and grid reliability available to re-energize affected 6.9 KV busses with motor breakers open.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines that switchyard voltage and grid reliability is available per the initiating cue.</div> <p>BOOTH OPERATOR CUE: IF TCC is contacted, "Adequate switchyard voltage and grid reliability is available."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 6</u> 6. Place switches for the following pumps in "OFF" position:</p> <ul style="list-style-type: none"> • All de-energized KR pumps • All de-energized hotwell pumps • All de-energized condensate booster pumps. <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant places the switches for HTWL PUMP 1A, 1B, 1C, and CM BSTR PUMP 1A, 1B, and 1C to the OFF position. Applicant also depresses the green OFF pushbutton for KR PUMP A and KR PUMP B.</p> <p>This step is critical to NOT depress the green OFF pushbutton for KR PUMP B, which is powered from Unit 2, allowing KR Pump B to supply cooling water to Unit 2 loads.</p> <p>NOTE TO EXAMINER: KR is the Recirculated Cooling Water System.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7</u> 7. Dispatch operator to ensure breakers for all motor loads on all de-energized 6.9 KV busses open. REFER TO Enclosure 22 (Local Load Shed of 6.9 KV Busses).</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant dispatches an operator by calling the simulator booth operator.</p> <p>NOTE TO BOOTH OPERATOR: <u>WHEN</u> notified to dispatch operator, <u>REPEAT</u> back the information and <u>THEN</u> INSERT EVENT 1.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 8</u> 8. Do not continue in this procedure until the following are satisfied:</p> <ul style="list-style-type: none"> • Status of 6.9 KV bus lockout relays are determined • Station management has approved power restoration. • Enclosure 22 (Local Load Shed of 6.9 KV Busses) is complete. <p><u>STANDARD:</u></p> <p>Applicant determines that lockout relay status is determined and that station management has approved power restoration per the initial conditions, however, does not continue until contacted by the Booth Operator that Enclosure 22 is complete.</p> <p>NOTE TO BOOTH OPERATOR: <u>AFTER</u> items triggered from EVENT 1 have timed out, <u>CALL</u> the Control Room and <u>INFORM</u> the applicant that Enclosure 22 is complete</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9</u> 9. Notify TCC prior to re-energizing affected 6.9 KV busses.</p> <p><u>STANDARD:</u></p> <p>Applicant calls the Booth Operator to notify the TCC.</p> <p>NOTE TO BOOTH OPERATOR: <u>WHEN</u> notified about re-energizing the 6.9 KV busses, <u>REPEAT</u> back the information.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>NOTE</u> Zone A or B lockout will occur if at least one main transformer cooling circuit is not restored within 15 minutes of re-energizing main transformer.</p> <p><u>STEP 10</u> 10. Energize 6.9 KV busses as follows:</p> <p style="padding-left: 40px;">a. Announce "Energizing Unit 1 main power. All personnel stand clear."</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant makes a plant page via the grey phone on 1MC-1.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 11</u> b. Close at least one of the following PCBs:</p> <ul style="list-style-type: none"> • PCB 15 • PCB 18. <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant depresses the red CLOSE pushbuttons for PCB 15 CLOSE and PCB 18 CLOSE on 1 MC-11.</p> <p>NOTE TO EVALUATOR: PCB 15 will not close.</p> <p>This step is critical to align power the 1A Main Transformer from offsite.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 12</u></p> <p>c. <u>IF</u> "TRANSF 1A" energized, <u>THEN</u> perform the following for each affected 6.9 KV bus:</p> <ul style="list-style-type: none"> • 1TD: <ul style="list-style-type: none"> 1) Place "7KV BUS 1TD MODE SEL" switch in "MAN A & TIE". 2) Close "7KV 1TD FDR FRM 1T1A". <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px;"> Applicant places the switch for 7KV BUS 1TD MODE SEL in the MAN A & TIE position as depresses the red CLOSE pushbutton for 7KV 1TD FDR FRM 1T1A. </div> <p>This step is critical to energize 1TD.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13</u></p> <ul style="list-style-type: none"> • 1TC: <ul style="list-style-type: none"> 1) Place "7KV BUS 1TC MODE SEL" switch in "MAN A & TIE". 2) Close "7KV 1TC FDR FRM 1T1A". <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px;"> Applicant places the switch for 7KV BUS 1TC MODE SEL in the MAN A & TIE position as depresses the red CLOSE pushbutton for 7KV 1TC FDR FRM 1T1A. </div> <p>This step is critical to energize 1TC.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 14</u></p> <ul style="list-style-type: none"> • 1TB: <ol style="list-style-type: none"> 1) Place "7KV BUS 1TB MODE SEL" switch in "MAN A & TIE". 2) Close "7KV 1TB FDR FRM 1T2A". <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;"> Applicant places the switch for 7KV BUS 1TB MODE SEL in the MAN A & TIE position as depresses the red CLOSE pushbutton for 7KV 1TB FDR FRM 1T2A. </div> <p>This step is critical to energize 1TB.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15</u></p> <ul style="list-style-type: none"> • 1TA: <ol style="list-style-type: none"> 1) Place "7KV BUS 1TA MODE SEL" switch in "MAN A & TIE". 2) Close "7KV 1TA FDR FRM 1T2A". <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;"> Applicant places the switch for 7KV BUS 1TA MODE SEL in the MAN A & TIE position as depresses the red CLOSE pushbutton for 7KV 1TA FDR FRM 1T2A. </div> <p>This step is critical to energize 1TA.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 16</u> d. <u>IF</u> "TRANSF 1B" energized, <u>THEN</u> perform the following for each affected 6.9 KV bus:</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 17</u> e. <u>IF</u> "TRANSF 1A" <u>AND</u> "TRANSF 1B" are energized, <u>THEN</u> place mode select switch for all 6.9KV busses in auto position.</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 18</u> f. Verify all 6.9 KV switchgear - ENERGIZED.</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that all 6.9 KV switchgear is energized via voltage gauges on 1MC-11 or via the OAC electrical graphic.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 19</u> 11. <u>RETURN TO</u> step in effect.</p> <p><u>STANDARD:</u></p> <p>Applicant reads the step.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
2014 NRC Initial License Exam
JPM F

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- **Unit 1 is recovering from a Loss of Offsite Power Event.**
- **The TCC has informed the Control Room that the electrical grid has remained energized and adequate switchyard voltage and grid reliability is available to re-energize 6.9 KV busses with motor breakers open.**
- **The status of all 6.9 KV bus lockout relays has been determined.**

INITIATING CUES:

The SRO instructs you restore offsite power to the 6.9 KV busses per AP/1/A/5500/007 (Loss of Normal Power), Enclosure 4 (Restoration of Offsite Power).

**Catawba Nuclear Station
JPM G
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System JPM G

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC 175
3. Enter the password.
4. Select “Yes” on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE “Extra Operator” is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event

**Catawba Nuclear Station
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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 is in MODE 1.

INITIATING CUES:

- The Control Room Supervisor has instructed you to shift Lower Containment Vent Units by stopping the 1A LCVU and starting the 1B LCVU.
- Steps 3.1 and 3.3 were marked N/A during the pre-job brief.
- Peer check has been waived.

EXAMINER NOTE: After reading cue, provide the applicant with a copy of OP/1/A/6450/001 Containment Ventilation (VV) Systems, Enclosure 4.13.

Catawba Nuclear Station

JPM G

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 3.2 IF three LCVUs are operating AND it is desired, shift the operating units as follows:</p> <p style="padding-left: 40px;">3.2.1 IF the LCVUs are operating in "LOW" speed, perform the following:</p> <p style="padding-left: 80px;">3.2.1.1 Stop the LCVU to be removed from service by placing its control switch in the "OFF" position:</p> <ul style="list-style-type: none"> • "VV LCVU 1A" <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant places the switch for VV LCVU 1A to the OFF position.</p> <p>This step is critical to shut down the desired Lower Containment Vent Unit</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
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<p>NOTE: The procedure may continue up to and including Step 3.2.1.8 before completing the following step.</p> <p><u>STEP 2</u> 3.2.1.2 Verify the green indicating light illuminates for the LCVU stopped.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0; padding: 5px;">Applicant determines the green indicating light is LIT for VV LCVU 1A.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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STEP/STANDARD		SAT/UNSAT
<p><u>STEP 3</u></p> <p>3.2.1.3 Verify the red "MAX" indicating light extinguishes for the LCVU stopped.</p> <p><u>STANDARD:</u></p> <p>Applicant determines the red “MAX” indicating light for VV LCVU 1A MAX is DARK.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>	
<p><u>STEP 4</u></p> <p>3.2.1.4 Verify the green "CLOSED" indicating light illuminates for the LCVU damper associated with the LCVU stopped.</p> <p><u>STANDARD:</u></p> <p>Applicant determines the green “CLOSED” indicating light for 1LCVU-D-1 LWR CONT VENT DAMPER is LIT.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>	

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STEP/STANDARD	SAT/UNSAT
<p>NOTE: If Unit 1 is in Mode 1 and LCVU 1C or 1D is the idle unit that is being placed in service, a delay of approximately 15 to 30 minutes may be needed before starting LCVU 1C or 1D to allow lower containment air temperature to increase. This will prevent exceeding the Tech Spec low limit for air temperature. {PIP 00-0763, PIP 05-3785}</p> <p><u>STEP 5</u> 3.2.1.5 Start the idle LCVU by placing its control switch in the "LOW" position:</p> <ul style="list-style-type: none"> • "VV LCVU 1B" <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant places the switch for VV LCVU 1B in the LOW position.</p> <p>This step is critical to start the desired LCVU.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 6</u> 3.2.1.6 Verify the red indicating light illuminates for the LCVU placed in service.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant determines the red (middle) indicating light for VV LCVU 1B is LIT.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD		SAT/UNSAT
<p><u>STEP 7</u> 3.2.1.7 Verify the red "OPEN" indicating light illuminates for the LCVU damper associated with the LCVU started.</p> <p><u>STANDARD:</u></p> <p>Applicant determines the red "OPEN" indicating light for 1LCVU-D-2 LWR CONT VENT DAMPER.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8</u> 3.2.1.8 Verify the red "MAX" indicating light illuminates for the LCVU placed in service.</p> <p><u>STANDARD:</u></p> <p>Applicant determines the red light for VV LCVU 1B MAX is LIT</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9</u> 3.2.2 IF the LCVUs are operating in "HIGH" speed, perform the following:</p> <p><u>STANDARD:</u></p> <p>Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>		<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 10</u> 3.4 Indicate below the operating Pipe Tunnel Booster Fan:</p> <ul style="list-style-type: none"> "PIPE TUNNEL BSTR FAN 1A" "PIPE TUNNEL BSTR FAN 1B" <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant marks the box for the operating Pipe Tunnel Booster Fan.</div> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11</u> 3.5 Indicate below the operating LCVUs:</p> <ul style="list-style-type: none"> "VV LCVU 2A" "VV LCVU 2B" "VV LCVU 2C" "VV LCVU 2D" <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant marks the blocks for the 1B, 1C and 1D LCVUs.</div> <p><u>COMMENTS:</u></p> <p style="text-align: center; margin-top: 20px;">END OF TASK</p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
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JPM G

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Unit 1 is in MODE 1.

INITIATING CUES:

- **The Control Room Supervisor has instructed you to shift Lower Containment Vent Units by stopping the 1A LCVU and starting the 1B LCVU.**
- **Steps 3.1 and 3.3 were marked N/A during the pre-job brief.**
- **Peer check has been waived.**

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System JPM H

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EVALUATION SHEET

Task: Place Standby Component Cooling Train in Service

Alternate Path: No

Facility JPM #: KC-082 (Modified)

Safety Function: 8 **Title:** Component Cooling Water System

K/A 008 A4.01 Ability to manually operate and/or monitor in the control room: CCW indications and controls

Rating(s): 3.3 / 3.1 **CFR:** 41.7 / 45.5

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator X In-Plant _____ Perform X Simulate _____

References: OP/1/A/6400/005 (Component Cooling System) rev. 116

Task Standard: "1B1" Component Cooling Pump running and "B" KC HX outlet valve in "KC TEMP" position. "1A2" KC Pump stopped and "A" KC HX Outlet Valve aligned for miniflow.

Validation Time: 20 minutes **Time Critical:** Yes _____ No X

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Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #175
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event

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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is operating at 100% with “1A2” KC Pump in operation.
- KC Pump “1A2” needs to be removed from service to permit preventive maintenance on the pump and motor.

INITIATING CUES:

- The Control Room SRO instructs you to shift trains of KC with 1B1 KC Pump in service and take KC Pump “1A2” out of service beginning at step 3.1.2 in enclosure 4.3 of OP/1/A/6400/005.
- Concurrent verification and peer checks have been waived and the “B” train KC pumps have been “checked out” satisfactorily by a NLO.

EXAMINER NOTE: After reading cue, provide the applicant with a copy of OP/1/A/6400/005 (Component Cooling System), Enclosure 4.3 (Shifting Trains).

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 3.1.2 Ensure 1RN-347B (KC Hx 1B Inlet Isol) is open.</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant determines that 1RN-347B is open by verifying the red OPEN light is LIT or via the OAC.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>STEP 2</u> 3.1.3 Ensure "KC HX 1B OTLT MODE" is in "KC TEMP".</p> <p><u>STANDARD:</u></p> <p style="background-color: #f0f0f0; padding: 5px;">Applicant places the switch for KC HX 1B OTLT MODE in the "KC TEMP" position on 1MC-11.</p> <p>This step is critical to ensure that the outlet of the KC Heat exchanger is controlled at the proper temperature.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
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STEP/STANDARD	SAT/UNSAT
<p>STEP 3 3.1.4 IF letdown is in service per OP/1/A/6200/001 (Chemical and Volume Control System) perform the following: (R.M.)</p> <p>3.1.4.1 Verify the Cation Bed Demineralizer is NOT in service per OP/1/A/6200/001 (Chemical and Volume Control System).</p> <p><u>STANDARD:</u></p> <p>Applicant determines that letdown is in service and that the Cation Bed Demineralizers are not in service.</p> <p>EXAMINER CUE: IF ASKED, "The Cation Bed Demineralizers are not in service."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 4 3.1.4.2 Record position of 1NV-153A (Letdn Hx Otl 3-Way Vlv).</p> <p>Recorded valve position _____</p> <p><u>STANDARD:</u></p> <p>Applicant determines that the position of 1NV-153A is in the "DEMIN" position.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 5</u> 3.1.4.3 IF letdown flow is through the demineralizers, notify Primary Chemistry that the demineralizers will be bypassed while shifting KC Trains. Person notified _____</p> <p><u>STANDARD:</u></p> <p>Applicant determines that letdown flow is through the demineralizers and notifies Primary Chemistry that the demineralizers will be bypassed while shifting KC Trains.</p> <p>EXAMINER CUE: "This is Stephanie Jackson from Primary Chemistry, I understand the demineralizers will be bypassed while shifting KC Trains."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6</u> 3.1.4.4 IF letdown flow is through the demineralizers, notify Radiation Protection that the demineralizers will be bypassed while shifting KC Trains. Person notified _____</p> <p><u>STANDARD:</u></p> <p>Applicant notifies Radiation Protection that the demineralizers will be bypassed while shifting KC Trains.</p> <p>EXAMINER CUE: "This is Christina Frey from Radiation Protection, I understand that the demineralizers will be bypassed while shifting KC Trains."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 7</u> 3.1.4.5 Place 1NV-153A (Letdn Hx Otlr 3-Way Vlv) in the "VCT" position.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant places the switch for 1NV-153A to the "VCT" position.</p> <p>This step is critical to bypass the demineralizer to prevent a change in reactivity due to the changing boron affinity of the demineralizers caused by letdown temperature changes due to component cooling temperature changes when the trains are shifted.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>CAUTION: 5700 gpm discharge header flow per each operating KC pump shall <u>NOT</u> be exceeded.</p> <p><u>STEP 8</u> 3.1.5 Start either KC Train 1B pump:</p> <ul style="list-style-type: none"> • "KC PUMP B1" <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant depresses the red ON pushbutton for KC PUMP 1B on 1MC-11</p> <p>This step is critical to start the desired pump.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 9</u> 3.1.6 Adjust the following flow controllers on 1MC11 to zero gpm flow:</p> <ul style="list-style-type: none"> 1KC-149 (KF Hx 1A Cool Wtr Otlt) <p><u>STANDARD:</u></p> <p>Applicant adjusts the controller for 1KC-149 to zero gpm.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10</u> 3.1.7 Stop all KC Train 1A pumps:</p> <ul style="list-style-type: none"> "KC PUMP A2" <p><u>STANDARD:</u></p> <p>Applicant depresses the green OFF pushbutton for KC PUMP A2 on 1MC-11</p> <p>This step is critical to secured the desired pump.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11</u> 3.1.8 Place "KC HX 1A OTLT MODE" in "MINIFLOW" position.</p> <p><u>STANDARD:</u></p> <p>Applicant places the switch for KC HX 1A OTLT MODE in the "MINIFLOW" position on 1MC-11</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 12</u> 3.1.9 <u>IF AT ANY TIME</u> KC Train flow approaches 5700 gpm while performing the next step, ensure 1KC-C40B (Train B Miniflow Isol) is closed.</p> <p><u>STANDARD:</u></p> <p>Applicant ensures that 1KC-40B is closed on 1MC-11.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13</u> 3.1.10 Perform the following for the KF cooling loops that are in service:</p> <ul style="list-style-type: none"> Adjust 1KC-149 (KF Hx 1A Cool Wtr Otl) flow controller on 1MC11 to 3000 gpm or as necessary to maintain Spent Fuel Pool temperature < 125°F. <p><u>STANDARD:</u></p> <p>Applicant adjusts 1KC-149 flow controller to less than or \leq 3000 gpm.</p> <p>EXAMINER NOTE: Since Spent Fuel Pool temperature is only ~ 115°F, the applicant may decide to adjust 1KC-149 at this time.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p>NOTE: One pump running is preferred as long as flow is < 5700 gpm.</p> <p><u>STEP 14</u> 3.1.11 IF KC flow requirement is > 5700 gpm, perform the following:</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15</u> 3.1.12 IF letdown is in service per OP/1/A/6200/001 (Chemical and Volume Control System), WHEN KC flow and temperature have stabilized perform the following: (R.M.)</p> <p>3.1.12.1 IF 1NV-153A (Letdn Hx Otlt 3-Way Vlv) position was recorded as "DEMIN" in Step 3.1.4.2 AND no other reason exists for it to remain in the "VCT" position, return it to "AUTO" as follows:</p> <p style="margin-left: 40px;">A. Place 1NV-153A in the "DEMIN" position. (R.M.)</p> <p style="margin-left: 40px;">B. Verify 1NV-153A returns to "AUTO".</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant places the control switch for 1NV-153A to the "DEMIN" position and returns it to AUTO on 1MC-10.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 16</u> 3.1.12.2 IF letdown flow is through the demineralizers, notify Primary Chemistry that the demineralizers have been restored to service. Person notified _____</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 10px 0;">Applicant notifies Primary Chemistry that the demineralizers have been restored to service.</div> <p>EXAMINER CUE: "This is Stephanie Jackson from Primary Chemistry, I understand the demineralizers have been restored to service."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 17</u> 3.1.12.3 IF letdown flow is through the demineralizers, notify Radiation Protection that the demineralizers have been restored to service. Person notified _____</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 10px 0;">Applicant notifies Radiation Protection that the demineralizers have been restored to service.</div> <p>EXAMINER CUE: "This is Christina Frey from Radiation Protection, I understand the demineralizers have been restored to service."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 18</u> 3.1.13 <u>IF</u> RN miniflow was established per Step 3.1.1.2, secure unneeded flow paths.</p> <p><u>STANDARD:</u></p> <p>Applicant determines that this step does not apply.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
2014 NRC Initial License Exam
JPM H

READ TO APPLICANT

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INITIAL CONDITIONS:

- Unit 1 is operating at 100% with “1A2” KC Pump in operation.
- KC Pump “1A2” needs to be removed from service to permit preventive maintenance on the pump and motor.

INITIATING CUES:

- The Control Room SRO instructs you to shift trains of KC with 1B1 KC Pump in service and take KC Pump “1A2” out of service beginning at step 3.1.2 in enclosure 4.3 of OP/1/A/6400/005.
- Concurrent verification and peer checks have been waived and the “B” train KC pumps have been “checked out” satisfactorily by a NLO.

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**System JPM I
In-Plant**

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JPM I
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EVALUATION SHEET

Task: Break Condenser Vacuum Locally

Alternate Path: None

Facility JPM #: CA-084

Safety Function: 4S **Title:** Main Turbine Generator (MT/G) System

K/A 045 A1.06 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including: Expected response of secondary plant parameters following T/G trip

Rating(s): 3.3 / 3.7 **CFR:** 41.5 / 45.5

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator _____ In-Plant X Perform _____ Simulate X

References: AP/2/A/5500/006 (Loss of S/G Feedwater) Enclosure 3

Task Standard: Enclosure 3 has been completed with the first vacuum breaker opened within 10 minutes.

Validation Time: 8 minutes **Time Critical:** Yes X No _____

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Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event

**Catawba Nuclear Station
JPM I
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READ TO APPLICANT

DIRECTION TO APPLICANT:

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INITIAL CONDITIONS:

- Unit 2 is in Mode 3 following a reactor trip.

INITIATING CUES:

- The Control Room Supervisor instructs you to perform AP/2/A/5500/006 (Loss of S/G Feedwater) Enclosure 3 (Local Actions to Break Condenser Vacuum).

This JPM is TIME CRITICAL; time begins when you acknowledge the task.

EXAMINER NOTE: Provide applicant with a copy of the procedure.

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JPM I

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STEP/STANDARD	SAT/UNSAT
START TIME _____	
<p>Examiner NOTE:</p> <p>Critical Time Start: Record Time that applicant acknowledges the task _____.</p> <p>CAUTION High air flow rates will exist when vacuum breakers are first opened. Stay clear of pipe end.</p> <p>STEP 1: 1. Break condenser vacuum by opening the following valves:</p> <ul style="list-style-type: none"> • 2CM-368 (2A Main Cond Shell Vacuum Bkr) (TB2-600, 2F-2G, 26) (Ladder needed) • 2CM-369 (2B Main Cond Shell Vacuum Bkr) (TB2-600, 2F, 24-25) (Ladder needed) • 2CM-370 (2C Main Cond Shell Vacuum Bkr) (TB2-609, 2F-22) (Ladder needed). <p>STANDARD:</p> <div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> Applicant will describe opening the valves: 2CM-368, 2CM-369, 2CM-370 </div> <p>This step is critical in order to open correct valves for breaking vacuum.</p> <p>Examiner Note: The critical end time is when the applicant describes opening the first valve. Due to the height of the valves, no fall protection will be required.</p> <p>Examiner Cue: When applicant describes engaging lever and rotating handwheel counter clockwise to open the following valve then: "A large volume of airflow is heard."</p> <p>Critical end time _____</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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JPM I

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 2</u> 2. Secure steam to CSAEs as follows:</p> <p style="padding-left: 40px;">a. Close the following valves:</p> <ul style="list-style-type: none"> • 2SA-22 (Main Steam To CSAE) (TB2-614, 2M-32) • 2SA-27 (Aux Steam To CSAE) (TB-614, 2L-2M, 27). <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant will describe closing 2SA-22 and 2SA-27</div> <p>This step is critical, because if it is not performed, the CSAEs will continue to pull vacuum.</p> <p>Examiner Cue: As applicant properly describes closing the valves give cue as appropriate, “Valve turns until resistance is felt.”</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 3</u> b. WHEN time and manpower permit, THEN complete the shutdown of the CSAEs. REFER TO OP/2/B/6300/006 (Main Vacuum).</p> <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant will read the step</div> <p>Examiner Cue: The Control Room Supervisor has instructed another operator to complete the shutdown of the CSAEs.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 4</u> 3. WHEN requested by Control Room Supervisor, THEN verify condenser vacuum broken as follows:</p> <ul style="list-style-type: none"> a. Inspect each vacuum breaker for absence of air flow into condenser. b. Notify Control Room Supervisor of results. <p><u>STANDARD:</u></p> <div style="background-color: #e0e0e0; padding: 5px; margin: 10px 0;">Applicant will inspect each vacuum breaker for the absence of air flow into the condenser and will report to the Control Room Supervisor.</div> <p>Examiner Cue: After each inspection, “No air flow into condenser.”</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
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JKM I

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 2 is in Mode 3 following a reactor trip.

INITIATING CUES:

- The Control Room Supervisor instructs you to perform AP/2/A/5500/006 (Loss of S/G Feedwater) Enclosure 3 (Local Actions to Break Condenser Vacuum).

This JPM is TIME CRITICAL; time begins when you acknowledge the task.

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**System JPM J
In-Plant**

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EVALUATION SHEET

Task: Shifting Main Transformer Auxiliaries

Alternate Path: No

Facility JPM #: EP-016

Safety Function: 6 **Title:** Electrical

K/A 062 A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Types of loads that, if de-energized, would degrade or hinder plant operation.

Rating(s): 3.4 / 3.9 **CFR:** 41.5 / 43.5 / 45.3 / 45.13

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator _____ In-Plant **X** Perform _____ Simulate **X**

References: OP/1/A/6350/005 (Alternate AC Power Sources) rev. 076, Enclosure 4.24

Task Standard: The 1A Main Transformer Auxiliaries are transferred to an energized source.

Validation Time: 15 minutes **Time Critical:** Yes _____ No **X**

=====

<u>Applicant:</u>	Time Start: _____
NAME _____ Docket # _____	Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____

NAME	SIGNATURE	DATE
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COMMENTS

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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC
3. Enter the password.
4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE "Extra Operator" is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event

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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is at 100% power.
- The incoming feeder breaker to 1LXC tripped due to a load center fault.
- As a result, one-half of the 1A Main Transformer Auxiliaries have been de-energized.

INITIATING CUES:

The Unit Supervisor directs you to shift the 1A Main Transformer Auxiliaries to the 1LXD Feeder per Enclosures 4.24 (Shifting Main Transformer 1A Auxiliaries) of OP/1/A/6350/005 (Alternate AC Power Sources).

EXAMINER NOTE: After reading cue, provide the applicant with a copy of OP/1/A/6350/005, Enclosure 4.24.

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

- NOTE:**
1. Shifting of power supplies shall be performed without delay.
 2. All breakers and alarm lights are located inside the cabinet at the Main Transformer.
 3. During normal operation, loss of a power supply (from LXC or LXD) will be indicated by the associated "NO VOLTAGE BANK A (B)" alarm light at the transformer.
 4. Electrical PPE (high voltage gloves, FR clothing, face shield) is required for shifting power supplies.

Examiner Note: Applicant should state that they would acquire the required PPE.

STEP 1: 3.1 **IF** shifting Bank A power supplies, perform the following:

3.1.1 Verify voltage indicated on 1LXD per one of the following:

- Transformer 1TXD Supply Voltage meter with 1LXD-4B closed

OR

- Transformer 1TXS Supply Voltage meter with 1LXD-8B closed

STANDARD:

Applicant verifies voltage indicated on transformer 1TXD with 1LXD-4B closed or 1TXS with 1LXD-8B closed.

Examiner Cue: 600 volts is indicated.

COMMENTS:

____ **SAT**

____ **UNSAT**

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 2</u> 3.1.2 IF this is an unexpected loss of power, verify the following at Transformer 1A:</p> <ul style="list-style-type: none"> • "NO VOLTAGE BANK A" alarm light illuminated. • "NO VOLTAGE BANK B" alarm light dark. <p><u>STANDARD:</u></p> <p>Applicant verifies "NO VOLTAGE BANK A" alarm light is illuminated and the "NO VOLTAGE BANK B" alarm light is dark.</p> <p>Examiner Cue: NO VOLTAGE BANK A is LIT and NO VOLTAGE BANK B is DARK.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3</u> 3.1.3 Open "NORMAL FEEDER 1LXC" breaker.</p> <p><u>STANDARD:</u></p> <p>Applicant describes opening the NORMAL FEEDER 1LXC breaker by placing it in the OFF (down) position.</p> <p>Examiner Cue: NORMAL FEEDER 1LXC is in the OFF position.</p> <p>This step is critical to allow the lockout bar to be slid in the following step.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 4</u> 3.1.4 Slide lockout bar to the left.</p> <p><u>STANDARD:</u></p> <p>Applicant describes sliding the lockout bar to the left.</p> <p>Examiner Cue: Lockout bar is to the left.</p> <p>This step is critical to allow closing of the EMERG FEEDER 1LXD breaker in the following step.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 3.1.5 Close "EMERG FEEDER 1LXD" breaker.</p> <p><u>STANDARD:</u></p> <p>Applicant describes closing the EMERG FEEDER 1LXD breaker by placing the breaker to the ON (up) position.</p> <p>Examiner Cue: EMERG FEEDER 1LXD breaker is in the ON position.</p> <p>This step is critical to energize the transformer auxiliaries for the 1A Main Transformer</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 6</u> 3.1.6 Acknowledge any alarms present.</p> <p><u>STANDARD:</u></p> <p>Applicant describes acknowledging any alarms.</p> <p>Examiner Cue: Alarms have been acknowledged.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7</u> 3.1.7 Complete and file Enclosure 4.29 (Unit 1 Main Transformers Cooler Groups Status) to record status.</p> <p><u>STANDARD:</u></p> <p>Applicant reads the step.</p> <p>Examiner Cue: Another operator will complete and file enclosure 4.29</p> <p>NOTE: At this point, Bank A is supplied from 1LXD. Subsequent steps are to return Bank A to 1LXC.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
2014 NRC Initial License Exam
JPM J

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is at 100% power.
- The incoming feeder breaker to 1LXC tripped due to a load center fault.
- As a result, one-half of the 1A Main Transformer Auxiliaries have been de-energized.

INITIATING CUES:

The Unit Supervisor directs you to shift the 1A Main Transformer Auxiliaries to the 1LXD Feeder per Enclosures 4.24 (Shifting Main Transformer 1A Auxiliaries) of OP/1/A/6350/005 (Alternate AC Power Sources).

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**System JPM K
In-Plant**

Catawba Nuclear Station
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EVALUATION SHEET

Task: Place the 2A Hydrogen Analyzer in Service

Alternate Path: No

Facility JPM #: VX-024

Safety Function: 5 **Title:** Hydrogen Recombiner and Purge Control System (HRPS)

K/A 028 A1.01 Ability to predict and/or monitor changes in parameter (to prevent exceeding design limits) associated with operating the HRPS controls including): Hydrogen concentration

Rating(s): 3.4 / 3.8 **CFR:** 41.5 / 45.5

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator _____ In-Plant X Perform _____ Simulate X

References:

- EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant), rev. 025
- OP/2/A/6450/010 (Containment Hydrogen Control Systems Enclosure 4.9), rev. 026

Task Standard: Hydrogen Analyzer Train 2A in Service monitoring upper containment via selection of Position "1".

Validation Time: 15 minutes **Time Critical:** Yes _____ No X

=====

Applicant: Time Start: _____
NAME _____ Docket # _____ Time Finish: _____

Performance Rating: Performance Time _____

SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

Catawba Nuclear Station
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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.
2. Reset to IC #168
3. Enter the password.
4. Select “Yes” on the INITIAL CONDITION RESET pop-up window.
5. Ensure simulator setup per table below.
6. Place simulator in RUN and acknowledge any alarms.
7. ENSURE “Extra Operator” is present in the simulator.
8. Place simulator in FREEZE until Examiner cue is given.

✓	Instructor Action	Final	Delay	Ramp	Delete In	Event

**Catawba Nuclear Station
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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- A large break LOCA has occurred on Unit 2.
- The procedure currently in use is EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant).
- Containment Hydrogen Analyzer 2B is tagged for maintenance.

INITIATING CUES:

- The Control Room Supervisor directs you to place Containment Hydrogen Analyzer 2A in service to Position "1" for sampling Upper Containment per OP/2/A/6450/010 (Containment Hydrogen Control Systems) Enclosure 4.9, step 3.1. All initial conditions are complete. Peer check has been waived.

EXAMINER NOTE: After reading cue, provide examinee with a copy of OP/2/6450/010, Enclosure 4.9 with the Initial Conditions signed off.

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STEP/STANDARD	SAT/UNSAT
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START TIME: _____

<p><u>STEP 1:</u> 3.1 Place Hydrogen Analyzer Train A <u>OR</u> Train B in service.</p> <p>3.1.1 <u>IF</u> aligning Hydrogen Analyzer Train A, proceed as follows:</p> <p>3.1.1.1 Obtain Hydrogen Analyzer Control Panel Train A (2ELCP0251) key (Key #225) from WCC.</p> <p><u>STANDARD:</u></p> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;">Applicant determines from the initiating cue that A train needs to be aligned and obtains the key #225</div> <p><u>EXAMINER NOTE:</u> Key not required to be obtained to complete this JPM task. Once key is identified give cue.</p> <p><u>EXAMINER CUE:</u> “Key 225 has been obtained.”</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
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STEP/STANDARD	SAT/UNSAT
<p>NOTE: Steps 3.1.1.2 - 3.1.1.5 will be performed at Hydrogen Analyzer Control Panel Train 2A HACP-2A (2ELCP0251) (AB-579, DD-61).</p> <p><u>STEP 2</u> 3.1.1.2 Select the desired sample location by positioning the "HYDROGEN ANALYZER SAMPLE VALVES PORTS" switch:</p> <ul style="list-style-type: none"> • Position "1" (for sampling Upper Containment) • Position "2" (for sampling operating level) • Position "3" (for sampling Steam Generator 1B cavity) • Position "ALL" for sampling ALL 3 locations) <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant describes placing the HYDROGEN ANALYZER SAMPLE VALVES PORTS" switch in position "1".</p> <p>EXAMINER CUE: "Switch is in position 1."</p> <p>This step is critical to sample Upper Containment.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
<p><u>STEP 3</u> 3.1.1.3 Verify the "POS 1: H2 ANALYZER POS 2: POST ACCIDENT SAMPLE PANEL" switch is in "POS. 1".</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant describes verifying the switch is in "POS 1"</p> <p>EXAMINER CUE: "Switch is in position 1."</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p><u>STEP 4</u> 3.1.1.4 Insert key in "HYDROGEN ANALYZER CONT ISOLATION VALVES" key switch and turn to "OPEN" position.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant describes inserting the key and turning the key to the "OPEN" position.</p> <p>This step is critical to open the containment isolation valves in order to be able to sample upper containment.</p> <p><u>EXAMINER CUE:</u> "Key is in the OPEN position."</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5</u> 3.1.1.5 Verify the following indicating lights are lit:</p> <ul style="list-style-type: none"> • "H2 SAMPLE CONT. ISOLATION VALVES OPEN" • Sample location(s) selected in Step 3.1.1.2. <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant describes verifying the red OPEN light LIT for H2 Sample Containment Isolation Valves.</p> <p><u>EXAMINER CUE:</u> "Red OPEN light is lit."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD	SAT/UNSAT
<p>NOTE: Steps 3.1.1.6 - 3.1.1.7 will be performed inside A Train Hydrogen Analyzer Control Unit (PAMS) 2MIMT5320A (AB-579, DD-61).</p> <p><u>STEP 6</u> 3.1.1.6 Verify the "STANDBY/OFF" switch is in the "STANDBY" position.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant describes verifying the "STANDBY/OFF" switch is in the "STANDBY" position.</p> <p><u>EXAMINER CUE:</u> "Switch is in the 'STANDBY' position."</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7</u> 3.1.1.7 Place the "ON/OFF" switch in the "ON" position.</p> <p><u>STANDARD:</u></p> <p style="background-color: #e0e0e0;">Applicant describes moving the ON/OFF switch up to the "ON" position.</p> <p>This step is critical to turn the analyzer on.</p> <p><u>EXAMINER CUE:</u> "Switch is in the 'ON' position and the green 'ON' light is lit."</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

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STEP/STANDARD		SAT/UNSAT
<p><u>STEP 8</u></p> <p>3.1.1.8 Monitor H₂ concentration at either of the following locations:</p> <ul style="list-style-type: none"> "Hydrogen Analyzer Control Unit "2MIMT5320A" (AB-579, DD-61) "CONTAINMENT TRN A H₂ ANAL" meter (2MIP5320) located on 2MC7. <p><u>STANDARD:</u></p> <p>Applicant describes calling the control room to inform them that the hydrogen analyzers are in service and can be read on the local unit or on 2MC-7.</p> <p><u>EXAMINER CUE:</u> "Hydrogen concentration will be monitored on 2MC-7."</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>		<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)
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READ TO APPLICANT

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INITIAL CONDITIONS:

- A large break LOCA has occurred on Unit 2.
- The procedure currently in use is EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant).
- Containment Hydrogen Analyzer 2B is tagged for maintenance.

INITIATING CUES:

- The Control Room Supervisor directs you to place Containment Hydrogen Analyzer 2A in service to Position "1" for sampling Upper Containment per OP/2/A/6450/010 (Containment Hydrogen Control Systems) Enclosure 4.9, step 3.1. All initial conditions are complete. Peer check has been waived.