

Final Submittal
(Blue Paper)

CATAWBA DECEMBER 2005 EXAM

05000413/2005301 & 05000414/2005301

DECEMBER 5 - 8, 2005
DECEMBER 14, 2005 (WRITTEN)

FINAL JPMS

1. ADMINISTRATIVE JPMS
2. IN-PLANT JPMS
3. SIMULATOR JPMS (CONTROL ROOM)

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
RO1**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Determine the allowable hours an operator can work and the amount of hours rest required based on those limits per the Nuclear Site Directive

Alternate Path: NO

Facility JPM #: Catawba (NEW)

K/A Rating(s): GENERIC: 2.1.1 (3.7/3.8)
Knowledge of Conduct of Operations Requirements.

Task Standard:

The candidate determines that the latest that Operator "B" can work is 1025 on 12/3 and the earliest that he can report to work that evening is 1825 (per NSD-200, Overtime Control)

Preferred Evaluation Location:

Control Room In-Plant

Preferred Evaluation Method:

Perform Simulate _____

Procedure References:

NSD-200, Overtime Control

Validation Time: 20 min

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE / DATE

=====

COMMENTS

Tools/Equipment/Procedures Needed:

A copy of Nuclear Site Directive 200

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Given the following timeline:

12/2 1800 Operator "B" arrives at work following 7 day break
12/2 1825 Operator "B" assumes the OATC watch

1. Determine the latest time that Operator "B" can be relieved without violating overtime limits or requiring any additional approvals.
2. Assuming Operator "B" is relieved and leaves site at the time determined in #1 above, determine the earliest time that he can report to work on 12/3 without violating any overtime limits or requiring any additional approvals.

(Do not consider the number of hours to be worked after he reports)

START TIME:

| | |
|--|---|
| <p>Given the following timeline:</p> <p>12/2 1800 Operator "B" arrives at work following 7 day break 12/2 1825 Operator "B" assumes the OATC watch</p> | <p>___ SAT ___ UNSAT</p> |
| <p><u>Your Task:</u></p> <p>Determine the latest time that Operator "B" can be relieved without violating overtime limits or any additional paperwork.</p> <p><u>STANDARD:</u> Student determines the Operator can work until 1025 on 12/3, without addition paperwork (16 hours <u>excluding</u> turnover time).</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP ___ SAT ___ UNSAT</p> |

| | |
|--|---|
| <p><u>Your Task:</u></p> <p>Assuming Operator "B" is relieved and leaves site at the time determined in #1 above, determine the earliest time that he can <u>report</u> to work on 12/3 without violating any overtime limits or any additional paperwork. (Do not consider the number of hours to <u>be</u> worked after he reports)</p> <p><u>STANDARD:</u> Candidate determines that Operator B cannot return to work until 1825 on 12/3/2005 (8 hours break between work periods, <u>including</u> shift turnover).</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

Given the following timeline:

12/2 1800 Operator "B" arrives at work following 7 day break
12/2 1825 Operator "B" assumes the OATC watch

1. Determine the latest time that Operator "B" can be relieved without violating overtime limits or requiring any additional approvals.
2. Assuming Operator "B" is relieved and leaves site at the time determined in #1 above, determine the earliest time that he can report to work on 12/3 without violating any overtime limits or requiring any additional approvals.

(Do not consider the number of hours to be worked after he reports)

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
RO2/SRO2**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Determine the amount of boric acid required to get Control Bank D above the Rod insertion limits.

Alternate Path: NO

Facility JPM #: (new)

K/A Rating(s): GENERIC 2.1.25 (2.8/3.1) Ability to obtain station reference materials such as graphs, monographs, and tables which contain performance data.

Task Standard:

Candidate determines that rod insertion limit at 50% power using the Reactor Operating Data, R.O.D book, is 44-50 steps on Control Bank D. Performs calculation and determines that 321.98 -419 gallons is the amount of boric acid required to be added to withdraw control bank D rods to that position.

Preferred Evaluation Location:

Simulator _____ In-Plant _____

Preferred Evaluation Method:

Perform X Simulate _____

References:

Validation Time: 25 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

READ TO OPERATOR

DIRECTION TO TRAINEE:

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 operating at 100% power.
Core burnup 250 EFPD.
Boron concentration is 1020 ppm

CURRENT CONDITIONS:

- At 1030 today, Unit 1 experienced a Zone A lockout. The crew entered AP/1/A/5500/003, Load Rejection.
- At 1040, plant stabilization is in progress with the following conditions:
 - Reactor power is 50%.
 - No dilutions are in progress.
 - 1AD-2, B/9 "Control Rod Bank Lo-Lo Limit" is LIT
 - Control rods are in manual.
 - Control Bank Positions:
 - A = 229 steps
 - B = 229 steps
 - C = 136 steps
 - D = 20 steps

INITIATING CUE:

You have been directed to perform Enclosure 3, Rod Insertion Limit Boration, of AP/1/A/5500/003, Load Rejection.

Without any consideration for the effects of Xenon for rod insertion limits (RIL) requirements, calculate the **MINIMUM** gallons of boric acid addition required to meet RIL. The OAC is unavailable.

Start Time: _____

| | |
|---|---------------------------------|
| <p>STEP 1: If the control rods cannot be maintained above the rod insertion limits, then: a. Stop any dilutions in progress.</p> <p>STANDARD: Determines no dilutions are in progress based on the cue provided from initial conditions. Student reads the caution and note in step 1a.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Caution Failure to initiate boration within one hour of exceeding rod insertion limits may violate Tech spec 3.1.6</p> <p>STANDARD: Candidate notes that actions must be taken within 1 hour based on the caution. Based on the initiating cue it has only been 10 minutes, so this is not a concern at this time.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |

| | |
|---|---|
| <p><u>Note</u> OAC point C1L4409 (Ctrl Bank Tech spec Insertion Lmt Reached) and R.O.D. Book (Section 2.2) provide rod insertion limit indication.</p> <p><u>STANDARD:</u> The candidates reads note and follows it. Determines that section 2.2 of the R.O.D. needs to be used.</p> <p><u>EXAMINER NOTE:</u> The procedure says to use Section 2.2 of the R.O.D. book, However some students may use Figure 3 of the COLR. This is equally acceptable. If the student uses the COLR, the RIL could be based on the calculation included with the graph. If they use the ROD Book, it will be based solely on reading a graph.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Candidate determines that 46 (44-50) steps is the minimum insertion limit and that 50 steps withdrawn is adequate and does the first bullet of the cue.</p> <p>EXAMINER NOTE: Based on the Initiating Cue, the candidate must determine that 44-50 steps withdrawn on Bank D meets the requirements for minimum RIL.</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |

| | |
|---|---|
| <p>b. Borate the NC system as required, to restore rods above insertion limits.</p> <p>STANDARD: Using 50 steps withdrawn on Bank D:</p> <p>Uses R.O.D. book section 5.6 for IRW HFP, Eq Xe, Eq Sm, and uses data from the 200 EFPD column (175-250 EFPD), and determines:</p> <ul style="list-style-type: none"> • Bank D 20 steps, rods are worth 982 pcm • Bank D 44-50 steps, rods are worth 794-747 pcm for a difference of -188-235 pcm of reactivity. <p>Uses R.O.D. book section 5.5 for HFP ARO and determines differential boron worth is -6.11 pcm/ppm.</p> <ul style="list-style-type: none"> • Calculates $188/-6.11 = 30.76$ ppm $235/-6.11 = 38.48$ ppm (30.76-40 ppm is acceptable) <p>Calculates final required boron concentration:</p> <ul style="list-style-type: none"> • 1020 ppm current [B] + 30.76-39 ppm = 1050.76-1060 ppm final [B] (1050.76-1059 ppm is acceptable) <p>Uses table 4.1 in the R.O.D. book for Hot RCS (Modes 1,2 and 3) to determine the gallon of boric acid to go from 1020 to the range of 1050-1060 ppm</p> <p>1020 ppm to 1040 ppm = 209 gals 1040-1060 = 210 gals 210/20ppm=10.5 gals/ppm</p> <p>(321.98 - 419) gallons is acceptable</p> <p>COMMENTS:</p> <p style="text-align: center;">JPM Complete</p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |
|---|---|

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

Unit 1 operating at 100% power.
Core burnup 250 EFPD.
Boron concentration is 1020 ppm

CURRENT CONDITIONS:

- At 1030 today, Unit 1 experienced a Zone A lockout. The crew entered AP/1/A/5500/003, Load Rejection.
- At 1040, plant stabilization is in progress with the following conditions:
 - Reactor power is 50%.
 - No dilutions are in progress.
 - 1AD-2, B/9 "Control Rod Bank Lo-Lo Limit" is LIT
 - Control rods are in manual.
 - Control Bank Positions:
 - A = 229 steps
 - B = 229 steps
 - C = 136 steps
 - D = 20 steps

INITIATING CUE:

You have been directed to perform Enclosure 3, Rod Insertion Limit Boration, of AP/1/A/5500/003, Load Rejection.

Without any consideration for the effects of Xenon for rod insertion limits (RIL) requirements, calculate the MINIMUM gallons of boric acid addition required to meet RIL. The OAC is unavailable.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
RO3/SRO4**

CANDIDATE:

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Determine radiation protection requirements for an activity.

Alternate Path: NO

Facility JPM #: NEW

K/A Rating(s): **GENERIC 2.3.10 (2.9/3.3)** Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure

Task Standard:

Correctly determine that total dose received for the job is 13 mR and maximum clock time to complete venting without exceeding RWP dose limits is 0849 hrs – 0849 hrs +38 seconds.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform X Simulate _____

Procedure References:

GET MANUAL

Validation Time: 14 min

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE

DATE

=====

COMMENTS

Tools/Equipment/Procedures Needed:

Radiation Work Permit # 5021
Room 105 (ND Pump 1A) Survey Map

READ TO OPERATOR**DIRECTION TO TRAINEE:**

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.

Information sheet:

Unit 1 is in AP/1/A/5500/019, Loss of Residual Heat Removal and you are to:

- Stage yourself inside Room 105 where you can minimize your dose while waiting.
- Vent ND pump 1A pump casing when directed.

0800 – You enter Room 105.

0830 – You are directed to vent using 1ND-88 (1A ND Pump Seal Water Hx Inlet Vent).

0842 – Venting is completed. You immediately exit the Room and report back to the Control Room.

Assume that once venting starts, the room becomes airborne contaminated at a constant concentration of 2 DAC-hrs.

Initiating Cue:

Based on the time line, RWP 5021, and Room 105 survey map provided:

1. State the amount of dose that was received for the duration of this task.
2. Assuming you entered the room and began venting at the stated times, determine the latest clock time that venting could complete without exceeding a limit imposed by the RWP.

START TIME:

| | |
|---|---|
| <p>EXAMINER NOTE: Provide the initiating cue, RWP, Dress Category Code sheet and survey map to operator.</p> | |
| <p>Operator answers the following questions.</p> <p>1. What dose will be received for the duration of this task?</p> <p>Based on a 30 minute wait at the LEWA and 12 minutes at valve 1ND-88 and the nearest posted general area dose rates (50):</p> <p>LEWA dose: 4 mR/hr X 0.5 hr = 2 mR</p> <p>Vent time dose Area dose is 12/60 hr X 50 mR/hr = 10 mR Airborne dose: 2 DAC-hr X 2.5 mR/DAC X 12/60 hr = 1 mR</p> <p>Estimated total dose received is 2+10+1 = 13 mr.</p> <p>2. What is the maximum time that the pump casing could have been vented before reaching a limit imposed by the RWP?</p> <p>Based on the nearest general area dose rates (50) and DAC concentration during venting:</p> <p>The RWP limits total exposure to 20 mR.</p> <p>LEWA is 4 mR/hr X 0.5 hr = 2 mR Vent time dose (a) is a/60 hr X (50 mR/hr+5mR/hr) ≤18 mR</p> <p>Solving: a ≤ 18 mR * 60 min/hr /55 mR/hr a ≤19.63 min</p> <p>Clock time – 0830 + 19.63 min = 0849hrs + 38 seconds</p> <p><u>0849 hrs – 0849 hrs +38 seconds is acceptable.</u></p> <p><u>STANDARD:</u> Calculates maximum venting time stated above..</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP ___ SAT ___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

Information sheet:

Unit 1 is in AP/1/A/5500/019, Loss of Residual Heat Removal and you are to:

- Stage yourself inside Room 105 where you can minimize your dose while waiting.
- Vent ND pump 1A pump casing when directed.

0800 – You enter Room 105.

0830 – You are directed to vent using 1ND-88 (1A ND Pump Seal Water Hx Inlet Vent).

0842 – Venting is completed. You immediately exit the Room and report back to the Control Room.

Assume that once venting starts, the room becomes airborne contaminated at a constant concentration of 2 DAC-hrs.

Initiating Cue:

Based on the time line, RWP 5021, and Room 105 survey map provided:

1. State the amount of dose that was received for the duration of this task.
2. Assuming you entered the room and began venting at the stated times, determine the latest clock time that venting could complete without exceeding a limit imposed by the RWP.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
RO4**

CANDIDATE:

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Perform the emergency plan requirements for a hazmat event

Alternate Path: NO

Facility JPM #: New

K/A Rating(s): Generic KA: 2.4.43 (2.8/3.5)
Knowledge of emergency communications systems and techniques

Task Standard:

Immediate action steps of RP/0/B/5000/008 enclosure 4.1 and enclosure 4.4 step 1 are completed to initiate a hazmat team response.

Preferred Evaluation Location:

Preferred Evaluation Method:

Simulator In-Plant Perform Simulate

References:

RP/0/B/5000/008 Spill Response Revision 24

Validation Time: 14 min.

Time Critical: NO

Candidate: _____
NAME

Time Start : _____
Time Finish: _____

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

Instructions to work the QUIKPAGE without a telephone connection.

1. Unplug the Gray telephone line from the QUIKPAGE.
2. Now the student can use as directed in the procedure.
3. When the message is typed in and the ENTER key is depressed, a few seconds pass then a warning and BEEP occurs. The message says:

"No Dial Tone: Check Connection!"
Press any Key to Confirm
4. When warning message is displayed, depress any key. You then receive another message depress "C".
5. The machine will reset itself and the next student can perform the JPM.
6. When the last student is completed. Ensure step 4 has been performed, reinstall the gray phone connection.

Tools/Equipment/Procedures Needed:

Each candidate requires one copy of the following: RP/0/B/5000/008 and appropriate information sheets.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

You are the Unit 1 Balance of Plant operator and receive the following 4911 emergency phone call from security. A spill of diesel fuel is being reported and the CRS has directed you to perform the immediate actions of RP/0/B/5000/008 Spill Response.

Information Sheet

Date: 12/06/2005 Time 1400.

This is security Mark Stevens. I am located on the site road on the north side of the Aquatic Center. A vendor truck has had its fuel tank ruptured and diesel fuel is spilling onto the road and down next to the training buildings. Several site workers are attempting to stop the spill and there may be as much as 100 gallons of fuel leaking from the tank. The spill is not stopped nor contained at this time. There are no injuries to anyone in the area. My call back number is 3778.

| | |
|---|---|
| <p>EXAMINER NOTE: Ensure candidate knows this is a simulation. Both the Control Room and Simulator locations can perform real notifications.</p> | |
| <p>2. Immediate Actions 2.1 For On-site Spill Response, go to Enclosure 4.1.</p> <p><u>STANDARD:</u> :</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 1. Immediate Actions 1.1 Record the following information taken from the caller:</p> <ul style="list-style-type: none"> • Name/group of person reporting incident: Mark Stevens/Security • Location of spill/product: Site Road north of Aquatic Center (Training Center) / Diesel Fuel • Elevation: Column Line: N/A • Equipment/components affected: Vendor truck • Are there any injured people? NO How many? NONE • Are there people in the immediate area who need to be relocated to a safer area? Not known or no • Is the source of the spill isolated/secured? NO • Is the spill continuing? YES • Is the spill confined/contained? NO • Call back number: 3778 • Time of call: 1400 <p><u>STANDARD:</u> Completes the information in bold from the information sheet.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 1.2 Dispatch Fire Brigade Leader to investigate the spill and determine the appropriate response.</p> <p><u>STANDARD:</u> Makes a statement that the fire brigade captain must go to the spill to conduct an assessment. This may be a verbal to examiner or operator may simply page the captain.</p> <p>EXAMINERS CUE: Fire brigade captain is in route to the spill.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

| | |
|--|---|
| <p>Step 1.3 Announce the following over the plant PA system: “Attention all plant personnel. Attention all plant personnel. This is the Control Room. A chemical spill has been reported. This spill is occurring at (provide plant location). Please stay clear of this area until further notice.”</p> <p>STANDARD: Makes the plant page for the spill at the road location next to the Aquatic Center.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 1.4 IF the Fire Brigade Leader requests immediate support, perform the following:</p> <p>EXAMINER NOTE: Booth operator will call with the following cue: <i>“This is the fire brigade Captain. I need immediate support.”</i></p> <ul style="list-style-type: none"> • Dispatch the on-site Fire Brigade. <p>EXAMINER CUE: Another operator will handle dispatch of the fire brigade.</p> <ul style="list-style-type: none"> • Notify Security (CAS-5364 or SAS-3377) to perform the following: <ul style="list-style-type: none"> ○ Assist the Fire Brigade with securing the spill area. ○ Assist the MERT response for actual or potential injuries. <p>STANDARD: Notes the need to dispatch the fire brigade and calls security.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

| | |
|--|---|
| <p>Step 1.5 WHEN the Fire Brigade Leader reports the status of the spill, determine the appropriate procedural guidance as follows:</p> <p>EXAMINER CUE: The booth operator will call with the following cue: <i>"This is the fire brigade captain, the leak is still in progress and cannot be isolated at this time."</i></p> <p>STANDARD: Based on the fire brigade captain's status report, the BOP notes that step 1.5.4 A applies because the spill is not contained and/or C applies because diesel fuel could burn. In either case, operator refers to Enclosure 4.4 to perform the hazmat team activation process.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Enclosure 4.4 1. HazMat Emergency Response Team Notification During an Emergency</p> | |
| <p>Step 1.2 Activate the off-site emergency pager system Quiktel Key Pad located in the Control Room.</p> <p>1.2.1 Type in "SPILL"</p> <p>1.2.2 Press <ENTER></p> <p>1.2.3 Press <M> key (for Message)</p> <p>1.2.4 Type the following message:</p> <p>"CNS Hazardous Materials Spill; All Team Members Respond. Duty Person call 803-831-5164."</p> <p>1.2.5 Press <ENTER></p> <p>STANDARD: Completes the entries into the Quiktel key pad per step 1.2.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

| | |
|---|---------------------------------|
| <p>Step 1.2.6 Monitor the confirmation pagers located at the Quiktel Key Pad to verify proper pager activation.</p> <p>STANDARD: Operator waits for the confirmation pages to display activation information.</p> <p>EXAMINER CUE: The confirmation pager has received the following message:</p> <p style="padding-left: 40px;">“CNS Hazardous Materials Spill; All Team Members Respond. Duty Person call 803-831-5164.”</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 1.3 IF the Quiktel Key Pad is unavailable.....</p> <p>STANDARD: N/A steps and notes that no additional steps are required. Page 3 of 3 only lists the members who would respond.</p> <p>EXAMINER CUE: The fire brigade captain reports hazmat tech has arrived at the spill location.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Returns to Enclosure 4.1</p> | |
| <p>Step 1.5.5 If the spill product/substance can be safely cleaned up by personnel responsible for the spill with absorbent materials or flushed to an appropriate site wastewater treatment system perform the following:</p> <p>STANDARD: Per the cue, this step is N/A.</p> <p>EXAMINER CUE: The fire brigade captain reports that the hazmat tech is directing the cleanup with the vendor. NO additional support is required.</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 1.5.6 If the Fire Brigade Leader and Hazmat technician determine additional HAZMAT support is required.....</p> <p>STANDARD: per the pervious step cue, this step is N/A.</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

You are the Unit 1 Balance of Plant operator and receive the following 4911 emergency phone call from security. A spill of diesel fuel is being reported and the CRS has directed you to perform the immediate actions of RP/0/B/5000/008 Spill Response.

Information Sheet

Date: 12/06/2005 Time 1400.

This is security Mark Stevens. I am located on the site road on the north side of the Aquatic Center. A vendor truck has had its fuel tank ruptured and diesel fuel is spilling onto the road and down next to the training buildings. Several site workers are attempting to stop the spill and there may be as much as 100 gallons of fuel leaking from the tank. The spill is not stopped nor contained at this time. There are no injuries to anyone in the area. My call back number is 3778.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
SRO1**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Determine minimum staffing requirements, if overtime limits have been exceeded, and perform required actions per Tech Spec 5.2.2 and NSD-200.

Alternate Path: NO

Facility JPM #: (NEW)

K/A Rating(s): GENERIC: 2.1.1 (3.7/3.8)
Knowledge of Conduct of Operations Requirements

Task Standard:

Determines 3 reactor operators are required meet the minimum station staffing requirements per Selected Licensee Commitment (SLC) 16.13-4. Reactor Operator X is required to be held over to meet minimum staffing. Determines that by requiring the reactor operator to work, this will require completing Appendix A of NSD200 prior to exceeding the overtime limits. The SRO determines that the individual must have an 8 hour rest prior to reporting to work the following day.

Preferred Evaluation Location:

Control Room X In-Plant

Preferred Evaluation Method:

Perform X Simulate

Procedure References:

Tech Spec 5.2.2, Selected Licensee Commitment (SLC) 16.13-4 and NSD-200, Overtime Control

Validation Time: 30 min

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE

DATE

=====

COMMENTS

Tools/Equipment/Procedures Needed:

A copy of Technical Specification, Selected Licensee Commitments and Nuclear Site Directive 200

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

START TIME: _____

INITIATING CUE:

- You are the Control Room Supervisor (SRO).
- Unit 1 is at 100% power
- Unit 2 is in Mode 4
- The oncoming reactor operator calls and cannot report to work.
- The operator waiting to be relieved (Operator X) has worked 2 twelve hour shifts. He reported to work at 0600 on 12/4 and has been the Operator at the Controls (OATC) since 0630. Time now is 1800.
- Two Licensed reactor operators (Y and Z) have assumed the watch as oncoming operators. All other reactor operators have left.
- A reactor operator is available but cannot report to work until 2330.

Your Task:

1. Determine the minimum staffing requirements for Reactor Operators for this condition.
2. State what action(s), if any, are required to satisfy minimum staffing requirements.
3. Complete any required administrative action(s), if any, based on the determination made in #2 above.
4. Reactor operator X is relieved and leaves site at 2330. State the earliest time that he can return to work without violating any overtime limits or requiring any additional approvals.

| | |
|---|---|
| <p>1. Determine the minimum staffing requirements for Reactor Operators for this condition.</p> <p><u>STANDARD:</u></p> <p>1. The Control room Supervisor determines three (3) licensed reactor operators are required to meet minimum station staffing requirements per SLC 16.13-4.</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p><input type="checkbox"/> SAT</p> <p><input type="checkbox"/> UNSAT</p> |
| <p>2. State what action(s), if any, are required to satisfy minimum staffing requirements.</p> <p><u>STANDARD:</u></p> <p>2. The Control Room Supervisor determines that operator X needs to stay over until he can be relieved.</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p><input type="checkbox"/> SAT</p> <p><input type="checkbox"/> UNSAT</p> |
| <p>3. Complete any required administrative action(s), if any, based on the determination made in #2 above.</p> <p><u>STANDARD:</u></p> <p>3. Overtime limits will be violated so an Appendix A of NSD200 Request for Work Hours extension is required. Candidate completes form.</p> <p>The operator will work greater than 16 hours in a 24 hour period and greater than 24 hours in a 48 hour period.</p> <p>CRITICAL INFO ON FORM: Identification of the limits exceeded. (a, b, c)</p> <p>EXAMINER NOTE: If asked per Step 4 of Appendix A (NSD200), state:</p> <p style="text-align: center;">“Approval has been granted.”</p> <p>Step 5 is N/A because current time is prior to exceeding limits.</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p><input type="checkbox"/> SAT</p> <p><input type="checkbox"/> UNSAT</p> |

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| <p>3. Reactor operator X is relieved and leaves site at 2330. State is the earliest time that he can return to work, without additional paperwork.</p> <p><u>STANDARD:</u></p> <p>3. A break of at least 8 hours should be allowed between work periods, including shift turnover time. The candidate should calculate that reactor operator X cannot return to work until 0730</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

STOP TIME: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

- You are the Control Room Supervisor (SRO).
- Unit 1 is at 100% power
- Unit 2 is in Mode 4
- The oncoming reactor operator calls and cannot report to work.
- The operator waiting to be relieved (Operator X) has worked 2 twelve hour shifts. He reported to work at 0600 on 12/4 and has been the Operator at the Controls (OATC) since 0630. Time now is 1800.
- Two Licensed reactor operators (Y and Z) have assumed the watch as oncoming operators. All other reactor operators have left.
- A reactor operator is available but cannot report to work until 2330.

Your Task:

1. Determine the minimum staffing requirements for Reactor Operators for this condition.
2. State what action(s), if any, are required to satisfy minimum staffing requirements.
3. Complete any required administrative action(s), if any, based on the determination made in #2 above.
4. Reactor operator X is relieved and leaves site at 2330. State the earliest time that he can return to work without violating any overtime limits or requiring any additional approvals.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
SRO3**

CANDIDATE:

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Evaluate an emergent issue equipment failure

Alternate Path: NO

Facility JPM #: NEW

K/A Rating(s): GENERIC 2.2.17 (2.3/3.5)

Knowledge of the process for managing maintenance activities during power operations.

Task Standard:

Performs a tech spec evaluation for the maintenance work and determines that TS 3.8.1 and 3.7.8 apply and state the actions and times required as listed in the body of the JPM. Determines PT/1/A/4350/002B will satisfy the retest requirements.

Preferred Evaluation Location:

Preferred Evaluation Method:

Control Room X In-Plant X Perform X Simulate

Procedure References:

Technical Specifications

Validation Time: 15 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

Tools/Equipment/Procedures Needed:

Technical Specifications

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Assuming the following:

- All station electrical systems are in normal alignment.
- All equipment is operable.

After starting 1B D/G using OP/1/A/6350/02 (Diesel Generator Operation), D/G frequency cannot be stabilized and the D/G is shutdown. The D/G Engineer has stated that a governor adjustment is required. You are notified of this at 0800 today.

As the WCC SRO perform the following evaluations and make determinations for the following issues:

1. State which Technical Specification action(s) apply and when the action(s) must be completed for this condition.
(Do not consider "tracking" entries.)
2. State the retest(s) required to be completed before the 1B D/G can be declared operable following maintenance activities.

START TIME:

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| <p>EXAMINER NOTE: Provide each operator a copy of the Cue sheet, answer sheet and copy of Tech Specs.</p> | |
| <p>Operator answers the questions based on the information provided.</p> <p>1. State which Technical Specification action(s) apply and when the action(s) must be completed for this condition. (Do <u>not</u> consider "tracking" entries.)</p> <p>RN Tech Spec 3.7.8 and AC Sources Tech Spec 3.8.1 apply</p> <p>For Tech Spec 3.8.1, Action B applies.</p> <p>B.1 Perform SR 3.8.1.1 for the offsite circuit(s) by 0900 TODAY and every 8 hours while 1B D/G is inoperable.</p> <p><u>AND</u></p> <p>B.2 Declare required features(s) supported by the inoperable DG inoperable when its redundant feature(s) is inoperable by 1200 TODAY. (does not apply because all equipment was operable in the initial cue)</p> <p><u>AND</u></p> <p>B.3.1 Determine 1A DG in not inoperable due to a common cause failure by 0800 TOMORROW. <u>OR</u> B.3.2 Perform SR 3.8.1.2 for 1A D/G by 0800 TOMORROW.</p> <p><u>AND</u></p> <p>B.4 Restore 1B D/G to OPERABLE status by 0800 THREE days (72 hours) from today.</p> <p>For Tech Spec 3.7.8, Action A applies.</p> <p>A.1 Restore NSW train 1A to OPERABLE status by 0800 THREE days (72 hours) from today.</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP ___ SAT ___ UNSAT</p> |

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| <p>2. State the retest(s) required to be completed before the 1B D/G can be declared operable following maintenance activities.</p> <p>Candidate should state that PT/1/A/4350/002B (Diesel Generator 1B Operability Test) is the retest required.</p> <p><u>STANDARD:</u> Candidate answers the 2 questions above in BOLD as noted above. All questions must be answered correctly for a SAT grade.</p> | |
| <p>This JPM is complete.</p> | |

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

Assuming the following:

- All station electrical systems are in normal alignment.
- All equipment is operable.

After starting 1B D/G using OP/1/A/6350/02 (Diesel Generator Operation), D/G frequency cannot be stabilized and the D/G is shutdown. The D/G Engineer has stated that a governor adjustment is required. You are notified of this at 0800 today.

As the WCC SRO perform the following evaluations and make determinations for the following issues:

1. State which Technical Specification action(s) apply and when the action(s) must be completed for this condition.
(Do not consider "tracking" entries.)
2. State the retest(s) required to be completed before the 1B D/G can be declared operable following maintenance activities.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**ADMIN
SRO5**

CANDIDATE:

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Classify an emergency and complete the transmittal form

Alternate Path: NO

Facility JPM #: NEW

K/A Rating(s): GENERIC 2.4.41 (2.3/4.1)

Knowledge of the emergency action level thresholds and classifications.

Task Standard:

Candidate determines that an Alert emergency exists based on 4.4.A.2-1 within 15 minutes. Within 14 minutes and 30 seconds of the declaration, correctly completes the emergency notification sheet.

Preferred Evaluation Location:

Preferred Evaluation Method:

Control Room _____ In-Plant _____ Perform _____ Simulate _____

Procedure References:

RP/O/A/5000/001
RP/O/A/5000/006A

Validation Time: 29 minutes 30 seconds

Time Critical: Yes

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

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COMMENTS

Tools/Equipment/Procedures Needed:

Enough copies of RP/0/A/5000/001, and RP/0/A/5000/006A, and the correct preprinted Emergency Notification (ENS) Form and a blank ENS form for each SRO candidate.

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

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:

You are the operations shift manager.

Unit 1 was taken offline for an outage on 11/06/05 at 2300 hrs.

Unit 1 was in Mode 6 preparing to set the reactor vessel head following core reload with reactor coolant (NC) system wide range level at 20% and NC temperature at 139 °F prior to the event.

The following sequence of events has occurred:

- The control room operators reported that residual heat removal (ND) pump 1A was cavitating and tripped. ND pump 1B cannot be started.
- Operators note that ND & NS Rooms Sump Level "Hi Hi" and "Emerg Hi" alarms are in alarm.
- Operators note 1EMF36 (Unit Vent Gas) readings increasing.
- AP/1/A/5500/019 (Loss of Residual Heat Removal) is entered and makeup has been initiated.
- Operators report that NC wide range level is 18% and stable.
- NC temperature has increased to 187 °F and continues to slowly increase.
- Weather conditions: Wind direction is from 35° at a speed of 8 mph. No precipitation.

INITIATING CUE:

Based on the conditions specified, classify the event per RP/0/A/5000/001, Classification of Emergency.

Complete an initial Emergency Notification Form per RP/0/A/5000/006A, Notifications to States and Counties from the Control Room. This JPM is time critical.

START TIME: _____

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| <p>2.1: Determine the operating mode that existed at the time the event occurred prior to any protection system or operator action initiated in response to the event.</p> <p><u>STANDARD:</u> Operator determines the unit was in Mode 6.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>2.2: IF the plant was in Mode 1-4 and a valid condition affects fission product barriers, proceed to Enclosure 4.1 (Fission Product Barrier Matrix).</p> <p><u>STANDARD:</u> Candidate determines this step is N/A</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>2.3: IF a General Emergency is NOT declared in Step 2.2 OR the condition does not affect fission product barriers, review the listing of enclosures to determine if the event is applicable to one the categories shown.</p> <p><u>STANDARD:</u> Candidate refers to Enclosure 4.4.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>2.4: Compare actual plant conditions to the Emergency Action Levels evaluated in step 2.2 and/or 2.3 and declare the appropriate Emergency Class as indicated.</p> <p>STANDARD: Candidate refers remaining enclosures of RP-01. Based on initial conditions and information reports. Determines that an ALERT classification is required per the following:</p> <p>4.4.A.2 Inability to Maintain Plant in Cold Shutdown</p> <p>OPERATING MODE: 5, 6</p> <p>4.4.A.2-1 Total loss of ND and/or RN and/or KC.</p> <p><u>AND</u></p> <p>One of the following:</p> <ul style="list-style-type: none"> • Inability to maintain reactor coolant temperature below 200 °F. • Uncontrolled reactor coolant temperature rise to >180 °F. <p>EXAMINER'S NOTE: The 15 minutes for completing the initial notification form begins once the emergency classification is determined.</p> <p>Time of Classification Determination: _____</p> <p><u>COMMENTS:</u></p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |
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|---|---|
| <p>Using RP/0/A/5000/006A</p> <p>2.1 Immediate Actions Initial Notifications:</p> <p>2.1.1 For Initial Notifications Emergency Notification Form completion, perform Enclosure 4.1 (Emergency Notification Form Completion).</p> <p><u>STANDARD</u>: Obtains copy of preprinted 4.4.A.2 and performs enclosure 4.1</p> <p>EXAMINER CUE: IF the operator is ready to begin completing 4.4.A.2, provide the preprinted copy. IF the operator has made some other classification, provide the blank ENS form to the operator.</p> <p>COMMENTS:</p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Emergency Notification Form for event 4.4.A.2 (RP/006A, Enclosure 4.1)</p> <p><u>STANDARD</u>: Candidate completes the form using the enclosure instructions. The following lines are critical (based on performance indicators):</p> <ul style="list-style-type: none"> • Line 1: Message #1 • Line 2: Marked A (INITIAL) • Line 3, 4, 5: ALERT, Based on EAL 4.4.A.2, Description entered. (pre-printed) • Line 6: Mark B (is occurring) [C (has occurred) is acceptable] • Line 7: Mark D (Under Evaluation) • Line 8: Mark B (Stable), [C (degrading) is acceptable] • Line 9: Enters wind speed, direction and precipitation data. • Line 10: Marked A (Declaration). Lists the time and date. • Line 11: Affected Unit – 1 • Line 12: Unit status – logs unit 1 shutdown date/time • Line 13: Remarks – Can be left blank. • Lines 14-16 are not required on Initial Notifications. • Line 17: Signs for approval to transmit, and date/time. <p>EXAMINER'S NOTE: The Notification Form must be completed within 14 minutes and 30 seconds of the time of the event declaration.</p> <p>EXAMINER'S NOTE: CRITICAL ITEMS ARE BOLD ABOVE.</p> <p>Time form completed: _____</p> <p><u>COMMENTS</u>:</p> | <p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>This JPM is complete.</p> | |

STOP TIME: _____
SRO5F.doc

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

You are the operations shift manager.

Unit 1 was taken offline for an outage on 11/06/05 at 2300 hrs.

Unit 1 was in Mode 6 preparing to set the reactor vessel head following core reload with reactor coolant (NC) system wide range level at 20% and NC temperature at 139 °F prior to the event.

The following sequence of events has occurred:

- The control room operators reported that residual heat removal (ND) pump 1A was cavitating and tripped. ND pump 1B cannot be started.
- Operators note that ND & NS Rooms Sump Level “Hi Hi” and “Emerg Hi” alarms are in alarm.
- Operators note 1EMF36 (Unit Vent Gas) readings increasing.
- AP/1/A/5500/019 (Loss of Residual Heat Removal) is entered and makeup has been initiated.
- Operators report that NC wide range level is 18% and stable.
- NC temperature has increased to 187 °F and continues to slowly increase.
- Weather conditions: Wind direction is from 35° at a speed of 8 mph. No precipitation.

INITIATING CUE:

Based on the conditions specified, classify the event per RP/0/A/5000/001, Classification of Emergency.

Complete an initial Emergency Notification Form per RP/0/A/5000/006A, Notifications to States and Counties from the Control Room. This JPM is time critical.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**JPM_a.
Simulator**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Place ND Train 1B in RHR Mode during Loss of ND

Alternate Path: NO

Facility JPM #: ND-033

K/A Rating(s): SAFETY FUNCTION 4(Primary) APE025 AA1.01 (3.6/3.7)

Task Standard:

ND train 1B is aligned to RHR mode per Enclosure 8 of AP/1/A/5500/019 Case I. 1B train flow is established to less than or equal to 3000 GPM and flow is established through the 1B ND heat exchanger.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

AP/1/A/5500/019 revision 43

Validation Time: 20 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

SIMULATOR SET- UP SHEET

1. Select any shutdown IC set with 1A train of ND in RHR mode. Ensure NC system is in the LOOPS NOT FILLED condition with NC level approximately 44%.
2. Insert LOA-NC040 Core CETS, Value = NORMAL
3. Ensure all 4 KC pumps are on.
4. Rackout the running ND pump to create a Loss of ND.
5. Perform actions of AP/19 Case I, Loss of ND up step 28 RNO where the operator is told to restore one train of ND using enclosure 8.
6. Temperatures will be increasing, so verify Enclosure 8 is ready to begin then freeze and write snap.

IC SELECTED 144

SIMULATOR OPERATOR INSTRUCTIONS:

Remove the covers from the ND loop suction valves and then replace when another JPM is setup.

Tools/Equipment/Procedures Needed:

AP/1/A/5500/019 Enclosure 8.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

The reactor coolant system is in "Loops Not Filled" condition. Core cooling has been lost due to a trip of 1A ND pump. AP/1/A/5500/019, (Loss of Residual Heat Removal System) Case 1 (Loss of ND Train without Large Vent Path Established) is in effect. Reactor Coolant T-Hot temperatures are increasing. The Control Room Supervisor (CRS) instructs you to align and start 1B ND train and establish core cooling per Enclosure 8 of AP/19.

START TIME:

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| <p>Step 1. Verify the following: □ CASE I - IN PROGRESS</p> <p><u>STANDARD:</u> Case I is in progress per initiating cue and goes to step 2.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2. Verify the following:</p> <ul style="list-style-type: none">• NC pressure - LESS THAN 385 PSIG• NC temperature - LESS THAN 350°F• NC subcooling based on core exit T/Cs GREATER THAN 0°F <p><u>STANDARD:</u> Verifies NC Pressure less than 385 psig using OAC ND or NC graphic, RVLIS W/R pressure, 1NCP5120 and 5140 Loop B&C Hot LEG W/R pressure meters 1MC-05.</p> <p>Verifies NC Thots less than 350°F using OAC ND or NC graphic, RVLIS Loop Thot indication, 1NCCR5850 & 5900 Loop Hot LEG recorders on 1MC-05.</p> <p>Verifies RVLIS A and B Train Subcooling indications 1MC-1</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2. Verify the following: continued</p> <ul style="list-style-type: none">• NC System inventory as follows: IF the NC System is in loops not filled condition, THEN verify both of the following:<ul style="list-style-type: none">• NC level - GREATER THAN OR EQUAL TO 11%• NC level - STABLE OR INCREASING.OR• IF the NC System is in loops filled condition, THEN verify both of the following:<ul style="list-style-type: none">• Pzr level - GREATER THAN OR EQUAL TO 10%• Pzr level - STABLE OR INCREASING. <p><u>STANDARD:</u> Per the cue, verifies PZR level greater than 10% and stable or increasing per 1NCPS5173, PZR COLD CAL on 1MC-5, OAC NC graphic</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 3. Verify CASE IV - IN PROGRESS.</p> <p><u>STANDARD:</u> Step does not apply, goes to Step 5</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5. Verify S/I - HAS ACTUATED.</p> <p><u>STANDARD:</u> Verifies that status lights on S/I-13 are dark and goes to step 7.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 7. Verify Enclosure 7 (Assured NC System Makeup Alignments) - IN PROGRESS.</p> <p><u>STANDARD:</u> Based on cue, operator goes to step 9</p> <p>EXAMINER CUE: Enclosure 7 is not in progress.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 9. Determine which train of ND desired to be placed in service.</p> <p><u>STANDARD:</u> Determines, per the initiating cue, that train 1B will be placed in service.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 10. Verify KC flow to the desired ND heat exchanger - GREATER THAN 5000 GPM.</p> <p><u>STANDARD:</u> Operator determines no KC flow aligned to 1B ND heat exchanger on 1MC-7. Depresses Open for 1KC-81B verifies the red "OPEN" light lit.</p> <p>Operator may also verify flow on 1KCP5680, KC Outlet flow to ND 1B heat exchanger on 1MC-7</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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|---|---------------------------------|
| <p>Step 11. Verify at least one RN pump - ON.</p> <p><u>STANDARD:</u> Verifies that at least one RN pump is running on either Unit 1 or Unit 2 control boards.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 12. Verify it is desired to place Train A ND in service.</p> <p><u>STANDARD:</u> From cue, goes to step 28 to place 1B train in service.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 28. Verify 1ETB - ENERGIZED.</p> <p><u>STANDARD:</u> Verifies any "B" train equipment on main control board energized or verifies 1ETB electrical lineup on MC-5 and status lights on SI-14 are dark.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 29. Verify the following valves - OPEN:</p> <ul style="list-style-type: none"> • 1ND-37A (ND Pump 1B Suct Frm Loop C) • 1ND-36B (ND Pump 1B Suct Frm Loop C). <p><u>STANDARD:</u> Verifies 1ND-37A and 1ND-36B red OPEN lights lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Note prior to step 30 does not apply</p> <p>Step 30. Verify the B Train ND Hx outlet and bypass valves - ABLE TO BE OPERATED FROM THE CONTROL ROOM.</p> <p><u>STANDARD:</u> Verifies nothing preventing valves from operating exist. Bypass controller has power and VI pressure is available if checked on MC-13.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

| | |
|---|---|
| <p>Step 31. Verify 1NI-178B (ND Hdr 1B To Cold Legs A&B) - OPEN.</p> <p><u>STANDARD:</u> Determines 1NI-178B red OPEN light is lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 32. Manually close the following valves:</p> <ul style="list-style-type: none"> • 1ND-60 (ND Hx 1B Outlet Ctrl) • 1ND-61 (ND Hx 1B Bypass Ctrl). <p><u>STANDARD:</u> For 1ND-60 rotate control knob counterclockwise until BLACK needle is at bottom of scale. For 1ND-61 controller depresses red "MAN" pushbutton and verifies red CLOSE light lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 33. Verify Enclosure 3 (ND Suction Header and Pump Casing Venting) – IN PROGRESS.</p> <p><u>STANDARD:</u> Goes to step 35 and continues in procedure.</p> <p>EXAMINER CUE: Enclosure 3 is not in progress.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 35. Ensure D/G 1B load sequencer - RESET.</p> <p><u>STANDARD:</u> Verifies that 1B D/G load sequencer yellow RESET light is lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 36. Start ND Pump 1B.</p> <p><u>STANDARD:</u> Operator depresses red ON pushbutton for ND 1B pump and verifies amps, and pump discharge pressure increase.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 37. Verify 1ND-59B (ND Pump 1B Miniflow) OPENS.</p> <p><u>STANDARD:</u> Verifies 1ND-59B red OPEN light is lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 38. Determine any required ND flow restrictions as follows: a. Verify the NC System - IN A LOOPS NOT FILLED CONDITION.</p> <p><u>STANDARD:</u> Per the initiating cue, this condition is met.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>CAUTION Flashing may occur in the high point of the ND pump suction line if the following ND flowrate limits are exceeded.</p> | |
| <p>Step 38. Determine any required ND flow restrictions as follows: b. Determine the maximum allowable ND flow from the table below:</p> <p><u>STANDARD:</u> Per the initiating cue, this condition is met. Operator uses the table to determine that ND maximum flow is limited to 3000 gpm.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 38 c. IF AT ANY TIME NC Level changes, THEN repeat Step 38.b.</p> <p><u>STANDARD:</u> Reads and continues in the procedure.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 39. RNO b.</p> <p>1) Slowly throttle open 1ND-61 (ND Hx 1B Bypass Ctrl) and 1ND-60 (ND Hx 1B Outlet Ctrl) to maintain the following:</p> <ul style="list-style-type: none"> • ND flowrate through ND Train 1B less than the maximum flowrate determined in Step 38. • NC System cooldown rate less than 100°F in an hour. <p>2) GO TO Step 40</p> <p>STANDARD: Rotates 1ND-60 controller knob clockwise and depresses the increase/decrease buttons as required on 1ND-61 to establish flow through the heat exchanger and maintain total ND train flow less than or equal to 3000 gpm.</p> <p>Monitors NC temperature using OAC ND, NC graphic, cooldown table or using Tcold recorders on 1MC-05 to determine when the effects on reactor coolant temperature begin and verifies that a temperature decrease is occurring.</p> <p>Goes to step 40.</p> <p>EXAMINER NOTE: In order to establish a cooldown rate, this evolution would take 10s of minutes. The rate of decrease, due to the already cold condition of the primary can not exceed 100°F in an hour.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 40. Verify ND Train 1B - IN OPERATION.</p> <p>STANDARD: Determines that ND train 1B flow is indicated.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 41. Ensure adequate shutdown margin is maintained. REFER TO ROD Book, Section 5.11.</p> <p>STANDARD: Reads step</p> <p>EXAMINER CUE: Another operator will ensure shutdown margin is met.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 42. RETURN TO step in effect.</p> <p>STANDARD: Reports JPM task is complete.</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>This JPM is complete.</p> | |

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

The reactor coolant system is in "Loops Not Filled" condition. Core cooling has been lost due to a trip of 1A ND pump. AP/1/A/5500/019, (Loss of Residual Heat Removal System) Case 1 (Loss of ND Train without Large Vent Path Established) is in effect. Reactor Coolant T-Hot temperatures are increasing. The Control Room Supervisor (CRS) instructs you to align and start 1B ND train and establish core cooling per Enclosure 8 of AP/19.

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JOB PERFORMANCE MEASURE**

**JPM_b.
Simulator**

CANDIDATE

EXAMINER

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JOB PERFORMANCE MEASURE**

Task: Align ND to Aux Containment Spray

Alternate Path: NO

Facility JPM #: NEW

K/A Rating(s): SAFETY FUNCTION 5 E14 High Containment Pressure (3.7/3/7)

EA1.1: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Task Standard:

Operator successfully transfers ND Train A from the recirculation mode to the containment spray mode per EP/1/A/5000/FR-Z.1, Response to High Containment Pressure, step 11 within 10 minutes.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

EP/1/A/5000/FR-Z.1 revision 10

Validation Time: 7 minutes

Time Critical: Yes

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

SIMULATOR SET- UP SHEET

1. Init to any 100% power IC set.
2. Insert the following malfunctions to disable both trains of containment spray.
MAL-NS001A, Value = 2
MAL-NS001B, Value = 2
3. Insert a LOCA, MAL-NC013C (Cold Leg Break) Value = 4.65
4. Complete all EP actions for E-0, E-1
5. As soon as there are 3.5 feet in containment sump reduce FWST inventory to 37% (Variable "asisrwst" = 1250000) and transfer to cold leg recirculation per ES-1.3.
6. When annunciators have been acknowledged and CA flow control throttled to zero FREEZE and write snap.

IC SELECTED 145

SIMULATOR OPERATOR INSTRUCTIONS:

1. NONE.

Tools/Equipment/Procedures Needed:

EP/1/A/5000/FR-Z.1 pages 11 through 16.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

50 minutes ago Unit 1 tripped and safety injected due to a large LOCA. EP/1/A/5000/ES-1.3, Transfer to Cold Leg Recirculation is complete. The containment spray system has failed and you have been directed to align "A" train of residual heat removal (ND) to auxiliary containment spray per EP/1/A/5000/FR-Z.1 Response to High Containment Pressure, step 11.

This JPM is time critical.

START TIME:

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|---|---------------------------------|
| <p>Step 11. Verify conditions allowing alignment of ND for aux containment spray as follows:</p> | |
| <p>11 a. At least one ND train - ALIGNED AND OPERATING IN COLD LEG RECIRC MODE.</p> <p><u>STANDARD:</u> Per the initiating cue, ND has been aligned for cold leg recirculation,</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>11 b. Containment pressure - GREATER THAN 3 PSIG.</p> <p><u>STANDARD:</u> Locates containment pressure transmitters on MC-11 and verifies containment pressure greater than 3 psig.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>11 c. Elapsed time since Reactor Trip - GREATER THAN 50 MIN</p> <p><u>STANDARD:</u> Per the initiating cue the time is greater than 50 minutes.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>11d. Verify the following valves - CLOSED:</p> <ul style="list-style-type: none"> • 1NS-43A (ND Pmp 1A To Cont Spray Hdr) • 1NS-38B (ND Pmp 1B To Cont Spray Hdr). <p><u>STANDARD:</u> Operator verifies that 1NS-43A and 1NS-38B green CLOSE lights are lit on MC-11.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>11e. Verify core cooling can be maintained with minimum S/I flow as follows:</p> <ul style="list-style-type: none"> • "NV S/I FLOW" - INDICATING FLOW • At least one NI pump - INDICATING FLOW. <p><u>STANDARD:</u> Operator verifies that flow is indicated on MC-5 on the "NV S/I FLOW" and 1A and or 1B NI pump discharge flow meters are showing flow.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

| | |
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| <p>11f. Align one ND train for aux containment spray as follows:</p> <p>Train A: 1) Place "PWR DISCON FOR 1NI-173A" switch to "ENABLE." 2) Close 1NI-173A (ND Hdr 1A To Cold Legs C&D). 3) Open 1NS-43A (ND Pmp 1A To Cont Spray Hdr).</p> <p><u>STANDARD:</u> Rotates the power disconnect for 1NI-173A to the ENABLE position. Depresses the green CLOSE pushbutton for 1NI-173A and verifies the green CLOSE light is lit. Depresses the red OPEN pushbutton for 1Ns-43A and verifies the red OPEN light is lit.</p> <p>EXAMINER NOTE: The time critical clock stops when 1NS-43A begins to open. This time must be less than 10 minutes from the time the JPM was started.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>11g. Verify following conditions to align a second ND train for aux containment spray:</p> <p>1) Another ND train - ALIGNED AND OPERATING IN COLD LEG RECIRC 2) Containment pressure - GREATER THAN OR EQUAL TO 10 PSIG.</p> <p><u>STANDARD:</u> Verifies that containment pressure is less than 10 psig. Operator goes to the RNO for g2.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>RNO g.2) Proceed as follows:</p> <p>a) IF AT ANY TIME containment pressure is greater than or equal to 10 PSIG while in this procedure, THEN RETURN TO Step 11.g. b) GO TO Step 12.</p> <p><u>STANDARD:</u> Operator reads this step and states that he will monitor containment pressure.</p> <p>EXAMINER CUE: Another operator will monitor containment pressure.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

50 minutes ago Unit 1 tripped and safety injected due to a large LOCA. EP/1/A/5000/ES-1.3, Transfer to Cold Leg Recirculation is complete. The containment spray system has failed and you have been directed to align "A" train of residual heat removal (ND) to auxiliary containment spray per EP/1/A/5000/FR-Z.1 Response to High Containment Pressure, step 11.

This JPM is time critical.

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**JPM_c.
Simulator**

CANDIDATE

EXAMINER

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Task: Respond to process radiation monitoring alarms

Alternate Path: YES

Facility JPM #: NEW

K/A Rating(s): SAFETY FUNCTION (7) INSTRUMENTATION Generic 2.4.10 (3.0/3.1)

Task Standard:

Using annunciator response for 1EMF-33, isolate blowdown and realign the Unit 1 CSAE exhaust to limit any radiation release.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

OP/1/B/6100/010X Annunciator window B/1

Validation Time: 10 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

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COMMENTS

SIMULATOR SET- UP SHEET

1. Reset to 100% Simulator I/C
2. Insert the following Malfunctions:
 - MAL-EMF1.33, EMF-33 false reading Value=155, TRIGGER=1
 - OVR-SG062A, Rad Mon override light, Value=OFF
 - OVR-SG062B, Rad Mon override PB, Value=ON
 - OVR-CM030C, Unit 1 CSAE Exhaust selector Switch, Value=OFF
3. Stabilize and write Snap

IC SELECTED 146

SIMULATOR OPERATOR INSTRUCTIONS:

1. Insert Trigger 1 as directed by Examiner

Tools/Equipment/Procedures Needed:

OP/1/B/6100/010X pages 10 and 11.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Unit 1 is operating at 100%. You are the Balance of Plant Operator monitoring the Control Boards.

START TIME:

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|---|---|
| <p>Recognizes alarm on panel 1RAD-1. Determines that the Annunciator Response for 1EMF-33 CSAE Exhaust Hi Rad in Trip 2 Condition is the correct response for this condition.</p> <p><u>STANDARD:</u> Locates Annunciator Response procedure OP/1/B/6100/010X from control board panel and reviews actions for Annunciator B/1 in Alarm.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Annunciator Response Probable Cause Section:</p> <p><u>STANDARD:</u> Candidate reviews the probable cause for 1EMF-33 CSAE Exhaust Hi Rad in the alarm condition.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Annunciator Response Automatic Actions section:</p> <p><u>STANDARD:</u> Candidate reviews the list of valves listed that close on the trip 2 signal.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p><u>STEP 1:</u> Verify that automatic actions occur by checking computer points C1A0968 through A0971 (S/G 1A through 1D Blowdown Flow).</p> <p><u>STANDARD:</u> Uses OAC and determines that the blowdown flow control valves are not closed. Locates blowdown flow control valves and rotates the controller knobs counterclockwise until flow indicates zero GPM:</p> <p>1BB-69 (S/G A Blowdown Flow Ctrl) 1BB-73 (S/G B Blowdown Flow Ctrl) 1BB-24 (S/G C Blowdown Flow Ctrl) 1BB-65 (S/G D Blowdown Flow Ctrl)</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>STEP 2: Contact Primary Chemistry to ensure the following valves are closed, 1NM-267, 269,270,271, and 272. (S/G Sample Header to Sample sinks).</p> <p><u>STANDARD:</u> Contacts Primary Chemistry and requests that the listed valves by verified closed.</p> <p>EXAMINER CUE: (Time Compression) This is Bob from Primary Chemistry, valves 1NM-267, 269, 270, 271 and 272 are closed.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>STEP 3: Select "AUTO" on "UNIT 1 CSAE EXH" switch (1MC13).</p> <p><u>STANDARD:</u> Places the "UNIT 1 CSAE EXH" switch to the "AUTO" position</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>STEP 4: Verify "VA" indicating light is lit (1MC13)</p> <p><u>STANDARD:</u> Determines that the "VA" indicating light is not lit, continues on with the annunciator response.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>STEP 5: If "VA" indicating light is dark, verify one of the following:</p> <ul style="list-style-type: none"> • ABFXF-1A on 1ABF-D-11 open Or • ABFXF-1B on 1ABF-D-4 open <p><u>STANDARD:</u> Verifies at least one VA fan on, determines that an NLO must be contacted for the valve position. Contacts an NLO to locally verify 1ABF-D-11 open or 1ABF-D-4 open</p> <p>EXAMINER CUE: After the NLO has been contacted, report that the "1ABF-D-11 is open".</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Supplemental Actions:</p> <p><u>STANDARD:</u> Starts to read and perform Supplementary actions</p> <p>EXAMINER CUE: The control room supervisor will perform the required Supplementary Actions.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

Unit 1 is operating at 100%. You are the Balance of Plant Operator monitoring the Control Boards.

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**JPM_d.
Simulator**

CANDIDATE

EXAMINER

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Task: Place Excess Letdown in service

Alternate Path: NO

Facility JPM #: NV-092

K/A Rating(s): SAFETY FUNCTION 2 APE022 AK3.03 (3.1/3.3)

Task Standard:

An excess letdown path is established to the NCDT with component cooling (KC) aligned. 1NV-124B flow is increased to greater than or equal to 75% without exceeding excess letdown heat exchanger outlet temperature of 170°F and excess letdown heat exchanger outlet pressure of 45 psig.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

OP/1/A/6200/001 revision 128

Validation Time: 20 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE

DATE

COMMENTS

SIMULATOR SET- UP SHEET

1. Pick any 100% IC Set.
2. Insert VLV-NV007F, Letdown valve 1NV-1A, Value = 0.
3. Increase VCT pressure to greater than 50 psig. This ensures that the NCDT must be used for the Excess Letdown flow.
4. Take manual control of 1NV294 and reduce total charging flow to 32 gpm. Ensure NV-309 controls for proper Seal Injection flow.
5. Increase VCT level to greater than 50%.
6. Acknowledge annunciators and place the simulator in "FREEZE".
7. Write to a SNAP

IC SELECTED 147

SIMULATOR OPERATOR INSTRUCTIONS:

1. After each use, reset to stored snap, verify stable and freeze.



Tools/Equipment/Procedures Needed:

OP/1/A/6200/001, Enclosure 4.12

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

AP/1/A/5500/012, Loss of Charging and Letdown, Case II is in effect. The Control Room Supervisor directs you to establish excess letdown to stabilize pressurizer level per OP/1/A/6200/001, Chemical and Volume Control System Enclosure 4.12. Initial conditions are verified complete, begin at step 2.1.

START TIME:

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|---|---------------------------------|
| <p>Candidate reads caution prior to step 2.1</p> <p>Step 2.1 Establish Excess Letdown as follows: 2.1.1 Notify Primary Chemistry of the following: {PIP 96-3230} Person notified _____</p> <ul style="list-style-type: none">• Excess Letdown will be placed in service• VCT pressure will be reduced to ~20 psig <p>STANDARD: Contacts chemistry and informs them of placing excess letdown in service and VCT pressure is being reduced to 20 psig</p> <p>EXAMINER CUE: This is Jeff in chemistry, I understand that you will be placing excess letdown in service and reducing VCT pressure to 20 psig.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Candidate reads caution prior to step 2.1.2</p> <p>Step 2.1.2 Reduce VCT pressure to ~20 psig per Enclosure 4.21 (Adjusting the Volume Control Tank (VCT) Hydrogen Pressure).</p> <p>EXAMINER CUE: I understand that you want me to use Enclosure 4.21 and reduce VCT pressure to 20 psig.</p> <p>EXAMINER CUE: After 2 minutes: (Time Compression) The VCT pressure regulator has been set to 20 psig.</p> <p>Step 2.1.3 Notify Radwaste Chemistry to establish Unit 1 VCT purge. Person notified _____</p> <p>EXAMINER CUE: This is Frank in Radwaste Chemistry, I understand you want a purge established on Unit 1 VCT.</p> <p>STANDARD: An NLO is contacted and directed to perform Enclosure 4.21 to reduce VCT pressure to 20 psig. Operator contacts Radwaste Chemistry to establish Unit VCT purge.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.1.4 Open the following valves to establish KC flow to the Excess Letdown Heat Exchanger:</p> <ul style="list-style-type: none"> • 1KC-305B (Exs Letdn Hx Supply Cont Isol) • 1KC-315B (Excess Letdn Hx Ret Cont Isol) <p><u>STANDARD:</u> Locates 1KC-305B and 315B on MC-11 and depresses OPEN buttons and verifies red OPEN lights are lit.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.5 Verify 1NV-125B (Excess Letdn Hx Otlt Ctrl) is in the "VCT" position.</p> <p><u>STANDARD:</u> Verifies white light lit for "VCT"</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Candidate reads note prior to Step 2.1.6</p> <p>Step 2.1.6 IF either of the following conditions exist, place 1NV-125B (Excess Letdn Hx Otlt Ctrl) in the "NCDT" position:</p> <ul style="list-style-type: none"> • VCT pressure > 45 psig as indicated on 1NVP5500 (VCT Vent Press). • VCT level > 50% as indicated on 1NVP5761 (VCT Level). <p><u>STANDARD:</u> Candidate locates the VCT pressure and level gages on MC-05 and determines that excess letdown must be aligned to the NCDT. Operator depresses the 1NV-125B "NCDT" button and verifies the NCDT light is lit.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.7 Open the following valves:</p> <ul style="list-style-type: none"> • 1NV-122B (Loop C To Exs Letdn Hx Isol) • 1NV-123B (Loop C To Exs Letdn Hx Isol) <p><u>STANDARD:</u> Depresses OPEN pushbuttons for 1NV-122B and 1NV-123B and verifies the red OPEN light is lit.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.1.8 Ensure the manual loader for 1NV-124B (Excess Letdn Press Ctrl) is adjusted to "0%" (closed).</p> <p><u>STANDARD:</u> Manual loader of 1NV-124B is rotated counterclockwise to ensure the positioner is set for 0%</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>PROCEDURE NOTE: 1NV-124B (Excess Letdn Press Ctrl) will NOT open until demand is increased on its manual loader in subsequent steps.</p> <p>Step 2.1.9 Select "OPEN" on 1NV-124B (Excess Letdn Press Ctrl).</p> <p><u>STANDARD:</u> 1NV-124B red OPEN pushbutton is depressed and verifies that the red OPEN light is still dark.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.10 Slowly adjust the manual loader for 1NV-124B (Excess Letdn Press Ctrl) to "6%" open. This is done to avoid thermal shocking the Excess Letdown Heat Exchanger.</p> <p><u>STANDARD:</u> 1NV-124B manual loader is slowly rotated clockwise until positioner display indicates 6%</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Candidate reads caution prior to step 2.1.11</p> <p>2.1.11 IF seal injection is in operation, monitor and maintain NCP seal injection flow at 6 - 8 gpm.</p> <p><u>STANDARD:</u> Verifies that seal injection IS in operation and monitors flow rates between 6-8 gpm on MC-5.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Candidate reads note prior to step 2.1.12</p> <p>2.1.12 Adjust the manual loader for 1NV-124B (Excess Letdown Press Ctrl) until the required excess letdown flow is achieved within the following parameters:</p> <ul style="list-style-type: none"> • Excess Letdown Hx outlet temperature as indicated on 1NVP5090 < 170°F. • Excess Letdown Hx outlet pressure as indicated on 1NVP5280 < 45 psig. <p>STANDARD: 1NV-124B flow is increased by rotating the loader clockwise (red needle) to equal to or greater than 75% open while ensuring excess letdown Hx outlet temperature remains less than 170°F and Excess Letdown Hx outlet pressure remains less than 45 psig.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>2.1.13 Notify Primary Chemistry of the following: Person notified _____</p> <ul style="list-style-type: none"> • Time Excess Letdown was established • IF Excess letdown flow is directed to the NCDT, then NC System hydrogen concentration will be decreasing. <p>STANDARD: Primary chemistry is contacted and informed of the time excess letdown is established and whether or not NCDT is being used.</p> <p>EXAMINER CUE: This is Jeff in chemistry, I understand that excess letdown was established at _____.</p> <p>EXAMINER CUE: (IF REQUIRED) I understand that hydrogen will decrease due to excess letdown flow to the NCDT.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.1.14 IF 1NV-125B (Excess Letdn Hx Otlf Ctrl) is aligned to the "NCDT" position, WHEN all the following conditions exist, perform the following:</p> <ul style="list-style-type: none"> • VCT level < 50% • VCT pressure < 45 psig • It is desired to align Excess Letdown to the VCT <p>2.1.14.1 Place 1NV-125B (Excess Letdn Hx Otlf Ctrl) in the "VCT" position.</p> <p>2.1.14.2 Notify Primary Chemistry that Excess Letdown has been aligned to the VCT. Person notified _____</p> <p><u>STANDARD:</u> VCT level and or pressure is still greater than their limits and the step does not apply.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.15 IF it is desired to isolate Normal Letdown, OR Normal Letdown is NOT in service, perform the following:</p> <p>2.1.15.1 Ensure the following valves are closed:</p> <ul style="list-style-type: none"> • 1NV-10A (Letdn Orif 1B Otlf Cont Isol) • 1NV-11A (Letdn Orif 1C Otlf Cont Isol) • 1NV-13A (Letdn Orif 1A Otlf Cont Isol) <p>2.1.15.2 Notify Primary Chemistry that Normal Letdown sample points are out of service and NC and other appropriate sample points must be used. Person notified _____</p> <p><u>STANDARD:</u> Operator notes that 1NV-10A, 11A, and 13A are closed.</p> <p>Contacts primary chemistry and informs them that NC sample points are isolated and alternate sample locations must be used.</p> <p>EXAMINER CUE: This is Jeff in chemistry, I understand that the NC sample points are isolated and alternate locations must be used.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

AP/1/A/5500/012, Loss of Charging and Letdown, Case II is in effect. The Control Room Supervisor directs you to establish excess letdown to stabilize pressurizer level per OP/1/A/6200/001, Chemical and Volume Control System Enclosure 4.12. Initial conditions are verified complete, begin at step 2.1.

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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JOB PERFORMANCE MEASURE**

**JPM_e.
Simulator**

CANDIDATE

EXAMINER

Do not enter in ADAMS

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Task: Evacuate the Control Room per AP/1/A/5500/017 Case II

Alternate Path: YES

Facility JPM #: NEW

K/A Rating(s): SAFETY FUNCTION (8) Plant Service Systems APE068 AA1.23 (4.3/4.4)

Task Standard:

Control board actions to evacuate the control room completed successfully, security key box obtained and operator prepares to exit the control room and go to the SSF.

Preferred Evaluation Location:

Preferred Evaluation Method:

Control Room _____ In-Plant _____

Perform _____ Simulate _____

Procedure References:

AP/1/A/5500/017 Revision 47

Validation Time: 10 minutes

Time Critical: NO

Candidate: _____

NAME

Time Start: _____

Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____

NAME

SIGNATURE

DATE

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COMMENTS

SIMULATOR SET- UP SHEET

1. Init to any 100% snap.
2. Insert the following failures:
 - MAL-IPX003A, Reactor Trip Breaker A Failure
 - MAL-EHC-002, Turbine Trip Failure, Value = 0 (AUTO).
3. Ensure the training lock boxes for the needed ASP keys are in the correct location in the simulator.
4. Freeze and write snap.

IC SELECTED 148

SIMULATOR OPERATOR INSTRUCTIONS:

1. After each JPM ensure the training security lock box is returned to the proper location.

Tools/Equipment/Procedures Needed:

AP/1/A/5500/017 Case II pages 4 through 6.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

A station security event is in progress. Security officers have arrived in the control room to inform your crew that intruders are nearing the control room. They recommend an evacuation of the OSM's command and control location to the SSF. You have been assigned the task to complete any required control room actions per AP/1/A5500/017 Case II, Loss of Plant Control due to Fire or Security Event.

START TIME:

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| <p>Step 1. Manually trip reactor.</p> <p>STANDARD: Operator rotates REACTOR TRIP 1A(B) BREAKERS handles counterclockwise on MC-01.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2. Verify Reactor Trip:</p> <ul style="list-style-type: none"> • All rod bottom lights - LIT • All reactor trip and bypass breakers - OPEN • I/R amps - DECREASING. <p>STANDARD: Operator locates DRUPI indication displays and verifies all rods display a green "RB" on the screen. Operator verifies only Reactor Trip Breaker 1B green OPEN light is lit. Operator verifies N-35 and N-36 Intermediate range displays are decreasing.</p> <p>Operator comes to the conclusion that the reactor is tripped.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 3: Verify all turbine stop valves - CLOSED.</p> <p>STANDARD: Operator locates the red Turbine Stop valve #1, #2, #3, #4 CLOSED status lights on 1SI-2. Determines all lights are dark.</p> <p>Operator depresses turbine trip pushbutton on turbine control panel and verifies the red Turbine Stop valve #1, #2, #3, #4 CLOSED status lights on 1SI-2 are lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 4. Ensure all CRD vent fans - ON.</p> <p>STANDARD: Operator determines all CRD vent fans with except of fan 1A are on. Depresses red ON pushbutton for CRD Vent 1A and verifies the red ON light is lit.</p> <p>EXAMINER NOTE: The CRD ON light will light when air flow is detected. This causes a slight delay after depressing the on pushbutton.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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|--|---|
| <p>Step 5. Trip CF pumps.</p> <p>STANDARD: Operator depresses the CFPT 1A and 1B Trip and Reset green TRIP pushbutton on MC-10. Verifies the green TRIP light is lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 6. Trip the following NC pump breakers:</p> <ul style="list-style-type: none"> • All NC pump safety breakers • All NC pump motor supply breakers. <p>STANDARD: On MC-10, operator locates the 4 NC pump safety breakers and 4 NC pump supply breakers and depresses the green OPEN pushbuttons and verifies the green OPEN lights are lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 7. Ensure the following valves - CLOSED:</p> <ul style="list-style-type: none"> • 1NV-10A (Letdn Orif 1B Otlt Cont Isol) • 1NV-89A (NC Pmps Seal Ret Cont Isol). <p>STANDARD: Operator determines that 1NV-10A and 89A are open. Depresses the green CLOSE pushbuttons for 1NV-10A and 1NV-89A and verifies the green CLOSE lights are lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 8. Initiate transfer to the SSF as follows:</p> <p>a. IF this is a security event, THEN notify Security that operators are being dispatched to the 1ETA switchgear room and the SSF.</p> <p>STANDARD: Operator contacts security to inform them that operators are being dispatched to the 1ETA switchgear room and the SSF.</p> <p>EXAMINER CUE: I understand that you are dispatching operators to the 1ETA switchgear room and the SSF.</p> <p>b. Notify SSF Security Officer (Ext. 5251 or 5212) to ensure 1SLXG is energized. REFER TO AP/1/A/5500/017 (Loss Of Control Room), Enclosure 10 (SSF D/G Startup).</p> <p>STANDARD: Operator contacts SSF security officer to ensure 1SLXG is energized by referring to AP/17 Enclosure 10.</p> <p>EXAMINER CUE: YES, 1SLXG is energized per Enclosure 10</p> <p>c. Dispatch operator to 1ETA to perform AP/1/A/5500/017 (Loss Of Control Room), Enclosure 11 (Transfer Control to SSF).</p> <p>STANDARD: Operator contacts NLO to perform AP/17 Enclosure 11.</p> <p>EXAMINER CUE: I understand that I am to perform AP/17 Enclosure 11.</p> <p>COMMENTS:</p> | <p>Critical Step 8c</p> <p>___ SAT</p> <p>___ UNSAT</p> |
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*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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|---|--|
| <p>STEP 8 continued</p> <p>Procedure NOTE</p> <ul style="list-style-type: none"> • If loss of all AC in progress, the emergency lighted pathway to the SSF is via the Unit 1 594 Electrical Pen Room and out door SEC1. Emergency flashlights are available in the Control Room for transit to the SSF. • If a security event is in progress, operators dispatched to the SSF should use the SSF security fence. <p><u>STANDARD:</u> Operator may inform the dispatched operator to use the SSF security fence.</p> <p>d. Dispatch licensed operator to SSF to maintain Hot Standby conditions on Unit 1. REFER TO OP/0/B/6100/013 (Standby Shutdown Facility Operations).</p> <p><u>STANDARD:</u> Licensed operator contacted to go to the SSF and maintain hot standby conditions per the operating procedure.</p> <p>EXAMINER CUE: I understand that I am to go to the SSF and maintain hot standby conditions per OP/0/B/6100/013.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step 8d</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Procedure NOTE</p> <p>For security events, Security may need to be contacted to determine best location for command and control by the OSM.</p> <p><u>STANDARD:</u> From the initiating cue, the OSM will be relocating to the SSF.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 9. Verify Control Room - AVAILABLE FOR CONTINUED COMMAND AND CONTROL BY THE OSM.</p> <p><u>STANDARD:</u> Based on previous note the SSF should be used for command and control and the operator performs Step 9 RNO.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

| | |
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| <p>Step 9 RNO: Perform the following:</p> <ul style="list-style-type: none"> a. Obtain the contents of the security key box located at the Control Room Supervisor desk. b. Transfer command and control to suitable location. c. Notify appropriate personnel of new location. <p>STANDARD: Critical Step: Operator locates the security box key as he exits the control room.</p> <p>He also notifies appropriate personnel, as required that the SSF is the new command and control location.</p> <p>EXAMINE CUE: When the operator locates the key box and describes the action of step RNO 9a State:</p> <p>"You have the security key box and have left the control room."</p> <p><u>COMMENTS:</u></p> | <p>Critical Step (9a.)</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>EXAMINER CUE: JPM complete</p> | |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

A station security event is in progress. Security officers have arrived in the control room to inform your crew that intruders are nearing the control room. They recommend an evacuation of the OSM's command and control location to the SSF. You have been assigned the task to complete any required control room actions per AP/1/A5500/017 Case II, Loss of Plant Control due to Fire or Security Event.

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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**JPM_f.
Simulator**

CANDIDATE

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Task: Perform a Manual Makeup to the VCT

Alternate Path: NO

Facility JPM #: OP-CN-PS-NV-115

K/A Rating(s): SAFETY FUNCTION (1) Reactivity Control SYS004 A4.12 (3.8/3.3)

Task Standard:

Volume control tank (VCT) level increased to approximately 58% using the correct blended makeup of boron and demineralized water.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

OP/1/A/6150/009 (Boron Concentration Control) revision 059
Unit 1 OAC Data Book

Validation Time: 15 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE / _____
DATE

=====

COMMENTS

SIMULATOR SET- UP SHEET

1. Reset to any BOC IC set.
2. Ensure VCT makeup controls in manual and all makeup pumps in "OFF".
3. Place 1NV-172 in the "RHT" position.
4. Run simulator until 30% VCT level is reached.
5. Ensure that 1NV-172 is returned to the "VCT" position.
6. FREEZE simulator and write snap.

IC SELECTED 149

SIMULATOR OPERATOR INSTRUCTIONS:

1. **Ensure the makeup totalizers are reset prior to each JPM.**

Tools/Equipment/Procedures Needed:

OP/1/A/6150/009 (Boron Concentration Control)
Unit 1 OAC Data Book (or Simulator OAC)

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Unit 1 is at 100% steady state power. Reactor coolant system boron is 1375 PPM and the Boric Acid Tank is 7500 PPM. The Volume Control Tank (VCT) automatic makeup is out of service for calibration by IAE and VCT level has decreased to 30%. The Control Room Supervisor (CRS) directs you to perform a manual blended makeup to increase VCT level to 58% per OP/1/A/6150/009, Boron Concentration Control, Enclosure 4.5 beginning at step 2.2.

START TIME:

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| <p>Step 2.2 Determine the volume of makeup desired. Total desired makeup: _____ gal</p> <p>STANDARD: Based on existing VCT level and final required VCT level, operator performs the following using the OAC Databook curve or calculation.</p> <p>OAC Calculation is made by inserting the Initial and Final levels in Percent then subtract the gallons at each level to determine the batch volume required. For 30 – 58% this should be approximately 537 gallons.</p> <p>OAC CURVE: Acceptable range is 500 to 600 gallons</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Procedure Note: The RMWST boron concentration has an insignificant effect on the calculation at higher outlet concentrations. The RMWST boron concentration term may be considered "0" when the desired concentration is greater than 100 ppm.</p> | |
| <p>Step 2.3 IF blended makeup is desired, calculate the amount of boric acid to be added as follows:</p> $\text{Boric acid gal} = \frac{V_f (C_f - C_w)}{(C_a - C_w)}$ <p>where V_f is the total makeup volume from Step 2.2 C_f is the desired boron concentration C_w is the RMWST boron concentration C_a is the BAT boron concentration</p> <p>STANDARD: $\frac{537 (1375 - 0)}{(7500 - 0)} = 98.45 \pm 2$ gallons of boric acid</p> <p>EXAMINER NOTE: Acceptable range: -At 500 gallons boric acid is 91.6 ± 2 gallons -At 600 gallons boric acid is 110 ± 2 gallons -An amount calculated between 500 and 600 gpm will be based on the calculated value from the equation ± 2 gallons.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 2.4 IF boric acid is to be added, ensure one boric acid transfer pump is in "ON".</p> <p>STANDARD: Places boric acid pump 1A or 1B control switch to "ON" and verifies the red ON light is lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.5 IF reactor makeup water is to be added, ensure one reactor makeup water pump is in "ON".</p> <p>STANDARD: Places reactor makeup 1A or 1B control switch to "ON" and verifies the red ON light is lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.6 Place 1NV-186A (B/A Blender Otlt To VCT Otlt) in the "OPEN" position to align a flowpath to the VCT.</p> <p>STANDARD: Positions 1NV-186A switch to the OPEN position and verifies the red OPEN light is lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.7 IF reactor makeup water is to be added, perform the following:</p> <p>PROCEDURE NOTE: If blended makeup is being added, 1NV-242A (RMWST To B/A Blender Ctrl) may be manually controlled to allow proper blending of makeup.</p> <p>2.7.1 Operate 1NV-242A (RMWST To B/A Blender Ctrl) as required.</p> <p>2.7.2 Monitor the total makeup batch counter.</p> <p>STANDARD: May operate the 1NV-242A switch; Open and CLOSED, as required while monitoring the batch counter.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 2.8 IF boric acid is to be added, perform the following:</p> <p>PROCEDURE NOTE: If blended makeup is being added, 1NV-238A (B/A Xfer Pmp To Blender Ctrl) may be manually controlled to allow proper blending of makeup.</p> <p>2.8.1 Operate 1NV-238A (B/A Xfer Pmp To Blender Ctrl) as required. 2.8.2 Monitor the boric acid batch counter.</p> <p>STANDARD: May operate the 1NV-238A switch; Open and CLOSED, as required while monitoring the batch counter.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.9 WHEN the desired volume(s) as determined in Step 2.2 AND IF applicable, Step 2.3 is(are) reached on the total makeup batch counter and/or the boric acid batch counter, ensure the following valves are closed to secure manual makeup:</p> <ul style="list-style-type: none"> • 1NV-242A (RMWST To B/A Blender Ctrl) • 1NV-238A (B/A Xfer Pmp To Blender Ctrl) <p>STANDARD: When the batch counters reach the amount determined in steps 2.2 and 2.3, the operator ensures that 1NV-242A and 1NV-238A are closed.</p> <p>EXAMINER NOTE: Acceptable range: -At 500 gallons boric acid is 91.6 ± 2 gallons -At 600 gallons boric acid is 110 ± 2 gallons -An amount calculated between 500 and 600 gpm will be based on the calculated value from the equation ± 2 gallons.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.10 Close 1NV-186A (B/A Blender Offl To VCT Offl).</p> <p>STANDARD: Operator selects CLOSE for 1NV-186A and verifies the green CLOSE light is lit.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 2.11 IF NOT required for current plant conditions, place pump (s) started in Step 2.4 and/or 2.5 in "OFF".</p> <p>STANDARD: Per the cue, places the pumps switches started in steps 2.4 and 2.5 to OFF and verify the green OFF lights are lit.</p> <p>EXAMINERS CUE: The Control Room Supervisor directs you to place the pumps switches to off while IAE continues to calibrate the makeup system.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.12 IF boric acid only was added AND it is desired, flush the makeup line as follows:</p> <p>STANDARD: Step does not apply and continues.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.13 IF automatic makeup is desired, perform one of the following:</p> <p>EXAMINER CUE: Another operator will align the makeup system when calibration is complete.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

Unit 1 is at 100% steady state power. Reactor coolant system boron is 1375 PPM and the Boric Acid Tank is 7500 PPM. The Volume Control Tank (VCT) automatic makeup is out of service for calibration by IAE and VCT level has decreased to 30%. The Control Room Supervisor (CRS) directs you to perform a manual blended makeup to increase VCT level to 58% per OP/1/A/6150/009, Boron Concentration Control, Enclosure 4.5 beginning at step 2.2.

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**JPM_g.
Simulator**

CANDIDATE

EXAMINER

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Task: Identify and isolate a ruptured steam generator

Alternate Path: YES

Facility JPM #: NEW

K/A Rating(s): SAFETY FUNCTION 3 EPE038 EA1.32 (4.6/4.7)

Task Standard:

Determines that steam generator 1A is ruptured: isolates 1A steam generator per step 4, and performs the actions to isolate the intact steam generators from steam generators 1A per step 5 RNO.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

EP/1/A/5000/E-3 Revision 28

Validation Time: 15 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

COMMENTS

SIMULATOR SET- UP SHEET

1. Reset to any 100% IC
2. Insert OVR-SG006D, S/G 1A SM ISOL CLSD PB, Value = 0
3. Insert MAL-SG001A, Value = 365
4. Safety inject and complete all the steps of E-0.
5. When S/G levels reaches 40%, close the CA flow control valve to 1A S/G.
6. Stabilize snap and write to IC set

IC SELECTED 150

SIMULATOR OPERATOR INSTRUCTIONS:

1. None.

Tools/Equipment/Procedures Needed:

EP/1/A/5000/E-3, Steam Generator Tube Rupture Revision 028

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUES:

Unit 1 has safety injected due to a steam generator tube rupture. The control room supervisor has directed you to identify and isolate the ruptured steam generator per EP/1/A/5000/E-3, Steam Generator Tube Rupture, steps 2 through 6.

START TIME:

| | |
|---|---------------------------------|
| <p>Step 2. Identify ruptured S/G(s) as follows:</p> <p>S/G level - INCREASING IN AN UNCONTROLLED MANNER. OR</p> <p><u>STANDARD:</u> Operator notes that narrow range level for S/G 1A on MC-02 meters and recorders is increasing at a rate greater than intact S/Gs and level is greater than 40%.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2 Continued:</p> <p>RP determines ruptured S/G by frisking the cation columns in the CT lab. OR</p> <p><u>STANDARD:</u> If used, operator contacts RP to frisk the cat columns for activity</p> <p>EXAMINER CUE: I understand you want me to frisk the cation columns for activity.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2 Continued:</p> <p>The following EMF trip 1 lights - LIT:</p> <ul style="list-style-type: none">• 1EMF-26 (Steamline 1A)• 1EMF-27 (Steamline 1B)• 1EMF-28 (Steamline 1C)• 1EMF-29 (Steamline 1D). <p>OR</p> <p><u>STANDARD:</u> If used, operator goes to the EMF panels in the back of the control room and determines that 1EMF-26 Trip 1 light is LIT.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 2 Continued:</p> <ul style="list-style-type: none"> Chemistry determines ruptured S/G using 1EMF-34 (S/G Sample). <p>OR</p> <p>EXAMINER CUE: Chemistry has not identified which steam generator is ruptured.</p> <ul style="list-style-type: none"> IF S/G Sampling is required to identify ruptured S/G(s), THEN: <ul style="list-style-type: none"> a. Ensure the following signals - RESET: <ul style="list-style-type: none"> 1) Phase A Containment Isolations 2) CA System valve control 3) KC NC NI NM St signals. b. Align all S/Gs for Chemistry sampling. c. Notify Chemistry to sample all S/Gs for activity. <p><u>STANDARD:</u> Operator aligns all S/Gs for sampling and contacts chemistry to sample all S/Gs for activity.</p> <p>EXAMINER CUE: I understand you want me to sample all S/Gs for activity.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 3. Verify at least one intact S/G - AVAILABLE FOR NC SYSTEM COOLDOWN.</p> <p><u>STANDARD:</u> Based on initial cue and status of intact S/Gs, operator determines at least one is available for cooldown.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 4. Isolate steam flow from ruptured S/G(s) as follows:</p> | |
| <p>Step 4a. Verify all ruptured S/G(s) PORV - CLOSED.</p> <p><u>STANDARD:</u> Locates and verifies that S/G 1A PORV green CLOSE light is lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 4b. Verify S/G(s) 1B and 1C - INTACT.</p> <p><u>STANDARD:</u> Per the cue, both 1B and 1C S/G are intact.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 4c. Isolate blowdown and steam drain on all ruptured S/G(s) as follows: S/G 1A: 1) Close 1SM-77A (S/G 1A Otl Hdr Bldwn C/V). CRITICAL ACTION</p> <p>2) Verify the following blowdown isolation valves - CLOSED: a) 1BB-56A (S/G 1A Bldwn Cont Isol Insd). b) 1BB-148B (S/G 1A Bldwn Cont Isol Byp). c) 1BB-57B (S/G 1A Bldwn Cont Isol Otsd).</p> <p>STANDARD: Operator depresses the green CLOSE pushbutton for 1SM-77A and verifies the green CLOSE light is lit.</p> <p>Operator verifies the green CLOSE lights for 1BB-56A, 1BB-148B, 1BB-57B are lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5. Close the following valves on all ruptured S/G(s):</p> <ul style="list-style-type: none"> • MSIV • MSIV bypass valve. <p>STANDARD: Attempts to close 1SM-7 and notes that the valve indication shows intermediate and goes to the RNO for Step 5.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5 RNO Perform the following: a. Close the following valves on remaining S/Gs:</p> <ul style="list-style-type: none"> • MSIV • MSIV bypass valve. <p>STANDARD: Depresses the green CLOSE pushbutton for 1SM-5, 1SM-3 and 1SM-1 and verifies the green CLOSE light is lit.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5b. Place steam dump control in manual and lower controller output to 0%. Step 5c. Place "STEAM DUMP SELECT" switch in pressure mode.</p> <p>STANDARD: Places steam dumps in manual and sets the manual controller output to 0% demand. Selects pressure mode on Steam Dump Select switch.</p> <p>COMMENTS:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 5d. Transfer turbine steam seal supply to AS as follows: 1) Open 1TL-8 (Aux Stm To Stm Seal Reg). 2) Close 1TL-2 (Main Stm To Stm Seal Reg).</p> <p><u>STANDARD:</u> Verifies 1TL-8 red OPEN light is lit and 1TL-2 green CLOSE light is lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5e. Ensure the following turbine S/V before seat drain valves - CLOSED:</p> <ul style="list-style-type: none"> • 1SM-41 (Stop Vlv #1 Before Seat Drn) • 1SM-44 (Stop Vlv #2 Before Seat Drn) • 1SM-43 (Stop Vlv #3 Before Seat Drn) • 1SM-42 (Stop Vlv #4 Before Seat Drn). <p><u>STANDARD:</u> Operator depresses the "S/V BEFORE SEAT DRN" green CLOSE pushbutton to close 1SM-41, 42, 43 and 44 and verifies the green CLOSE lights are all lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5f. Close 1AS-1 (SM To AS Inlet).</p> <p><u>STANDARD:</u> Depresses the green CLOSE pushbutton of 1AS-1 and verifies the green CLOSE light is lit.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5g. Ensure the following valves - CLOSED:</p> <ul style="list-style-type: none"> • 1HM-1 (MSRH 1A&1B SSRH Stm Source) • 1HM-2 (MSRH 1C&1D SSRH Stm Source). <p><u>STANDARD:</u> Ensures the green CLOSE lights are lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5h. Dispatch operator to isolate steam flow from all ruptured S/G(s). REFER TO Enclosure 2 (Locally Isolating Steam Flow From Ruptured S/G(s)).</p> <p><u>STANDARD:</u> Operator is dispatch to perform enclosure 2</p> <p>EXAMINER CUE: I understand you want me to perform Enclosure 2.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 5i. Use intact S/G(s) PORV for steam release.</p> <p>Step 5j. IF at least one intact S/G cannot be isolated from all ruptured S/G(s), THEN GO TO EP/1/A/5000/ECA-3.1 (SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired).</p> <p><u>STANDARD</u>: Notes the requirement to use the intact S/G PORVs and determines that step 5j does not apply.</p> <p>EXAMINER CUE: If the operator asks the supervisor if he should open the intact S/Gs PORVs to control temperature, state that another operator will monitor temperatures.</p> <p><u>COMMENTS</u>:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 6. Control ruptured S/G(s) level as follows:</p> <p>a. Verify ruptured S/G(s) N/R level - GREATER THAN 11% (29% ACC).</p> <p><u>STANDARD</u>: Determines S/G 1A N/R level is greater than 11%.</p> <p><u>COMMENTS</u>:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 6b. Isolate feed flow to all ruptured S/G(s) as follows:</p> <ul style="list-style-type: none"> • S/G 1A: <ul style="list-style-type: none"> 1) Close 1CA-62A (CA Pmp A Disch To S/G 1A Isol). 2) Close 1CA-66B (CA Pmp 1 Disch To S/G 1A Isol). <p><u>STANDARD</u>: Depresses the green CLOSE pushbuttons for 1CA-62A and 1CA-66B and verifies the green CLOSE light is lit.</p> <p><u>COMMENTS</u>:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 6c. IF AT ANY TIME ruptured S/G(s) N/R level is less than 11% (29% ACC), THEN perform Step 6.</p> <p><u>STANDARD</u>: Operator notes this requirement and then states that the JPM is complete.</p> <p><u>COMMENTS</u>:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIATING CUE:

Unit 1 has safety injected due to a steam generator tube rupture. The control room supervisor has directed you to identify and isolate the ruptured steam generator per EP/1/A/5000/E-3, Steam Generator Tube Rupture, steps 2 through 6.

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**JPM_h.
Simulator**

CANDIDATE

EXAMINER

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JOB PERFORMANCE MEASURE**

Task: Restore normal power to 1ETA and shutdown D/G 1A from the control room

Alternate Path: NO

Facility JPM #: DG3-004

K/A Rating(s): SAFETY FUNCTION (6) Electrical_APE056 AA1.04 (3.2/3.1)

Task Standard:

1ETA power being supplied from 1ATC and D/G 1A is shutdown without a reverse power trip.

Preferred Evaluation Location:

Preferred Evaluation Method:

Control Room _____ In-Plant _____

Perform _____ Simulate _____

Procedure References:

OP/1/A/6350/002 Diesel Generator Operation revision 125

Validation Time: 20 minutes

Time Critical: NO

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Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE

DATE

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COMMENTS

SIMULATOR SET- UP SHEET

1. Reset to any IC set.
2. Ensure 1B NV pump in service and "A" train equipment for everything else.
3. Open normal feeder breaker to ETA from 1ATC.
4. Perform actions of AP/1/A/5500/007 Case I up to the steps referring you to OP/1/A/6350/002 to restore normal power.
5. Stabilize unit and freeze and write snap.

IC SELECTED 151

SIMULATOR OPERATOR INSTRUCTIONS:

1. None.

Tools/Equipment/Procedures Needed:

OP/1/A/6350/002 Enclosure 4.17.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Unit 1 is recovering from a Unit Blackout per AP/1/A/5500/007 Case 1 (Loss of Normal Power to an Essential Train). 1ATC is energized and available to supply 1ETA. D/G 1A Mode Select Switch is in the "CTRL-RM" position. The D/G Load Sequencer has been reset. The Control Room Supervisor instructs you to parallel D/G 1A to 1ETA's normal power source (1ATC) and shutdown D/G 1A, per OP/1/A/6350/002 (Diesel Generator Operation) Enclosure 4.17 by completing step 2.2.

START TIME:

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|---|---|
| <p>Step 2.2 To shutdown the diesel from the Control Room, perform the following:</p> <p>STEP 2.2.1 IF both the normal (ETA Norm Fdr Frm ATC) AND alternate (ETA Alt Fdr Frm SATA) incoming feeder breakers are open, perform the following:</p> <p><u>STANDARD:</u> The Operator reads the caution prior to performing step 2.2.1.1</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.1.1 Adjust voltage using "D/G 1A Volt Adjust" to allow "D/G 1A Volts" to be one half to two divisions (50 to 200 volts) higher than "Line Volts"</p> <p><u>STANDARD:</u> The operator adjusts the D/G 1A voltage to 50 to 200 volts higher than "Line Volts".</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.1.2 Place the "D/G 1A Sync" Switch in the "ON" position.</p> <p><u>STANDARD:</u> "D/G 1A Sync" Switch is in the "ON" position on 1MC-11</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.1.3 Adjust D/G speed using "D/G 1A Gov Ctrl" such that the Synchroscope is moving slowly in the "FAST" direction, (Approximately 1 revolution per 30 seconds).</p> <p><u>STANDARD:</u> Operator adjusts the "D/G 1A Gov Ctrl" raise/lower pushbuttons so the Synchroscope is moving slowly in the Fast (clockwise) direction.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.2.1.4 As the indicator reaches 1.5 min. before the vertical (synchronized) position, close one of the following breakers:</p> <ul style="list-style-type: none"> • ETA Norm Fdr Frm ATC <p><u>STANDARD:</u> At 1.5 minutes before vertical, the operator closes the normal incoming feeder breaker from 1ATC and verifies the RED "CLSD" light is lit for "ETA NORM FDR FRM ATC"</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.1.5 Stabilize the D/G with a positive load and a lagging power factor.</p> <p><u>STANDARD:</u> D/G load (KW) remains positive and power factor (P/F) remains lagging on 1MC-8 by adjusting voltage and speed as necessary.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.1.6 IF the power factor meter indicates severely leading, (pegs high) AND power output decreases to 0 KW (pegs low) then IMMEDIATELY trip D/G 1A Bkr To ETA.</p> <p><u>STANDARD:</u> Step should not apply since the simulator will not cause any grid voltage swings.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.1.7 Place the "D/G 1A Sync" Switch in the "OFF" position. Record time_____</p> <p><u>STANDARD:</u> The operator places "D/G 1A Sync" Switch in the "OFF" position on 1MC-8.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.2.2 Verify one of the following breakers is closed:</p> <ul style="list-style-type: none"> • ETA Norm Fdr Frm ATC <p>OR</p> <ul style="list-style-type: none"> • ETA Alt Fdr Frm SATA <p>STANDARD: The Operator verifies the red “closed” light lit on “ETA NORM FDR FRM ATC”. Also verifies that all lights dark on “ETA Alt Fdr Frm SATA”.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.3 IF D/G 1A Bkr To ETA is open, go to Step 2.2.7.</p> <p>STANDARD: If the D/G Bkr was opened in step 2.2.1.5 of this JPM, then proceed to step 2.2.7. If not opened, proceed to step 2.2.4 of this JPM.</p> <p>COMMENTS:</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>EXAMINER NOTE: The only one of the next 3 steps (2.2.4, 2.2.5, and 2.2.6) will be used based on where the operator stabilized D/G power in the previous steps.</p> | |
| <p>Step 2.2.4 IF D/G load is < 2000 KW, while maintaining power factor at approximately .95 lagging using "D/G 1A Volt Adjust", adjust generator load using "D/G 1A Gov Ctrl" per the following:</p> <p>2.2.4.1 Reduce D/G load to 200 KW.</p> <p>2.2.4.2 Trip D/G 1A Bkr To ETA.</p> <p>STANDARD: The operator reads the steps and the caution prior to performing step 2.2.4.1 and 2.2.4.2. The operator reduces D/G load to approximately 200 KW and trips the D/G 1A Bkr to ETA.</p> <p>EXAMINER Note: If the operator performs this step of the procedure, then steps 2.2.5 and 2.2.6 are N/A.</p> <p>A Diesel Generator breaker trip on reverse power rather than by operator action constitutes a failure of the JPM.</p> <p>COMMENTS:</p> | <p>Critical Step (if used)</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

Step 2.2.5 IF D/G load is between 2000 KW to 3000 KW, while maintaining power factor at approximately .95 lagging using "D/G 1A Volt Adjust", adjust generator load using "D/G 1A Gov Ctrl" per the following:

2.2.5.1 Slowly reduce D/G load to 2000 KW (1850-2150 KW).
Record time _____

2.2.5.2 After 15 minutes, perform the following within 5 minutes:

A. Reduce D/G load to 200 KW. _____

B. Trip D/G 1A Bkr To ETA. _____

STANDARD: Examinee should determine this step to be N/A if the D/G load did not exceed 2000 KW and go to the next step. If load did go greater than 2000 KW, when the examinee lowers D/G to 2000 KW via the D/G governor, "Lower" pushbutton give the following cue,

CUE: "15 minutes have elapsed" Time of Cue _____
Time of BRK open _____

D/G governor control "Lower" pushbutton is used to lower load to 200 KW and the voltage adjust "RAISE/LOWER" pushbuttons are used to maintain a .95 power factor. The D/G 1A breaker is then tripped. The operator verifies the Green "OPEN" light lit. The standard is ≤ 5 minutes

A Diesel Generator breaker trip on reverse power rather than by operator action constitutes a failure of the JPM.

COMMENTS:

**Critical Step
(if used)**

___ SAT

___ UNSAT

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

Step 2.2.6 IF D/G load is > 3000 KW, while maintaining power factor at approximately .95 lagging using "D/G 1A Volt Adjust", adjust generator load using "D/G 1A Gov Ctrl" per the following:

2.2.6.1 Reduce load to 4800 KW (4650-4950 KW). (PIP 97-2796)
Record time_____

2.2.6.2 After 5 minutes, reduce load to 3850 KW (3700-4000 KW).
Record time_____

#1 2.2.6.3 After 5 minutes, reduce load to 2900 KW (2750-3050 KW).
Record time_____

#1 2.2.6.4 After 5 minutes, reduce load to 2000 KW (1850-2150 KW).
Record time_____

#2 2.2.6.5 Ensure total load reduction time is > 15 minutes, prior to performing step 2.2.6.6.

#1 2.2.6.6 After 5 minutes, perform the following within 5 minutes:

A. Reduce D/G load to 200 KW. _____

B. Trip D/G 1A Bkr To ETA. _____

STANDARD: Examinee should determine this step to be N/A if the D/G load did not exceed 3000 KW and go to the next step. If load did go greater than 3000 KW, when the examinee lowers D/G to the each KW setpoint via the D/G governor, "Lower" pushbutton give cue #1

EXAMINER CUE:

#1 Steps 2.2.6.1-2.2.6.4 "5 minutes have elapsed"

#2 Step 2.2.6.6 Cue "18 minutes have elapsed"

A Diesel Generator breaker trip on reverse power rather than by operator action constitutes a failure of the JPM.

COMMENTS:

**Critical Step
(if used)**

___ SAT
___ UNSAT

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.2.7 Allow diesel to idle unloaded for a minimum of 5 minutes or until the following conditions are met:</p> <ul style="list-style-type: none"> • Jacket water outlet temperature is < 170°F. • Lube oil outlet temperature is < 170°F. • Turbocharger exhaust temperatures have stabilized. <p>STANDARD: The diesel idles unloaded for a minimum of 5 minutes</p> <p>EXAMINER CUE: 5 minutes have elapsed</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.8 Ensure one of the following conditions is met:</p> <ul style="list-style-type: none"> • The D/G Sequencer is "RESET". <p>OR</p> <ul style="list-style-type: none"> • Power has been removed from the D/G Sequencer. <p>STANDARD: The operator recognizes that the D/G Sequencer is reset by verifying the YELLOW "RESET" light is lit for the 1A D/G Sequencer</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.2.9 Depress the D/G 1A "OFF" pushbutton to stop the engine. Record time _____</p> <p>STANDARD: The operator depresses the D/G 1A "OFF" pushbutton to stop the engine and verifies that the D/G green "OFF" light is lit on 1MC-11.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2.2.10 WHEN the engine stops, dispatch Operators as necessary to verify the following:</p> <ul style="list-style-type: none"> • The "L.O. Pump & Heater" light indicates "ON". • The "J.W. Pump & Heater" light indicates "ON". • 1RN-232A (1A D/G Hx Inlet Isol) (DB-565, DD-38) closes. <p>STANDARD: An operator is dispatched and verifies the "L.O. Pump & Heater" and "J.W. Pump & Heater" light indicates "ON". He also requests the Operator to verify 1RN-232A closes.</p> <p>EXAMINER CUE: I understand you want me to verify the following:</p> <ul style="list-style-type: none"> • The "L.O. Pump & Heater" light indicates "ON". • The "J.W. Pump & Heater" light indicates "ON". • 1RN-232A (1A D/G Hx Inlet Isol) (DB-565, DD-38) closes. <p>EXAMINER CUE: (Time Compression) The "L.O. Pump & Heater" light indicates "ON", the "J.W. Pump & Heater" light indicates "ON" and 1RN-232A is closed.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

Unit 1 is recovering from a Unit Blackout per AP/1/A/5500/007 Case 1 (Loss of Normal Power to an Essential Train). 1ATC is energized and available to supply 1ETA. D/G 1A Mode Select Switch is in the "CTRL-RM" position. The D/G Load Sequencer has been reset. The Control Room Supervisor instructs you to parallel D/G 1A to 1ETA's normal power source (1ATC) and shutdown D/G 1A, per OP/1/A/6350/002 (Diesel Generator Operation) Enclosure 4.17 by completing step 2.2.

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**JPM_i.
Plant JPM**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Perform Auxiliary Building Operator Actions Following Control Room Evacuation

Alternate Path: YES

Facility JPM #: RSS-034 (Modified)

K/A Rating(s): SAFETY FUNCTION (8) Plant Service Systems APE068 AK3.18 (4.2/4.5)

Task Standard:

Operator performs Enclosure 4 to transfer both diesel generators to local control, and initiates a makeup to the Spent Fuel Pool from the FWST.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

AP/2/A/5500/017, Loss of Control Room, Enclosure 4

Validation Time: 35 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

SIGNATURE

DATE

=====

COMMENTS

Tools/Equipment/Procedures Needed:

AP/2/A/5500/017 Enclosure 4.

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Toxic gas has forced the control room to be evacuated. You are the Unit 2 auxiliary building operator and have been directed to man your "Loss of Unit 2 Control Room" position. When you arrive at the location perform AP/2/A/5500/017, Enclosure 4.

START TIME:

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| <p>When the operator locates the auxiliary building operators' local copy of Enclosure 4, in the 2A D/G room, hand the copy to him.</p> <p><u>Comments:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 1. Activate control room overrides at Unit 2 diesel control panels as follows:</p> <p>a. Break glass and depress "CONTROL ROOM OVERRIDE" at the following panels:</p> <ul style="list-style-type: none">• Diesel Generator Control Panel 2A• Diesel Generator Control Panel 2B. <p>b. Notify Unit 2 ASP operator (x5550, x5551) that control room overrides have been engaged at Unit 2 diesel control panels.</p> <p><u>STANDARD:</u> Operator transits to both D/G rooms and breaks the cover glass for each D/G "Control Room Override" button and depresses the buttons. Then reports the information to the Unit 2 ASP operator.</p> <p><i>**EXAMINER CUE: (For each D/G) The Control Room Override cover glass is broken and the red Control Room Override pushbutton has been depressed.</i></p> <p>EXAMINER CUE: I understand that 2A and 2B D/Gs controls have been engaged locally.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>YOU WILL BE ENTERING THE RCA</p> | |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 2. Verify all of the following Unit 2 NC pump breakers - OPEN:</p> <ul style="list-style-type: none"> • "REACTOR COOLANT PUMP MOTOR NO. 2A" (AB-577, CC-68, Rm 484) • "REACTOR COOLANT PUMP MOTOR NO. 2C" (AB-577, CC-62, Rm 484) • "REACTOR COOLANT PUMP MOTOR NO. 2D" (AB-560, CC-68, Rm 360) • "REACTOR COOLANT PUMP MOTOR NO. 2B" (AB-560, CC-62, Rm 360). <p>STANDARD: Operator proceeds to each location rooms 484 and 360 determine the current position of each NC pump breaker. The breaker cubicle green OPEN light is lit.</p> <p>**EXAMINER CUE: (As each NC pump breaker is located) The green OPEN light is lit.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 3. Verify all of the following valves - OPEN:</p> <ol style="list-style-type: none"> a. 2RN-47A (RN Supply X-Over Isol) (AB-585, PP-QQ, 60-61, Rm 407). b. 2RN-48B (RN Supply X-Over Isol) (AB-585, PP-QQ, 60-61, Rm 407). c. 2RN-49A (Non-Ess Supply Hdr Isol) (AB-585, PP, 60-61, Rm 407). d. 2RN-50B (Non-Ess Supply Hdr Isol) (AB-585, PP, 60-61, Rm 407). <p>EXAMINER CUE: When the operator describes the location of the above valves, then provide the following cue:</p> <p>"Another operator has entered the area and verified proper valve position."</p> <ol style="list-style-type: none"> e. 2RN-51A (Non-Ess Ret Hdr Isol) (AB-588, MM-59, Rm 400). f. 2RN-52B (Non-Ess Ret Hdr Isol) (AB-588, MM-59, Rm 400). <p>STANDARD: All these valves have position indicating pointers. The operator locates each valve and reports the pointer pointing to the "OPEN" label or tag.</p> <p>**EXAMINER CUE: (As each valve is located) The indicator is pointing to OPEN.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 4. WHEN requested by Unit 2 ASP operator, THEN align Unit 2 NV pump suction to FWST as follows:</p> <p><u>STANDARD:</u> The operator should contact the ASP operator for further directions. And based on examiner cue, proceed to step 6.</p> <p>EXAMINER CUE: (If the operator explains the need to contact the ASP operator, provide the cue). Do not perform steps 4 and 5 at this time.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 5. WHEN requested by Unit 2 ASP operator, THEN align Unit 2 NV pump suction to VCT as follows:</p> <p><u>STANDARD:</u> Per the cue, proceeds to set 6.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>EXAMINER NOTE: Due to the negative pressure in the spent fuel building, when the CAD door is opened, the inrush of air will be very noticeable. Ensure the operator and yourself hold onto loose items to prevent them from being pulled away. When you exit the building this wind will be in your face and could blow off your hard hat.</p> | |
| <p>Step 6. Monitor, every 2 hours, Unit 2 spent fuel pool level between 2 ft below and equal to skimmer trough level.</p> <p><u>STANDARD:</u> Proceeds to the spent fuel pool building and verifies pool level between 2 feet below and equal to skimmer trough level. Based on cue, operator performs Step 6 RNO actions.</p> <p>EXAMINER CUE: Level is 3 feet below the skimmer trough and appears to be decreasing.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 6 RNO Perform the following:</p> <p>a. De-energize the following breakers:</p> <ul style="list-style-type: none"> • 2EMXB-F03D (Spent Fuel Pool Makeup From FWST Valve 2KF101B) • 2EMXI-F03D (Spent Fuel Pool Makeup From FWST Valve 2KF103A). <p><u>STANDARD:</u> Operator proceeds to 2EMXB-F03D and rotates switch counterclockwise until the switch points to OFF. Operator proceeds to 2EMXI-F03D and rotates switch counterclockwise until the switch points to OFF.</p> <p>**EXAMINER CUE: 2EMXB-F03D switch is rotated counterclockwise and the switch is pointing to OFF. 2EMXI-F03D switch is rotated counterclockwise and the switch is pointing to OFF.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 6 RNO</p> <p>b. Locally operate the following valves to maintain spent fuel pool level between 2 ft. below and equal to the lip of skimmer trough:</p> <ul style="list-style-type: none"> • 2KF-101B (FWST To Spent Fuel Pool) (AB-583, JJ-62, Rm 400) • 2KF-103A (FWST To Spent Fuel Pool) (AB-589, JJ-62, Rm 400). <p><u>STANDARD:</u> Operator locates valves engages the clutch and rotates the handwheels counterclockwise to open the valves.</p> <p>**EXAMINER CUE: 2KF-101B clutch is engaged and handwheel is rotated counterclockwise and then stops. 2KF-103A clutch is engaged and handwheel is rotated counterclockwise and then stops.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>EXAMINER NOTE: When the makeup valves are open and an explanation of the enclosure is done the JPM can be stopped.</p> <p>EXAMINER CUE: (When both makeup valves are open state the following)</p> <p style="text-align: center;">"Another operator will monitor makeup and spent fuel pool level."</p> | |
| <p>This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

Toxic gas has forced the control room to be evacuated. You are the Unit 2 auxiliary building operator and have been directed to man your "Loss of Unit 2 Control Room" position. When you arrive at the location perform AP/2/A/5500/017, Enclosure 4.

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**JPM _ J.
Plant**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Restore Power to 2EDD

Alternate Path: YES

Facility JPM #: NEW

K/A Rating(s): SAFETY FUNCTION (6) Electrical APE058 AA1.03 (3.1/3.3)

Task Standard:

Initially 2EDD is aligned to spare charger 2ECS, the operator determines that the spare charger is not performing correctly, returns to step 8 and then goes to step 11 to energize 2EDD using the tie breakers.

Preferred Evaluation Location:

Control Room _____ In-Plant _____

Preferred Evaluation Method:

Perform _____ Simulate _____

Procedure References:

AP/2/A/5500/029 Loss of Vital or Aux Control Power revision 16 Enclosure 5

Validation Time: 18 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____ / _____
NAME SIGNATURE DATE

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COMMENTS

Tools/Equipment/Procedures Needed:

AP/2/A/5500/029 Loss of Vital or Aux Control Power revision 16 Enclosure 5

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

Vital charger 2ECD has failed and vital DC bus 2EDD is de-energized. Repairs are in progress and the control room supervisor has directed you to restore power to 2EDD using AP/2/A/5500/029, Loss of Vital or Aux Control Power, Enclosure 5. You are to begin at step 4 and complete the enclosure to energize the 2EDD buss using spare charger 2ECS.

START TIME:

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| <p>Step 4. Verify 2EDD-F01A (2EDD Bus Voltage) GREATER THAN OR EQUAL TO 125 VOLTS.</p> <p><u>STANDARD:</u> Per the cue and the volt meter, operator determines buss voltage is zero and goes to step 7.</p> <p>EXAMINER CUE: (If checked) Bus voltage is zero volts</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 7. Ensure 2EDD-F03C (Inverter 2EID) - OPEN.</p> <p><u>STANDARD:</u> On 2EDD ensures breaker F03C is rotated to OFF.</p> <p><i>**EXAMINER CUE: Breaker 2EDD F03C is pointing to OFF.</i></p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 8. Select method of restoring power to 2EDD as follows:</p> <ul style="list-style-type: none">• IF desired to energize 2EDD using battery 2EBD and normal charger 2ECD THEN GO TO Step 9. OR• IF desired to energize 2EDD using battery 2EBD and spare charger 2ECS THEN GO TO Step 10. OR• IF desired to energize 2EDD using tie breakers to 2EDB, THEN GO TO Step 11. <p><u>STANDARD:</u> Per the initial cue, operator chooses the spare charger and goes to step 10.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 10. Restore power to 2EDD from battery 2EBD and spare charger 2ECS as follows:</p> <p>a. Verify 2ECS is aligned to 2EMXJ. Refer to OP/2/A/6350/008 (125VDC/120 VAC Vital Instrument and Control Power System).</p> <p>STANDARD: Operator notes that the procedure must be checked or checks the breaker alignment verify condition of the spare charger and 2EMXJ.</p> <p>EXAMINER CUE: (IF the operator calls the control room then state the following:) 2ECS is aligned to 2EMXJ.</p> <p>EXAMINER CUE: (IF the operator uses the local indications then state as required:) 2EMS-F01C is closed, 2ECS-CB301 (AC Input) is closed, 2ECS-CB302 (DC Output) is closed.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 10 b. Ensure 2EDD-F03A (Battery Charger 2ECD) - OPEN.</p> <p>STANDARD: Ensures that 2EDD-F03A breaker is rotated to OFF</p> <p>**EXAMINER CUE: Breaker 2EDD-F03A is pointing to OFF.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 10 c. Ensure 2EDB-F03B (2EDB Tie Breaker to 2EDD) - OPEN.</p> <p>STANDARD: Ensures 2EDB-F03B breaker is rotated to OFF.</p> <p>**EXAMINER CUE: Breaker 2EDB-F03B is pointing to OFF.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 10 d. Ensure the following breakers - CLOSED:</p> <ul style="list-style-type: none"> • 2EDD-F02A (Battery 2EBD) • 2EDD-F02B (Main Breaker). <p>STANDARD: On 2EDD ensures that F02A and F02B breakers are rotated to ON.</p> <p>EXAMINER CUE: IF ASKED; 2EDD-F02A and 2EDD-F02B are pointing to OFF.</p> <p>**EXAMINER CUE: (When step is performed) Breakers 2EDD-F02A and F02B are pointing to ON</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Procedure Note: The following breaker is kirk keyed (#705) with the output breaker to 2EDA and 2EDC so only one breaker can be closed at a time.</p> | |
| <p>Step 10 e. Ensure 2EDS-F01C (Spare Battery Charger To 2EDB and 2EDD)-CLOSED.</p> <p>STANDARD: Inserts kirk key and rotates, rotates 2EDS-F01C breaker to ON.</p> <p>**EXAMINER CUE: Breaker 2EDS-F01C is pointing to ON</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 10 f. Ensure 2EDD-F03B (2EDD Tie Breaker to 2EDB)-CLOSED.</p> <p>STANDARD: Ensures 2EDD-F03B breaker rotated to ON.</p> <p>**EXAMINER CUE: Breaker 2EDD-F03B is pointing to ON</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 10. g. Verify 2EDD-F01A (2EDD Bus Voltage) - GREATER THAN OR EQUAL TO 125 VOLTS.</p> <p>STANDARD: Operator locates and verifies proper voltage for 2EDD, and after the cue, goes to step 10 g. RNO.</p> <p>EXAMINER CUE: (When located) 2EDD bus voltage is 97 volts.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 10g RNO Perform the following:</p> <p>1) IF either of the following conditions exist, THEN RETURN TO Step 8:</p> <ul style="list-style-type: none"> • 2EDD-F01A (2EDD Bus Voltage) indicates approximately "0" volts OR <p>NOTE Channel 4 status lights will remain lit unless 2ERPD is supplied from regulated power.</p> <ul style="list-style-type: none"> • Control Room reports indications and controls associated with 2EDD remain unresponsive. <p>STANDARD: Since voltage is not 0 volts, operator must contact control room per the second bullet to determine course of action. Following discussion and examiner cue, operator should return to step 8 to choose another path.</p> <p>EXAMINER CUE: (When C/R is contacted) Control Room indications and controls are unresponsive.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>EXAMINER NOTE: Returning to complete this step again</p> <p>Step 8. Select method of restoring power to 2EDD as follows:</p> <ul style="list-style-type: none"> • IF desired to energize 2EDD using battery 2EBD and normal charger 2ECD THEN GO TO Step 9. OR • IF desired to energize 2EDD using battery 2EBD and spare charger 2ECS THEN GO TO Step 10. OR • IF desired to energize 2EDD using tie breakers to 2EDB, THEN GO TO Step 11. <p>STANDARD: Operator must choose between the last two options. He may consult the SRO or station management. Per the cue, operator goes to step 11 to use the tie breakers.</p> <p>EXAMINER CUE: (IF the operator contacts the supervisor state the following:) Complete your enclosure to re-energize 2EDD from available power sources.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 11. Restore power to 2EDD using tie breakers to 2EDB as follows:</p> <p>a. Ensure 2EDD-F02B (Main Breaker) - OPEN.</p> <p><u>STANDARD</u>: On 2EDD ensures breaker F02B rotated to OFF</p> <p>**EXAMINER CUE: Breaker 2EDD-F02B is pointing to OFF</p> <p><u>COMMENTS</u>:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 11 b. Ensure 2EDS-F01C (Spare Battery Charger Feeder To 2EDB And 2EDD) - OPEN.</p> <p><u>STANDARD</u>: On 2EDS, rotates breaker 2EDS-F01C rotated to OFF. (May also remove kirk key previously used, but not required)</p> <p>**EXAMINER CUE: Breaker 2EDS-F01C is pointing to OFF</p> <p><u>COMMENTS</u>:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 11 c. Ensure 2EDD-F03B (2EDD Tie Breaker To 2EDB) - CLOSED.</p> <p><u>STANDARD</u>: On 2EDD, ensures breaker F03B is rotated to ON.</p> <p>**EXAMINER CUE: Breaker 2EDD-F03B is pointing to ON.</p> <p><u>COMMENTS</u>:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 11 d. Ensure 2EDB-F03B (2EDB Tie Breaker To 2EDD) - CLOSED.</p> <p><u>STANDARD</u>: On 2EDB ensures breaker F03B rotated to ON.</p> <p>**EXAMINER CUE: Breaker 2EDB-F03B is pointing to ON.</p> <p><u>COMMENTS</u>:</p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>Step 11 e. Verify 2EDD-F01A (2EDD Bus Voltage) - GREATER THAN OR EQUAL TO 125 VOLTS.</p> <p><u>STANDARD:</u> On 2EDD verifies voltage on meter at 128 volts</p> <p>**EXAMINER CUE: Voltage is 128 volts</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 11 Continued</p> <p>f. IF 2ERPD is deenergized, THEN GO TO Enclosure 13 (Restoring Power To 2ERPD).</p> <p><u>STANDARD:</u> Based on cue, continues to step 11g.</p> <p>EXAMINER CUE: Another operator will restore 2ERPD.</p> <p>g. Return this enclosure to the Control Room SRO.</p> <p><u>STANDARD:</u> States that this enclosure will be returned to the SRO.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p style="text-align: center;">This JPM is complete.</p> | |

TIME STOP: _____

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIATING CUE:

Vital charger 2ECD has failed and vital DC bus 2EDD is de-energized. Repairs are in progress and the control room supervisor has directed you to restore power to 2EDD using AP/2/A/5500/029, Loss of Vital or Aux Control Power, Enclosure 5. You are to begin at step 4 and complete the enclosure to energize the 2EDD buss using spare charger 2ECS.

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

**CATAWBA
2005
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

**JPM_k.
Plant**

CANDIDATE

EXAMINER

**CATAWBA
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

Task: Locally break vacuum during a loss of feedwater.

Alternate Path: NO

Facility JPM #: NEW

K/A Rating(s): SAFETY FUNCTION (4(SEC) APE054 AK3.04 (4.4/4.6)

Task Standard:

Using AP/06 enclosure 3; vacuum breaker valves are opened and steam is isolated to the air ejectors. Using operating procedure enclosure 4.3, isolates condenser 1A from CSAE 1A.

Preferred Evaluation Location:

Preferred Evaluation Method:

Control Room _____ In-Plant _____

Perform _____ Simulate _____

Procedure References:

AP/1/A/5500/006 Enclosure 3 Revision 35
OP/1/B/6300/006 Enclosure 4.3 revision 57

Validation Time: 20 minutes

Time Critical: NO

Candidate: _____
NAME

Time Start: _____
Time Finish: _____

Performance Ratings:

SAT _____ UNSAT _____ Question Grade _____ Performance Time _____

Examiner: _____
NAME

_____/_____
SIGNATURE DATE

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COMMENTS

Tools/Equipment/Procedures Needed:

AP/1/A/5500/006 Enclosure 3
OP/1/B/6300/006 Enclosure 4.3

READ TO OPERATOR

DIRECTION TO TRAINEE:

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.

INITIATING CUE:

AP/1/A/5500/006, Loss of S/G Feedwater Case II, Loss of Normal CA is in effect. The control room supervisor has directed you to perform AP/006 Enclosure 3 steps 1 and 2 to break main condenser vacuum then perform OP/1/B/6300/006, Main Vacuum, Enclosure 4.3 to shutdown 1A and 1B air ejectors.

START TIME:

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| <p>Procedure Caution: High air flow rates will exist when vacuum breakers are first opened. Stay clear of pipe end.</p> | |
| <p>Step 1. Break condenser vacuum by opening the following valves:</p> <p>1CM-368 (1A Main Cond Shell Vacuum Bkr) (TB-600, 1F-26) (Ladder needed) 1CM-369 (1B Main Cond Shell Vacuum Bkr) (TB-603, 1F-24) (Ladder needed) 1CM-370 (1C Main Cond Shell Vacuum Bkr) (TB-605, 1F-22) (Ladder needed).</p> <p><u>STANDARD:</u> for each valve, operator positions a ladder of sufficient size to reach the hand wheel. Then engages clutch and opens the valve by rotating the handwheel counter clockwise.</p> <p>**EXAMINER CUE: (When located) Ladder has been obtained. **EXAMINER CUE: (for each valve) Clutch is engaged and handwheel has been rotated in the counter clockwise direction then stopped.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT ___ UNSAT</p> |
| <p>Step 2. Secure steam to CSAEs as follows:</p> <p>a. Close the following valves:</p> <ul style="list-style-type: none"> • 1SA-22 (Main Steam To CSAE) (TB1-594, 1M-32) • 1SA-27 (Aux Steam to CSAE) (TB-594, 1M-27). <p><u>STANDARD:</u> Valves are located high and are operated by chains. The chain wheels are rotated in the clockwise direction until the handwheel stops.</p> <p>**EXAMINER CUE: (for each valve) Valve handwheel is rotated in the clockwise direction and has stopped.</p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT ___ UNSAT</p> |
| <p>Step 2b. WHEN time and manpower permit, THEN complete the shutdown of the CSAEs. REFER TO OP/1/B/6300/006 (Main Vacuum).</p> <p><u>STANDARD:</u> Per the examiner cue, operator should perform enclosure 4.3 to shutdown the air ejectors.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT ___ UNSAT</p> |
| <p>Procedure: OP/1/B/6300/006 Enclosure 4.3 Step 2.1 To shutdown CSAE 1A, perform the following:</p> | |

*****Italicized Cues Are To Be Used Only If JPM Performance Is Being Simulated.***

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| <p>1. Initial Conditions: 1.1 Review Limits and Precautions</p> <p><u>STANDARD:</u> Reviews the limits and precautions.</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Initial conditions continued;</p> <p>1.2 Verify the main vacuum pumps are NOT aligned to Unit 1 Main Condenser</p> <p>1.3 Verify vacuum has been broken on 1A and 1B CFPT Condensers per OP/1/A/6250/001M (Isolation of Condensate and Feedwater System Components).</p> <p>EXAMINER CUE: Initial conditions 1.2 and 1.3 are complete.</p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.1 Ensure the following valves are closed to secure vacuum to Main Condenser 1A:</p> <ul style="list-style-type: none"> • 1ZJ-7 (1A CSAE No 1 Air Inlet) (TB-594, 1L-21) • 1ZJ-8 (1A CSAE No 2 Air Inlet) (TB-594, 1L-21) <p><u>STANDARD:</u> Locates and closes 1ZJ-7 and 1ZJ-8 by rotating chain wheels in the clockwise direction until the handwheel stops.</p> <p><i>**EXAMINER CUE: 1ZJ-7 and 1ZJ-8 handwheels are rotated in the clockwise direction until the handwheel stops.</i></p> <p><u>COMMENTS:</u></p> | <p>Critical Step</p> <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.2 Ensure the following valves are closed to secure vacuum to the CFPT condensers:</p> <ul style="list-style-type: none"> • 1ZJ-19 (1A & 1B CFPT Condenser Air Offtake To 1A CSAE No 1) (TB-594, 1L-21) • 1ZJ-20 (1A & 1B CFPT Condenser Air Offtake To 1A CSAE No 2) (TB-594, 1L-21) <p><u>STANDARD:</u> Locates and closes 1ZJ-19 and 1ZJ-20 by rotating chain wheels in the clockwise direction until the handwheel stops.</p> <p><i>**EXAMINER CUE: 1ZJ-19 and 1ZJ-20 handwheels are rotated in the clockwise direction until the handwheel stops.</i></p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 2.1.3 Ensure the following valves are closed to secure the 1st stage jets:</p> <ul style="list-style-type: none"> • 1SA-69 (1A CSAE 1st Stage No 1 Inlet) (TB-594, 1K-21) • 1SA-72 (1A CSAE 1st Stage No 2 Inlet) (TB-594, 1K-21) <p>STANDARD: Locates and closes 1ZJ-69 and 1ZJ-72 by rotating handwheels in the clockwise direction until the handwheel stops.</p> <p>**EXAMINER CUE: <i>1ZJ-69 and 1ZJ-72 handwheels are rotated in the clockwise direction until the handwheel stops.</i></p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.4 Close 1SA-114 (1A CSAE Inter Condenser Drain To Condenser) (TB-594, 1L-21).</p> <p>STANDARD: Locates and closes 1SA-114 by rotating the handwheel in the clockwise direction until the handwheel stops.</p> <p>**EXAMINER CUE: <i>1SA-114 handwheel is rotated in the clockwise direction until the handwheel stops.</i></p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>Step 2.1.5 Ensure the following valves are closed to secure the 2nd stage jets:</p> <ul style="list-style-type: none"> • 1SA-131 (1A CSAE 2nd Stage No 1 Inlet Isol From Inner Condenser) (TB-594, 1K-21) • 1SA-130 (1A CSAE 2nd Stage No 2 Inlet Isol From Inner Condenser) (TB-594, 1K-21) <p>STANDARD: Locates and closes 1SA-131 and 1SA-130 by rotating handwheels in the clockwise direction until the handwheel stops.</p> <p>**EXAMINER CUE: <i>1SA-131 and 1SA-130 handwheels are rotated in the clockwise direction until the handwheel stops.</i></p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |

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| <p>Step 2.1.6 Ensure the following 2nd stage steam inlet valves are closed:</p> <ul style="list-style-type: none"> • 1SA-66 (1A CSAE 2nd Stage No 1 Inlet) (TB-594, 1K-21) • 1SA-63 (1A CSAE 2nd Stage No 2 Inlet) (TB-594, 1K-21) <p><u>STANDARD:</u> Locates and closes 1SA-66 and 1SA-63 by rotating handwheels in the clockwise direction until the handwheel stops.</p> <p>**EXAMINER CUE: 1SA-66 and 1SA-63 handwheels are rotated in the clockwise direction until the handwheel stops.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>EXAMINER NOTE: When the operator completes step 2.1.6, provide the following cue:</p> <p>EXAMINER CUE: Another operator will shutdown 1B air ejector. Continue with Enclosure 3 actions.</p> | |
| <p>Enclosure 3</p> <p>Step 3 WHEN requested by Control Room Supervisor, THEN verify condenser vacuum broken as follows:</p> <p><u>STANDARD:</u> Based on the cue, reports that this JPM is complete</p> <p>EXAMINER CUE: The control room supervisor will contact you when he needs you to verify condenser vacuum is broken.</p> <p><u>COMMENTS:</u></p> | <p>___ SAT</p> <p>___ UNSAT</p> |
| <p>This JPM is complete.</p> | |

TIME STOP: _____

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**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIATING CUE:

AP/1/A/5500/006, Loss of S/G Feedwater Case II, Loss of Normal CA is in effect. The control room supervisor has directed you to perform AP/006 Enclosure 3 steps 1 and 2 to break main condenser vacuum then perform OP/1/B/6300/006, Main Vacuum, Enclosure 4.3 to shutdown 1A and 1B air ejectors.

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